



A STUDY OF CONNECTIONS

During the course of developing this project a variety of conditions were examined. Some studies focused on the importance of light and its relationship to structure and others simply looked at how things were put together.

Old Warehouse Structure, Belle Island, Richmond, Virginia
Above: Steel columns meeting the concrete foundation; two bolts per column.

Right: Line of light between two gables resulting from the decomposition of the building's gutter.

Kanapaha Botanical Gardens, Gainesville, Florida

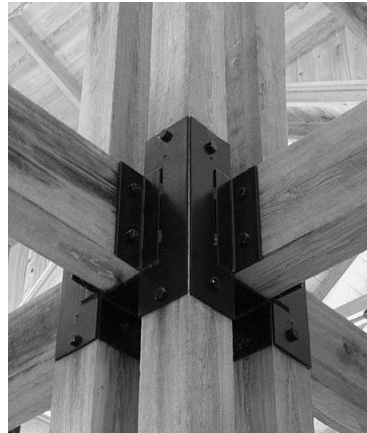
This building's structure is derived from four corner rooms meeting with a central hall intersecting two axes. The project consists of solid sawn members. The columns of the central hall are split into quarters allowing for light and views between the vertical members. The separation of columns also allows for the easy addition and subtraction of members.

Right: First connection of columns and beams.

Bottom Right: Connection of the column to the base.

Below: Exterior post connection of handrail on the porch.

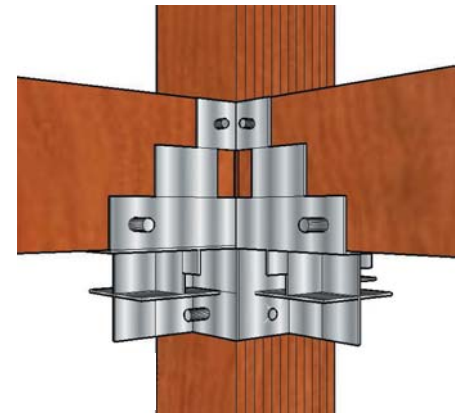
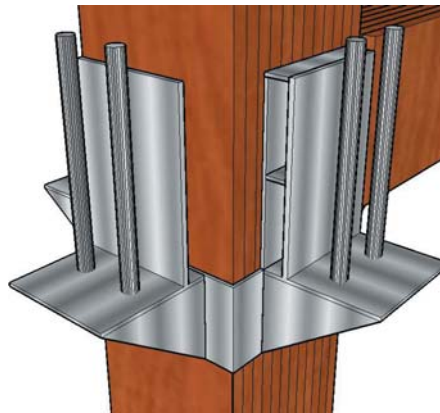
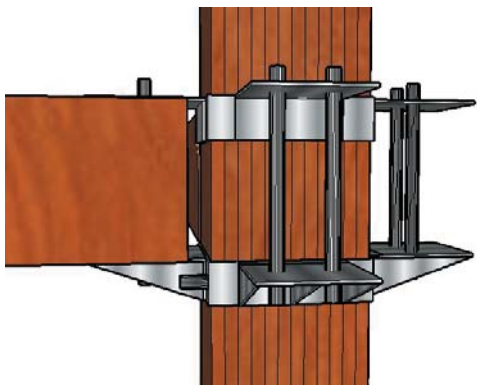
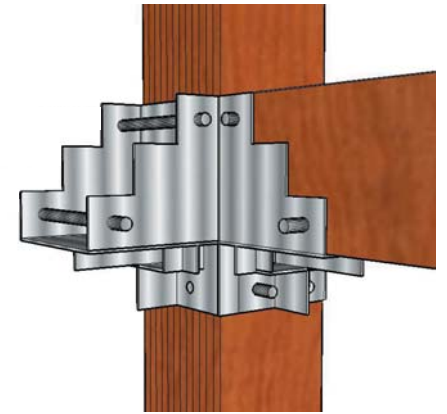
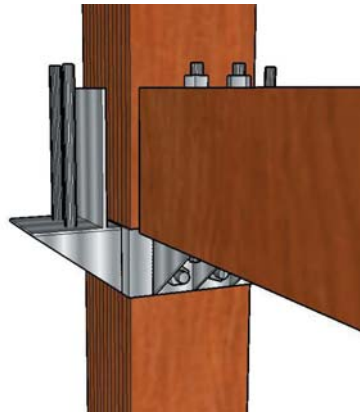
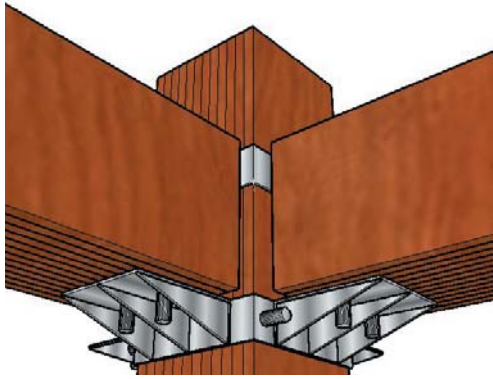
Left: Notice the reduction of beams and minimization of column heights as the space moves vertically.

