

TOTAL-CARE CANCER CENTER

a holistic approach to medical care

by Tammy Hieb



CIRCULATION
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Arch.
Thesis
2005
Hieb

"Holistic medicine is a system of health care which fosters a cooperative relationship among all those involved, leading towards optimal attainment of the physical, mental, emotional, social and spiritual aspects of health. It emphasizes the need to look at the whole person, including analysis of physical, nutritional, environmental, emotional, social, spiritual and lifestyle values."

Canadian Holistic Medical Association

2004-2005 Architectural Design Thesis
Department of Architecture and Landscape Architecture
North Dakota State University

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TOTAL-CARE CANCER CENTER

**A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University**

By

Tammy Hieb

**In Partial Fulfillment of the Requirements
for the Degree of
Bachelor of Architecture**

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Program Director

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Department Chair

**May 2005
Fargo, North Dakota**



TOTAL-CARE CANCER CENTER



I dedicate this book to
those that sacrificed their
time, money, and effort ...
to those that understood
the deadlines and hectic
schedules ... to those that
loved me unconditionally
through the hard times ...
to those that gave me
encouragement and
support especially when I
didn't have the energy or
strength to keep going. I
dedicate this book to my
family and friends,
especially to my children,
my parents, and my life-
long partner. God bless
each of you for the
sacrifices you've made.
I love you always.

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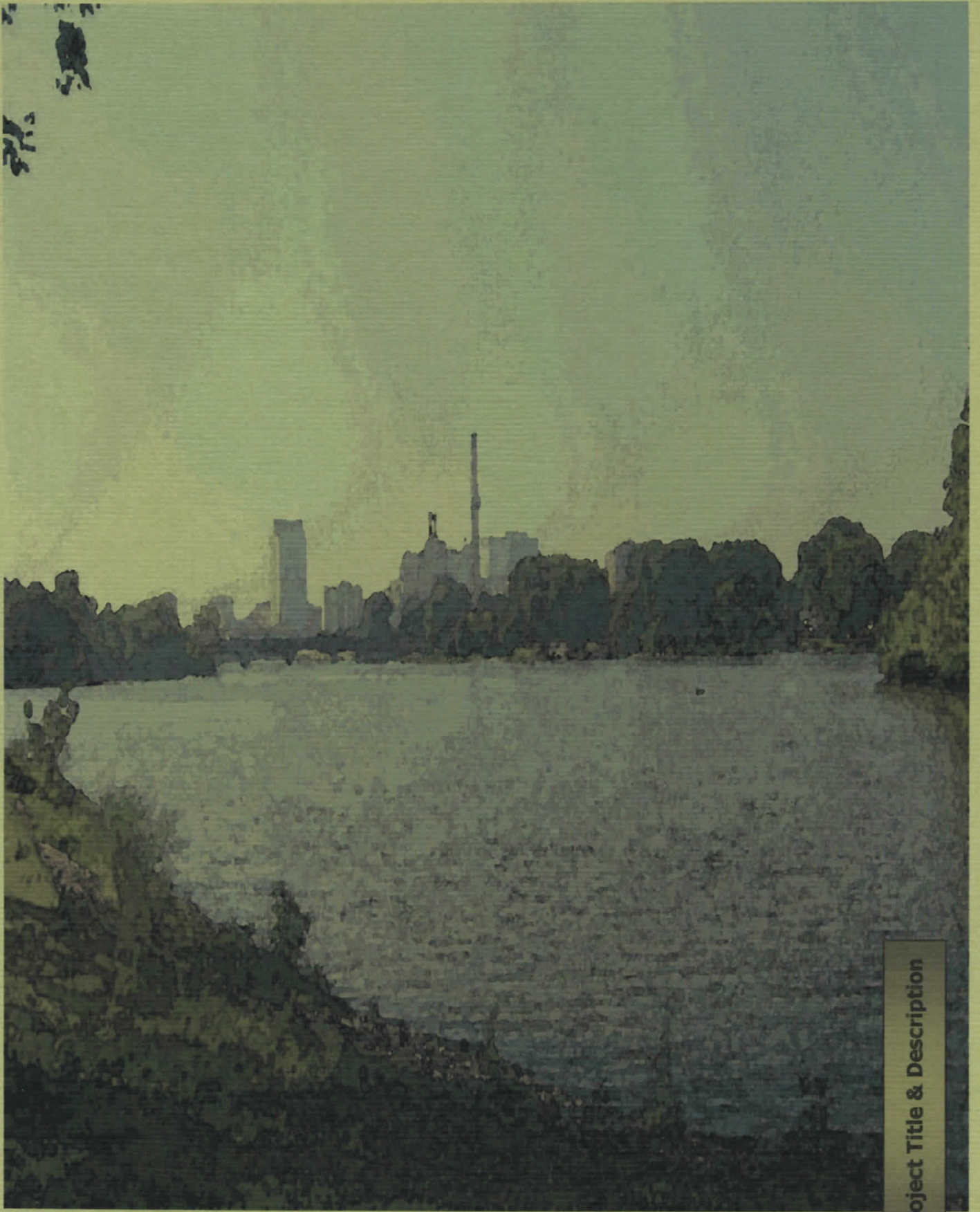
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Project Title & Description

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Project Title & Description

Project Title:

Total-Care Cancer Center

Project Typology

Description:

The Total-Care Cancer Center will be an extension of the Mayo Clinic in Rochester, Minnesota. Currently people from all over the world come to the Mayo Cancer Center for patient care, treatment, research and educational opportunities.

Theoretical Premise

Project Justification

Part of the Mayo Clinic's focus is on research in order to provide the best patient care through exploration and experience. The new Cancer Center will facilitate space for research development and hands on learning for staff, students, patients and family members.

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The facility will continue to provide patient care and treatment for both adults and pediatric cancer patients, but with a broader, unique approach through the incorporation of complimentary treatments, as well as the more conventional methods.

Previous Design Studio Experience

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The goal of this project is to create a design solution that takes the holistic approach a step further. Rather than focusing solely on one's physical health, it is important to also care for the emotional, mental, and spiritual needs of the patient and his/her family as an important part of healing. The question is, "Can the design of a space influence the outlook and ultimately the outcome of one's disease?" What type of design would serve as a source of hope, inspiration, support, peace, health and healing? The goal of this project is to create an innovative design to improve the quality of life for a cancer patient and his/her family through a holistic approach in master planning a Cancer Center, with a campus setting, while focusing on a more detailed design of the Clinic & Treatment Center.

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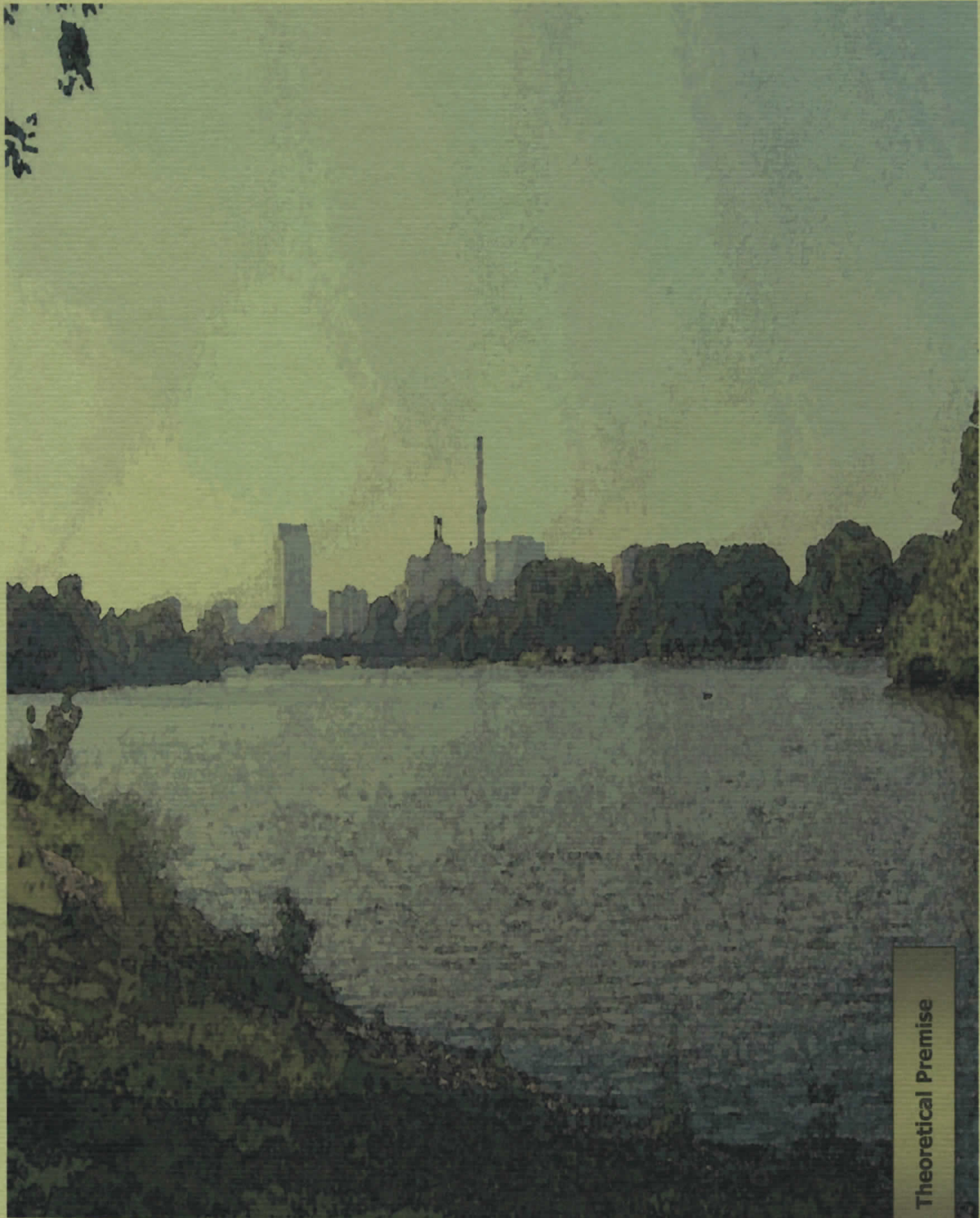
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Project Typology:

The building typology of the Total-Care Cancer Center is based on a combination of building types, which will include a medical facility consisting of a clinic, hospital, and research center for cancer patients. The facility would also include an extended-stay hotel or living quarters for patients, families, staff, students and visitors from all over the world. The building and location will provide a unique setting specifically designed to enhance the quality of life for patients and their families, as well as provide a work environment that enhances, inspires, and motivates its users.

The Clinic & Treatment Center will include complementary therapies, such as massage therapy, nutritional education and planning, meditation areas, healing gardens, water features, and natural elements to promote the holistic approach to enhance a 'healing environment'.

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Theoretical Premise:

The underlying premise of the design is based on a holistic approach to ultimately improve the quality of life for a cancer patient and his/her family. This approach involves two areas of focus.

The first deals with the whole person and his/her needs whether physical, emotional, mental or spiritual. The design is driven to provide a 'healing environment' through complimentary medicines, such as relaxation therapies, music therapy, exercise, nutrition, diet, healing through imagery, spiritual healing, lifestyle, pain management, etc. combined with the more common, conventional methods, such as chemo therapy, radiation therapy, etc.

Secondly, the actual space needs to incorporate elements that create a 'healing environment'; these elements include natural light, water, plants, sounds, smells, etc.

It is through this holistic approach that we can achieve the ultimate goal of designing a space that improves the quality of life and serves as a source of hope, inspiration, support, peace, health and healing.

Theoretical Premise



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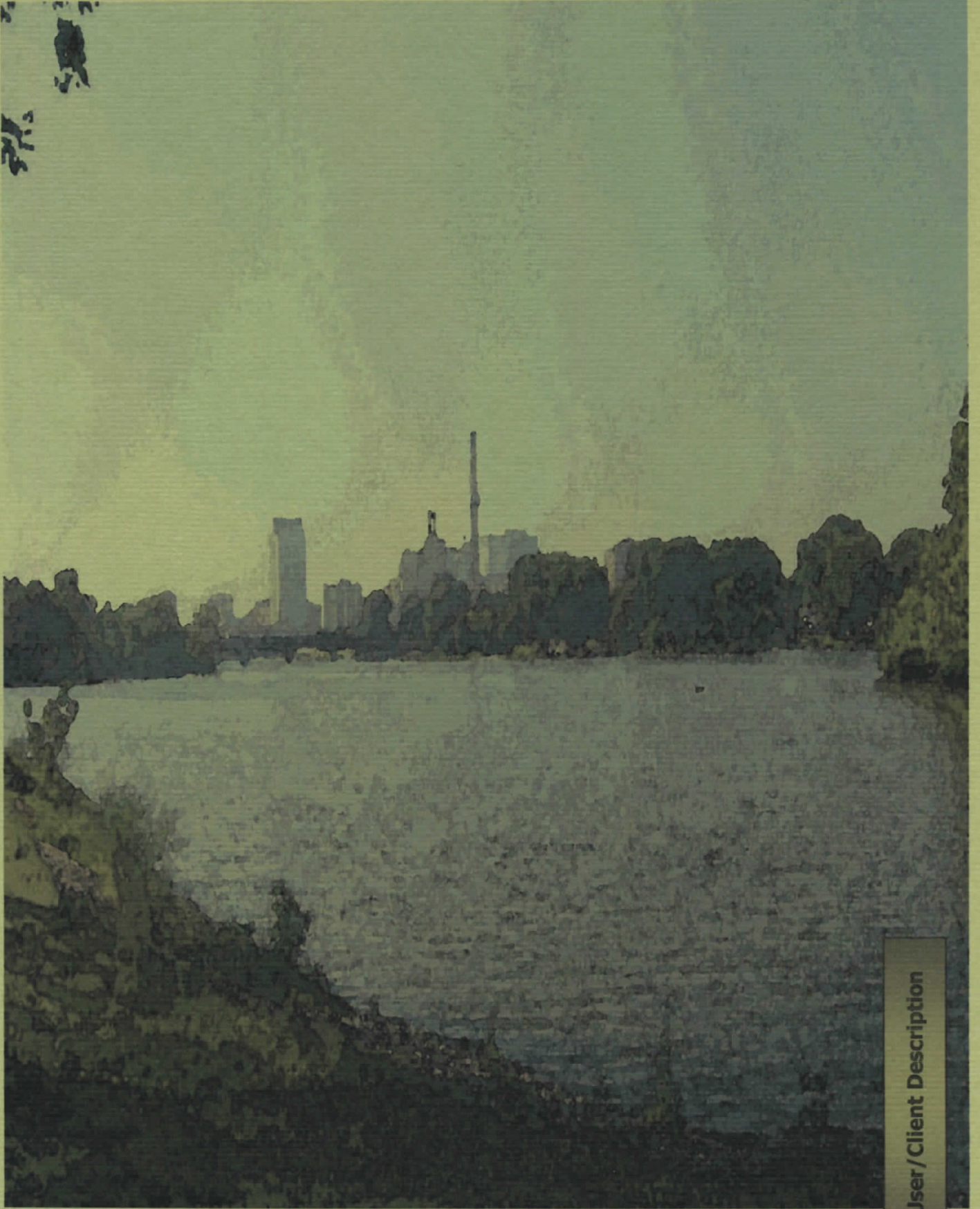
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Cancer affects people of all ages, races, incomes and regions. The American Cancer Society (2004) estimates that in 2004 there will be 1,368,030 new cancer cases in the United States with 9,200 occurring in children between the ages of 0-14. An estimated 563,700 deaths will occur in 2004 due to cancer. Cancer is the second leading cause of death in the United States (American Cancer Society, 2004).

