THE ARCHITECTURE OF CONCRETE

MICHAEL W HAGER JR

Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of:

Master of Architecture
In
Architecture

Jaan Holt
Jim Ritter
Marcia Feuerstein

June 23, 2016
Alexandria Virginia- WAAC

Key Words: architecture, mitch, concrete
THE ARCHITECTURE OF CONCRETE

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ABSTRACT

The ETD presented is but a simplistic representation of the time spent pursuing a proposition: what is the architecture of concrete? The timeline began in the Fall Semester of 2012 in Alexandria Virginia and ended as a formal built presentation on site to the committee in June of 2016. In its incipient form the thesis began with traditional and instructive methods involving ideas and theory. The ideas were refined by demonstration of the repertoire of tools available to an architect: hand drawings, physical models of different scales using a variety of media implicating concrete, and modern digital models transcending scale. Architecture requires that the tools, drawings, and models used in architecture respond to the site. To understand the site, I analyzed the site via various metrics, senses, and sensibilities. Upon further discussion, investigation, and opportunity, the committee allowed my proposition to transform itself into the architecture of concrete via the process of the art of building. The process lasted over two and a half years upon which I lived on site until the thesis was complete.
This ETD documents my pursuit of the architecture of concrete. The timeline began in the Fall Semester of 2012 in Alexandria Virginia and ended as a formal built presentation on site to the thesis committee in June of 2016. The thesis built upon my time spent in Blacksburg involving architectural ideas and theory. The ideas were refined at WAAC using some of the tools available to an architect namely: sketches, drawings, models, and digital models. A particular site was chosen on the Chesapeake Bay near Easton, MD. The site directly influenced the project proposal. The thesis committee challenged my ideas and implantation of concrete to a final proposal which was then approved. Upon further discussion, investigation, and opportunity I attempted to build the proposal on site over two and a half years until my thesis was complete.
Dedication:

While there are many who I am grateful to for their unrecognized support and contribution, this thesis is the last thesis to be chaired by Jaan Holt as director of WAAC. Jaan Holt’s influence was a significant reason for my departure from Blacksburg to WAAC. Jaan’s youthful and vigilant presence introduced optimism in every situation. Jaan could immediately discern the struggles present in my work. Similar to my perception of Kahn, who Jaan worked with, Jaan understands material. Jaan also coined the phrase “architecture makes material poetic space.” His contributions have always been masterful and his influence on my work will have a lifelong impact.

Jaan made WAAC happen. WAAC introduces architecture to a noble diversity of students, an international coalition that does not exist anywhere else in the United States. This foundation provides incipient architecture amidst a landscape where architecture is becoming unrecognizable and is evolving into something that challenges its inherent worth. While architecture will always exist wherever there is humanity and culture, WAAC helped architecture infiltrate.

In addition to Jaan, I must mention Henry Hollander who made a dynamic duo that was a cornerstone to WAAC. Without Henry’s help, this ETD would probably not exist. Henry deserves recognition for his often unrecognized but vital contributions to the many diverse and challenging situations at WAAC-including finishing my thesis. At the conclusion of my thesis, the dynamic duo no longer serves with Virginia Tech- but their efforts and influence continue.

The dedication cannot conclude without mentioning the rest of my committee who also deserve recognition, above an acknowledgement, for their patience, efforts, and contribution. Jim Ritter dedicated significant time to supporting and contributing to this unusual thesis. Time spent with the committee provided a rare opportunity for worthwhile reflection, contemplation, and architectural challenges that do not occur on the modern jobsite. Marcia also made significant contributions during the process and provided various insights from her substantial background.

There were additional unofficial members of the committee that this work is dedicated to. John Foote left WAAC during the thesis, but our conversation over representation, craft, and the built landscape had inherent influence. Last but not least- Susan Piedmont Palladino. Susan had profound intellectual impact on my project. She introduced me to many new realms in architecture and to role models such as Glenn Murcutt whose career impacted mine. All the best to Susan in her new role. Long live the spirit of WAAC.
Acknowledgements:

My family in architecture-

Hunter Pittman- Now at the helm of VT Architecture in Blacksburg Virginia; Thank you for your support during my struggles.
Kay Edge- Enjoyed our conversations outside lectures- your encouragement and insights were substantial.
Steve Thompson- The gatekeeper of my education and a gateway to architecture. Thank you for the chair and counsel to treat English as a second language
Scott Gardner- Thank you for introducing me to history. Your passion is contagious.
Frank Weiner- Thank you for helping me develop my first attempt at architecture.
Karen DePauw- Thank you for always supporting me. You demonstrate excellence and leadership in every situation.
Lord Palumbo- Thank you for letting me experience nobility; you define it. Wright said:

“noble life demands noble architecture for noble uses of noble men. Lack of culture means what is has always meant: ignoble civilization and therefore imminent downfall.”

