11-21-2008

For Earth's Sake: Closing the Chasm between Theory and Practice in Sustainable Interior Design Education

Jesus Mangaoang Jimenez

FOR EARTH'S SAKE: CLOSING THE CHASM BETWEEN THEORY AND PRACTICE IN SUSTAINABLE INTERIOR DESIGN EDUCATION

by

JESUS MANGAOANG JIMENEZ

Under the Direction of Michael White

ABSTRACT

Making sustainable interior design education practical is critical to the survival of the planet. The essential role of today's interior designer is to provide built environments that sustain the life of a building's occupants and the life in and around the built environment. Therefore, interior design departments are interweaving the principles and theories related to sustainable interior design into their pedagogical programs. However, there exists a void between the teachings of the theories and values related to sustainable design and putting them into practice.

With the possibility of climate change looming over us, interior design students must reach a significant level of proficiency, as quickly as possible, in the area of

understanding how to implement the principles and strategies of sustainable design into every phase of the design process. The environmental crisis is a design crisis.

INDEX WORDS: Jesus, Jess, Jimenez, Interior, Design, Sustainable, Building, Theory, Practice

FOR EARTH'S SAKE: CLOSING THE CHASM BETWEEN THEORY AND PRACTICE IN SUSTAINABLE INTERIOR DESIGN EDUCATION

by

JESUS MANGAOANG JIMENEZ

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Fine Arts

in the College of Arts and Sciences

Georgia State University

2008

FOR EARTH'S SAKE: CLOSING THE CHASM BETWEEN THEORY AND PRACTICE IN SUSTAINBLE INTERIOR DESIGN EDUCATION

by

JESUS MANGAOANG JIMENEZ

Committee Chair: Michael White

Committee: Amy Landesberg

Electronic Version Approved:

Office of Graduate Studies
College of Arts and Sciences
Georgia State University
December 2008

TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

Global warming is the direct consequence of how we have chosen to live on the earth. The biggest implication is the way that we design and build. This brings interior design into a global arena. Thus, sustainable interior design becomes critical in order to radically change the way we design and build our environment.

Integrating the principles of sustainability into the design process is complex and cumbersome in bringing it down to street level. However, according to the warnings of the scientific community, time is running out. We have to tip the scale. We have to bridge the gap between theory and practice.

Educators teaching sustainability in interior design schools must find a way to help students make the connection between our design decisions and how they impact the natural environment. Through green initiatives, sustainable interior design for students can be brought down to earth. Some university educators, across the disciplines, have realized and implemented this as a substantial part of the solution.

2. THE STATISTICS

It has been determined that buildings generate the largest demand of energy and materials that produce the greenhouse gases that result in global warming. They account for almost 50% of the greenhouse emission (CO2) in the U. S. and around the globe annually.[1] This includes energy used to produce material and transport them to building sites as well as the energy used by a building's occupants to operate the building. 76% of U. S. generated electricity alone goes to supply the building sector. Energy consumption in the

[1] Williams, Daniel E., FAIA. *Sustainable Design: Ecology, Architecture, and Planning*, p. xvi.

U. S. alone is expected to increase by 37% and greenhouse gases by 36% over a 20 year period. Globally this figure increases to 54%.

In 2003, an architect named Ed Mazria, a principal in a successful architecture practice in Santa Fe, NM, Mazria Riskin Odems, Inc., who has been interested in energy conservation for more than 30 years, made a pie chart (Fig. 1) using Department of Energy statistics that slices U.S. energy consumption into four wedges: 35% of the pie was for industry, which includes manufacturing, mining, agriculture, forestry, fisheries, construction and the operation of industrial buildings, the transportation wedge accounts for 27%, residential, which includes energy used at home for cooking, electricity and HVAC accounts for 21% and the commercial sector, which includes energy used in office buildings, hospitals, and government facilities make up 17%. When divided in this way, it appears that industry and transportation are the main culprits of greenhouse gases.

However, Mazria realized that this view of energy consumption was fundamentally wrong. He reapportioned the Department of Energy data. Industrial processes related to manufacturing of construction materials, for example, were placed in a new category that would include all buildings - commercial, residential, institutional and industrial.

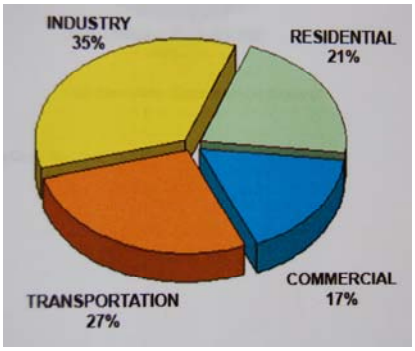


Figure 1: Original U.S. Energy Consumption Chart

(Fig. 2) What he realized from this was that the building sector consumed more energy than the transportation and industry sectors.

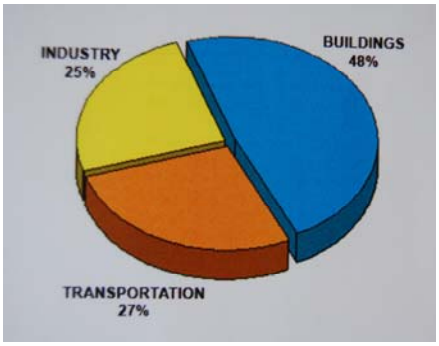


Figure 2: Reapportioned U.S. Energy Consumption Chart

3. THE SCIENCE

Energy consumption (the depletion of fossil fuel resources) and global warming are two converging events that are threatening us globally. Oil and natural gas production peaked in the 1970s. We have used 75% of known U. S. oil reserves and are drilling thousands more natural gas wells annually. We are rapidly using up remaining oil and gas reserves. Oil and natural gas are fossil fuels. If we continue to meet our energy needs using fossil fuels, we can expect further global warming.

Global warming is the result of substantial amounts of CO2 being released into the atmosphere. The earth can only absorb a certain amount of CO2. Currently, there are about 20 billion tons of CO2 being released into the atmosphere. The earth can only absorb about 10 billion. That additional 10 billon is released into the atmosphere and remains there trapping the heat on the earth and producing a greenhouse effect. Normally, the earth's heat can escape.

Scientists are linking this prolonged trapping of heat to melting snow packs, hurricane intensity, rise in water levels and overall climate change. To avoid dangerous climate change we must keep global warming under 2°C above pre-industrial levels. We are currently at 0.7°C. Promoting sustainable design to reduce consumption 50% by 2010 is a way forward.[2]

4. MUST MAKE THE CONNECTION

The global society is facing a challenge of massive proportion. The impact of global warming on the ecology of our planet and how to address this crisis are the crucial topics of our times. This issue has been around since the 1970s. But, science is now warning us that it is imperative that we pick up the pace in our efforts to deal with this dilemma or else the earth and its inhabitants are headed for nothing short of a disaster. Practical solutions have been slow in coming. Meanwhile, the problem has expanded. The environment is not just the business of science, it is everybody's business.

As it turns out, the design community has played the dominant role in creating this dilemma. Interior design, as part of that community, is faced with the challenge of not just changing the design process in theory but in practice. In other words, interior designers must make the connection between our actions and their impact on the natural environment.

---

[2] Williams, p. xvii.

5. IMPACT FOR GLOBAL CHANGE

Sustainability in design is increasingly becoming a relevant and necessary element of foundational and specialized courses in design education. Most interior design schools are interweaving sustainable design principles and theories as well as materials selection into their pedagogical programs. However, there remains a particular void between theory and practice in the educational process. This chasm will eventually have a profound effect on the professional practices of young designers of the future who will enter the job market. Few interior design students have experienced the application of the values and theories that they learned within the classroom.

If this gap in design education is not bridged, there will not be enough thrust to make the change necessary to revolutionize the paradigm related to the profession as a whole. This is of vital importance because science warns that conventional designs of the past have had seriously negative impact on the planet, from water polluting and global warming to the loss of biodiversity in natural systems.

It can be said that the environmental crisis is a design crisis. The design paradigm of “take, make and waste” has diminished earth’s ability to sustain its natural systems as well as the long term health of human culture. The whole of the design community, which includes the interior design students of the future, will play a critical role in securing a more prosperous future for all of earth’s inhabitants by designing in a manner that effectively uses energy and resources, and generates positive environmental, economical and social effects.

Due to significant, if not incontrovertible, scientific evidence relative to the environmental crisis, it is of necessity that interior design students, as part of the global

design community, reach a significant level of proficiency as quickly as possible in the areas of sustainable problem solving, as well as choice, use and evaluation of the most sustainable products and materials.

Students must learn, early on, how their design activities impact the health of the environment. Jane Nichols, Asst. Professor at Western Carolina University, says, "The design process is organic and, at it essence, must respond to a changing environment in the same way life forms adapt to environmental alterations.

This necessitates that interior design students must be able to recognize… organic patterns and natural connections, understanding the causes and effects of competing and interrelated components and then make appropriate design modifications…the design process mirrors the actions of living organisms"[3] (Fig. 3). But, at the educational level as well as the professional level, the transformation into practice of systems theory has not been fully realized.

With the possibility of sudden climate change looming over us, what earth is facing is nothing short of a catastrophe. Interior design pedagogy must quickly move from mainstream to tipping point. Students need to understand how to implement the principles and strategies of sustainable design into every phase of the design process. Furthermore, to bridge the sustainability gap, Cathy Steig, IIDA, IDEC, LEED AP and Director of Interior Design at Bassetti Architects in Seattle suggests that these traditional areas of interior design study be given more attention in undergraduate programs[4]:

- The relationship of buildings to their immediate environment
- Building infrastructure and its relation to the interior environment

[3] Steig, Cathy. "The Sustainability Gap", *Journal of Interior Design*, 2006.
[4] Nichols, Jane "A Hearty Economy and Healthy Ecology can Co-exists", Journal of Interior Design, 2007.

- Means of designing for space and resource efficiency
- Daylighting and energy efficient design (Fig. 4)
- Materials, and their physical characteristics and properties, appropriateness to design, code and universal design requirements, environmental impacts and effect on indoor are quality

Promoting sustainability education is a goal with international repercussions. In order for the U. S. to meet its international obligation and set the pace for developing nations, sustainable design must be taught, learned, and practiced outside of the studio. Because sustainable design is complex, there needs to be more collaboration between educators, researchers, government agencies, design professionals and others. This kind of effort may also serve to improve the educational institution's curricula. In 2006, the American Institute of Architects (AIA) assembled a task force to work within their knowledge communities to carry out and reach their goal toward complete sustainability by the year 2030.