As we look at these facts and figures we must ask ourselves what we can do not only to find a cure for this brutal disease, but what can we as designers do to improve the healing process and environment to which patients, their families, and medical staff are influenced by.

This project will provide a combination of conventional and complementary medicines to form an integrative approach to medical care. By incorporating this approach with the natural elements that promote a 'healing environment', we are able to provide a unique solution to help promote healing and ultimately improve the quality of life for the patient and his/her family.

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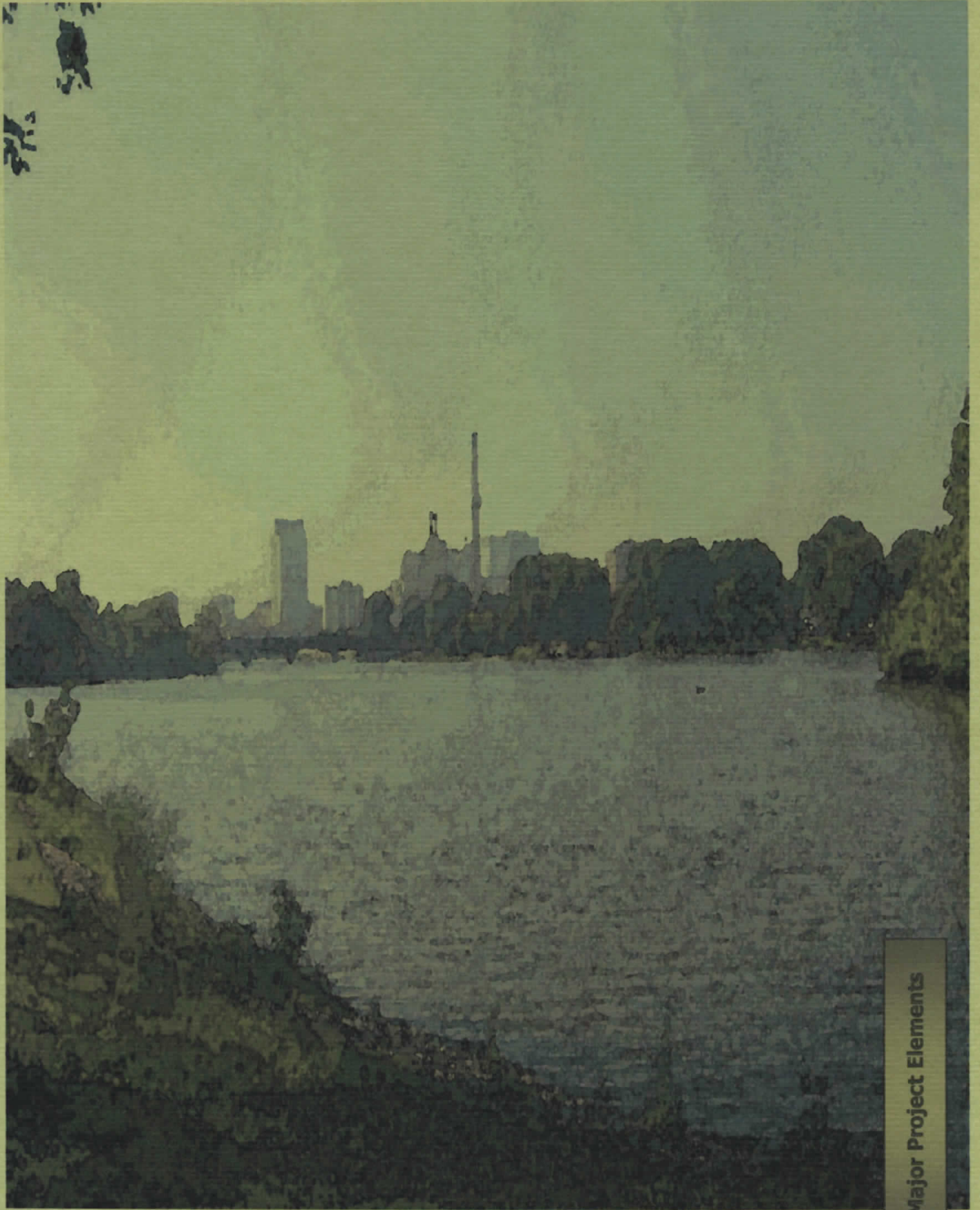
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User/Client Description:

Currently people from all over the world come to the Mayo Cancer Center for patient care, treatment, research and educational opportunities. Part of the Mayo Clinic's focus is on research in order to provide the best patient care through exploration and experience. The new Total-Care Cancer Center will continue to provide patient care and treatment but with a broader, unique approach, as well as a space for research development and hands on learning for staff, students, patients and family members.

The Mayo Clinic philosophy is based on three principles: clinical, research, and education. Clinical focuses direct on patient care. Research deals with investigation in basic science and clinical research. Education deals with the sharing of knowledge between students, peers, and their superiors. As part of their philosophy of sharing knowledge in order to provide the best patient care, the Total-Care Cancer Center will host visitations from medical staff from across the country and around the world.

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Major Project Elements – Master Plan:

Shared Outdoor Space

This includes shared spaces such as parking, but also spaces that promote the holistic approach, such as a landscaped courtyard, walking paths, water feature, playground, etc.

Retail & Commercial

This building would include spaces such as a Cafeteria, Gift Shop, a Juice Bar, Guest Services, etc. These spaces include the Main Entrance and Lobby.

Hospital

The hospital must include a Main Lobby, along with public areas, patient floors (adult & pediatric), labs, radiology, staff offices / lounges, family rooms, etc.

Clinic & Treatment Center

The Clinic & Treatment Center is the focus of this design program and must include a Main Lobby, along with registration and reception areas, waiting rooms, exam rooms (adult & pediatric), doctors' offices, nurses' stations, treatment rooms, infusion center, etc. State-of-the-art technology and equipment would be used for treatment, diagnostic, and educational purposes.

Administrative Support Services & Research Facility

The Administrative Support Services & Research Facility must include office space for administrative and support services, while providing additional space for research labs, offices, conference rooms, possibly an auditorium for lectures, classrooms, offices, etc. State-of-the-art technology and equipment would be used within this area.

Hotel / Resort or Living Quarters

This area would provide living quarters for patients and families during their stay. Amenities that would enhance or promote the holistic approach would be provided, such as a Fitness Center, Sun Room, Pool, Spa, Sauna, etc.

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Site Information:

Rochester is located in within the rolling farmland of the Zumbro River Valley in southeastern Minnesota, 80 miles southeast of Minneapolis and Saint Paul.

Rochester is known world-wide for the Mayo Clinic and its leading edge in medical research and discovery. Each year half of a million people from around the world come to the Mayo Clinic for patient care, treatment, research and educational opportunities, which makes Rochester an ideal location for the new Total-Care Cancer Center.



The Site location is on the southwest edge of town near the historical Maywood Mansion which was originally built and owned by William Mayo, one of the founders of the Mayo Clinic. The site is located at the intersection of County Road 25 and County Road 125 in the southeast corner, where utilities and access are readily available. The surrounding area is quiet and serene with gorgeous views of rolling hills and trees. The site is currently active as a gravel pit with natural and man-made landforms; one of which is a man-made lake which is located in the center of the site. The majority of the site is located outside of the flood plain, with the northwest corner as the best location for building. The soils in this area include Waukee loam along the north and northwest, Spillville silt loam in the central portion, Lawler loam, Terri loam, and a sandy substratum along the west edge with Becker loam along the entire southern half. A naturally wooded bike path and river runs along the south and eastern edge of the site. A row of mature trees borders County Road 125 to the west. County Road 25 borders the northern edge. The site's unique setting will enhance the healing environment that drives this project.

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Cancer Center:

Designing to improve the patient / staff experience within a functional, but yet inspirational 'healing environment'.

Complimentary Therapies / Holistic Medicine:

Designing for the whole person through a holistic approach, whether physical, emotional, mental or spiritual in order to create a 'healing environment'.

Physical Healing Environment:

Designing the facility to incorporate elements, such as natural light, water, plants, sounds, smells, which help to create a 'healing environment'

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Plan for Proceeding:

Definitions of Research Direction

Research will include a focus on holistic and complementary therapies, as well as 'healing environments' within healthcare. Case Studies of healthcare facilities will be used to explore new technology and existing facilities.

Plan for Design Methodology

Design method realization will occur when the research and analysis is done and the parts to the puzzle begin to fit together to make the whole picture. The connections between the holistic approach and conventional treatment methods will come together in correlation to creating a 'healing environment.'

Plan for Documenting the Design Process

The research documentation will be recorded through a series of notes, sketches, photos and Xerox copies accumulated within in a binder.

Project Schedule for 2004 Fall Semester

Week #1 (Oct. 4 – 8):

7 October -Thesis Proposal due to ARCH561 Instructor
-Student critic & faculty pref. slips available

Research

Week #2 (Oct. 11 – 15):

14 October -Return preference slips to Main Office

Research

Week #3 (Oct. 18 – 22):

21 October -Primary & Secondary Critics announced
-ARCH582 Firm Evaluation Paper due

Research

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Week #4 (Oct. 25 – 29):

28 October -Last day of ARCH561 Class
Research
Define the Program

Week #5 (Nov. 1 – 5):

4 November -ARCH582 Ethics Paper due
Research
Continue work on Program

Week #6 (Nov. 8 – 12):

11 November -Veteran's Day Holiday
12 November -ARCH571 Design Projects due
Research
Organize Site Information
Work on draft of Program

Week #7 (Nov. 15 – 19):

Final week of ARCH571 Design Studio / Final Presentations
18 November -ARCH582 Request for Proposals due
Research
Continue work on draft of Program

Week #8 (Nov. 22 – 26):

24 November -Draft Thesis Program due to Primary Critic
25-26 November-Thanksgiving Holiday
Further Site Analysis and Building Documents

Week #9 (Nov. 29 – Dec. 3):

2 December -ARCH582 Com. Volunteer Paper due
Research
Finalize organization of Site Info. and Building Documents
Work on Final Draft of Program

Week #10 (Dec. 6 -10):

9 December -Final Thesis Program due to Primary Critic
10 December -Last day of classes
Research
Begin working on Context Model

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Week #11 (Dec. 13 -17):

Final Exams Week
16 December -ARCH582 Final Exam

Week #12 (Dec. 20 -24):

Research
Work on Context Model

Week #13 (Dec. 27 -31):

Research
Work on Context Model

Week #14 (Jan. 3 - 7):

Research
Work on Context Model

Project Schedule for 2005 Spring Semester

Week #15 (Jan. 10 - 14):

11 January -Classes begin
12 January -Begin with weekly Critic Review
Conceptual and Schematic Design work
Finish Context Model

Week #16 (Jan. 17 - 21):

17 January -Martin Luther King, Jr. Holiday
19 January -Weekly review with Primary Critic
Conceptual and Schematic Design work

Week #17 (Jan. 24 - 28):

26 January -Weekly review with Primary Critic
Conceptual and Schematic Design work

Week #18 (Jan. 31 - Feb. 4):

2 February -Weekly review with Primary Critic
Conceptual and Schematic Design work

Week #19 (Feb. 7 - 11):

9 February -Weekly review with Primary Critic
Conceptual and Schematic Design work

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Week #20 (Feb. 14 – 18):

16 February -Weekly review with Primary Critic
Design Development

Week #21 (Feb. 21 – 25):

21 February -President's Day Holiday
23 February -Weekly review with Primary Critic
Design Development

Week #22 (Feb. 28 – Mar. 4):

2 March -Weekly review with Primary Critic
Design Development

Week #23 (Mar. 7 – 11):

Week of Mid-semester Thesis Reviews
9 March -Weekly review with Primary Critic
Design Development

Week #24 (Mar. 14 – 18):

Week of Spring Break
Presentation Drawings

Week #25 (Mar. 21 – 25):

23 March -Final weekly review with Primary Critic
25 March -Easter Holiday
Presentation Drawings

Week #26 (Mar. 28 – April 1):

28 March -Easter Holiday
Presentation Drawings

Week #27 (April 4 – 8):

Presentation Drawings

Week #28 (April 11 – 15):

Presentation Drawings

Week #29 (April 18 – 22):

Presentation Drawings

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Week #30 (April 25 – 29):

- 25 April -Thesis Projects due (4:30PM - Memorial Union Ballroom)
- 26-27 April -Annual Thesis Exhibit in the Memorial Union Ballroom
- 28-29 April -Final Thesis Reviews
- 29 April -Draft of Thesis document due to Primary Critics

Week #31 (May 2 – 6):

- 2-5 May -Final Thesis Reviews
- 6 May -Last day of classes

Week #32 (May 9 – 13):

Final Exams Week

- 12 May -Final Thesis Documents due at 4:30PM in the Main Office
- 13 May -Commencement at 4:00PM at the Fargodome