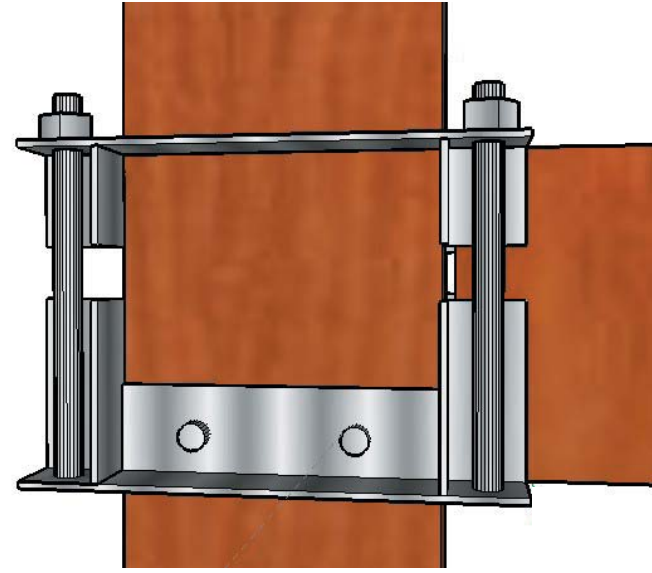
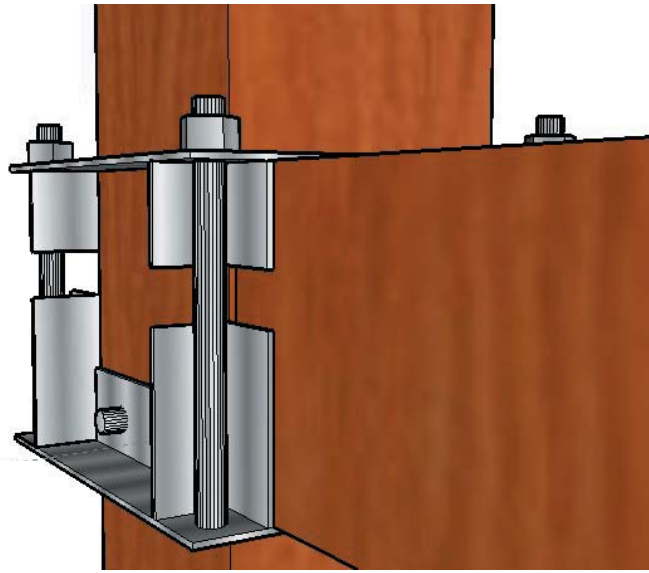


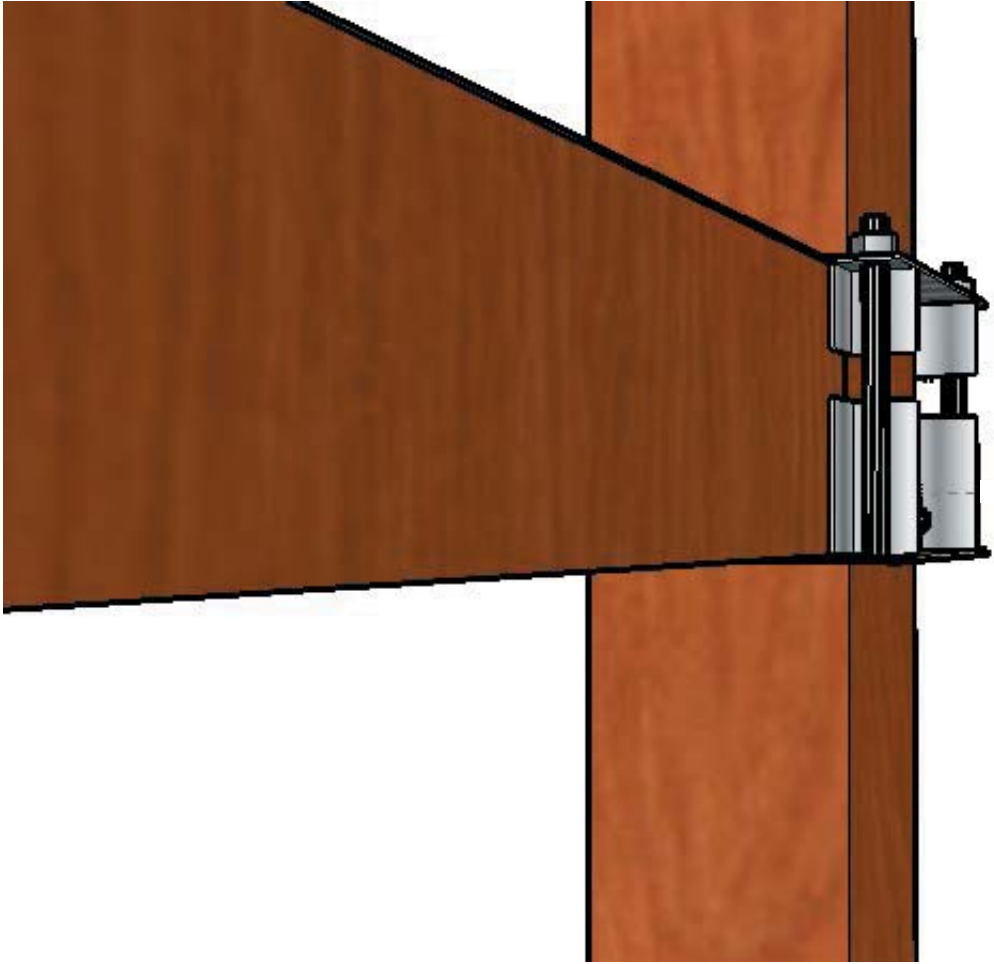
Connections of Columns to Beam

A variety of connections were drawn and modeled to determine what worked best within the framework of the three concepts. At right several ideas are illustrated.

The connection chosen (succeeding pages) to be used throughout the project consists of two collars, as shown in succeeding pages that slide over the column. The bottom collar is bolted to the column; the top collar slides over the beam, placing the beam between two vertical guides. The collars are bolted together and the beam is compressed between the collars eliminating the need for the beams to be drilled.