My family-

Thank you for providing the resources to make this project materialize.
# Table of Contents

Chapter 1: Incipient Architecture ................................................................. 1
Chapter 2: The Architecture of ................................................................. 7
Chapter 3: Concrete .................................................................................. 8

- Construction Documents ........................................................................ 17
- Construction Documentation ................................................................... 93
- Before and After Documentation ............................................................ 161

Conclusion ............................................................................................... 164

Bibliography ............................................................................................. 166
Chapter 1: Incipient Architecture

The years spent at Blacksburg were formative regarding Architecture: what architecture is, and is not. Architecture is art. Art’s essence is a wellspring which leads to diverse human expression. As an art form, Architecture has a very unique repertoire of tools and approach to its expression that is different from all the other arts. The tools of architecture in our modern condition are often misused hence misrepresentation and misunderstanding. Architecture is not merely a visual art; architecture is esoteric. While there are styles ascribed to architecture during different times in human history, Architecture itself is not a style- it transcends time. Applying this line of reasoning, my formative years can be summarized to four pursuits that established the essentials of my understanding of Architecture.
The first project was an immature but incipient attempt at architecture as design. Design is not Architecture. Design is a tool that can be implemented for Architecture. This project expressed my childhood experiences and situations: a diverse experience of the vernacular buildings in various parts in the world, mostly America. This projected engaged my love of vernacular buildings to my early understanding of architecture. While vernacular is beautiful, it is not architecture. The vernacular can serve a useful tool to influence the design process implemented in architecture.
The second project was a studio exercise: design a building based upon a preposition. I chose “beyond”. This project helped me discover myself in architecture, namely an ability to express the tectonic through the intersection of joints. The tectonic intersection happened as a stairway in between floor levels. I had not realized the accomplishment until Frank Weiner pointed it out to me. The images were incipient steps as part of the process.
The third project was part of a degree altering process during which I cancelled my position as TA for the Riva San Vitale trip for the Architecture Program in order to pursue a semester with Hunter Pittman at the Blacksburg campus. The semester focused on a competition to design a mixed use building for a site in Winston Salem. This was the first project that began to instill three essential components of architecture:

- site
- tectonic intersections
- atmosphere

During this time I was able to travel and study the industrial tobacco processing plants and continue my interest in vernacular as the first project. I had never attempted to express architecture vertically before - I used the vernacular as an essential tool of opportunity. Two individual towers intersected a horizontal building: a conception of tectonic intersections which helped me to understand vertical scale. The process utilized new tools: hand models that progressed beyond numerous sketches. This was the first project that started successful tectonic interceptions yet at this point in my studies I had not produced architecture.

Up until this point, I had not significantly understood the role of the site. The site is not architecture. Architecture requires a building to be of the site.
mixed-use development
winston-salem
The fourth and final project built upon the third project: an acceptance of the site, an investigation of the surrounding area, tectonic intersections, and atmospheric conditions. During this project I realized an essential tool for discovering architecture: models. This was the first time I constructed multiple scale models which included large scale models. Large scale models challenge and encourage the existence of the tectonic realm.

Tecton is not architecture, but architecture is tectonic.
Chapter 2: The Architecture of...

The last chapter established a summary of my degree up until the thesis proposal: an introduction to architecture. To establish the proposal: “The architecture of concrete” the words in the statement must also be established and understood to serve as a basis upon which the proposal and conclusion can rest. It seems reasonable at this time to investigate the etymology of the word “architecture” so it can relate to the proposal at hand.

The “arch” in architecture began as arche or archi which refers to governance and dominion, like the biblical archangel Michael who ruled over the dominion given to him. The word “tect” or “tecton” began as a reference to the leader of the carpenters or masons. Tect refers to craftsmen and craftsmen apply their craft. Obviously craft is gender neutral, but to be accurate to the origin of meaning I am referring to the historic reference of “men”. An architect governs or rules a dominion (the site) as leader of the craftsmen. Leadership and dominion are required in order to establish the essence of architecture: the art of building. There is no better historic reference to the development of this idea than the written work of Alberti: On the Art of Building in Ten Books.