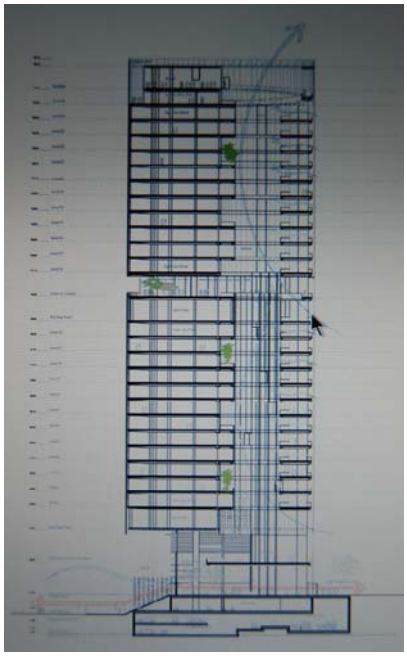


Figure 3: Use sunlight and airflow to mirror a tree

Figure 4: Daylighting

6. CAMPUS GREEN INITIATIVIES

Promoting sustainable interior design education internationally begins at the local level. Some universities have implemented campus green initiatives to encourage and connect students with ecological design issues. For example, *Arizona State University*, which is located in one of the most complex natural environments in the world, has launched a comprehensive sustainability effort which includes the building of a green residence hall to house its students. This teaches by example. This green residence hall is also an example of a collaborative effort that includes the professional design organizations, the academy and industry. ASU's School of Sustainability is involved in 170 research projects. ASU's President Michael M. Crow says, "Because this region is

doing so much building, we are the ones who have to figure out how to do it properly, and ASU has committed itself to being at the forefront of that effort."[5]

Since the year 2000, *Harvard University* has had the Harvard Green Campus Initiative (HGCI). This makes Harvard University a living laboratory for learning and pursuing campus sustainability. The HGCI is a service organization that includes 19 professional staff and 40 part time students that have been trained to work on building upgrades, construction and design, renewable energy, waste reduction, recycling, ongoing environmental education and more. This service organization works to insure continuous improvement in campus design and operations in support of campus sustainability. The impact has been:[6]

- 20 LEED registered building projects both new construction and renovation projects
- Campus green building projects have achieved energy performances of 30-50% above code and over 90% construction waste recycling rates
- Energy upgrades achieving energy use reductions of 30%
- Purchasing renewable energy certificates to offset 7% of Harvard's electricity consumption while inverting another $100,000 a year into renewable energy research and internal business development for an expanded renewable energy portfolio

At Oberlin College, *The Adam Joseph Lewis Center* is a demonstration of sustainable design promoting the practical skills and analytic abilities necessary to reverse the consequences of the first industrial revolution. It was conceived as a demonstration

---

[5] *Grist, Environmental News and Commentary*. "15 Green Colleges and Universities", 10 August 2007.
[6] See footnote 3.

project and testing ground for the emerging field of ecological design. Its design provided research and collaboration opportunities for students and faculty in multiple disciplines. The building includes not only materials that promote long term human and ecological health but an atrium that functions as a town hall for Oberlin's southern campus.

7. HUMANE DESIGN

One of the most important aspects of sustainable design is humane design. It is concerned with the livability of all constituents of the ecosystem. Respecting the life and dignity of fellow living organisms is its principle goal. Research has revealed that preservation of the chain elements of the ecosystem is what allows human survival.

In modern society, 70% of a person's lifespan is spent indoors.[7] The essential role of interior design is to provide built environments that sustain the health, welfare and safety of a building's occupants. However, today's interior designer must be concerned with whether or not the quality of the built environments will sustain the life of the building's occupants and the life in and around the built environments.

The three main strategies of humane design include: preservation of natural conditions, urban design and site planning, and design for human comfort. Elements of human comfort are closely related to interior design, and include, but are not limited to: thermal, visual and acoustical comfort, visual connection to exterior, operable windows, clean fresh air, nontoxic and non-outgasing materials, and accommodating persons with differing physical abilities. (Refer to Appendices for *School of Interior Design at Georgia State University*)

---

[7] Kim, Jong-Jim Asst. Professor of Architecture and Rigdon, Brenda. *Sustainable Architecture Module: Introduction to Sustainable Design*, p. 14.

CONCLUSION

Undeniably, global warming is the most significant challenge facing the inhabited earth. Until recently, buildings and the built environment have been overlooked as the greatest contributor to this problem. It is safe to say that the environmental crisis is a design crisis. Therefore, the design community, as a whole, is being called upon to make substantial contributions toward solving this vexing global problem. As part of that community, interior design really matters.

Interior design is often misunderstood. It is generally associated with interior decorating. However, unlike decorating and the fine arts, along with architecture and industrial design, interior design has pragmatic problem solving as its objective base. This is especially true in the case of sustainable interior design. Due to its connection to global warming, there should be no misunderstanding among educators and students. It should be clear at the undergraduate level that interior design is not merely about style, but, having a positive impact on the sustainability of human life and the ecosystems that help to sustain human life. In this sense, interior design is distinct from the other fine arts.

The pragmatic nature of interior design cannot be overstated particularly in its relationship to sustainable design. Just as students of architecture and industrial design know, students of interior design must also know that they are expected to develop a scientific knowledge base with skills and techniques to implement and solve design problems.

BIBLIOGRAPHY

Bonda, Penny Sosnowchik, Katie. *Sustainable Commercial Interiors*, (John Wiley and Sons, 2007).

Kim, Jong-Jin, Asst. Professor of Architecture and Rigdon, Brenda, Project Intern, College of Architecture and Urban Planning, the University of Michigan. *Sustainable Architecture Module: Introduction to Sustainable Design*, (National Pollution Prevention Center for Higher Education, 1998).

Mendler, Sandra F., AIA and Odell, William, AIA. *The HOK Guidebook to Sustainable Design* (John Wiley & Sons, 2000).

Pilatowicz, Grazyna. *A Guide to Environmentally Conscious Design*, (John Wiley and Sons, 1995).

Steel, James. *Sustainable Architecture: Principles, Paradigms, and Case Studies*, (McGraw-Hill Companies, Inc., 1997).

Steig, Cathy. "The Sustainability Gap", *Journal of Interior Design*, 2006.

Williams, Daniel E. *Sustainable Design: Ecology, Architecture, and Planning* (John Wiley & Sons, 2007).

APPENDIX 1

School of Interior Design at Georgia State University

Global warming is the greatest threat that is facing the planet on which we inhabit. The design professions have been called upon to make the most substantial contribution to the solution of this crisis of global proportion.

The Interior Design department at Georgia State University is evolving, through its present leadership, in order to keep pace with the demand for interior design graduates who are skilled in the current theories, values and technologies necessary to bring about revolutionary change in the practice of the interior design profession, thus, a sustainable future for the planet.

Unlike the fine arts, interior design, along with other professions such as architecture and industrial design, has pragmatic problem solving as its objective base. Much like the architect and industrial designer, it offers a service to the public. Interior design enhances the quality of interior spaces for the purpose of improving the quality of life, increasing productivity and protecting the health, welfare and safety of the public and, now, the planet.

Objective

More adequately reflect the distinguished characteristics and global significance and influence associated with interior design, and raise the public profile of the profession. Give the interior design department more prominence by segregating it from other fine arts disciplines. Using sustainable materials and technologies, build the *School of Interior Design at Georgia State University*.

General Requirements

Since sustainable interior design is becoming part of the pedagogical program, four main principles of sustainable design should be applied to the building: (1) daylighting and ventilation, (2) green materials, (3) alternative power source, (4) and water conservation/recycling. A small student lounge with café and vending machines area will be installed. Each floor should have space allotted for seating outside the classroom. Because interior design students often need to drop off projects, the front of the building should include a fifteen minute drop-off area large enough for two cars.

Spatial Information and Requirements:

All levels (3)

- Elevator, stairwells, restrooms, utility, electrical/telephone – 3,000’ sq. total
    1. Elevator, utility, electrical/telephone – 720’ sq. total
    2. Stairwells – 960’ sq. total
    3. Restrooms – 600’ sq. total
    4. Elevator lobby space – 720’ sq. total
    5. Corridors – 100’ x 8’ = 800’ sq. x 3 = 2,400’ sq.
    6. Open air space (s) – 20’ x 100’ = 2,000’ sq. x 3 = 6,000’ sq.
- *First Floor*
    1. Lobby/Reception area – 1,200’ sq. total
    2. Administration – 810’ sq. total
        a. Director’s office – 200’ sq.
        b. Advisor – 120’ sq.
        c. Grad advisor – 120’ sq.

d. Reception – 120’ sq.

e. Mailroom w/ copier, storage and supplies – 250’ sq.

3. Gallery – 630’ sq. total

- *Second Floor*

1. Café (with vending machines and seating for 25 persons) – 516’sq. total
2. Computer lab – 300’ sq. total (20 persons @ 15’sq.)
3. Printing room – 100’ sq.
4. Resource room / sustainable materials library – 300’ sq.
5. Collaborative lab – 400’ sq. total

- *Third Floor*

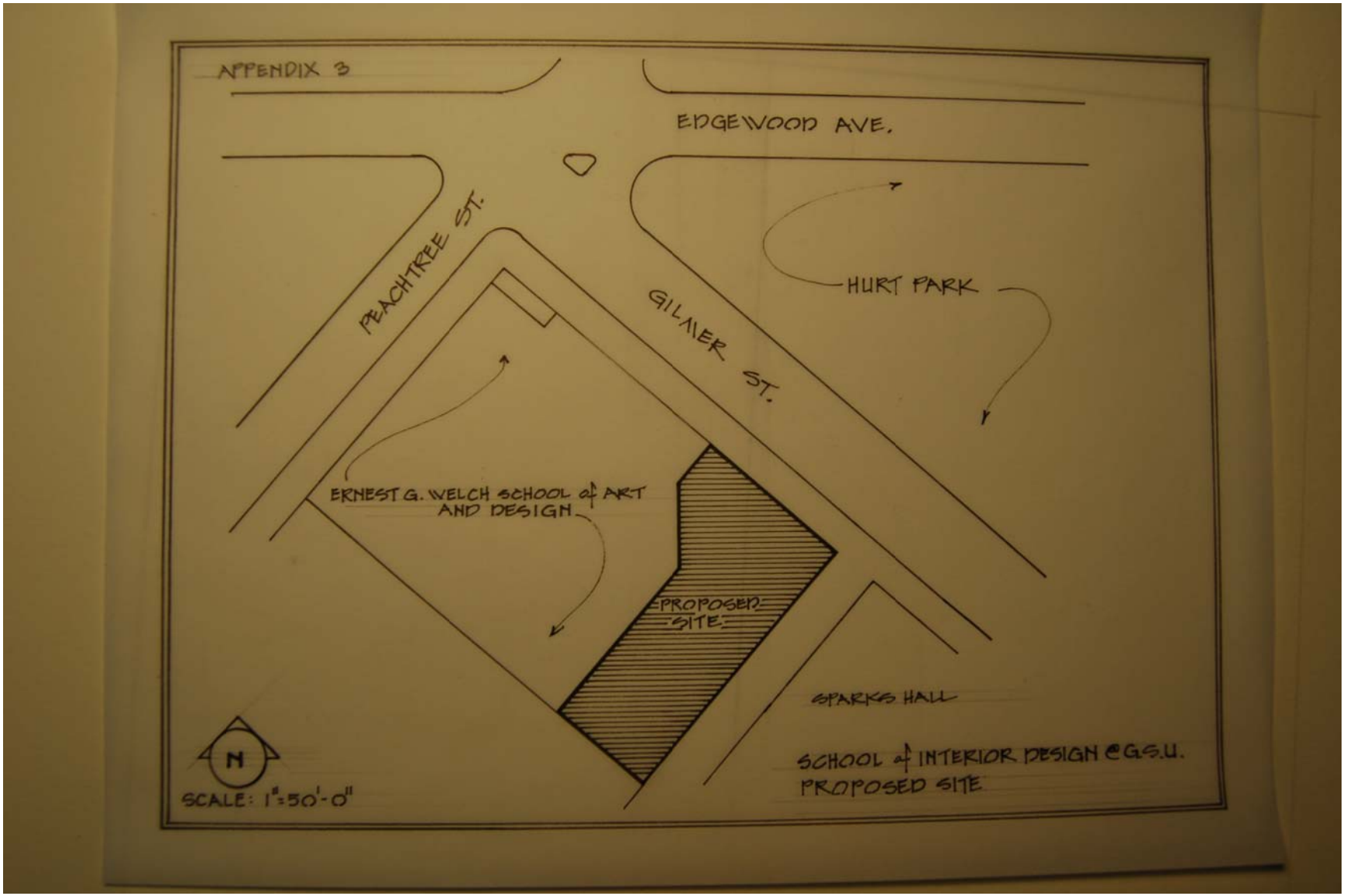
1. Lecture hall/presentation – 700’ sq. total (6’ sq. x 8
2. Instructor’s Offices – 816’sq. total

a. 4 fulltime instructors (1@240’sq; 3@144’sq)

b. 1 part-time instructor (8’x10’ within grad studio)