DESIGN FOR DISASSEMBLY

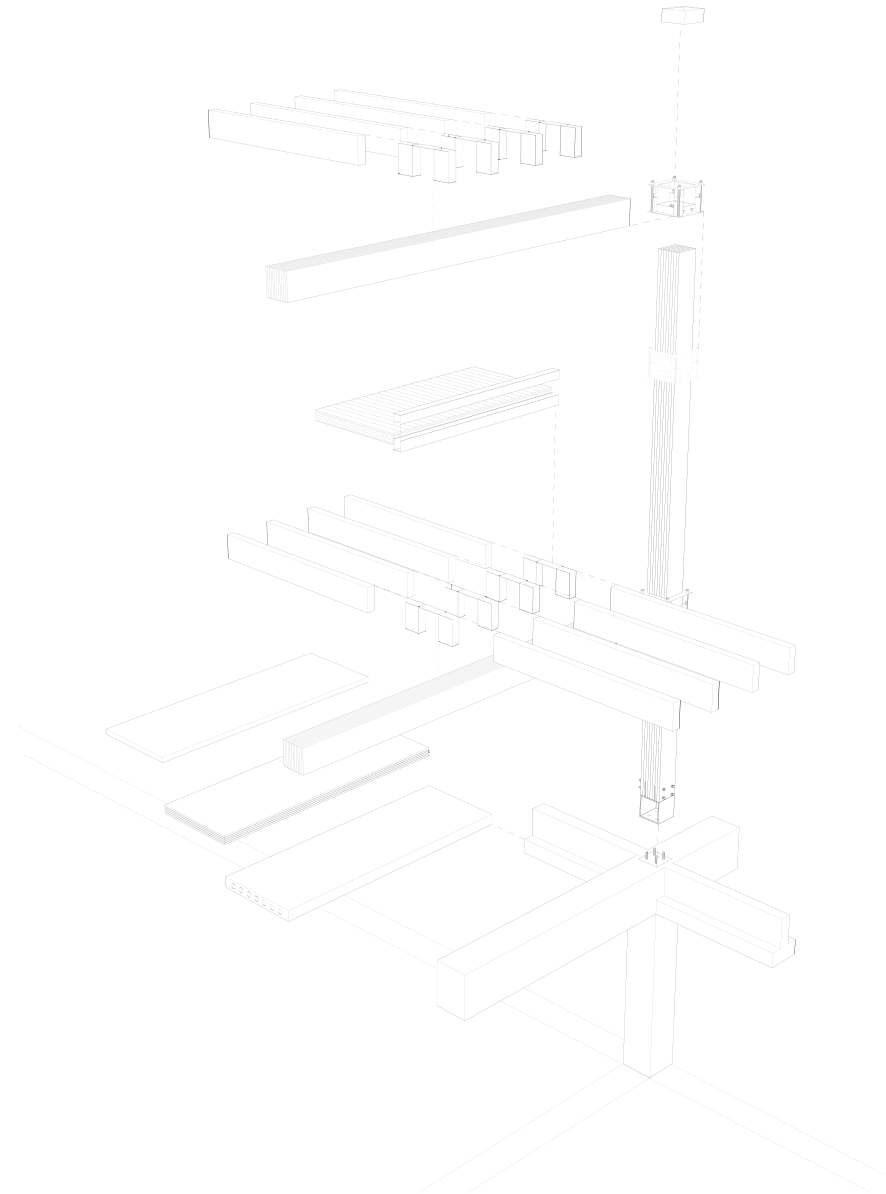
In the development of this project thought was given to what the site will finally look like at the end of its usefulness. Rather than raze the buildings designed in this thesis, the materials above the horizon could be recycled for use in other projects or the material recycled to make new structural pieces. In the end the site would look like the trestles, reinforced concrete in the landscape. Could the permanent infrastructure of this project be a base for future development?