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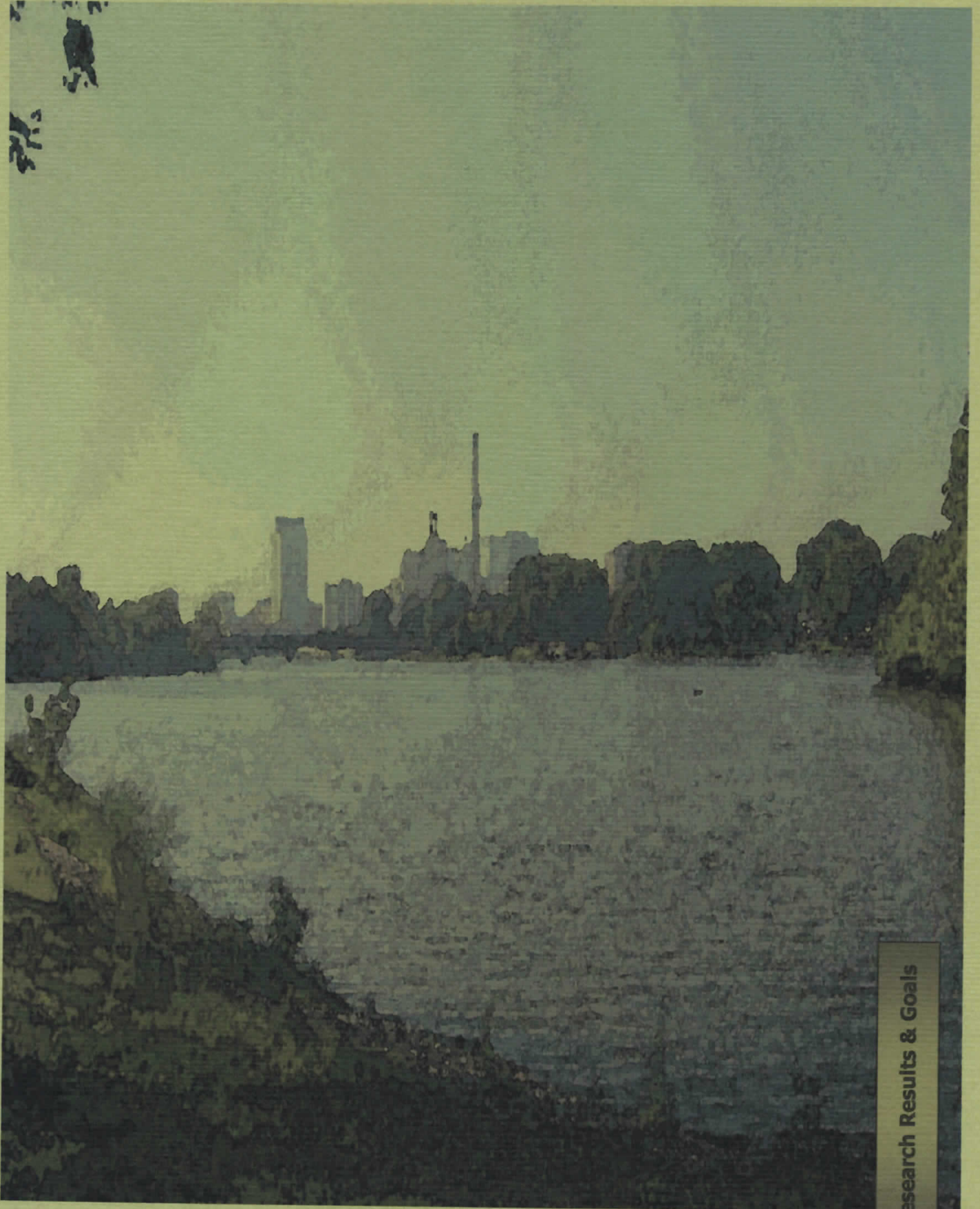
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Previous Design Studio Experience:

<u>Year / Semester</u>	<u>Instructor(s)</u>	<u>Projects</u>
2nd Year / Fall	Carol Prafcke	Visitor's Center – Atlanta, GA
2nd Year / Spring	Chris Monson	Vehicle Auction – Fargo, ND
3rd Year / Fall	Harlan Ormbreck	Library
3rd Year / Spring	Dan Faoro	Residential / Mixed Use
4th Year / Fall	Josh Walters, Mark Barnhouse, & Cindy Urness	Urban Design – Fargo, ND
4th Year / Spring	Don Faulkner	Med. Dens Housing - Fargo, ND Highrise – San Francisco, CA
5th Year / Fall	Vince Hatlen	Hotel & Conf. Center – Fargo, ND

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Research Results & Goals:

Complementary Therapies / Holistic Medicine

As we become more health conscious, national trends sway toward natural means of maintaining healthy lifestyles, as well as becoming a part of a patient's treatment with the ultimate goal of a quality life. Some claim that "healing will occur naturally in the human body if it is given what it truly needs, which is fresh air, sunlight, proper diet, pure water, exercise and rest" (Natural Health, 2004). Others believe that "God can provide an experience of inspiration, joy, security, peace of mind, and guidance that goes beyond what is possible in the absence of the conviction that such a power exists" (Holistic, 2004). Many support the holistic approach to medicine as it "treats the whole person as opposed to the individual organs of the body where symptoms occur" (Holistic Online, 2004). Many support the use of holistic medicine in addition to the more conventional methods. Such methods include homeopathy, herbology, iridology, bioenergetic methods, and nutrition which are designed to "stimulate and maintain the body's intrinsic self-healing processes" (Natural Health, 2004). Meditation, guided imagery, yoga, prayer and spiritual healing, bio feedback, bodywork, pet therapy, hypnotherapy, music therapy and so on can be used to relieve stress, promote relaxation, lower blood pressure, improve exercise performance, relieve insomnia and much more (Holistic Online, 2004). Meditation is a safe and simple way to balance a person's physical, emotional, and mental states" ... it's value "to alleviate suffering and promote healing has been known and practiced for thousands of years" (Holistic Online, 2004). These natural methods to healing and pain management would work well with the more conventional treatments, especially for cancer patients.

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Research Results & Goals:

Mayo Clinic & Cancer Center

Rochester was founded in 1854, five years after the Minnesota Territory was organized. Minnesota became a state on May 11, 1858 and shortly thereafter, on August 5th, the City of Rochester was established. Twenty-five years later, in 1883, a devastating tornado hit the city leaving many dead or injured (City of Rochester, 2004). Temporary medical facilities were set up in offices and hotels, while a group of nuns from the Sisters of Saint Francis were recruited as nurses. A woman, by the name of Mother Alfred Moes, and several nuns approached a doctor, by the name of William Worrall Mayo, and his two sons, William J. and Charles H. Mayo, with their dream of building the first general hospital within southeastern Minnesota (Mayo Clinic, 2003).

The elder Dr. Mayo had been practicing medicine since 1850 and was appointed a Civil War examining surgeon for the Union Enrollment Board in 1863. He moved to Rochester in 1864, as the headquarters for the Enrollment Board was located there (Mayo Clinic, 2003).

The eldest son, Dr. William J. Mayo, finished medical school in 1883 and his brother, Dr. Charles H. Mayo, finished in 1888. They both joined their father's practice in Rochester as soon as they were done with medical school.

The dream to build the first general hospital within southeastern Minnesota would depend on a joint effort. Mother Alfred Moes and the Sisters of Saint Francis agreed to build and run the hospital, while Mayo and his sons would provide medical care to the patients. The two parties agreed and in 1889 the 27 bed hospital opened and was called Saint Mary's Hospital (Mayo Clinic, 2003).

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By 1908, the Mayo practice had evolved into the first Group Practice in the world. It integrated physicians with other medical expertise; they had their own laboratories and staff; they expanded into providing editorial services and an in-house banker “to improve business procedures” (Mayo Clinic, 2003). Even back then, their philosophy and work ethic was based on teamwork and quickly built a reputation as such.

By 1914, the practice had grown along with their reputation and their patient load soared to 30,000. With their success, the Mayo brothers chose to open the Mayo School of Graduate Medical Education in 1915, which was the first formal graduate training program for physicians in the world. In 1919, the Mayo brothers turned over their assets, the bulk of their life savings, and the clinic name to a private, not-for-profit, charitable organization known today as the Mayo Foundation. All of the income from the Foundation was placed in a trust, which was used to pay the physicians’ salary and to provide funds to run the school. They set up a board of governors and committee system to oversee the Foundation and to reinforce their philosophy of teamwork and commitment to the patient. The Foundation’s Mission Statement specifies that “Mayo will provide the best care to every patient every day through integrated clinical practice, education, and research.” The philosophy that “the needs of the patient come first” and to “practice medicine as an integrated team of compassionate, multi-disciplinary physicians, scientists and allied-health professionals who are focused on the needs of patients from our communities, regions, the nation and the world” is still part of the primary values and core principles in which the Foundation was based on. (Mayo Research, 2001)

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In 1986, Saint Mary's Hospital and the Rochester Methodist Hospital integrated with the Mayo Foundation. Today the Foundation consists of three clinics and four hospitals located within three states. Saint Mary's, which originally began as a 27 bed hospital, is currently licensed for 1,157 beds and 53 operating rooms. All together the Mayo Foundation employs over 40,000 physicians, scientists, nurses and healthcare workers. In 2003, the Mayo Clinic in Rochester MN employed 1,626 physicians and scientists along with 1,636 residents, and an allied clinic and hospital healthcare staff of 23,524. (Mayo Clinic, 2003)

The Mayo Clinic or Foundation is known world-wide for their leading-edge treatments and therapies, their high standards of performance and professionalism, and their commitment to quality patient care. As a part of the Mayo Clinic Model of Care, they promise their patients "high quality, compassionate medical care delivered in a multi-specialty, integrated academic institution" (Mayo Clinic, 2004). The Mayo Clinic logo consists of three interlocking shields that symbolize Mayo's "commitment to excellence and interdependence in the three areas of Research, Education, and Clinical Practice" (Mayo Clinic, 2004).

The Mayo Clinic consists of many departments, one of which is the Cancer Center, which sees more than 16,000 new cancer patients every year. The Center is one of the largest in the United States and has held the National Cancer Institutes (NCI) designation for more than thirty years. The Center is dedicated to "understanding the biology of cancer; discovering new ways to predict, prevent, diagnose and treat cancer; and transforming the quality of life for cancer patients today and in the future" (Mayo Research, 2001).

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With Mayo's commitment to research and education, the Center has twelve major cancer research programs, which include the following (Mayo Research, 2001):

1. Cancer Imaging
2. Cancer Prevention & Control
3. Cell Biology
4. Developmental Therapeutics
5. Women's Cancer
6. Hematologic Malignancies
7. Immunology & Immunotherapy
8. Gastrointestinal Cancer
9. Gene Therapy
10. Neuro-oncology
11. Prostate Cancer
12. Genetic Epidemiology & Risk Assessment

The Cancer Imaging Program focuses on four general areas: technology development, cancer detection, cancer therapy and imaging informatics. One area within the technology development involves a new technique called MR Elastography, which "combines MRI and sound wave imaging to measure the elasticity of tissues inside the body." This tool can be used to detect tumors at earlier stages. Another technology is being developed to "monitor the effects and success of gene therapy for cancer". Other imaging techniques are used for treatment and therapy. Within imaging informatics, they are "developing methods for better computer-generated, three-dimensional modeling of tumors from image data, quantitative image analysis, and computer-aided image interpretation." "Mayo continues to discover and develop new imaging technologies and to use existing technology in revolutionary new ways" (Mayo Research, 2001).

Developmental Therapies is another area of research within the Mayo Clinic Cancer Center. A major strength of the Developmental Therapeutics Program is the involvement of researchers with a wide range of expertise. The scope of research ranges from basic molecular, pharmacologic and genetic studies to developing and implementing early clinical trials that test the drugs or treatments in patients. (Mayo Research, 2001)

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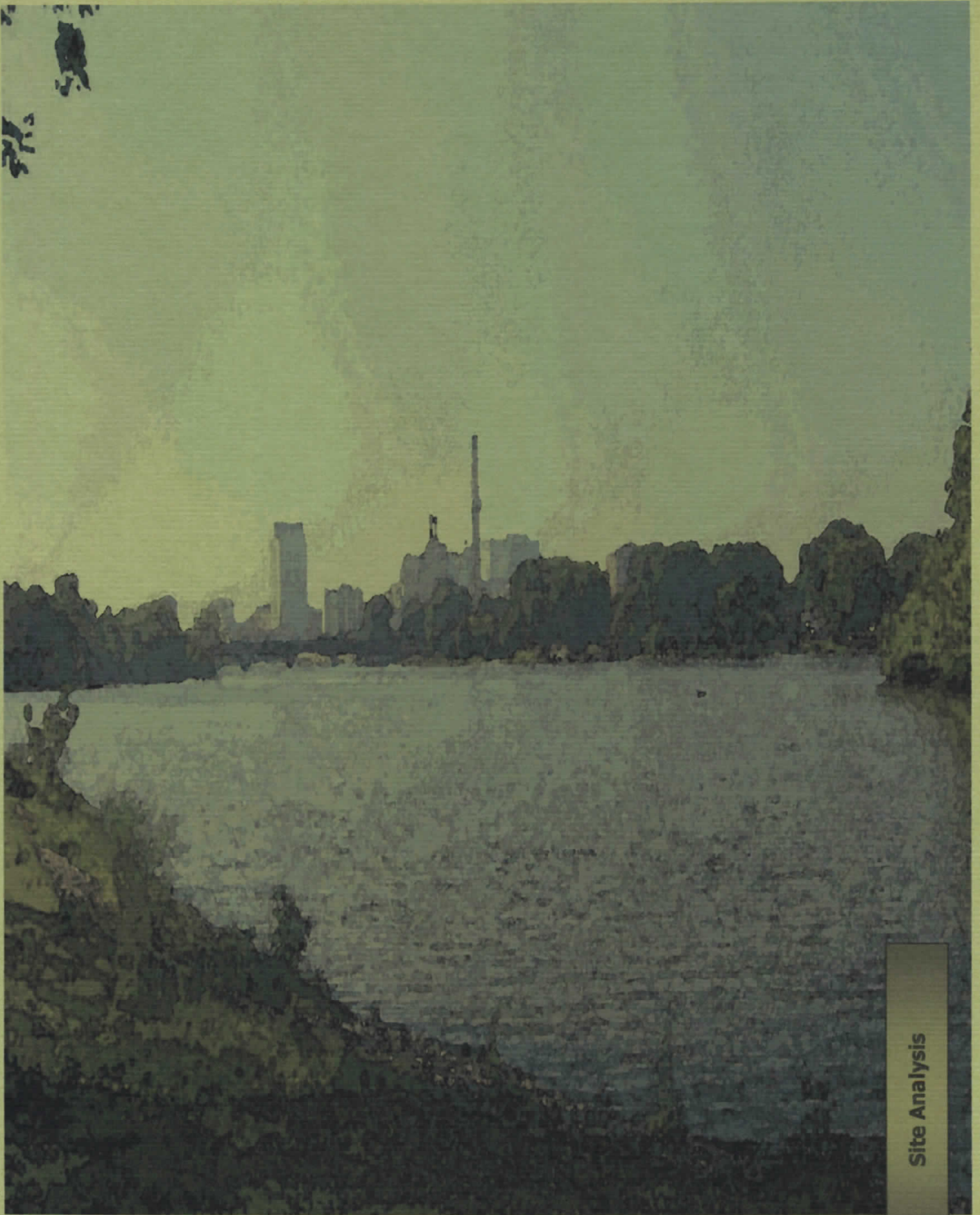
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Mayo's ultimate goal is to provide patients with the best possible care, which includes research and education, but what about the physical space itself? Dr. Henry Plummer was one of the first physicians to work for the Mayo brothers. He is known as the "architect of many of the early Mayo innovations". He thought of "buildings as tools to help physicians provide efficient patient care". He believed in the importance of "using good materials to build well-designed, well-constructed facilities". Mayo Clinic's modern buildings are designed to provide a friendly and warm environment in which to continue Dr. Plummer's concepts. "They are built which to continue Dr. Plummer's concepts. "They are built with the intention of advancing the integrated model of medicine to the next level of excellence" (Mayo Clinic, 2004) ... by "creating an environment that is beautiful to the eye and healing to the body, mind, and spirit" (Will, 2002).