3. Studio classrooms (2) 1,776’sq. total (888’sq. each: 1@ 20 students; 1 at 18; 30’ sq. each for drawing table)
4. Grad studio – 363’ sq. total (5 students at 40’ sq. each)


APPENDIX 2
CFL SOLOR POWERED LIGHTING
SPANDREL WINDOW WALL (ARGON OR KRYPTON FILLED) WITH VENT INSERTS, OPERABLE/ AUTOMATIC, TEMP. SENSITIVE
BICYCLE/SCOOTER RACK LEED CRITERIA
STUDENT PROJECT DROP OFF ZONE

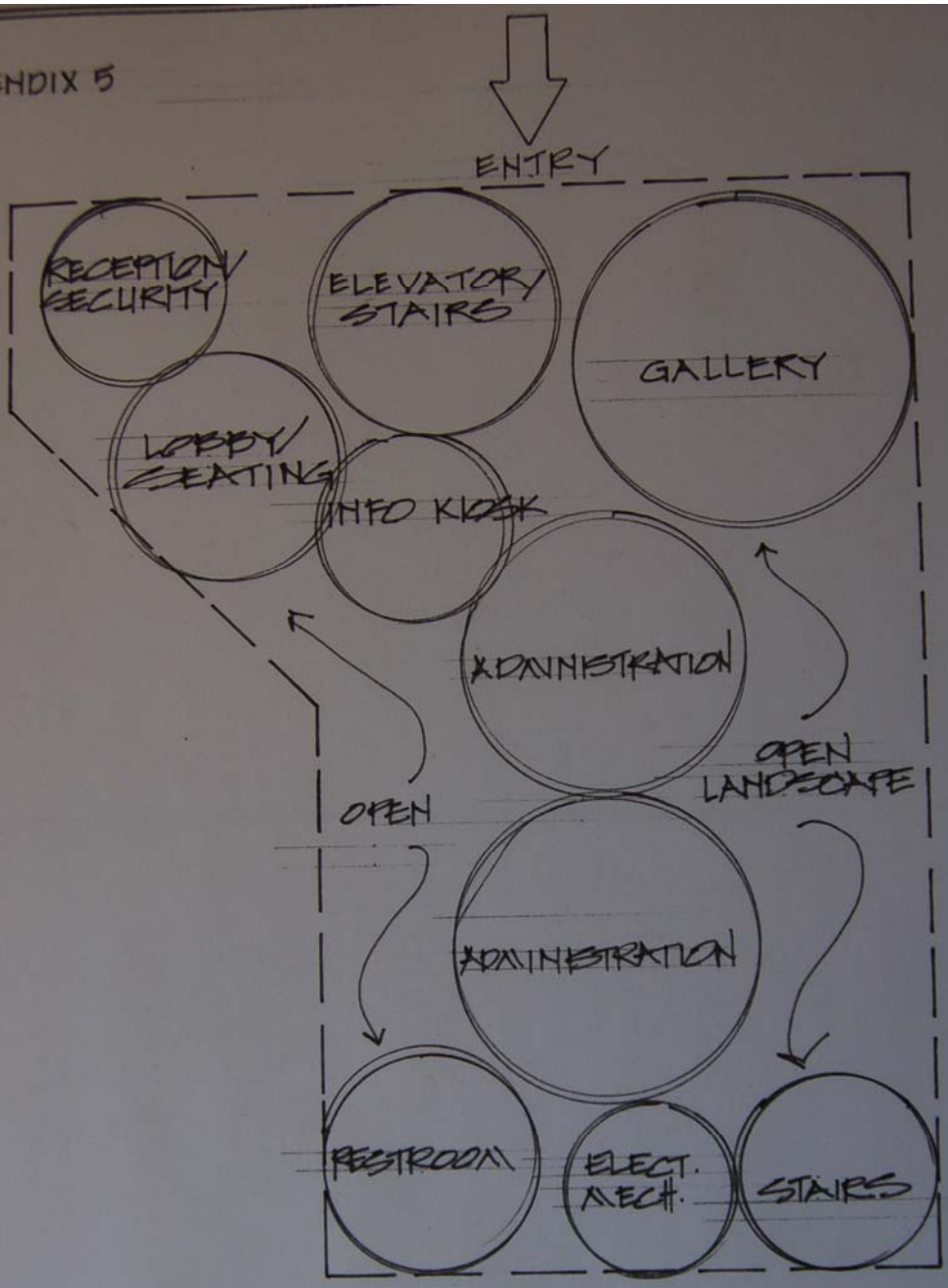

APPENDIX 3
EDGEWOOD AVE.
PEACHTREE ST.
GILMER ST.
HURT PARK
ERNEST G. WELCH SCHOOL of ART AND DESIGN
PROPOSED SITE
SPARKS HALL
N
SCALE: 1"=50'-0"
SCHOOL of INTERIOR DESIGN @ G.S.U.
PROPOSED SITE

APPENDIX 4

Program Elements	Objectives	Square Footage	Special Requirements	Sustainable Requirements
Studio classrooms	Spaciousness, versatility, natural/artificial lighting, well lit, fresh air	1,200'sq. total: 2 @ 600'sq. each: 20e students at 30'sq. each	Pin up area and dry erase board	Operable windows for ventilation
Instructor offices	Acoustics & privacy, natural/artificial lighting, comfortable space for one on one conference/critique	1,645'sq. total: 235'sq. per office (7 offices)	-	*
Computer lab	More circulation space	300'sq. total (20 persons @ 15'sq.)	Darkroom w/controlled lighting: ceiling mounted projector: dry erase board	*
Resource room/ sustainable materials library	Sustainable materials collection/I.D. specific resources	300'sq.	Shelves and bins for storage	*
Grad studio	Apportioned space w/ ample room for computer stations, drawing and cutting tables	300'sq. total: 5 students @ 60'sq. each	-	*
Cafe (manned)	To provide a lounging/ refreshment area	516'sq. total	Vending machine and seating f/25 persons	*

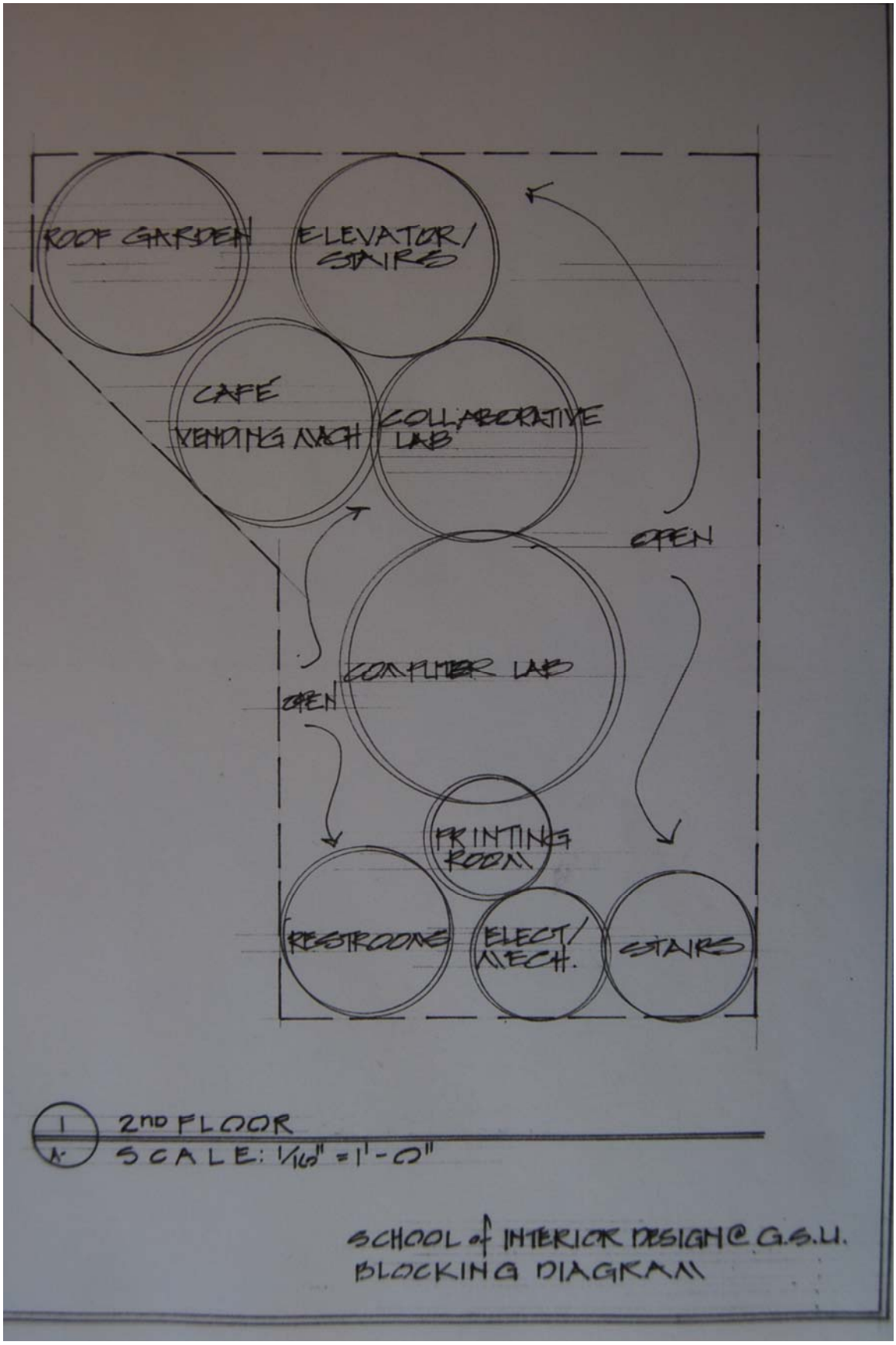
Lecture hall/presentation	Provide a specific area for lectures and for formal presentation, and guest speakers: I.D. continuing education	700'sq. total: 6'sq. x 80 persons	Overhead projection/ Screen, dry erase board, portable pin up boards,	*
Printing room	_	100'sq.	In proximity to computer lab	*
Collaborative lab	Provide a place for student Wi-fi work area	400'sq. total	-	*
Administration	Spacious area to service I.D. school and program	810'sq. total	200'sq. director's office, Mailroom 250'sq., remaining offices 120'sq.	*
Gallery	I.D. promotional work, current semester work, student and faculty projects, thesis showing	630'sq.	-	*
Lobby/reception	Achieve sense of connection to outside	1,200'sq. total	Security desk/monitor	*
*	**All sustainable materials; photovoltaic panels to generate electricity; low-flow toilets**			

