HARNESSING HISTORY

Restoration through Modern Technologies and Traditional Techniques
Learning Objectives:
1. Sustainable / energy efficient design and strategies of the early 20th century

2. Tools for assessing envelope, and structural conditions of historic buildings

3. Energy modeling and building simulation tools (WUFI, solar and CFDs)

4. The power of drawings as a communication tool, finding the best way to communicate
HARNESSING HISTORY

Restoration through Modern Technologies and Traditional Techniques
WHY ARE WE HERE

Learning from old traditions

RESTORE A BUILDING IN HOUSTON

UNDERSTAND HOW WE BUILT FOR THIS CLIMATE AND THIS REGION
WHY ARE WE HERE

Applying Modern Technology

Evaluate a 91 year old building, while measuring its energy performance with modern tools.

Simulate and construct a modern design into that building.
HISTORY
except fractional lots and
those between Garden and
Water Streets.

This plan is subject to
which are vacant.

The streets and blocks are

east and numbered, with
all streets and lots here
are reserved on the

Thell Jones C.
ADDITIONS EVERY DECADE
ADDITONS EVERY DECADE
EXISTING PLANS

1926 1st floor plan

1928 Addition site plan

cafeteria

Open court

auditorium

1928 addition
EXISTING PLANS

1926 2nd floor plan

1928 Addition site plan

- 1928 addition
- Gymnasium
- Open court
- Study hall
EXISTING STRUCTURAL DOCUMENTS

- Foundation Plan
- Structural Frame
- Beam schedule
- Pier details
EXISTING WALL SECTIONS
second tool
Assessments
Visual, Structural, Analysis
ON-SITE OBSERVATIONS
EXISTING STRUCTURAL VERIFICATION:
EXISTING BALCONY SEATING WAS A MYSTERY
WHAT’S BEHIND THIS WALL?
ENVELOPE ASSESSMENT
third tool
DIGITAL IMAGING
THERMAL | INFA-RED
THERMAL IMAGING

WINDOWS @ WEST FACING CLASSROOMS
WINDOWS @ WEST FACING CLASSROOMS
THE NEW WINDOWS
SIMULATION INPUTS

All simulations are done for North Wall because it’s the worst-case scenario for moisture transfer.

Materials:

- Brick is modeled with a leak to allow 1% fraction of Driving Rain.
- CMU is modeled with a crack to allow 5%CH air transfer.

(see Appendix for more details)

WALL ASSEMBLY ALMOST TWICE AS EFFICIENT AS REQUIRED BY ASHRAE FOR MASS WALLS
West Facing – SECOND FLOOR MAIN HALLWAY 3:00 PM
East Facing – FIRST FLOOR DINING COMMONS 9:00 AM
fifth tool

Construction tools

CLASH DETECTION | LASER SCAN
sixth tool

Construction tools

DRAWING AND COMMUNICATION
DOCUMENTATION OVER IMAGES

- Shed, Curtain Wall
- Cast Stone Coping to Match Existing
- Remove Brick as close to Existing Limestone Coping as possible
- Clean existing brick, tuck and point as necessary
- Remove existing mastic, taking care not to damage brick
- New Brick
- New Walkway Canopy
- Terrace patio and canopy structure not shown for clarity
- Smooth basement walls per MFR specifications to receive waterproofing
- Replace limestone base as necessary

SCALE: NTS

NE CORNER OF AREA D | A5
HARNESSING HISTORY

RESTORATION THROUGH MODERN TECHNOLOGIES AND TRADITIONAL TECHNIQUES
THANK YOU