The goal is to create a design solution for a unique medical facility that takes the holistic approach a step further. The focal group will consist of adult and pediatric cancer patients. Rather than focusing solely on one's physical health, it is important to also care for the emotional, mental, and spiritual needs of the patient and his/her family as this is an important part of healing. The question is, "Can the design of a space influence the outlook and ultimately the outcome of one's disease?" What type of design would serve as a source of hope, inspiration, support, peace, health and healing? The quality of life for the patient and his/her family CAN BE influenced through the creation and design of space. As stated by the Cancer Center, "We never stop searching for and providing powerful and innovative therapies to heal the whole person, improve quality of life, and restore hope" (Cancer Center, 2004). The goal of this project is to create an innovative design to improve the quality of life for a cancer patient and his/her family through a holistic approach.

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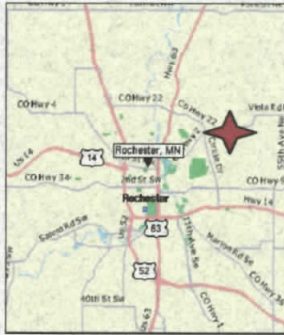
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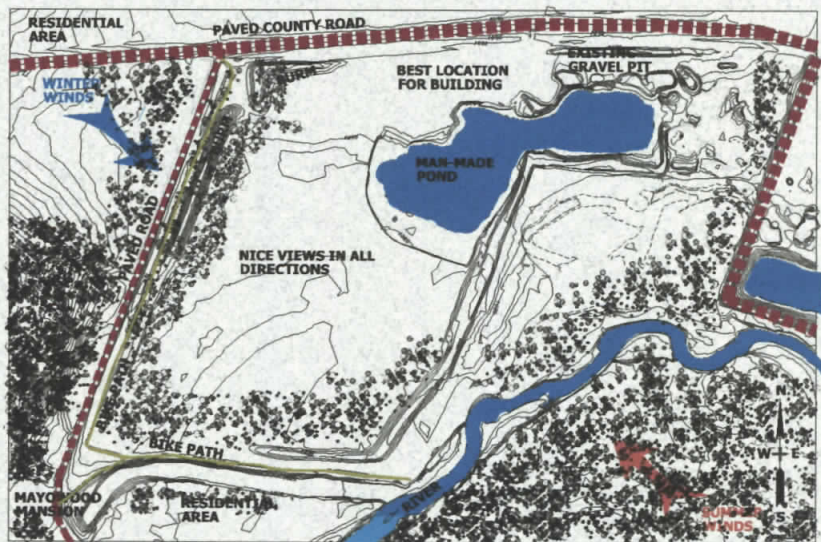
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Site Analysis: Site Inventory



Site Location: Rochester MN



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View looking east – south end of site



View looking east – south end of site



View looking east – south end of site



View looking east – central area of site

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Viewing site from southwest end, looking north



Viewing site from south central point, looking northwest



Viewing site from south central point, looking northwest



Viewing site from south central point, looking north / northwest

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Site Analysis: *Site Photos*



Viewing site from southwest end, looking northeast



Viewing site from south central point, looking northeast



Viewing site from southwest end, looking north



Viewing site from southwest end, looking north

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Site Analysis: *Site Photos*



Viewing site from residential area north of site, view looking southeast



Viewing site from residential area north of site, view looking south



Viewing site from residential area northwest of site, view looking southeast



Viewing site from residential area northwest of site, view looking southeast

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Site Photos & Surrounding Area



Viewing site from residential area north of site, view looking southwest



Viewing of surrounding area to the north of the site



View of surrounding area to the northwest of the site

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View of bike path & street on west edge of site



View of bike path & park bordering south edge of site

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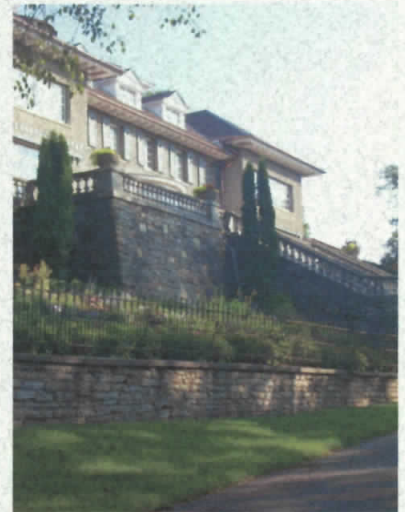
Photos of Mayowood Mansion & Grounds



“Welcome to Historic Mayowood Mansion”



View of the Mayowood Mansion



View of the Mayowood Mansion



Grand stairway leading to the Mayowood Mansion



Grand stairway leading to the Mayowood Mansion



Stairs detail

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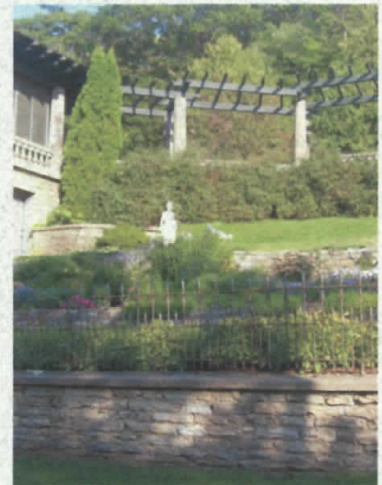
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Photos of Mayowood Mansion & Grounds



Building details



Landscaping within Mayowood Mansion grounds



Detail of arbor



Landscaping within Mayowood Mansion grounds



Landscaping within Mayowood Mansion grounds

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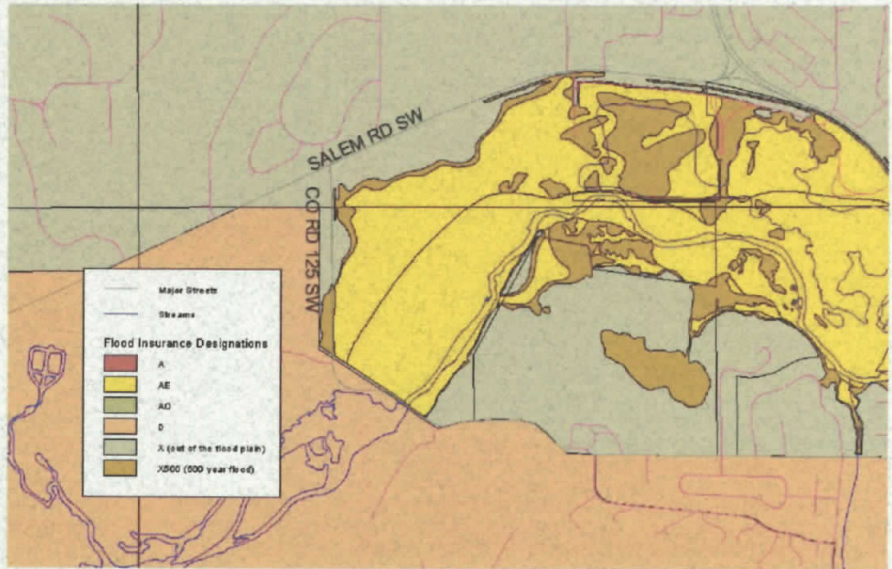
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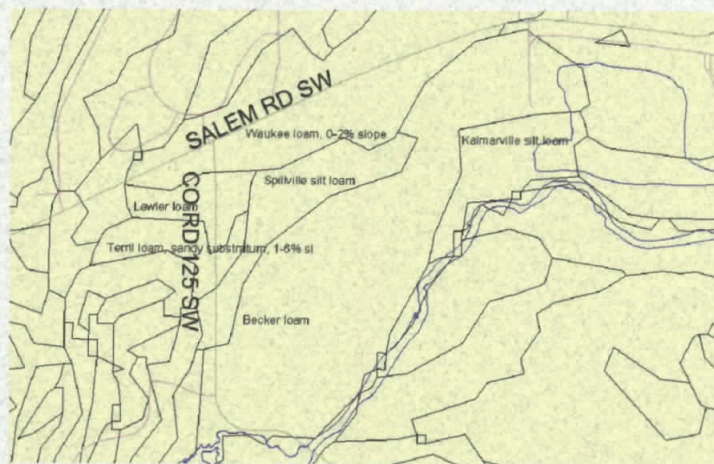
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Flood Plain Issues



Flood Plain Map provided by Olmsted County

Soils



Soils Map provided by Olmsted County

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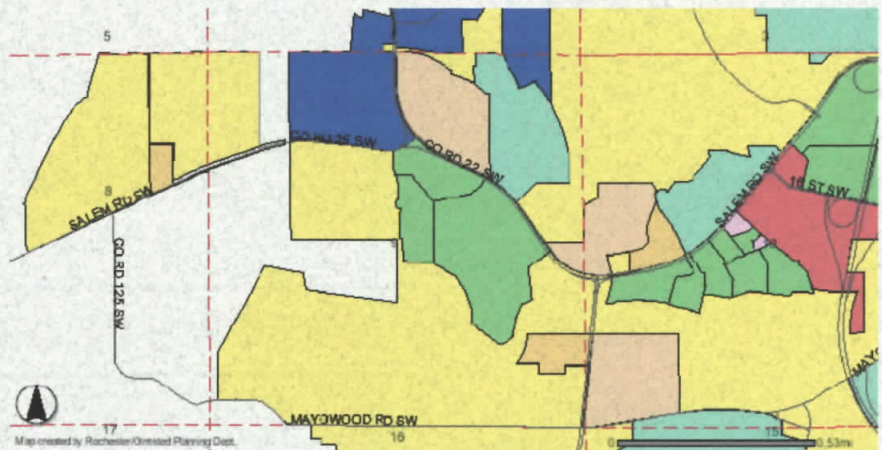
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Zoning Issues



Zoning Map provided by Olmsted Planning Department

Legend
Major Roadway Centerlines
Sections
Rochester Zoning (Aug. 2004)



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The climate in Rochester, Minnesota is seasonably mild throughout the year.

The coldest months of the year are December, January, and February with high temps averaging between 20° – 26° and low temps averaging -7° - -4°. The warmest months of the year are June, July, August and September with high temps averaging between 70° – 82° and low temps of 49° - 60°

Most precipitation is during the months of June, July, and August with an average of 4 inches. Between December and March, they average 8 – 10 inches of snow per month on an average.

Between December and April, wind are out of the northwest at 15 – 16 mph. Between May and November, winds are out of the south at 12 – 14 mph.

Cloud cover is prominent and averages between 56% - 74% of the time with sunshine between 26% - 44% of the time.

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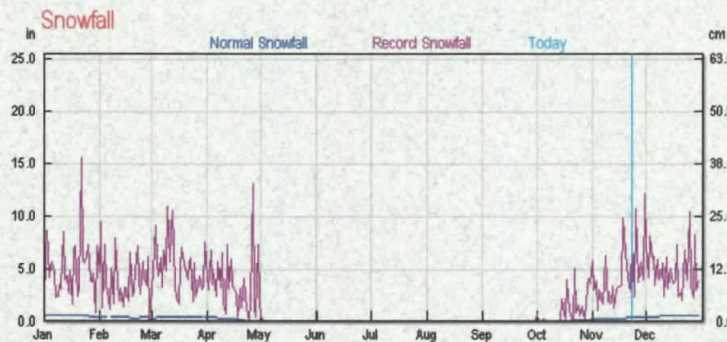
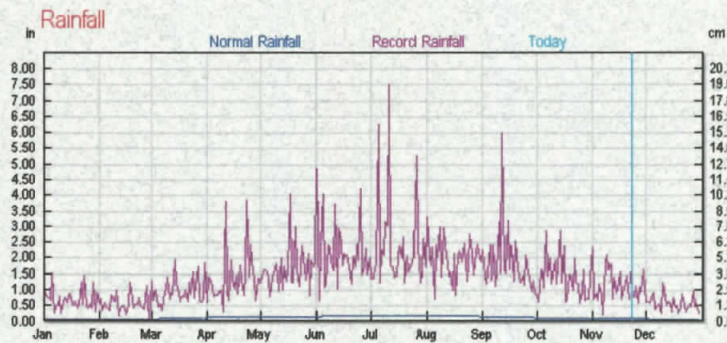
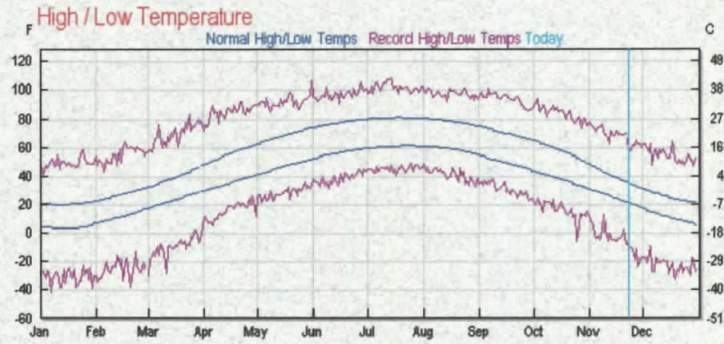
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Temperature (High/Low), Rainfall, & Snowfall



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Temperature (high/low), Precipitation, Snow, Wind Speed, Wind Direction and Cloud Cover

	Monthly Averages					
	January	February	March	April	May	June
High Temperature (F / C)	20 / -7	26 / -3	38 / 3	55 / 13	68 / 20	78 / 25
Low Temperature (F / C)	3 / -16	8 / -13	21 / -6	35 / 1	46 / 8	55 / 13
Precipitation (in / mm)	1 / 20	1 / 19	2 / 45	3 / 69	3 / 86	4 / 94
Snow (in / cm)	9 / 24	8 / 20	10 / 25	2 / 6	0 / 0	0 / 0
Wind Speed (mph / kmh)	15 / 25	15 / 24	15 / 24	16 / 25	14 / 23	13 / 22
Wind Direction (from the)	NW	NW	NW	NW	South	South
Cloud Cover (out of 8)	5.2	5.3	5.6	5.4	5.2	4.9