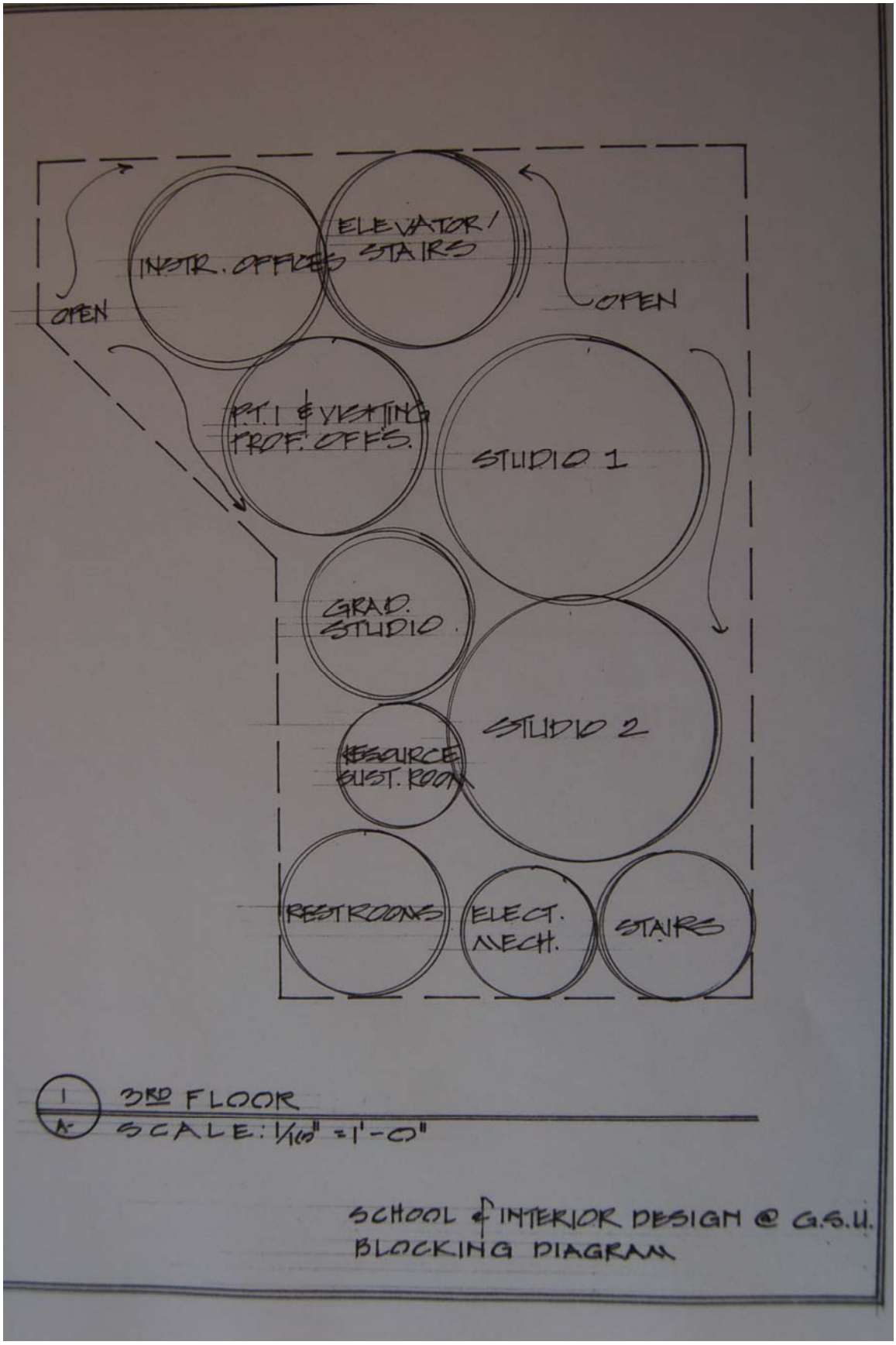
PENDIX 5



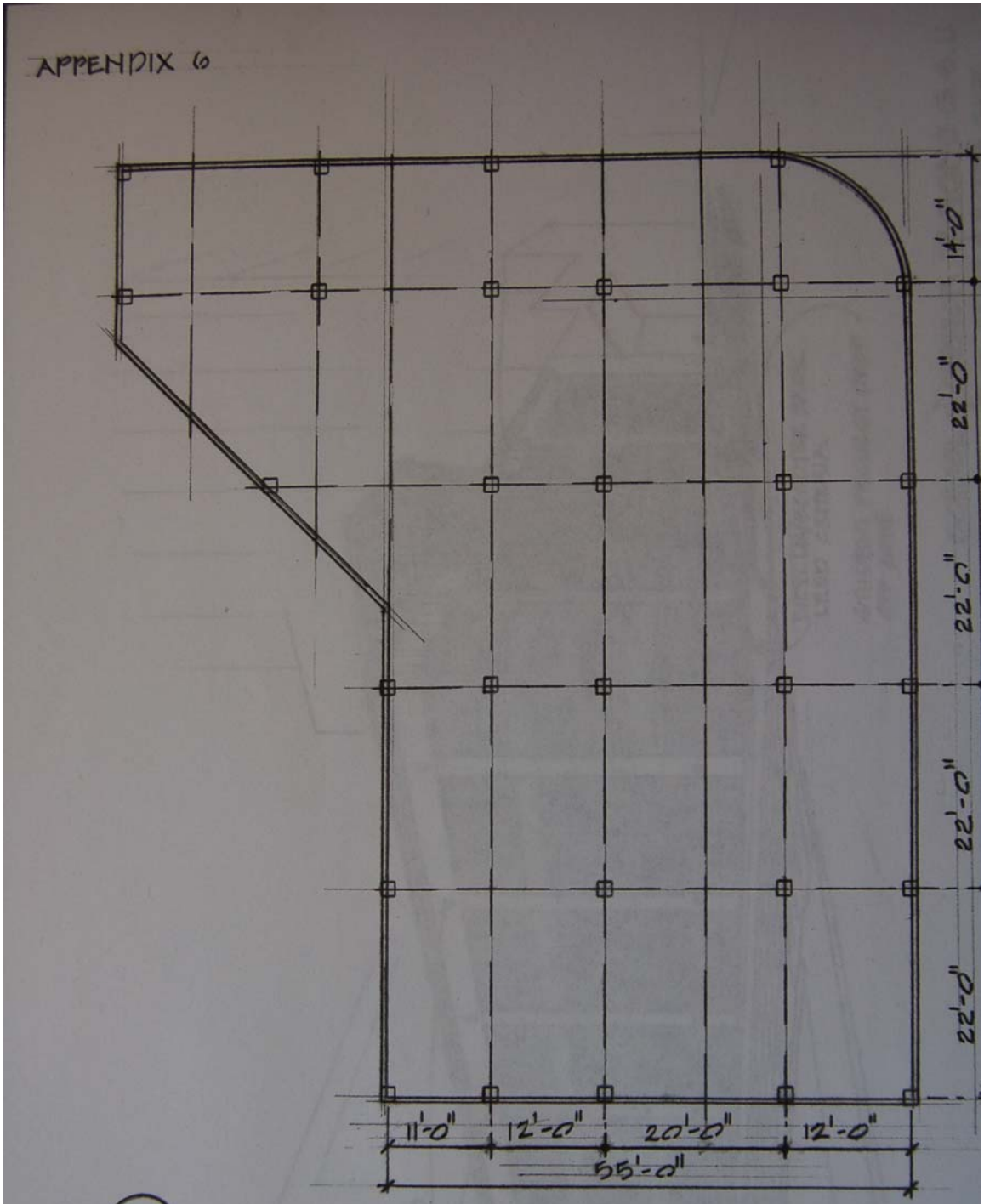
1 / A- 1ST FLOOR STREET LEVEL
SCALE: 1/16" = 1'-0"

SCHOOL of INTERIOR DESIGN G.S.U.
BLOCKING DIAGRAM


ROOF GARDEN
ELEVATOR/ STAIRS
CAFE
VENDING MACH
COLLABORATIVE LAB
OPEN
COMPUTER LAB
OPEN
PRINTING ROOM
RESTROOMS
ELECT/ MECH.
STAIRS
1
2ND FLOOR
SCALE: 1/16" = 1'-0"
SCHOOL of INTERIOR DESIGN @ G.S.U.
BLOCKING DIAGRAM


INSTR. OFFICES
ELEVATOR / STAIRS
OPEN
OPEN
P.T.I & VISITING PROF. OFFS.
STUDIO 1
GRAD. STUDIO
STUDIO 2
RESOURCE BUST. ROOM
RESTROOMS
ELECT. MECH.
STAIRS
1
A-
3RD FLOOR
SCALE: 1/16" = 1'-0"
SCHOOL of INTERIOR DESIGN @ G.S.U.
BLOCKING DIAGRAM

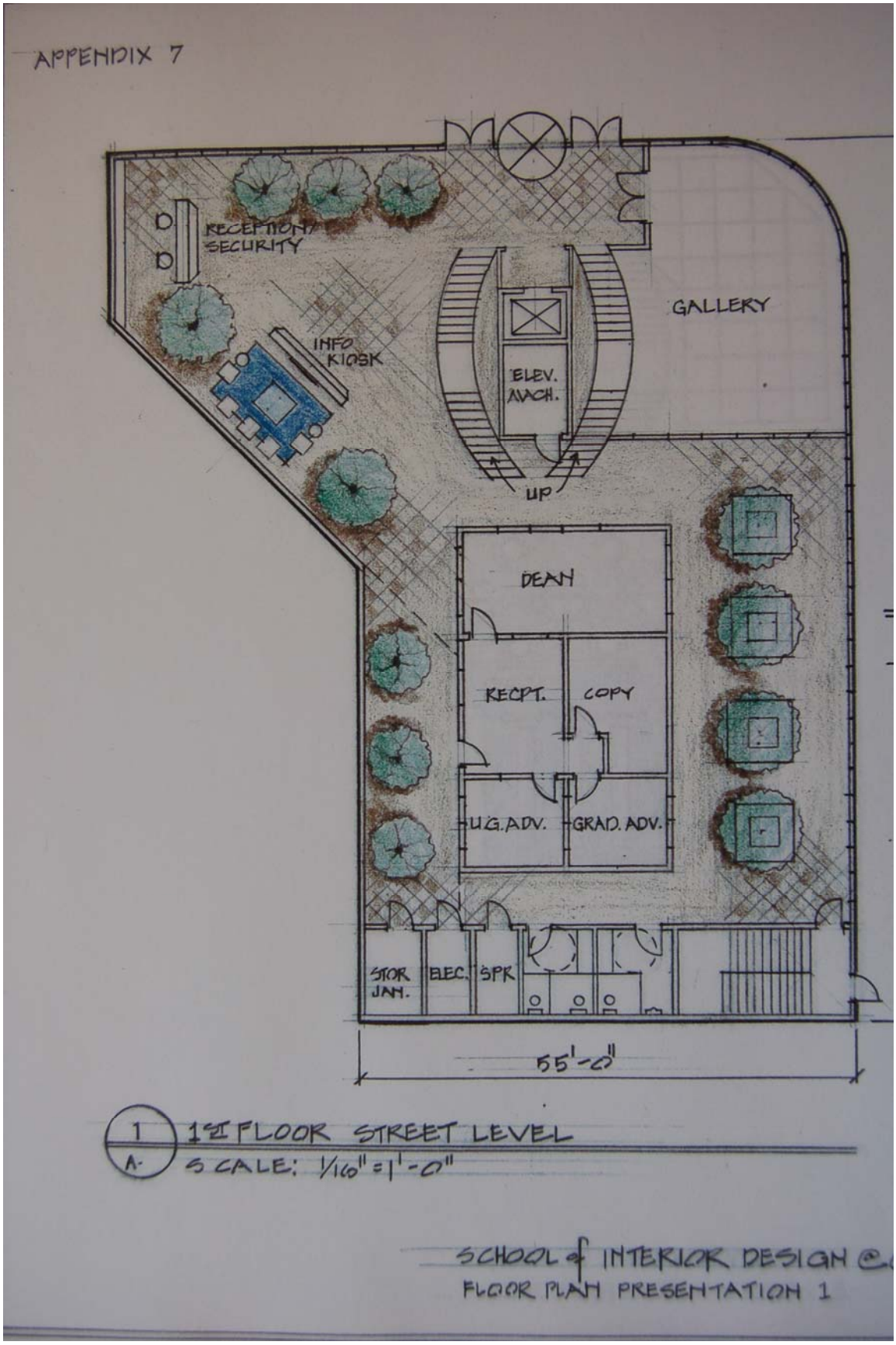
APPENDIX 6



STRUCTURAL GRID STUDY
SCALE: 1/16"=1'-0"