Architecture is art. It has a lot in common with other forms such as poetry in the typographical sense, music in the auditory sense, and the various visual arts. These realms all share our common humanity. However, architecture is distinctly different and not specific to one particular sense. Architecture is not frozen music. Architecture is not a visual style. To reduce the practice of architecture to style is to be simplistic and very ignorant of the word itself. Architecture must incorporate elements outside of our humanity, especially the site, which determines the structure. Architecture also requires craft: the ingenious manipulation of material. Architecture is the poetic expression of material as it relates to the site. The poet of the process is the architect. The architect’s realm is not visual, the realm is atmospheric and spatial. The architect uses the site for insight, the craft as the means, wisdom as the guide, and soundness of judgement of the end and the means. The repertoire of tools for an architect are unique amongst the arts and distinctly different to an engineer, a builder, or any other type of artist. An architect must master the craft of his own tools and understand their limitation. These tools include but are not limited to: sketches, models, and the drafting table. The computer can be an essential tool, but is more often than not a machine. A machine should not determine architecture and any architect must understand the difference and keep to the correct tools that serve the process best.

If architecture involves poetic expression of material, the language of the poet is tecton. Tecton is a realm unto itself. As mentioned in the abstract- this written work is but a simplistic representation of the actual work of the thesis and architecture itself. The best reference for the significance of the tectonic is covered by Kenneth Frampton: Studies in Tectonic Culture. Tectonic is often thought of as the structural expression of the building- the expression is determined by the architect, or poet, and is distinctly different than that of an engineer or computer which are not meant to serve in the realm of art. A work of architecture involves the tectonic expression of different materials.
Chapter 3: Concrete

Understanding the architecture of concrete involves an attempt to understand concrete. While it is impossible to cover the history, applications, and types of concrete within the scope of this thesis, I did attempt to best understand many aspects of concrete. Part of the investigation involved how to represent concrete during the design phase. The best way to understand concrete is to experiment and experience concrete - the craft of concrete. This thesis utilized and explored self-reinforcing concrete (ductal concrete by LaFarge); UHPC concrete; precast concrete; cast in place concrete; and slab form concrete. There were many investigations of various architectural projects involving the substantial tectonic use of concrete.
In the early stages of the thesis, there were many investigations and experiments undertaken to better understand the essence of concrete. This involved numerous ludic representations; these were somewhat helpful in understanding representation of concrete.
In order to apply concrete, the site is essential. I chose to move onto the site during the design phase to attempt to best understand and be influenced by the site for the project. This involved moving into an unused outbuilding. As part of the process I studied the metrics of the site by installing and monitoring a weather station to see the seasonal wind directions. I also investigated the altitude and azimuth of the sun throughout the seasons. While digital modeling helped (e.g. Revit) nothing can better the intimate understanding as that which results from experiencing the site in person. This experience was the genesis of the idea for concrete and its implication and application for my thesis. During the first year I spent substantial time documenting the site and using photography to capture my experience of the site- especially the interaction of the site with water as the site happens to be on the Chesapeake Bay. Human observation and on site experience led to the idea for the application of concrete as architecture.
The site is an essential influence, so are the regional vernacular buildings. Time was spent studying the buildings in the surrounding area. This had a pronounced influence on the design of the building.
After numerous drawings, sketches, and models of varying scales and detailing I met with the individual members of the thesis committee to discuss the architectural elements and significance of the project. Once the committee had agreed on a direction forward I modeled the building using Revit. In order to commence with construction, the project had to go through rigorous reviews on local, state, and federal levels. The process required hundreds of pages of applications, drawings and even a court review. The regulatory process took over a year to complete.

The following pages represent the construction drawings needed to commence with construction of the project. These exclude some additional detailed and engineered drawings which were not completed by me.
A. Construction Documents
CONSTRUCTION DOCUMENTS - BALTIMORE COUNTY, MD.