	July	August	September	October	November	December
	High Temperature (F / C)	82 / 28	79 / 26	70 / 21	58 / 15	41 / 5
Low Temperature (F / C)	60 / 16	58 / 14	49 / 9	38 / 3	24 / -4	9 / -13
Precipitation (in / mm)	4 / 107	4 / 99	3 / 88	2 / 59	2 / 41	1 / 26
Snow (in / cm)	0 / 0	0 / 0	0 / 0	trace / trace	4 / 10	9 / 24
Wind Speed (mph / kmh)	12 / 19	12 / 19	13 / 21	14 / 23	15 / 24	15 / 23
Wind Direction (from the)	South	South	South	South	South	NW
Cloud Cover (out of 8)	4.5	4.6	4.7	5.0	5.9	5.7

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Altitude and Azimuth of the Sun on Dec. 21st

Astronomical Applications Dept.
U.S. Naval Observatory
Washington, DC 20392-5420

ROCHESTER, MINNESOTA

Altitude and Azimuth of the Sun
Dec 21st
Central Standard Time

	Altitude	Azimuth
		(E of N)
h m	o	o
07:00	-7.4	115.6
07:30	-2.6	120.6
08:00	2.2	125.8
08:30	6.2	131.3
09:00	10.0	137.0
09:30	13.5	143.1
10:00	16.5	149.5
10:30	18.9	156.2
11:00	20.8	163.3
11:30	22.0	170.5
12:00	22.5	177.9
12:30	22.4	185.4
13:00	21.5	192.7
13:30	20.0	199.9
14:00	17.9	206.8
14:30	15.2	213.4
15:00	12.0	219.7
15:30	8.4	225.6
16:00	4.4	231.2
16:30	0.4	236.5
17:00	-4.7	241.6
17:30	-9.6	246.6

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U.S. Naval Observatory
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ROCHESTER, MINNESOTA

Altitude and Azimuth of the Sun
June 21st
Central Standard Time

	Altitude		Azimuth (E of N)		
h m	o	o	h m	o	
03:30	-8.7	45.0	14:00	59.8	236.0
04:00	-4.7	50.6	14:30	55.1	245.3
04:30	0.2	56.0	15:00	50.0	253.0
05:00	4.4	61.1	15:30	44.8	259.6
05:30	9.1	66.0	16:00	39.5	265.5
06:00	14.1	70.8	16:30	34.1	270.8
06:30	19.3	75.6	17:00	28.7	275.8
07:00	24.5	80.3	17:30	23.4	280.7
07:30	29.9	85.2	18:00	18.1	285.4
08:00	35.2	90.3	18:30	13.0	290.2
08:30	40.6	95.7	19:00	8.1	295.0
09:00	45.9	101.7	19:30	3.4	300.0
09:30	51.1	108.5	20:00	-1.3	305.2
10:00	56.1	116.5	20:30	-5.6	310.6
10:30	60.7	126.3	21:00	-9.5	316.3
11:00	64.7	138.6			
11:30	67.7	154.0			
12:00	69.3	172.4			
12:30	69.1	191.8			
13:00	67.2	209.6			
13:30	63.9	224.3			

Astronomical Applications Dept.
U.S. Naval Observatory
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	Altitude		Azimuth (E of N)		
h m	o	o	h m	o	
14:00	59.8	236.0			
14:30	55.1	245.3			
15:00	50.0	253.0			
15:30	44.8	259.6			
16:00	39.5	265.5			
16:30	34.1	270.8			
17:00	28.7	275.8			
17:30	23.4	280.7			
18:00	18.1	285.4			
18:30	13.0	290.2			
19:00	8.1	295.0			
19:30	3.4	300.0			
20:00	-1.3	305.2			
20:30	-5.6	310.6			
21:00	-9.5	316.3			

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Demographics

Rochester Population Growth 1980 - 2004

1980	57,890
1990	70,745
2000	85,806
2001	89,325
2004	93,037



Rochester City Hall

Olmsted County – 2000 Population – Race

Caucasian	112,255	90.3%
Asian or Pacific Islander	5,346	4.3%
Black	3,330	2.7%
Two or more races	1,881	1.5%
Other Races	1,148	0.9%
American Indian, Eskimo	317	0.3%

Rochester Poverty Levels 1990 – 2000

1990	7,155	6.1% in poverty
2000	7,806	6.7% in poverty

Rochester Median Household Income 1990 – 2000

1990	\$35,789
2000	\$51,316

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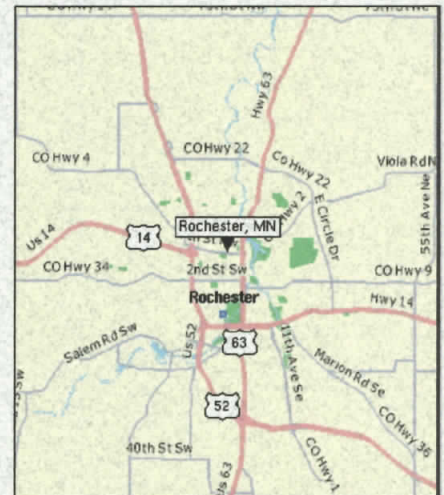
Transportation

Airport

The Rochester International Airport is located 8 miles south of Rochester on US Highway 63. Jet service is provided through Northwest Airlines and American Eagles Airlines with direct connections from Minneapolis, Chicago, and Detroit. Northwest Airlines offers 10 incoming and departure flights per day; while American Eagle Airlines offers 5 incoming flights and 4 departure flights per day. Hundreds of thousands of visitors come through the airport annually.

Highways

Rochester is serviced by several major highways, including Interstate 90 (which runs East-West) and Interstate 35 (which runs North-South). US Hwy 14, State Hwy 30, State Hwy 42 and State Hwy 296 provide access from the East-West; while US Hwy 52, US Hwy 63 provide access from the North-South. Rochester is centrally located within 16 major, mid-west metropolitan areas and less than 550 miles away.



Train

The nearest Amtrak station is located in Winona, MN which is 40 miles east of Rochester. Bus service is available from Winona to Rochester through the Union Bus Depot.

City Bus System

The City Bus System offers service 6 days per week and runs from 5:45 AM to 6:45 PM with a total of 25 routes.

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Rochester Area Attractions

Chateau Theatres
971 East Circle Dr. NE

Cinemagic Stadium 12
2170 Superior Dr. NW

Gilded Star Gallery
324 Broadway Ave. S.

Heritage House
225 1st Ave. NW

Historic Chateau Theatre
15 1st St. SW



Mayo Clinic Arch. Tour
200 1st St. SW



Mayo Clinic Art Exhibits
200 1st St. SW



Mayowood Mansion
3720 Mayowood Road SW

Olmsted Co. History Center
1195 County Road 22 SW



Plummer House of the Arts
1091 Plummer Lane SW

Quarry Hill Nature Center
701 Silver Creek Rd. NE

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Rochester Area Attractions



Rochester Art Center
40 Civic Center Dr. SE



Silver Lake Park
7th St. & 2nd Ave. NE

Soldiers Field Vets. Memorial
3rd Ave. & 7th St. S

SE MN Visual Artists Gallery
16 1st St. SW

Taylor-Gebler Gallery
3006 Allegro Park SW

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Site Analysis Summary

Rochester, Minnesota is a perfect city to locate this type of Cancer Center especially with the connection to the Mayo Clinic and their philosophy concerning patient care, education, and research. The city experiences a mild climate throughout the year. Wind speeds are mild and will provide a nice breeze from the south in the summer months, with little wind during the winter months from the northwest.

The Site location is located within a quiet, serene area with gorgeous views on all sides. The site is surrounded by a combination of rolling hills, vegetation, open areas and mature trees. A river runs along the southern edge, with a man-made lake located in the center of the site. The majority of the site is located outside of the flood plain, with the northwest corner best for building. The site's unique characteristics will enhance the healing environment that I wish to achieve.

The challenges with this site involve locating the edge of the flood plan to make sure the facility is outside of that area. Another issue involves the soil types and locating them on the site to make sure that area is feasible to build on.

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Below are the space allocations for the Master Plan of the Total-Care Cancer Center. The focus of this project will be the Clinic & Treatment Center

Shared Outdoor Space

- Landscaped Courtyard –
(w/intimate spaces and areas for large gatherings)
- Walking Paths
- Children's Playground
- Water Feature
- Parking

Retail & Commercial

- Main Entrance
- Lobby
- Information / Guest Services Desk –
(wheelchairs, walkers, & stroller)
- Restrooms
- Cafeteria / Restaurant / Buffet
- Coffee Bar
- Historical / Art Gallery
- Circulation
- Patient Education Area
- Business Center / Library / Coffee Shop –
(like Barnes & Nobel)
- Gift Shop
- Loading Dock
- Receiving Area
- Receiving Office
- Temporary Receiving Storage
- Theater
- Pharmacy
- Public Phones

Hospital – Entry / Main Public Areas

- Lobby
- Admissions / Registration Area
- Waiting Area
- Restrooms

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cont. Hospital – Entry / Main Public Areas

- Housekeeping
- Mechanical Room
- Electrical Room
- Communications Room
- Administrative Offices
- Business Services Office
- Building Maintenance
- Equipment Maintenance
- Information Services Tech Area
- Facilities Management Offices
- Conference Rooms
- Board Room
- Patient Services Offices
- Circulation
- Switchboard
- Patient Education Area
- Storage
- Circulation

Hospital – Patient Floors (Adult & Pediatric)

- Family Waiting Areas (with kitchenette)
- Patient Rooms (with restrooms)
- Nurses' Stations
- Dictation Areas
- Staff Offices
- Doctors' Offices
- Restrooms
- Therapy Rooms
- Staff Lounge
- Conference Rooms
- Kitchenette (for patients)
- Housekeeping
- Storage
- Linen Storage
- Educational Room

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Programmatic Requirements:

cont. Hospital – Patient Floors (Adult & Pediatric)

- Children's Play Room
- Patient Lounge Area
- Communications Room
- Phlebotomy Lab
- Circulation (vertical & horizontal)
- Radiology Rooms (X-rays, MRIs, PET Scans, CT Scans etc.)
- Radiology Staff Offices
- Radiology Doctors' Offices
- Image Viewing Rooms
- Radiology Dressing Rooms
- Patient Education Area
- Storage
- Circulation

Hotel / Resort or Living Quarters

- Guestrooms (for extended stay)
- Fitness Center
- Sun Room
- Pool / Spa / Sauna
- Children's Play Area
- Restrooms
- Mechanical Room
- Electrical Room
- Housekeeping
- Maintenance
- Registration / Information Desk
- Linen Storage
- Laundry Room
- Communications Room
- Administrative Offices
- Circulation
- Business Center

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Clinic & Treatment Center

The Clinic & Treatment Center is the focus of this project.

Public Space:

- Vestibule
- Lobby w/Seating Area (quiet area & area with TV)
- Registration
- Nutrition Center (with refreshments and water cooler)
- Coatroom
- Public Restrooms
- Public Phones
- Education Area
- Play Area (Pediatric – glass enclosure)
- Wheelchair / Walker Storage
- Greeter

Semi Private / Public Space:

- Reception Areas (Adult & Pediatric)
- Waiting Areas (Adult & Pediatric)
- Refreshments Area (Adult & Pediatric)
- Coatrooms (Adult & Pediatric)
- Patient Education Areas (Adult & Pediatric)
- Business Center (Adult Only)
- Public Restrooms
- Children's Playroom (Pediatrics Only)
- Family Rooms (Adult & Pediatrics)
- Blanket Warmer Space

Private – Staff Only:

- Dictation Area
- Nurses' Station
- Doctors' Offices
- Storage
- Staff Lounge
- Conference Rooms
- Staff Locker Rooms

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Programmatic Requirements:

Continue Private – Staff Only:

- Viewing Rooms (Dark Rooms near Exam Rooms – for On-line viewing by physicians)
- Physician Library (shared with students & research staff)
- Research Labs
- Research Staff Offices
- Educational Staff Offices
- Educational Group Room (for large families)
- Administration Offices (near Lobby)
- Coding Office (for 4 staff)
- Staff Restrooms
- Clean / Sterile Storage
- Contamination / Dirty Linen Storage
- Housekeeping

Private – Patients:

- Patient Exam / Consult Rooms (Adult & Pediatric)
- Radiology Oncology Treatment Rooms
- Chemo Therapy Rooms / Infusion Center (Private Rooms – Adult & Pediatric; note pediatric rooms need to be double the size of an adult room to accommodate families)
- Chemo Therapy Rooms / Infusion Center (Social Rooms – Adult & Pediatric)
- Blood Draw / Phlebotomy Lab
- Weigh-in / Vitals Area
- Nutrition Consultation Room
- Patient Restrooms
- Business / Customer Service Office (near Lobby but private)
- Chaplaincy Offices
- Nutritionalist Offices
- Social Services Offices
- Psychiatric Offices

Utilities:

- Mechanical Room
- Electrical Room
- Communications Room

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Programmatic Requirements:

Administrative Support Services & Research Facility

- Research Labs
- Offices (for research, administration, telecommunications, information systems etc.)
- Conference Rooms / Auditorium
- Classrooms
- Circulation
- Storage
- Restrooms
- Clean Storage
- Sterilization Area
- Contamination Area

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Appendix A:

Abstract

Total-Care Cancer Center

Advancement of a Holistic Approach to the Design of a Cancer Facility in Rochester, Minnesota By Tammy Hieb
2004 Fall Semester

The Total-Care Cancer Center will be an extension of the Mayo Clinic in Rochester, Minnesota. Currently people from all over the world come to the Mayo Cancer Center for patient care, treatment, research and educational opportunities. Part of the Mayo Clinic's focus is on research in order to provide the best patient care through exploration and experience. The facility will continue to provide patient care and treatment but with a broader, unique approach. The new Cancer Center will facilitate space for research development and hands on learning for staff, students, patients and family members.

The goal is to create a design solution that takes the holistic approach a step further. The focal group will consist of adult and pediatric cancer patients. Rather than focusing solely on one's physical health, it is important to also care for the emotional, mental, and spiritual needs of the patient and his/her family as an important part of healing. The question is, "Can the design of a space influence the outlook and ultimately the outcome of one's disease?" What type of design would serve as a source of hope, inspiration, support, peace, health and healing? The goal of this project is to create an innovative design to improve the quality of life for a cancer patient and his/her family through a holistic approach.