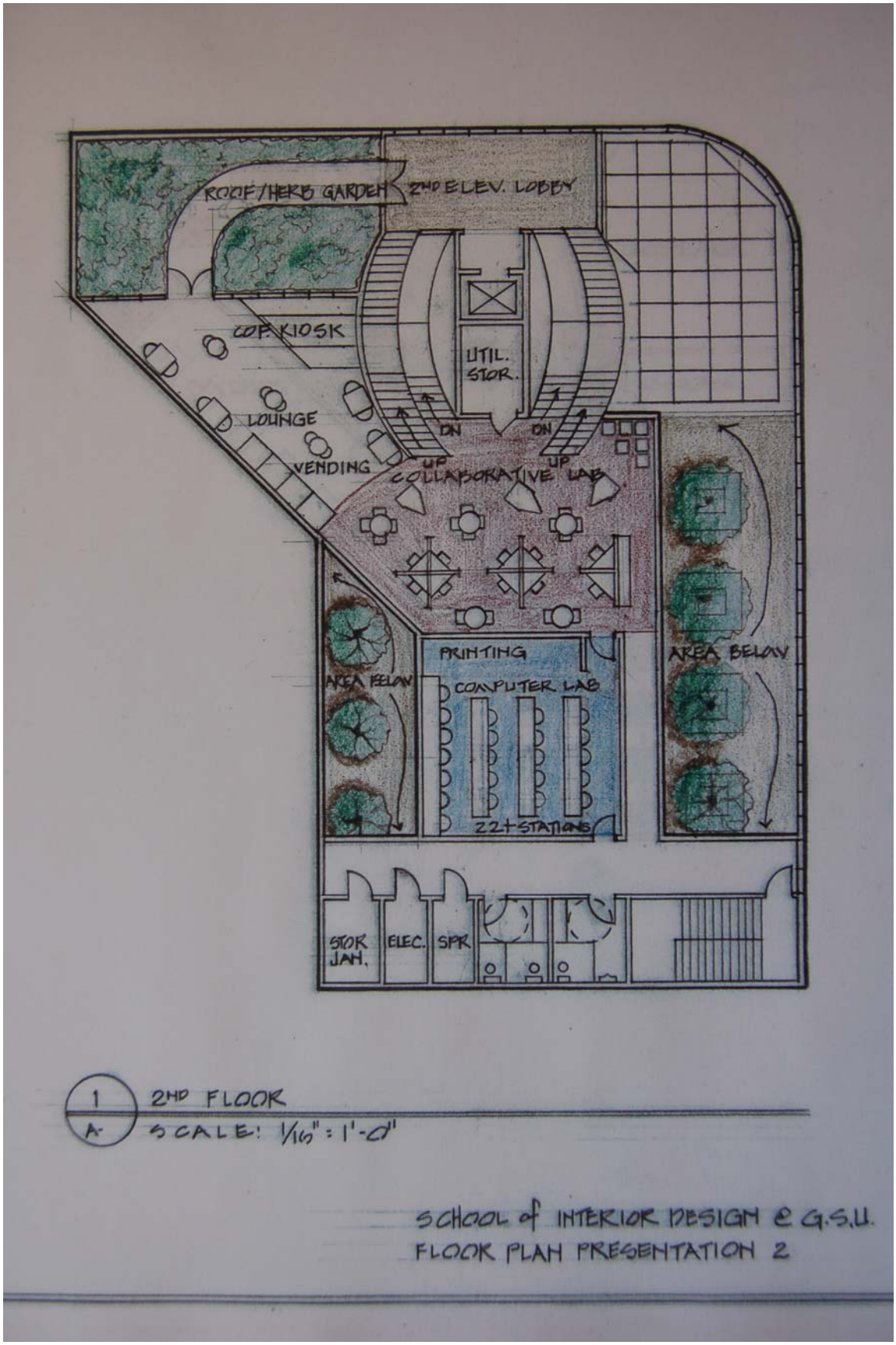
SCHOOL of INTERIOR DESIGN
STRUCTURAL CONSIDERATION