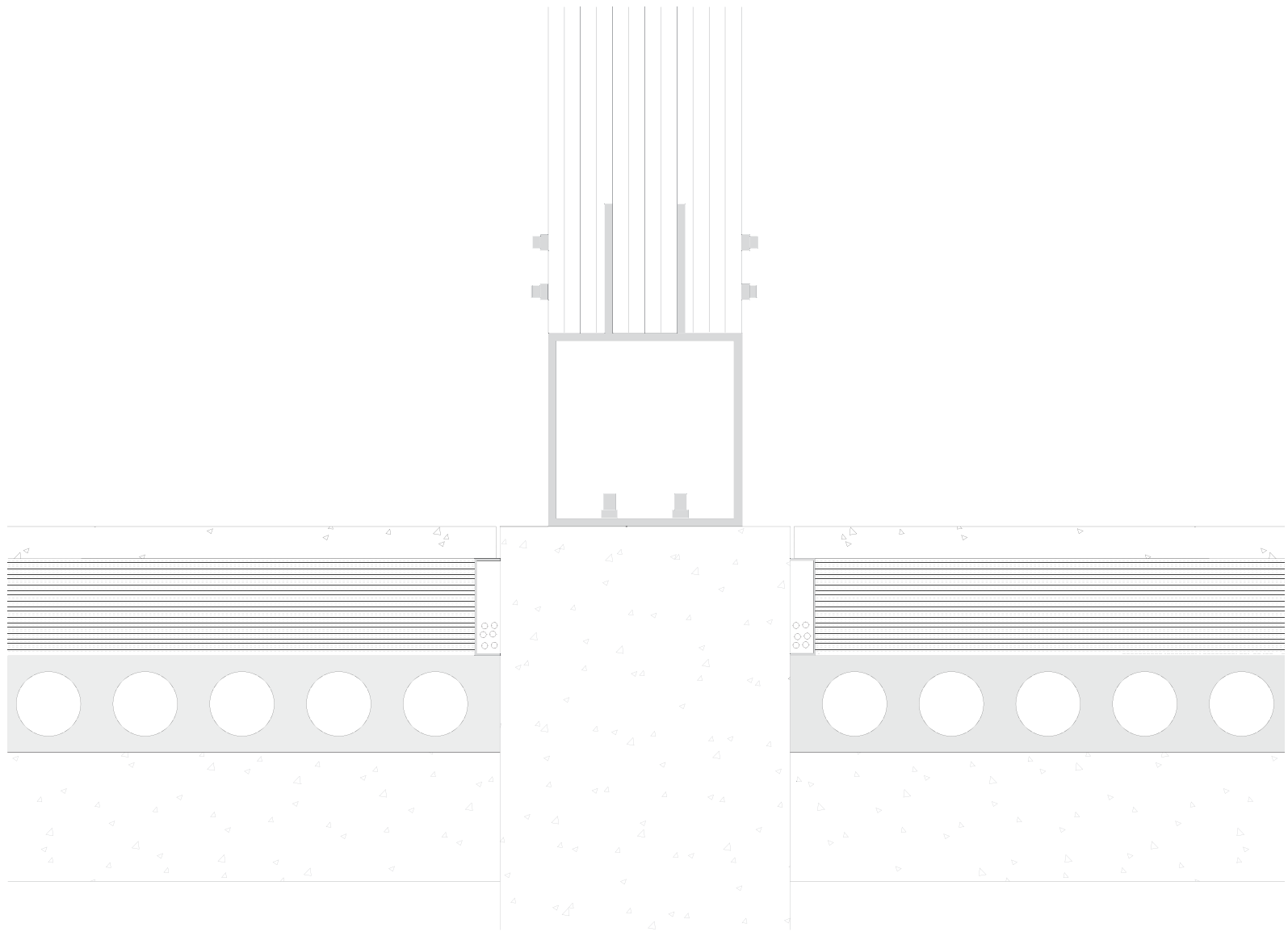
The questions above required a different way of thinking about designing a building. Where does the secondary structure rest? How does the exterior wall meet the structure? In what way should a beam be attached to a column?

Previously the connections integral to the superimposition of the geometries have been looked at and each of those connections becomes a mediator between materials.

In designing the connections three basic concepts governed the decisions: light, both literal dispersion of light and lightness of material, flexibility, and deconstructability of the members of the building.

Flexibility and deconstructability stem from my definition of sustainability: the generosity of materials to be reused or recycled with minimal waste or damage, a fundamental system of structure that allows expansion and contraction of form, a belief in compiling structure and materials into a form that works with environmental and physical conditions versus competing with them.



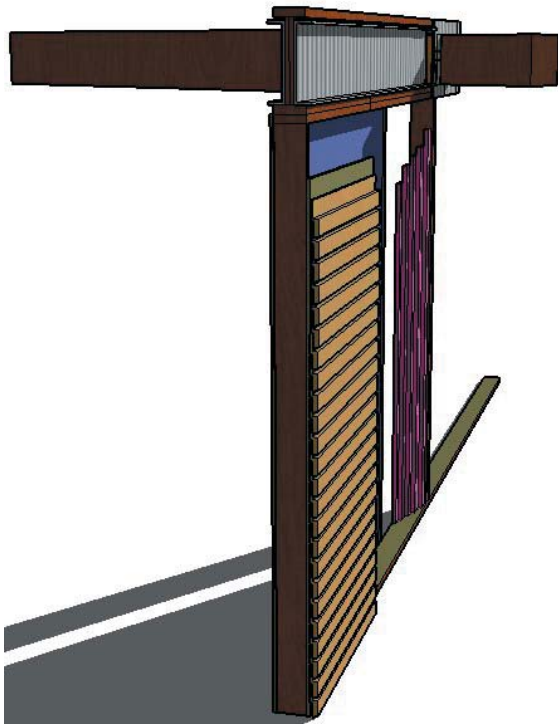


EXTERIOR WALL CONSTRUCTION AND MATERIAL

The walls connect to the floor plate via a segmented construction. Segment 1 consists of SIPS panels nine feet tall and with a variable width in increments of one foot. Segment 2 is a wooden I-beam ten inches high. The i-beam is sheathed on the exterior by a recessed metal skin creating a shadow line. The interior is a place where joists connect to the wall and tie the wall into the main structure. The second level is the same construction topped by a three foot parapet.