The building typology of the Total-Care Cancer Center is based on a combination of building types, which will include a medical facility consisting of a clinic, hospital, and research center, as well as an extended-stay hotel / resort for patients, families, staff, students and visitors from all over the world. The building and location will provide a unique setting specifically designed to enhance the quality of life for patients and their families, as well as provide a work environment that enhances, inspires, and motivates its users.

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Appendix B:

Final Statement of Intent

Total-Care Cancer Center

Advancement of a Holistic Approach to the Design of a Cancer Facility in Rochester, Minnesota By Tammy Hieb
2004 Fall Semester

As we look back in time, we are reminded how much our world has changed ... how our way of life has evolved ... how convenience and quality of life have become important and in turn have driven the design of products, services, and facilities. These changes can be seen in the medical field through technology, research, state-of-the-art equipment and the new holistic approach to patient care. The question we, as designers, are faced with is "What is the next step?" How can we improve the quality of life for a patient and his/her family, especially those with a terminal illness?

The Total-Care Cancer Center will be an extension of the Mayo Clinic in Rochester, Minnesota. Currently people from all over the world come to the Mayo Cancer Center for patient care, treatment, research and educational opportunities. Part of the Mayo Clinic's focus is on research in order to provide the best patient care through exploration and experience. The facility will continue to provide patient care and treatment but with a broader, unique approach. The new Cancer Center will facilitate space for research development and hands on learning for staff, students, patients and family members.

The Total-Care Cancer Center will be located in Rochester, Minnesota, on the southwest edge of town. The Site is located near the historical Mayowood Mansion which was originally built and owned by William Mayo, one of the founders of the Mayo Clinic. The Site location is at the intersection of County Road 25 and County Road 125 in the southeast corner, where utilities and access are readily available. The surrounding area is quiet and serene with gorgeous views of rolling hills and trees, which will enhance the holistic atmosphere surrounding the facility.

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The goal is to create a design solution for a unique medical facility that takes the holistic approach a step further. The focal group will consist of adult and pediatric cancer patients. Rather than focusing solely on one's physical health, it is important to also care for the emotional, mental, and spiritual needs of the patient and his/her family as this is an important part of healing. The question is, "Can the design of a space influence the outlook and ultimately the outcome of one's disease?" What type of design would serve as a source of hope, inspiration, support, peace, health and healing? The quality of life for the patient and his/her family CAN BE influenced through the creation and design of space. As stated by the Cancer Center, "We never stop searching for and providing powerful and innovative therapies to heal the whole person, improve quality of life, and restore hope." (www.cancercenter.com) The goal of this project is to create an innovative design to improve the quality of life for a cancer patient and his/her family through a holistic approach.

According to the Canadian Holistic Medicine Association, "Holistic medicine is a system of health care which fosters a cooperative relationship among all those involved, leading towards optimal attainment of the physical, mental emotional, social and spiritual aspects of health. It emphasizes the need to look at the whole person, including analysis of physical, nutritional, environmental, emotional, social, spiritual and lifestyle values." (www.holisticmed.com) As a designer it is important to consider these aspects in order to achieve a holistic design. The underlying purpose of the design is that holistic medicine guides the architecture which ultimately defines it.

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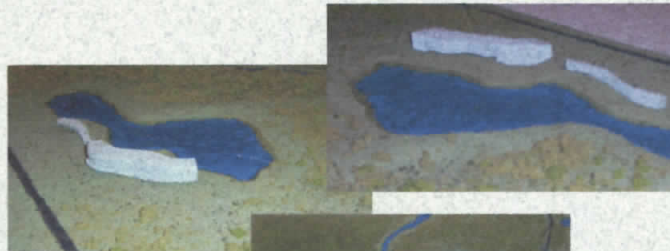
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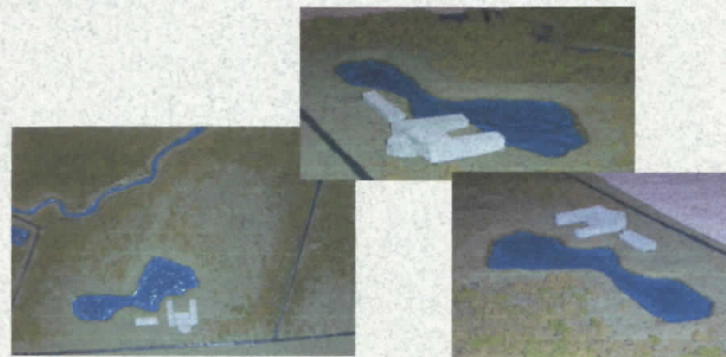
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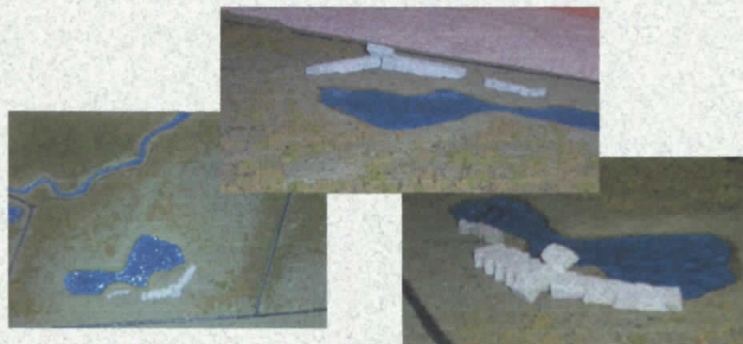
Process Documentation: *Study of Building Shapes & Forms* Cancer Center



Option 1



Option 2



Option 3

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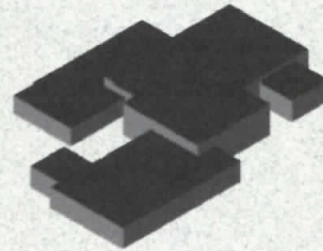
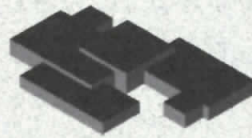
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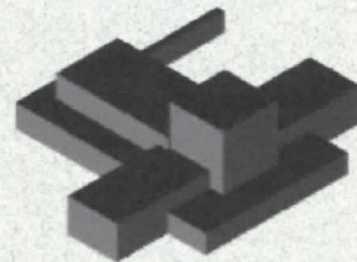
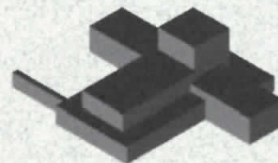
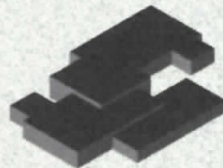
Process Documentation:

Study of Programmatic Elements & the Spatial Relationships Between Them

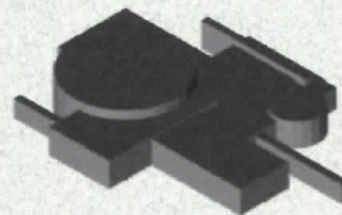
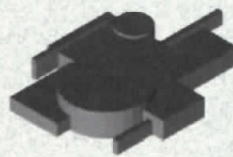
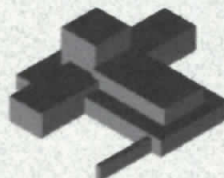
Cancer Center



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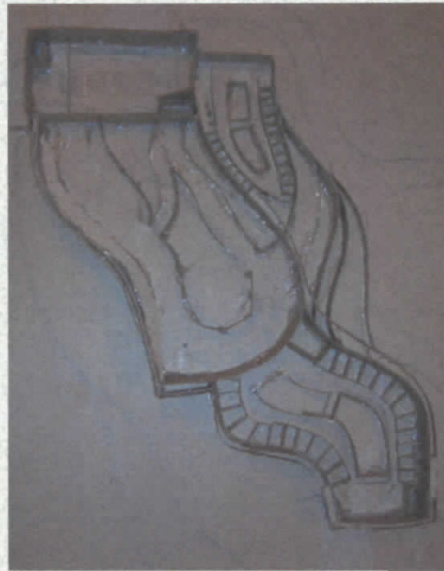
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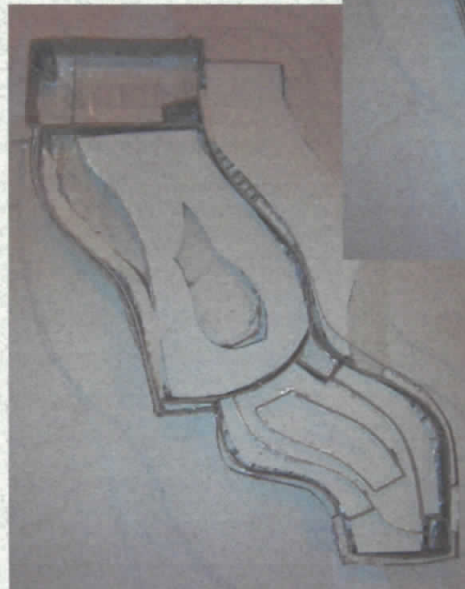
Process Documentation:

Sketch Model – Discarded Option to Combine Elements into One Building

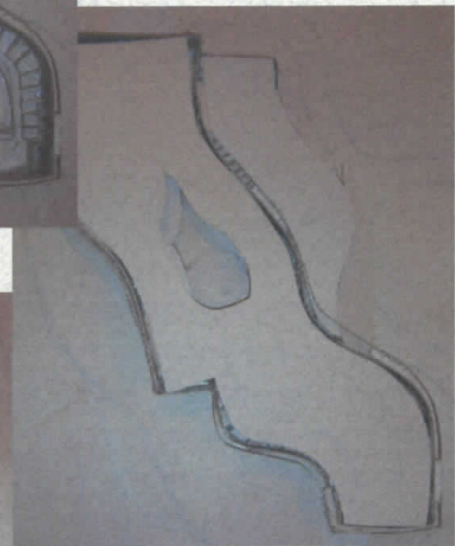
Cancer Center



First Floor



Second Floor



Aerial View

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Process Documentation: *Master Plan – Sketches of Site Plan Layout*



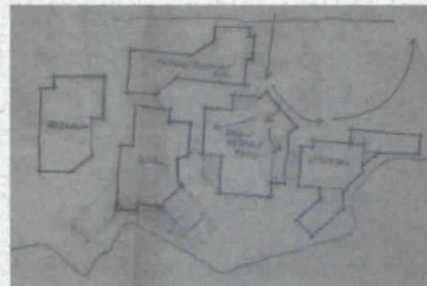
Options 1-6



Options 7-9



Option 10 – Radial Plan



Option 11 – Cluster

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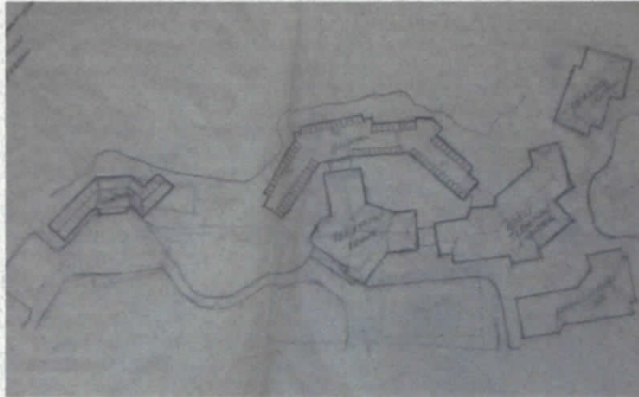
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Master Plan



Master Plan – Design Development



Master Plan – Design Development Model

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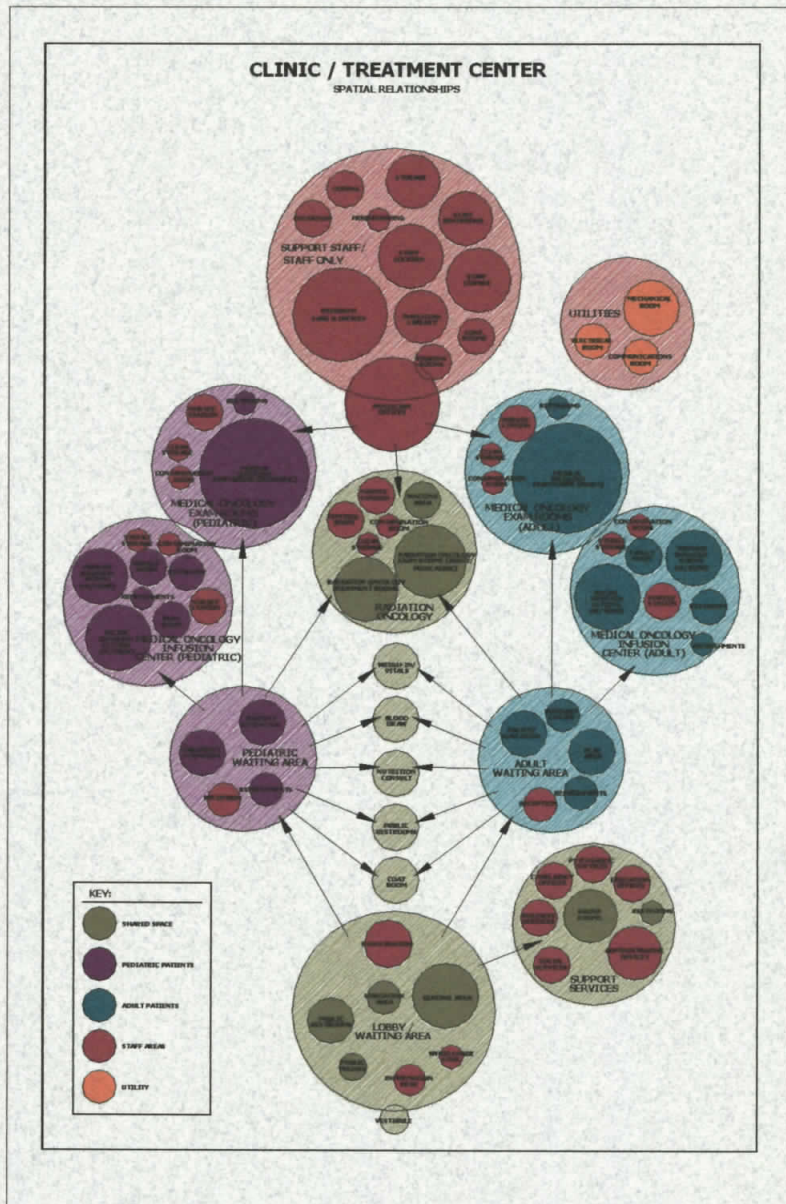
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Process Documentation: Spatial Relationships - Bubble Diagram Clinic & Treatment Center