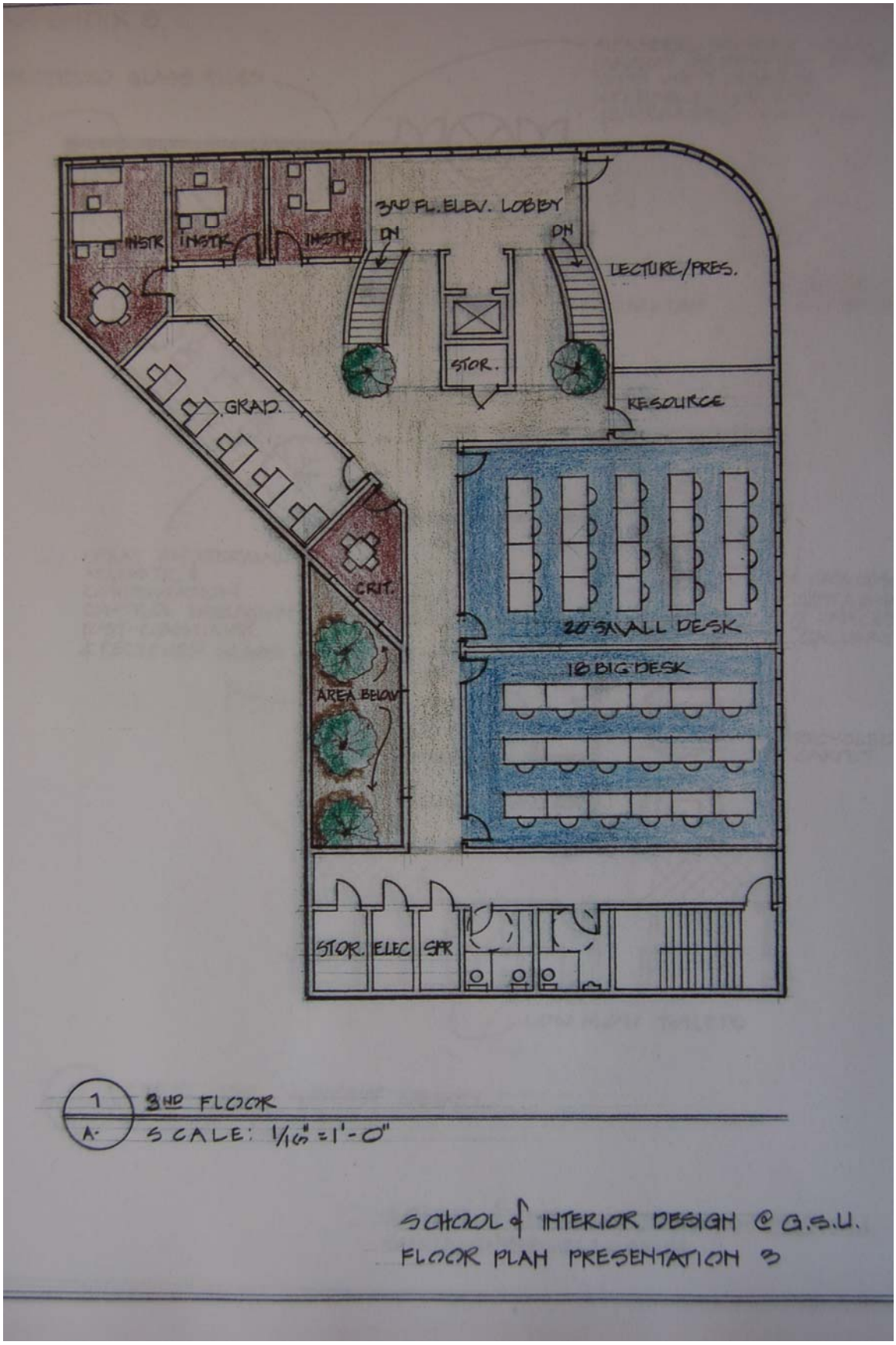
APPENDIX 7

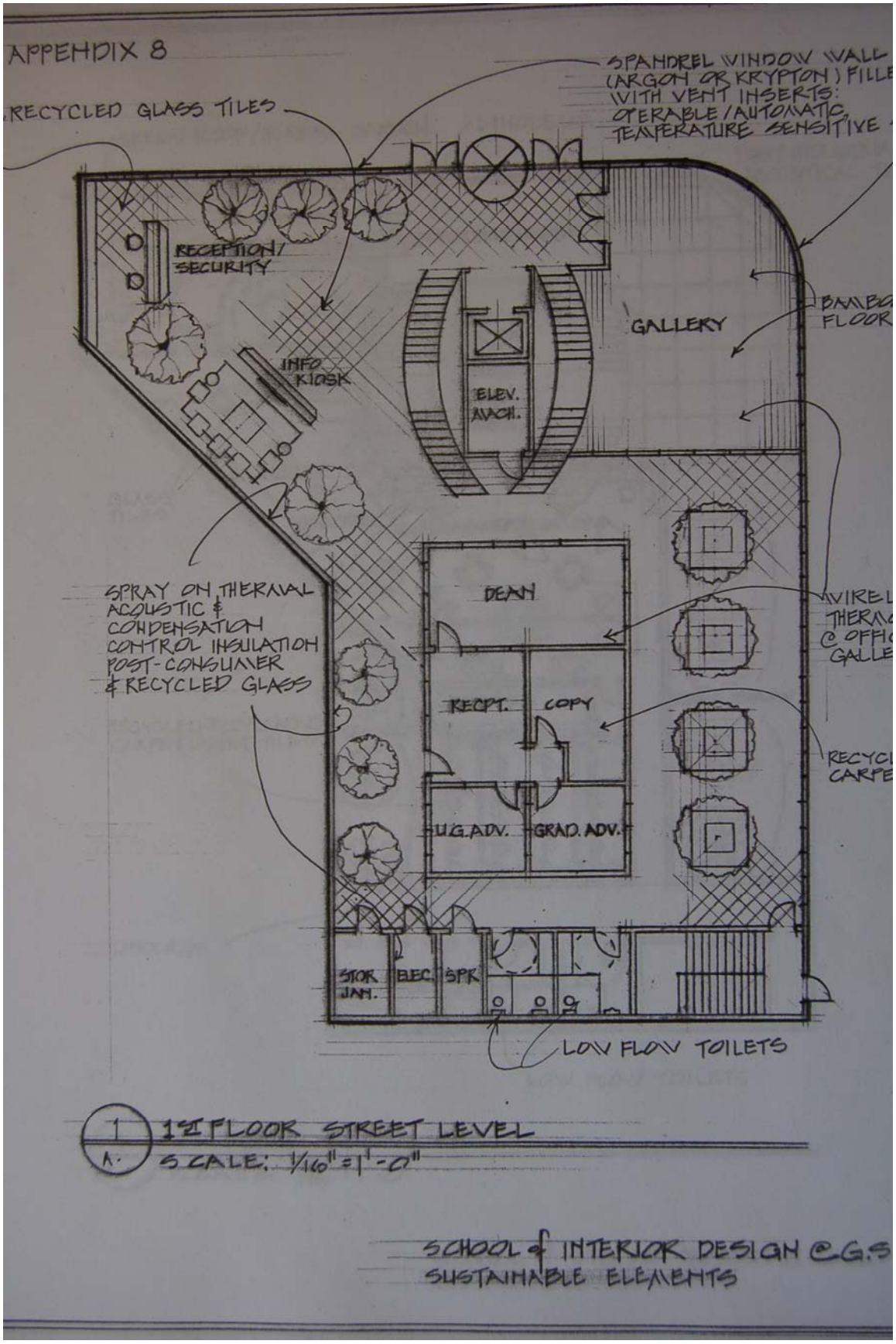


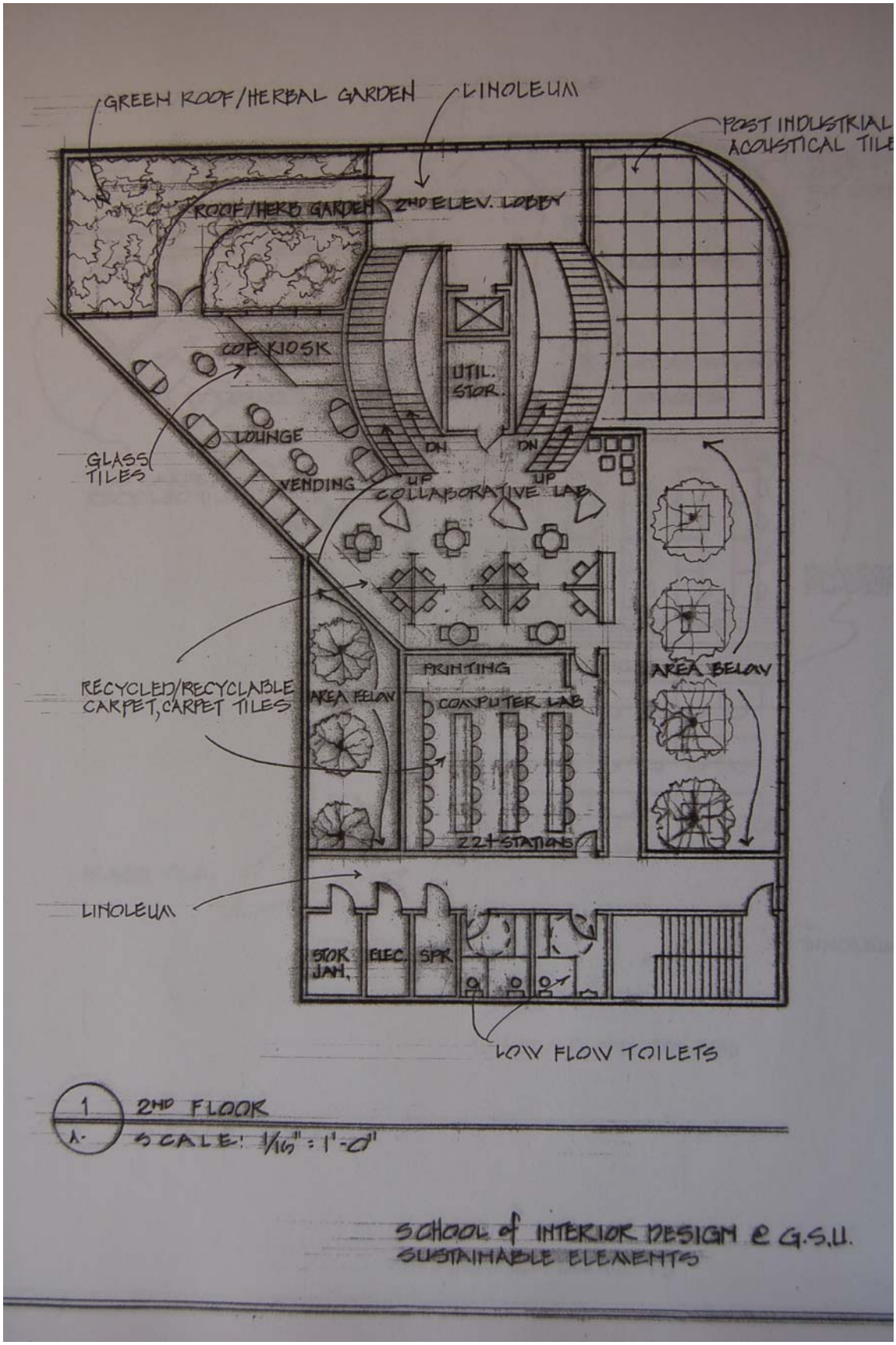
1/A 1ST FLOOR STREET LEVEL
SCALE: 1/16" = 1'-0"

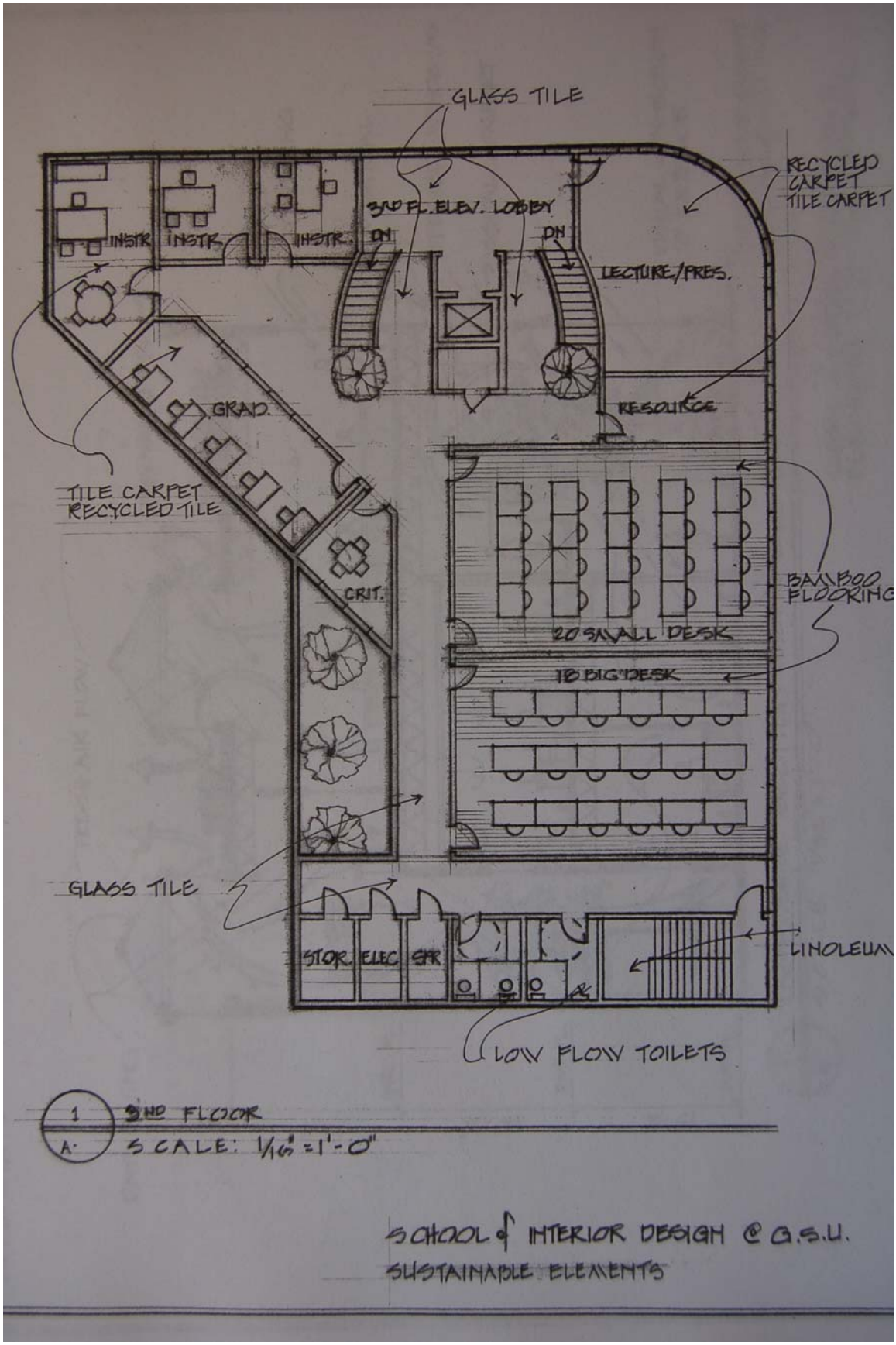
SCHOOL of INTERIOR DESIGN
FLOOR PLAN PRESENTATION 1