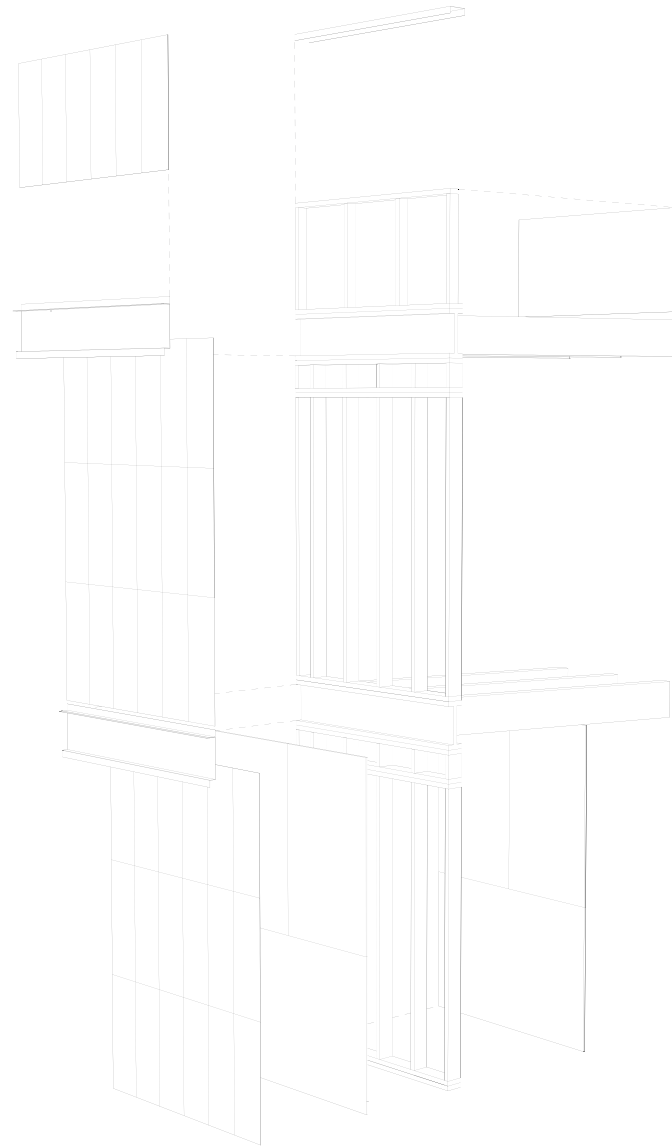
The skin of the building consists of aged steel panels that are 36 x 12 inches. The finish of the panels are slightly rusted then sealed. In the context of the town there is a lot of brick, however brick is not conducive to quick construction and deconstruction. The color of brick is however desired and the town has a precedence for a metal skinned building.

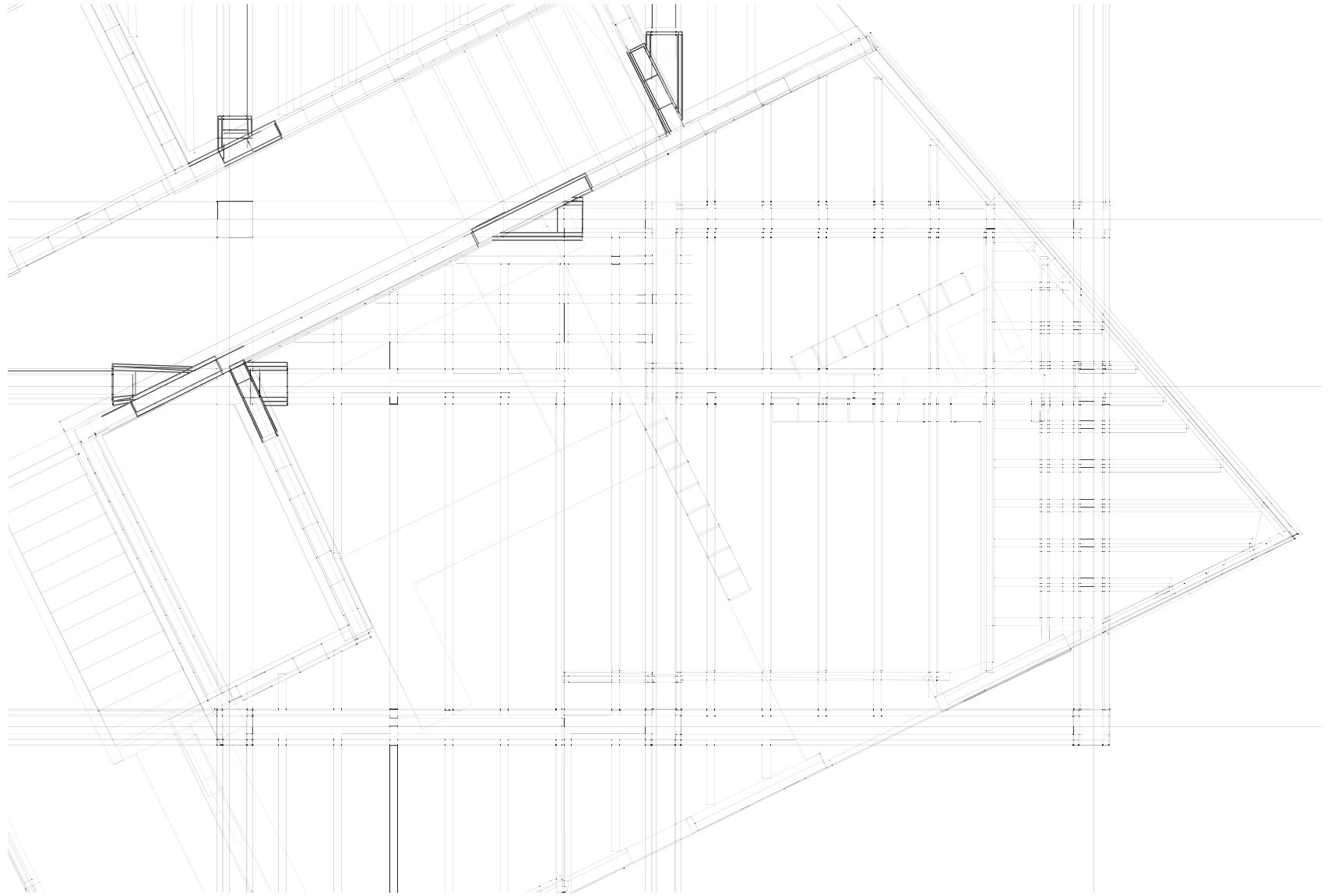
In the example at right the skin is a horizontal metal panel, like a rolling door at a storage facility.