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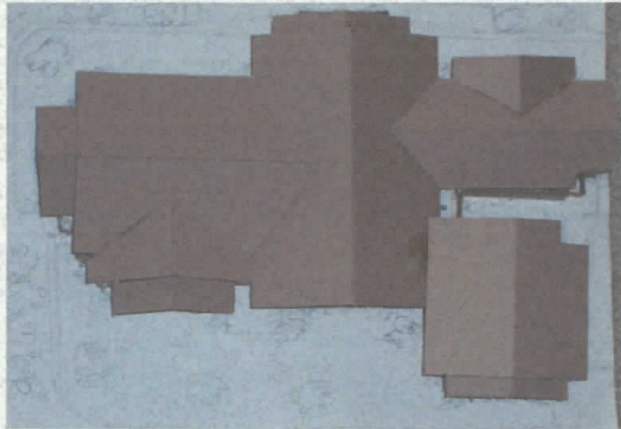
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Sketch Model

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Aerial View



Southeast Perspective



Southwest Perspective

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South Perspective



Northwest Perspective



Northeast Perspective

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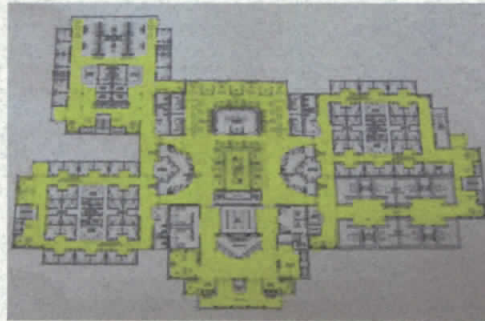
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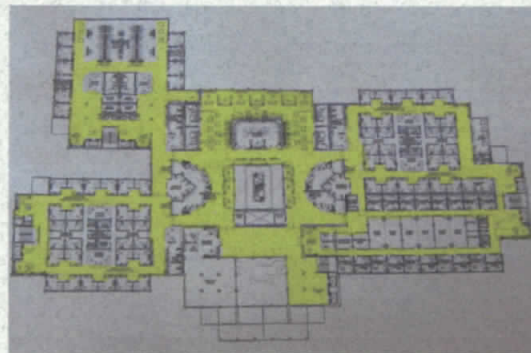
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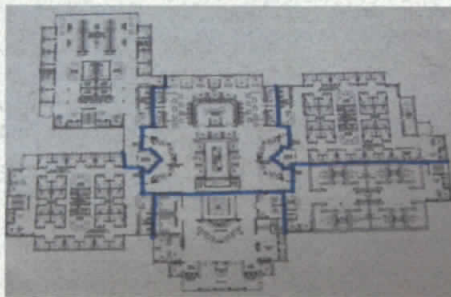
Process Documentation: *Plan Specifications – Design Development* **Clinic & Treatment Center**



First Floor – Circulation Patterns



Second Floor – Circulation Patterns



First Floor – Fire Wall Locations

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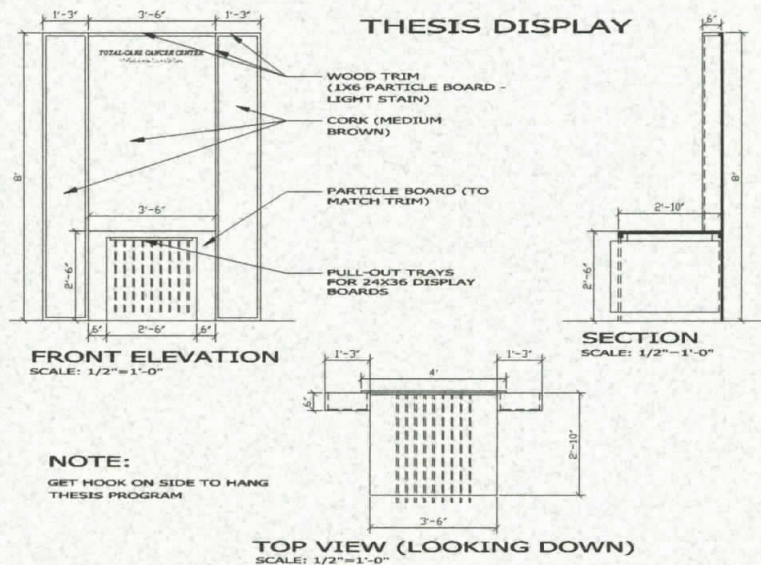
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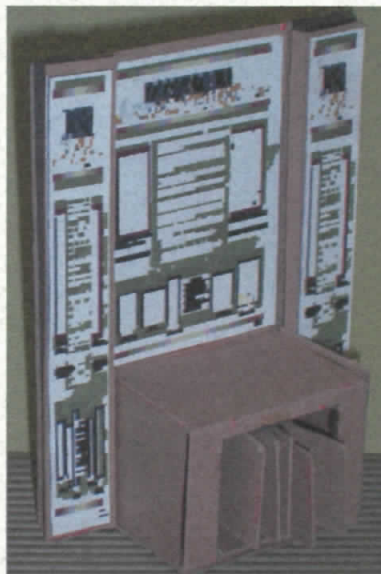
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Process Documentation: Final Presentation Display – Sketch Model & Construction Document

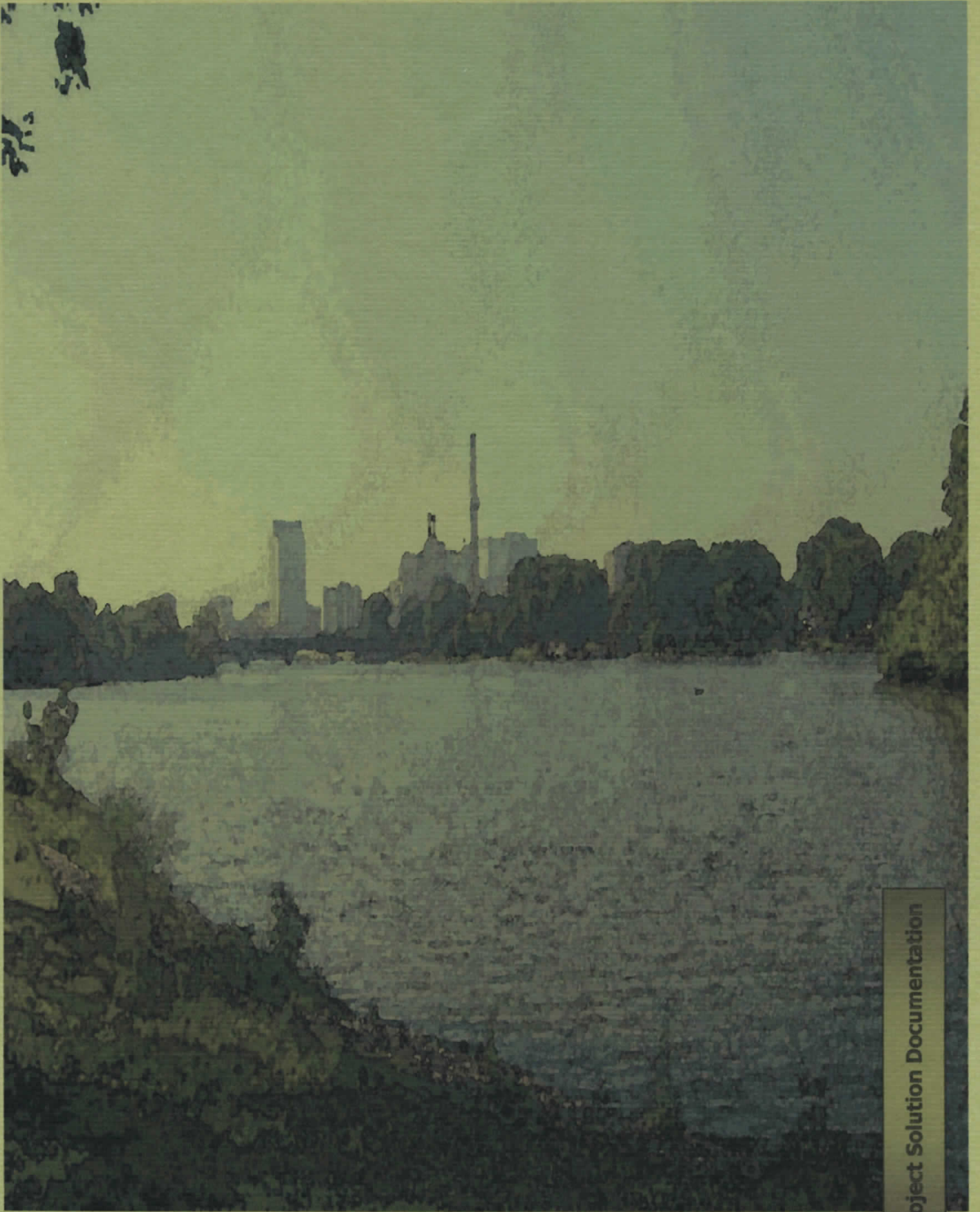


Construction Document



Sketch Model

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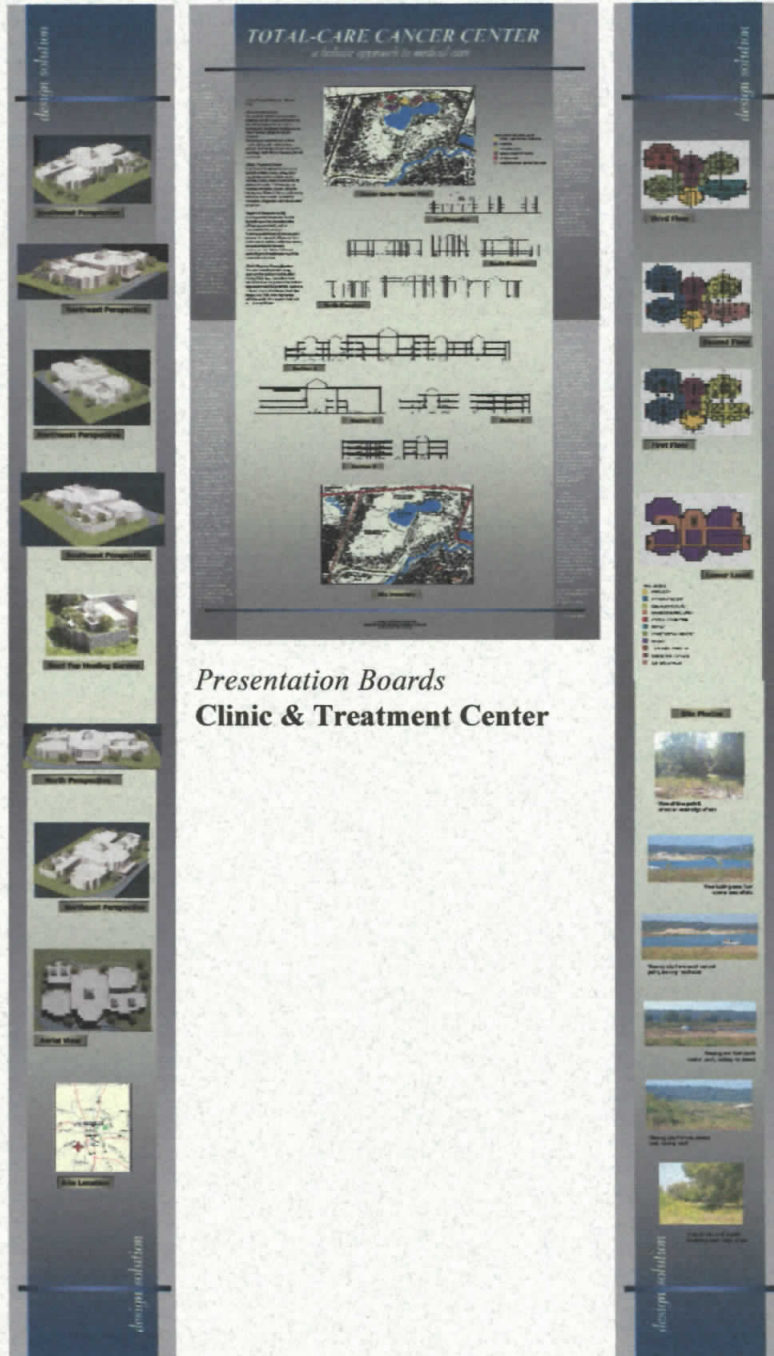
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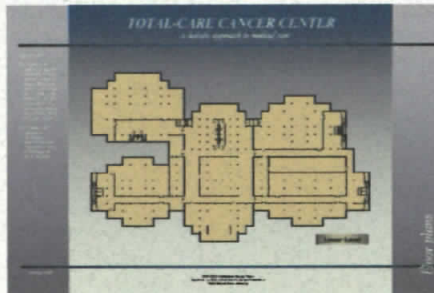
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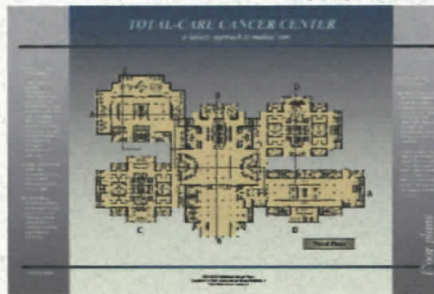
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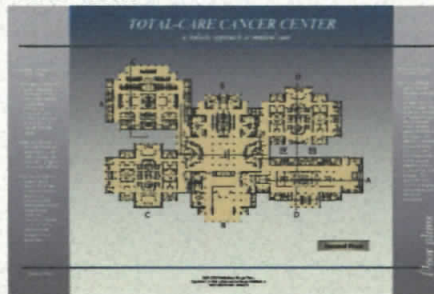
Clinic & Treatment Center



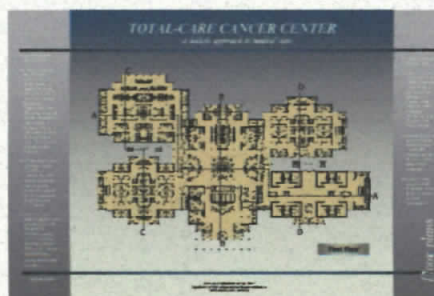
Lower Level



First Floor



Second Floor



Third Floor

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Master Plan



Master Plan

MASTER PLAN - SITE PLAN LEGEND:

- RETAIL / RESTAURANT / AMENITIES
- HOSPITAL
- HOUSING / HOTEL
- CLINIC / TREATMENT CENTER
- PARKING RAMP
- ADMINISTRATION / SUPPORT SERVICES