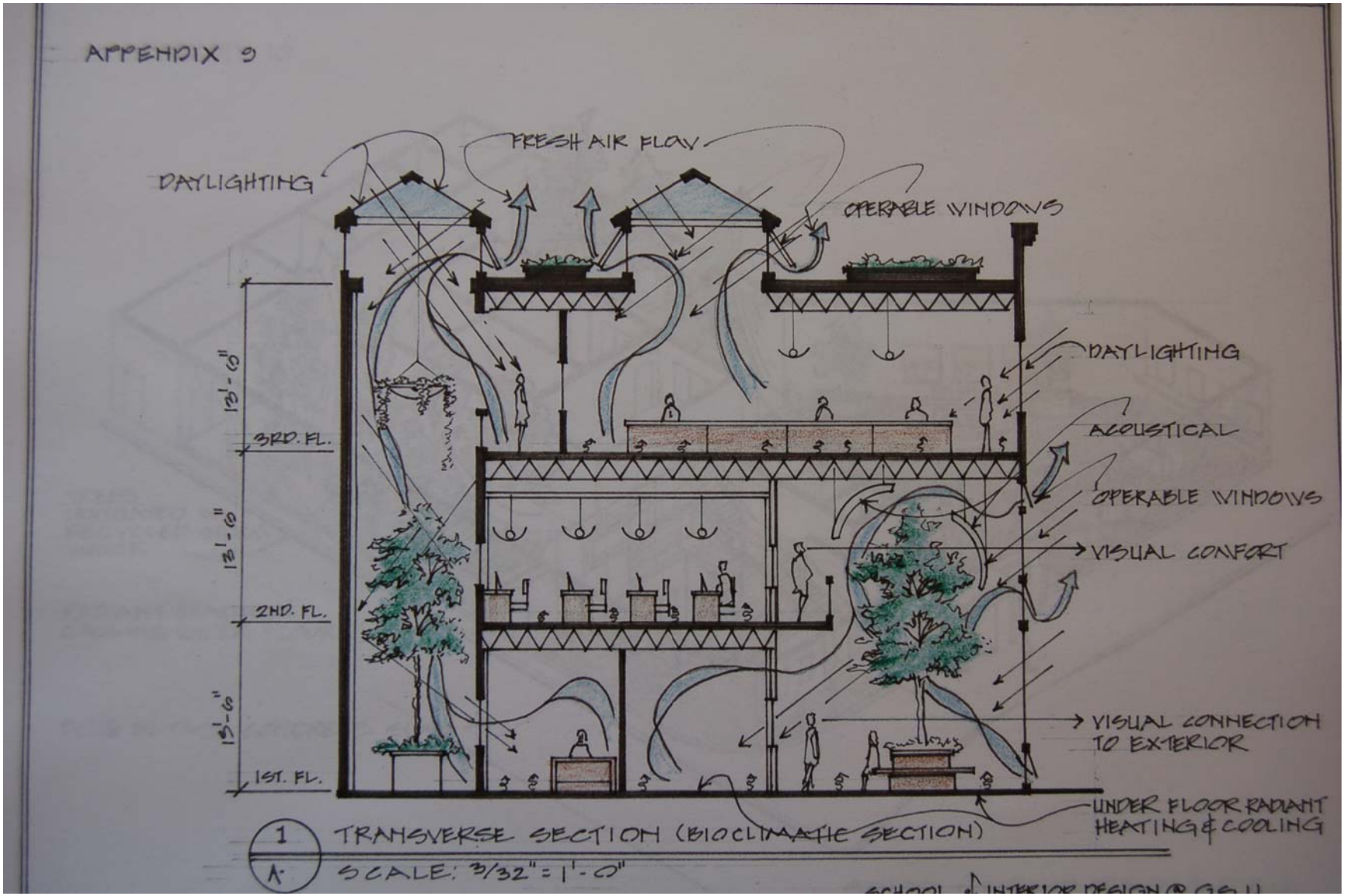

ROOF/HERB GARDEN
2ND ELEV. LOBBY
COF. KIOSK
UTIL. STOR.
LOUNGE
VENDING
DN
DN
UP
UP
COLLABORATIVE LAB
PRINTING
COMPUTER LAB
AREA BELOW
AREA BELOW
22+ STATIONS
STOR JAN.
ELEC.
SPR
1
A
2ND FLOOR
SCALE: 1/16" = 1'-0"
SCHOOL of INTERIOR DESIGN @ G.S.U.
FLOOR PLAN PRESENTATION 2

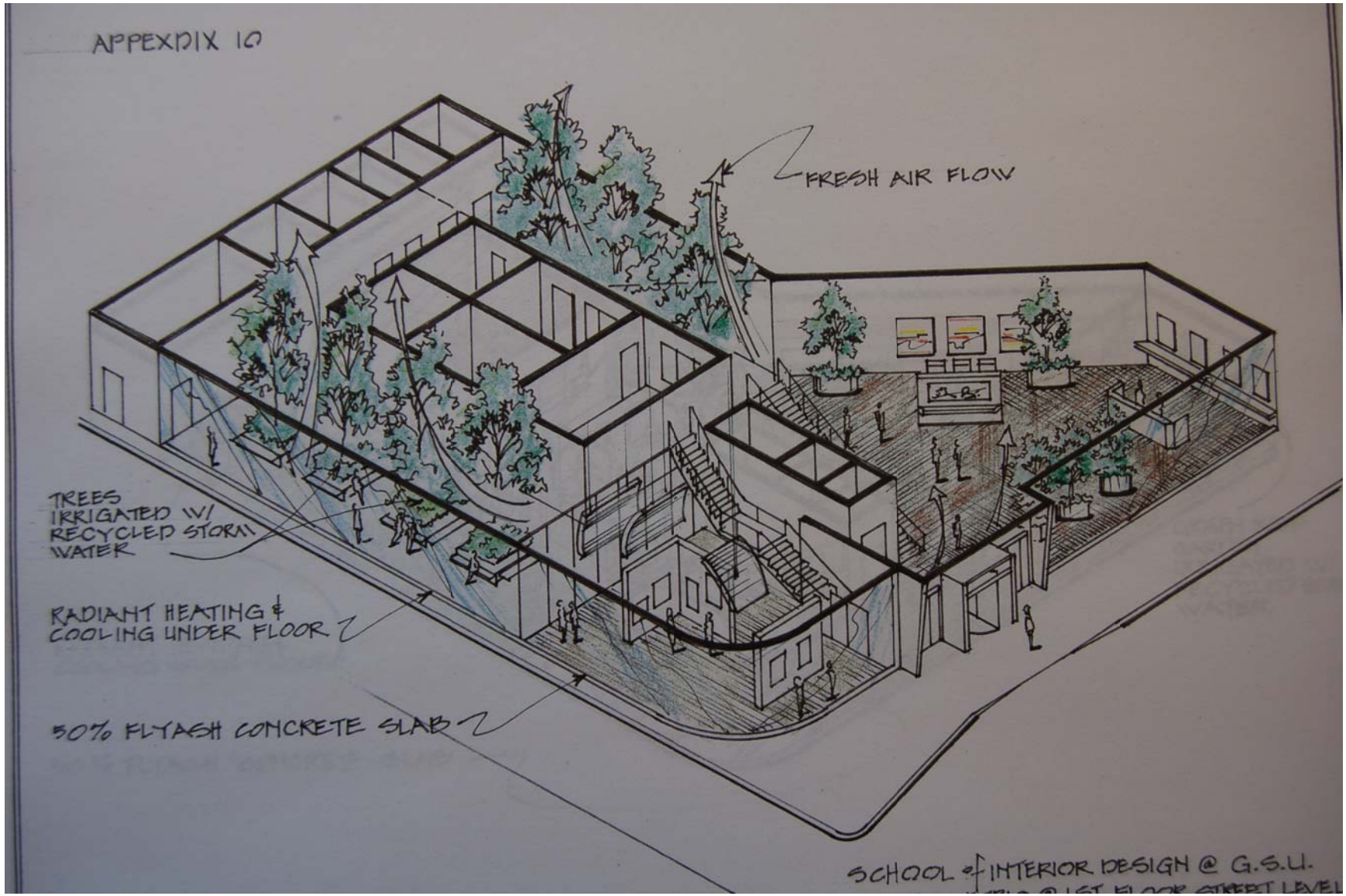

INSTR
INSTR
INSTR
3RD FL. ELEV. LOBBY
DN
DN
LECTURE/PRES.
STOR.
RESOURCE
GRAD.
CRIT.
20 SMALL DESK
18 BIG DESK
AREA BELOW
STOR.
ELEC
SHR
1
A
3RD FLOOR
SCALE: 1/16" = 1'-0"
SCHOOL of INTERIOR DESIGN @ G.S.U.
FLOOR PLAN PRESENTATION 3

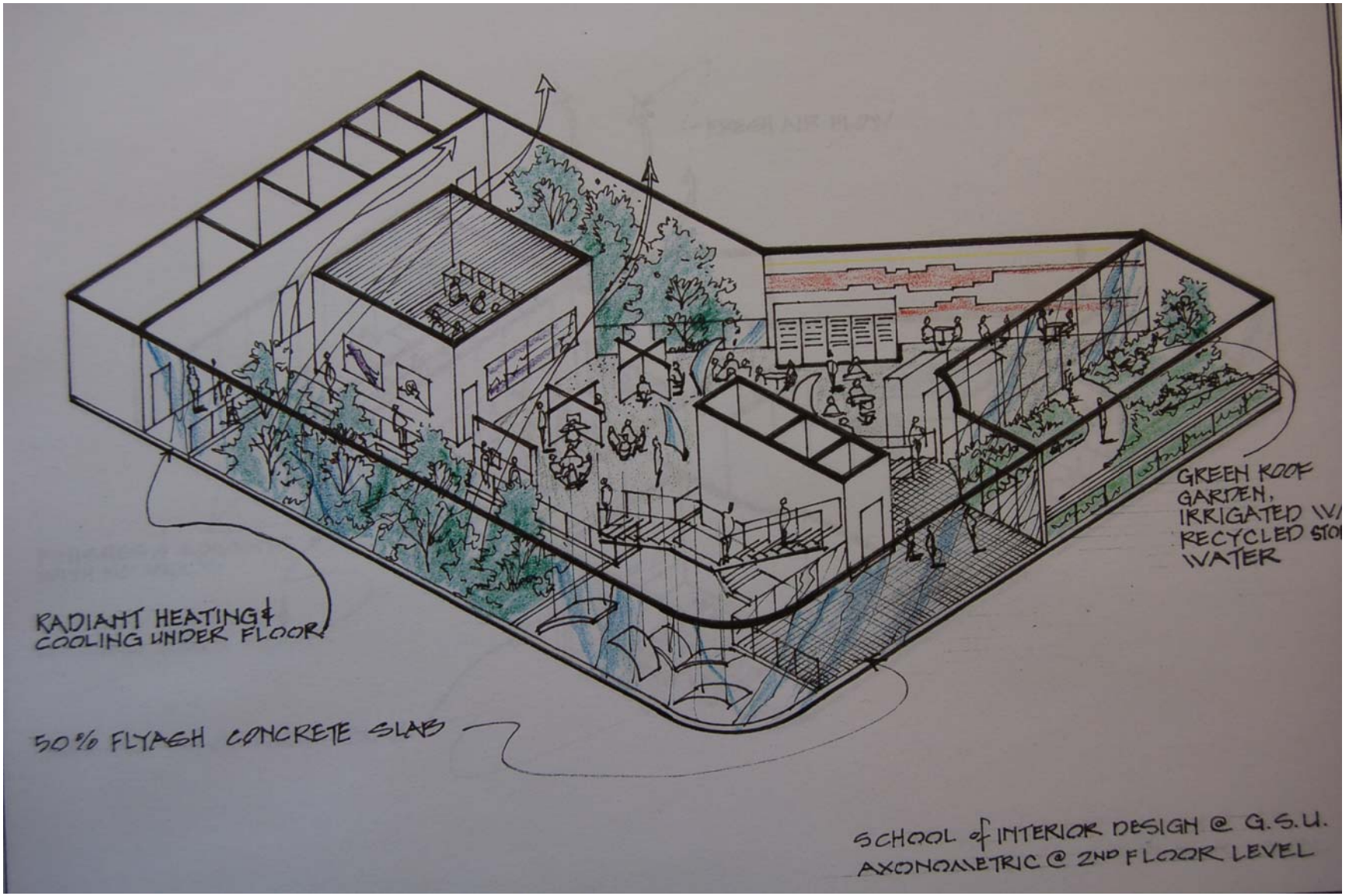

APPENDIX 8
RECYCLED GLASS TILES
SPANDREL WINDOW WALL
(ARGON OR KRYPTON) FILLE
WITH VENT INSERTS:
OPERABLE/AUTOMATIC,
TEMPERATURE SENSITIVE
RECEPTION/
SECURITY
INFO
KIOSK
ELEV.
MACH.
GALLERY
BAMBO
FLOOR
SPRAY ON THERMAL
ACOUSTIC &
CONDENSATION
CONTROL INSULATION
POST-CONSUMER
& RECYCLED GLASS
DEAN
RECPT.
COPY
U.G. ADV.
GRAD. ADV.
STOR.
JAN.
ELEC
SPR
LOW FLOW TOILETS
1
1ST FLOOR STREET LEVEL
SCALE: 1/16" = 1'-0"
SCHOOL of INTERIOR DESIGN C.G.S
SUSTAINABLE ELEMENTS