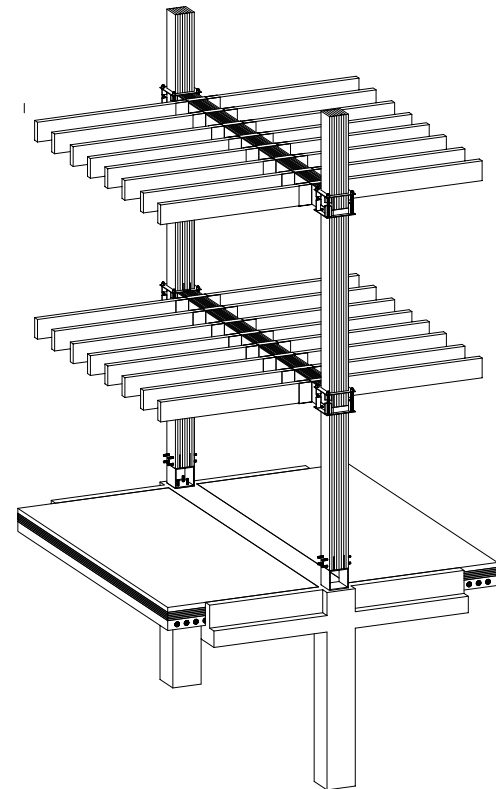
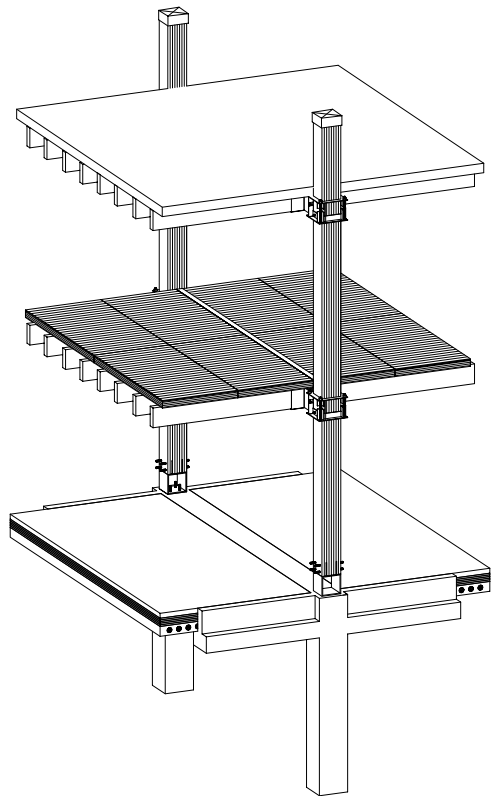
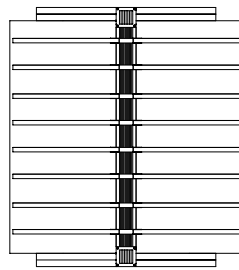
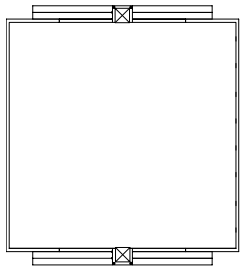


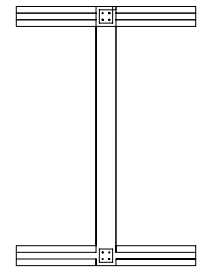
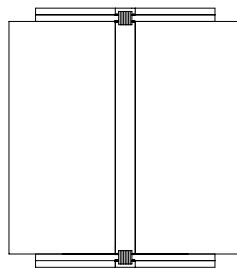
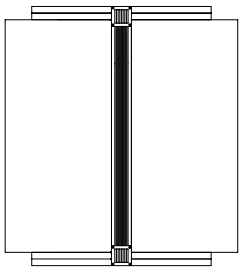
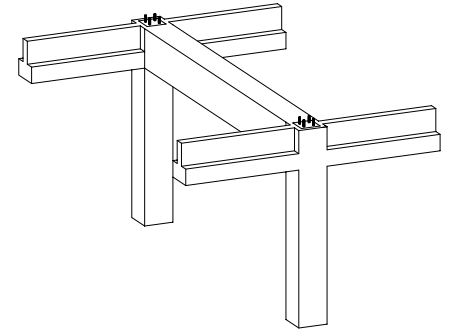
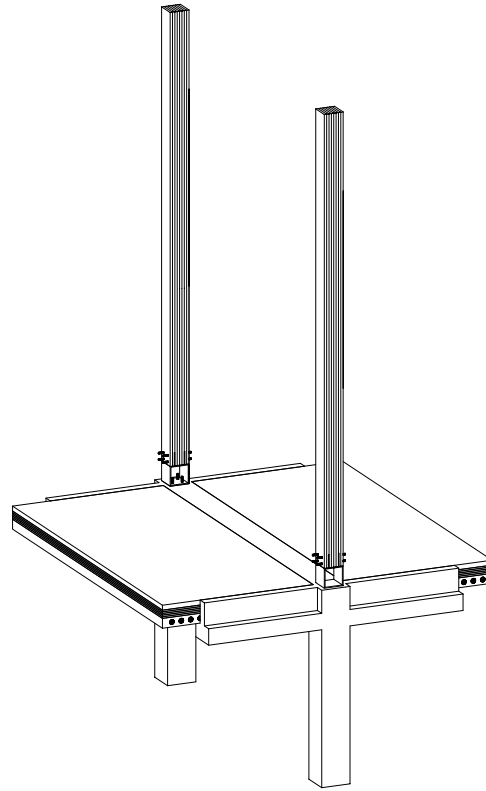
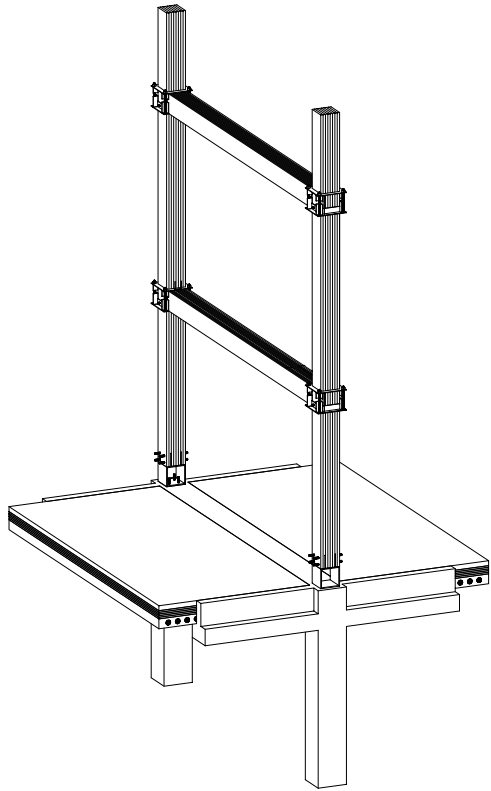
Left: Example of a wall section of the north wall. Section 2 is above center in the illustration.