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North Perspective



Southwest Perspective



Roof-Top Healing Garden



Northwest Perspective



Southeast Perspective

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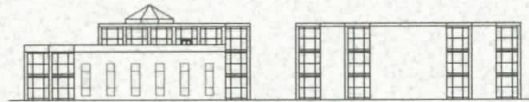
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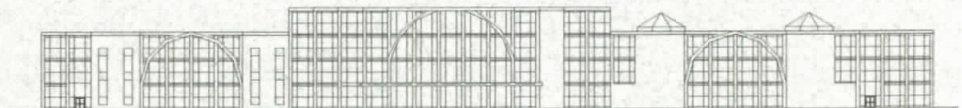
Design Solution – Elevations & Sections
Clinic & Treatment Center



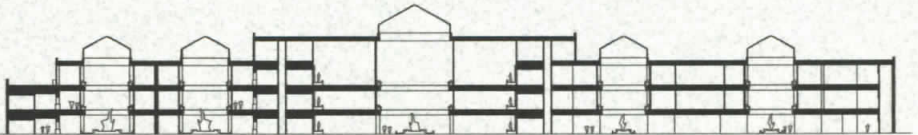
East Elevation



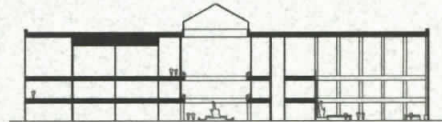
South Elevation



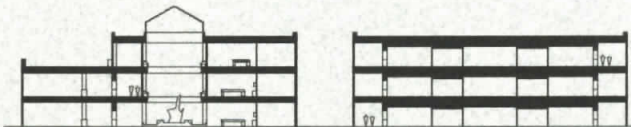
North Elevation



Section A



Section B



Section C



Section D

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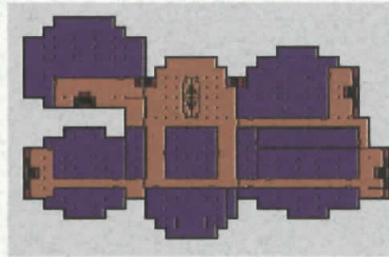
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Building Model

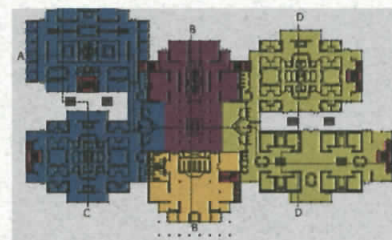
Clinic & Treatment Center



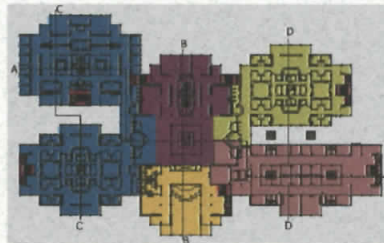
Lower Level

PLAN LEGEND:

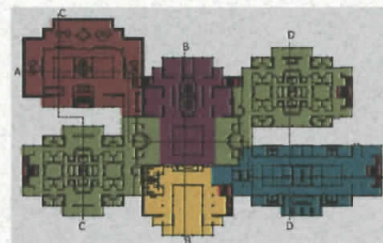
- MAIN LOBBY
- MEDICAL ONCOLOGY
- RADIATION ONCOLOGY
- LOWER LEVEL CIRCULATION
- VERTICAL CIRCULATION
- RESEARCH
- COMPLEMENTARY MEDICINE
- UTILITY
- ADDITIONAL AMENITIES
- SHARED WAITING AREAS
- SUPPORT SERVICES



First Floor

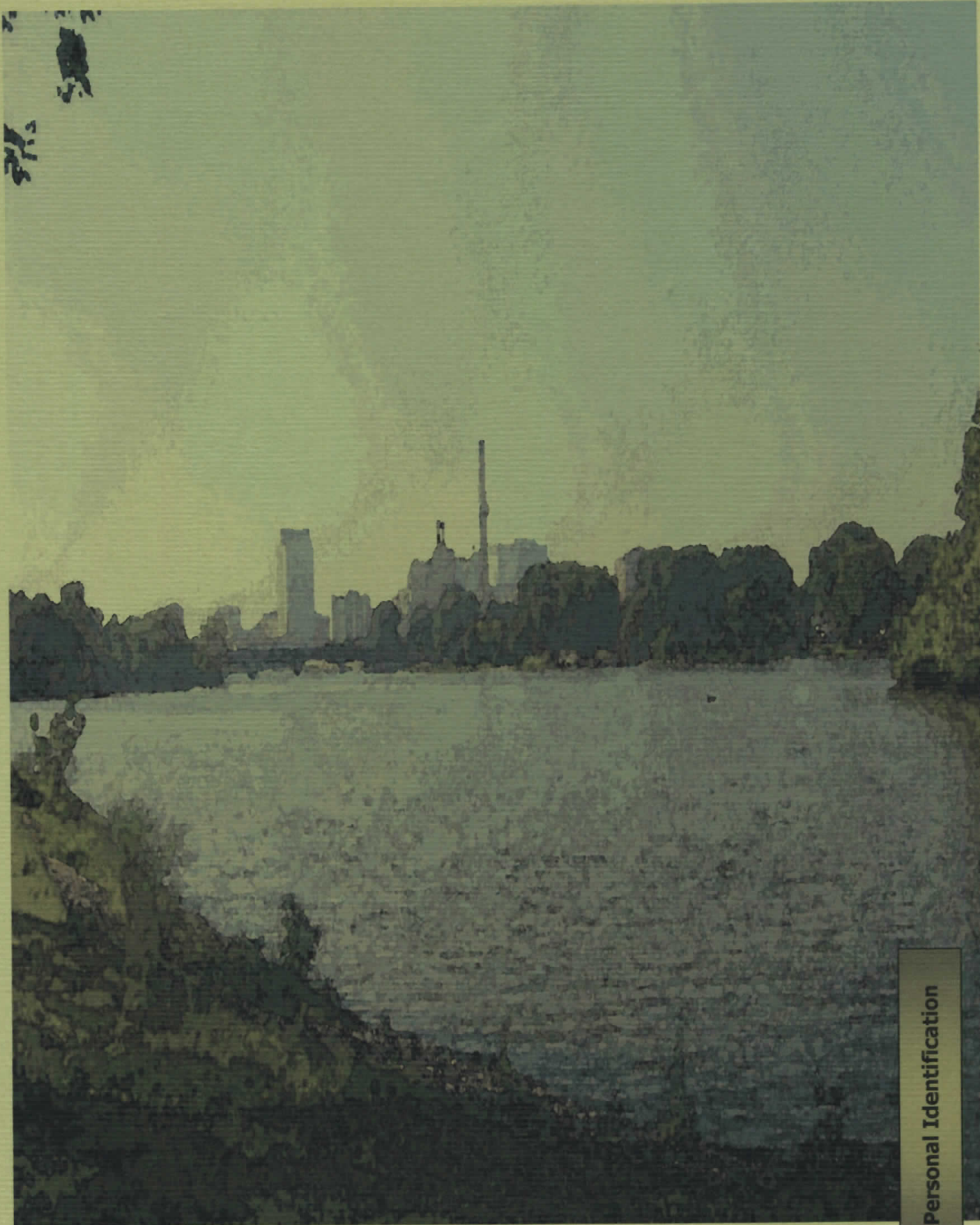


Second Floor



Third Floor

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Tammy Hieb

Quote:

“Never give up on your dreams ... no matter how long it may take, dedication and perseverance will pay off.”

Favorite Scripture:

“Delight yourself in the Lord and He will give you the desires of your heart.” Psalm 37:4 NIV

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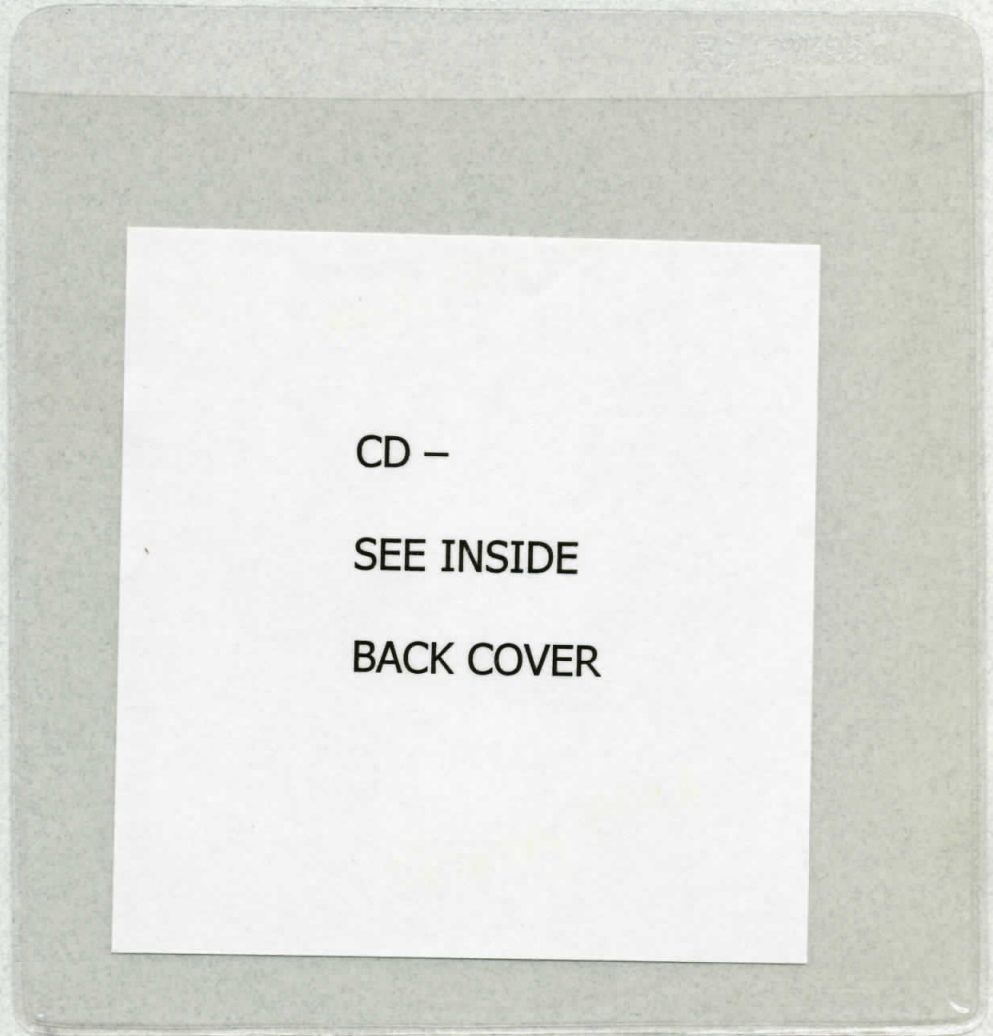
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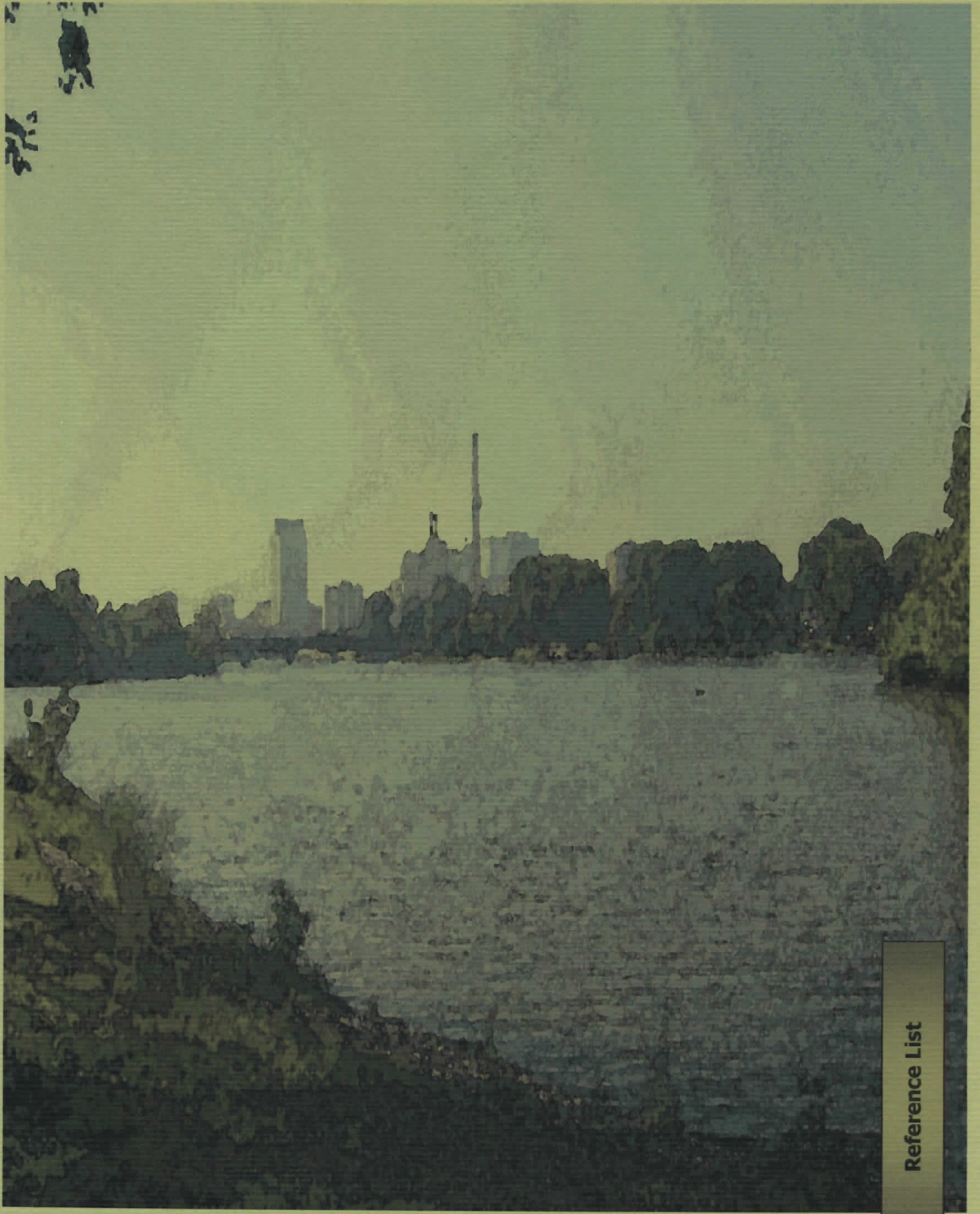
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