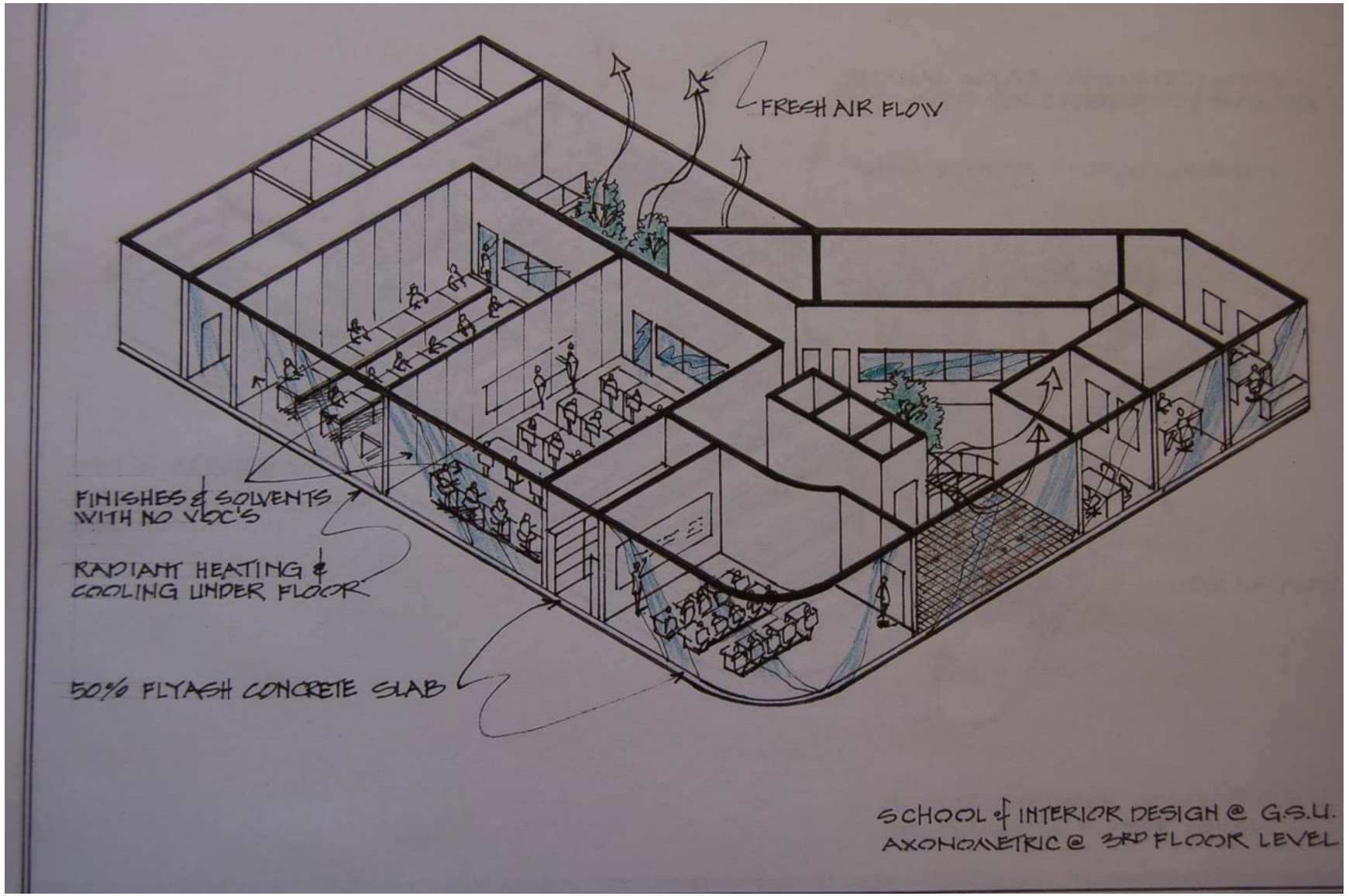

GREEN ROOF/HERBAL GARDEN
LINOLEUM
POST INDUSTRIAL ACOUSTICAL TILE
ROOF/HERB GARDEN
2ND ELEV. LOBBY
COP KIOSK
UTIL. STOR.
LOUNGE
GLASS TILES
DN
DN
VENDING
UP
UP
COLLABORATIVE LAB
RECYCLED/RECYCLABLE CARPET, CARPET TILES
PRINTING
AREA BELOW
AREA BELOW
COMPUTER LAB
22+ STATIONS
LINOLEUM
STOR JAN.
ELEC.
SPR
LOW FLOW TOILETS
1
A
2ND FLOOR
SCALE: 1/16" = 1'-0"
SCHOOL of INTERIOR DESIGN @ G.S.U.
SUSTAINABLE ELEMENTS

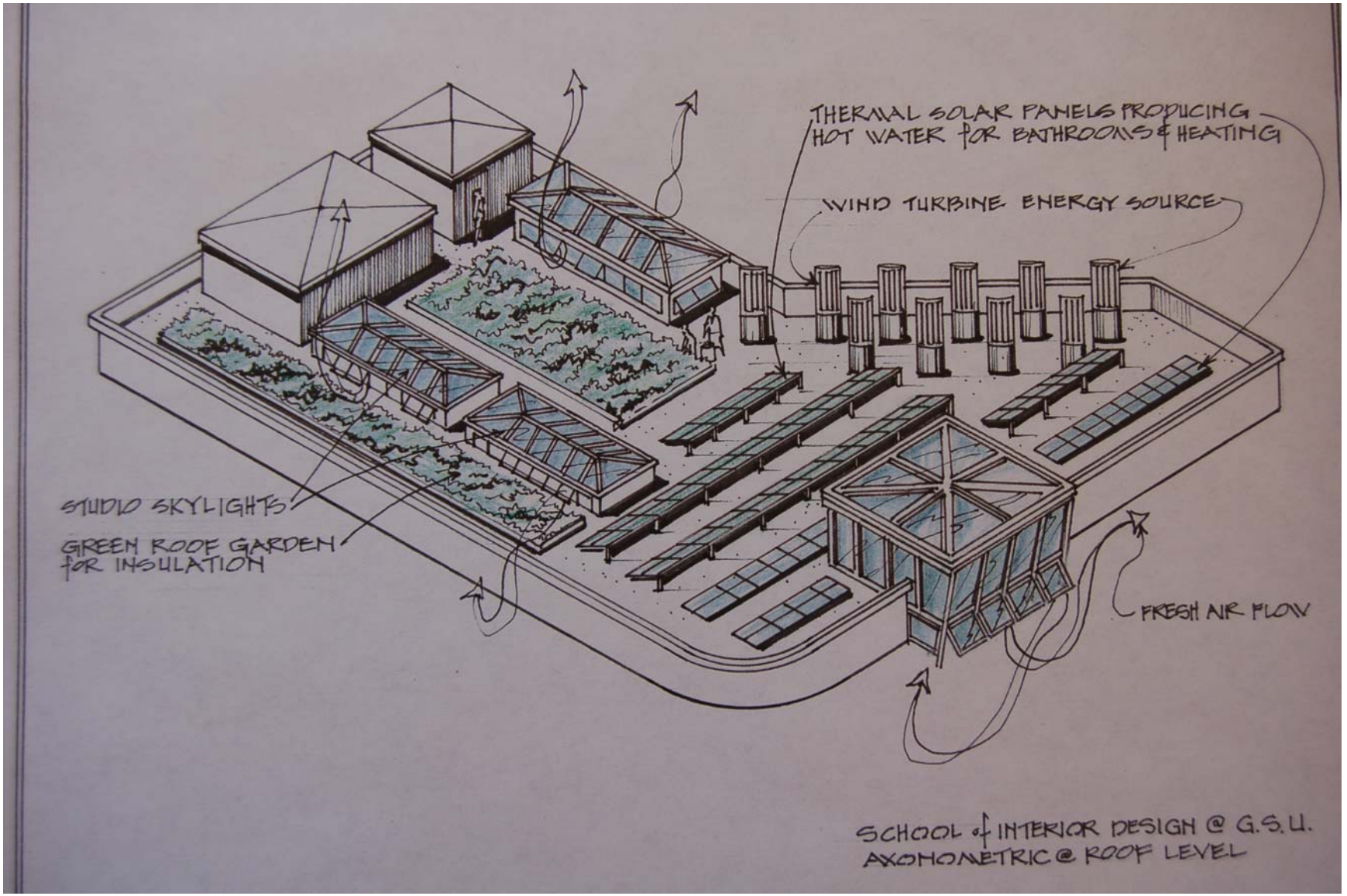

GLASS TILE
RECYCLED CARPET TILE CARPET
3RD FL. ELEV. LOBBY
DN
DN
INSTR.
INSTR.
INSTR.
LECTURE/PRES.
RESOURCE
GRAD.
TILE CARPET RECYCLED TILE
CRIT.
BAMBOO FLOORING
20 SMALL DESK
10 BIG DESK
GLASS TILE
STOR.
ELEC
SPR
LINOLEUM
LOW FLOW TOILETS
1
A
3RD FLOOR
SCALE: 1/16" = 1'-0"
SCHOOL of INTERIOR DESIGN @ G.S.U.
SUSTAINABLE ELEMENTS


APPENDIX 9
FRESH AIR FLOW
DAYLIGHTING
OPERABLE WINDOWS
DAYLIGHTING
ACOUSTICAL
OPERABLE WINDOWS
VISUAL CONFORT
VISUAL CONNECTION TO EXTERIOR
UNDER FLOOR RADIANT HEATING & COOLING
13'-0"
13'-0"
15'-0"
3RD. FL.
2ND. FL.
1ST. FL.
1
A
TRANSVERSE SECTION (BIOCLIMATIC SECTION)
SCALE: 3/32" = 1'-0"


APPEXDIX 10
FRESH AIR FLOW
TREES
IRRIGATED W/
RECYCLED STORM
WATER
RADIANT HEATING &
COOLING UNDER FLOOR
50% FLYASH CONCRETE SLAB
SCHOOL of INTERIOR DESIGN @ G.S.U.


GREEN ROOF
GARDEN,
IRRIGATED W/
RECYCLED STO
WATER
RADIANT HEATING &
COOLING UNDER FLOOR
50% FLYASH CONCRETE SLAB
SCHOOL of INTERIOR DESIGN @ G.S.U.
AXONOMETRIC @ 2ND FLOOR LEVEL


FRESH AIR FLOW
FINISHES & SOLVENTS WITH NO VOC'S
RADIANT HEATING & COOLING UNDER FLOOR
50% FLYASH CONCRETE SLAB
SCHOOL of INTERIOR DESIGN @ G.S.U.
AXONOMETRIC @ 3RD FLOOR LEVEL


THERMAL SOLAR PANELS PRODUCING HOT WATER FOR BATHROOMS & HEATING
WIND TURBINE ENERGY SOURCE
STUDIO SKYLIGHTS
GREEN ROOF GARDEN FOR INSULATION
FRESH AIR FLOW
SCHOOL of INTERIOR DESIGN @ G.S.U.
AXOMOMETRIC @ ROOF LEVEL