Right: Wall Explosion







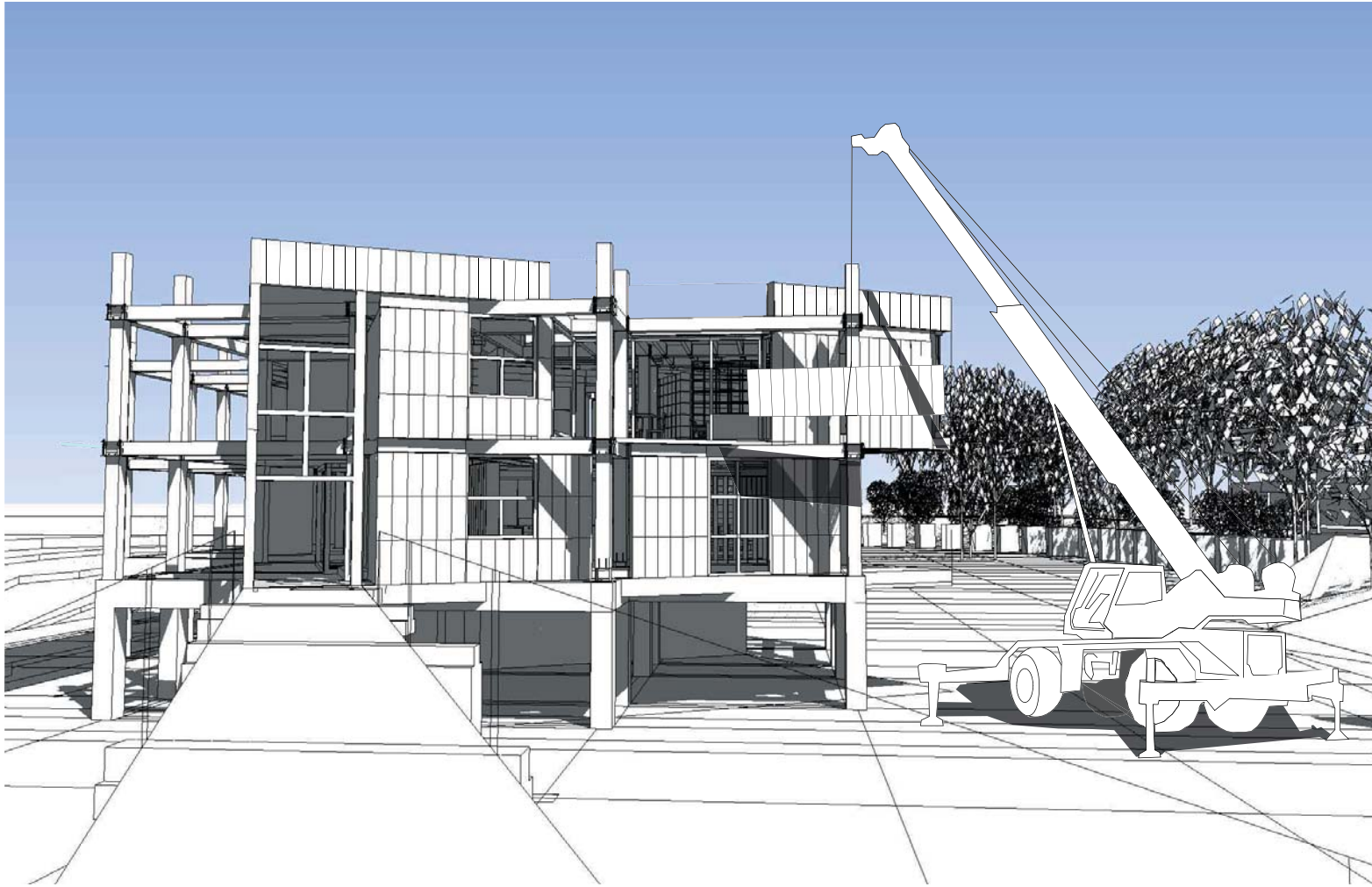


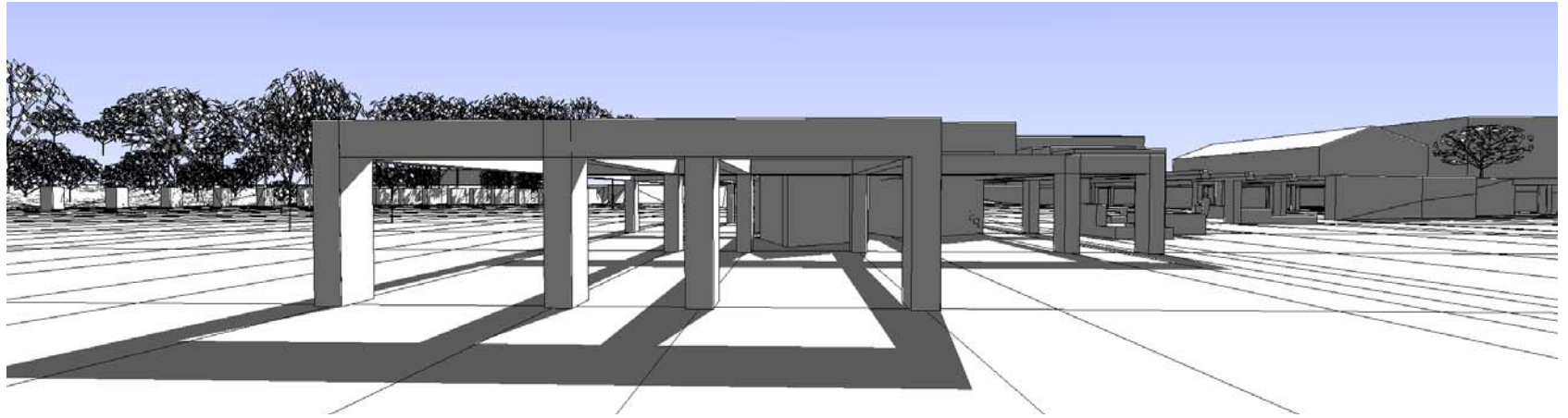
FINAL STATE

The questions of assembly and disassembly of a superimposition of geometry has been the focus of this thesis. In the final state, after the building's usefulness has expired what happens to the site? This thesis is part of the site's history and what remains tells a story that continues the tale of the site's life. The existing railroad trestles inspired this thesis in its entirety. So, these closing images show the current state, the proposed state, the eventual state, and the final state. The final state mingles with the railroad trestles creating an archeological record.









REFERENCES:

01. Jody Blake and Jeannette Lasansky (1996), *Rural Delivery: Real Photo Postcards from Central Pennsylvania 1905-1935*, Union County Historical Society, Lewisburg, Pennsylvania, Donning Company Publishers, Virginia Beach, Virginia.
02. Bernard Tschumi (1987), *Cinegramme Folie, Paris Nineteenth Arrondissement*, Princeton Architectural Press, Princeton New Jersey.
03. (1989), *Wexner Center for the Visual Arts, The Ohio State University*, with Critical Essays by Rafael Moneo, Anthony Vidler, Rizzoli International Publications, Inc., New York, New York.
04. Bernard Tschumi, *Architecture and Disjunction*, 1994, Massachusetts Institute of Technology, The MIT Press, Cambridge, Massachusetts, London, England na 2543 s6 t 78 1994
05. Colin Porteous (2002), *The NEW eco-ARCHITECTURE: Alternatives from the Modern Movement*, Spon Press, London, England, New York, New York.
06. (1984), *Chernikhov, Fantasy and Construction Iakov Cherinikhov's approach to Architectural Design*, Catherine Cooke, Architectural Design, AD Profile 55.
07. (2000), *Sustainable Architecture White Papers*, Quebecor Printing, Inc., Laval, Quebec, earth pledge foundation.
08. Peter Eisenman (1999), *Diagram Diaries*, Universe Publishing, A division of Rizzoli International Publications Inc., New York, New York
09. (1995), *The Master Architect Series; Eisenman Architects, Selected and Current Works*, The Images Publishing Group Pty Ltd, Mulgrave, Victoria, Australia.
10. http://www.arch.nus.edu.sg/news/events_news/toyo-ito/toyo-ito.html

All images in this book are by the author unless otherwise noted. Images from other sources are part of the public domain.

ACKNOWLEDGMENT

I wish to thank my thesis committee for their guidance, insight, and support of me and this project.

Thank You.

Doug Satteson

dsatteso@yahoo.com

Selected Publications

From The Ground Up, Masters of Architecture Thesis, Virginia Tech

Religion & Politics; The Renaissance Print in Social Context, Exhibition Catalogue, University of Richmond Museums, Marsh Art Gallery

Ralph Adams Cram, The University of Richmond , and the Gothic Style Today, Exhibition Catalogue, University of Richmond Museums, Marsh Art Gallery

Pygmalion and Galatea, Exhibition Catalogue, University of Richmond Museums, Marsh Art Gallery

101 Photographs by 101 Photographers, Exhibition Catalogue, University of Richmond Museums, Marsh Art Gallery

Education

2000-2003

Master of Architecture, Virginia Tech

1993-1996

Bachelor of Arts, Studio Art, University of Richmond

Awards

Bobby Chandler Award in Art, 1995, Department of Art, University of Richmond

Experience

2001-2003

Graduate Assistant, Department of Architecture, Virginia Tech

Maintain the department's current web site and develop a new site to enhance navigation through the URL.

2001

Web Designer, A Virginia Tech and The Nature Conservancy collaboration.

Develop web site for The Nature Conservancy's, Virginia Coast Reserve highlighting the Reserve's mission and programs. Duties included client contact and design sessions. HTML, Java, and some ASP coding. Teaching client software applications to enable transfer of site responsibilities.

1996-2000

Exhibitions and Collections Manager, University of Richmond Museums

Work with the director in the design and layout of exhibitions and publications. Care for and document a growing collection of art and objects and organize the shipping of objects for exhibition and coordinate with other institutions for loans. Prepare exhibition galleries for installation of objects. Interact with a wide range of guests, scholars, artists, and faculty. Manage the schedules of 20-25 student assistants and supervise students working in galleries. Train selected senior students for collection handling and management.

1996-2003

Freelance Photographer, Web Designer.

Provide images and infrastructure for web sites, photography of events and objects, site and brand development.