TRED AVON RESIDENCE

TABLE OF CONTENTS: THESIS SET

A1 Overview
A2 Area Overview
A3 Site Existing Conditions
A4 Site Plan Proposal
A5 Site Section Views
A6 Site Section Views
A7 Approximate Site Variance
A8 Disturbance Calculations
A9 Clear Site Survey
A10 Stormwater Plan
A11 Floor Plan
A12 Perspective - Northern House
A13 Elevations - North South
A14 Elevations - East West
A15 Ground Floor Plan
A16 Furniture Layout
A17 Custom House
A18 Dimensions - Final
A19 Dimensions - Detail
A20 Foundation Plan - Footings
A21 Foundation Plan - Walls
A22 Foundation Plan - Slabs
A23 Site Plan
A24 Roof Plan - 1st Floor
A25 Roof Plan - 2nd Floor
A26 Roof Plan - Masonry Roof Detail
A27 Roof Plan - Elevator
A28 Elevator - 1st floor
A29 Control Center - Ground Floor
A30 Control Center - Mezzanine Room
D1 Roof Plan - 1st Floor
D2 Roof Plan - 2nd Floor
D3 Roof Section I
D4 Roof Section II
D5 Roof Section III
D6 Roof Section IV
D7 Roof Section V
D8 Roof Section VI
E1 Electrical Plan - Ground Floor
E2 Electrical Plan - Lighting
E3 Electrical Plan - A/V Plan
E4 Electrical Plan - Central A/V
E5 Electrical Plan - Alarm
E6 Electrical Plan - AV
H1 HVAC Plan - Ground Floor
H2 Mechanical Floor Plan
K1 Kitchen Plan Details
K2 Kitchen Detail
M1 Building Details
M2 Basement Details
M3 Rear Elevation Details
M4 Rear Elevations Details
M5 Rear Elevation
M6 General - General Details
M7 Floor Plan Details
M8 Detail - Details
P1 Plumbing Plan
P2 Plumbing - 1st Floor Detail
P3 Plumbing - 2nd Floor Detail
P4 Plumbing - Samples Plan
P5 Plumbing - Samples Plans
P6 Site Details
R1 Rafter Plan
R2 Rafter Detail
R3 Rafter Detail
R4 Rafter Detail
R5 Roof Plan
R6 Column Detail
R7 Foundation Plan
R8 1st Floor Plan
R9 2nd Floor Plan
R10 Foundation Plan
R11 Roof Plan
R12 Structural Sections
R13 Typical Structural Details
W1 Pool Plan
W2 Window Plan
W3 Window Details
W4 Elevator Plan
W5 Elevator Details
W6 Elevator Details
W7 Elevator Details
W8 Elevator Details
W9 Elevator Details
W10 Elevator Details
W11 Elevator Details
W12 Elevator Details

PROJECT DETAILS

Project Description:
A single story, new build (in kind replacement) modern home. The method of construction is a partial slab on grade with a portion of the concrete slab over a concrete crawl space. All walls are exposed masonry construction with exterior insulation and a fiber cement siding system. The rear of the home is set behind a water conserved in between glutes.

Property Owners:
- Architect/Engineer: Mitch Hager, LLC
- Contractor: McCon Engineering (MD license #: 17795)

Property Information:
- Property Address: 21500 Tred Avon Dr
- Town: Easton, MD
- County: MD
- Zip Code: 21601

Buildings Details:
- House Dimensions: 29' x 54'11"
- Foundation: Crawlspace
- Foundation Walls: 8" Concrete
- Foundation Slabs: 10" Concrete
- Slab on Grade: 12" Concrete
- Roof: 2 Layers of 15" Malarkey Castle
- Windows: 36" x 48"
- Doors: 36" x 96"
- Elevators: 36" x 96"
- Garage: 30' x 20'

Value of Construction (Permit Fee):
- Total Cost: $343,652
- House: $230,000
- Garage: $110,000
- Total Due: $1,793,26

Site SDS:
- Site Plan
- Section Plan
- Elevations
- Details

Architect/Engineer:
- Mitch Hager, LLC

Contractor:
- McCon Engineering (MD license #: 17795)
Plant Removal Schedule

<table>
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<tr>
<th>Species</th>
<th>Caliper Diameter</th>
<th>Location; Description; Removal Class</th>
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<td>Sugar Maple</td>
<td>31</td>
<td>Septic Field; [LIVE]</td>
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<tr>
<td>Red Maple</td>
<td>28</td>
<td>Septic Field; Cavity 60% of tree; [DEAD/DISEASED/DYING]</td>
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<tr>
<td>Pelonia</td>
<td>18</td>
<td>Septic Field; Hollow Base/Trunk; [DEAD/DISEASED/DYING]</td>
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<td>Septic Field; Hollow Base/Trunk; [DEAD/DISEASED/DYING]</td>
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<td>Sophora</td>
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<td>False Holly</td>
<td>18</td>
<td>Site Perimeter; Storm Damage/Decaying Stem; [DEAD/DISEASED/DYING]</td>
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<td>Wild Cherry</td>
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<td>Main Lawn; Fireblight; [DEAD/DISEASED/DYING]</td>
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<td>Catulpa</td>
<td>24</td>
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<td>Dogwood</td>
<td>3</td>
<td>House Perimeter; [LIVE]</td>
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<tr>
<td>Dogwood</td>
<td>3</td>
<td>House Perimeter; [LIVE]</td>
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<tr>
<td>Dogwood</td>
<td>3</td>
<td>House Perimeter; [LIVE]</td>
</tr>
<tr>
<td>Red Maple</td>
<td>31</td>
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<td>House Perimeter; Multiple Bores/Dying; [DEAD/DISEASED/DYING]</td>
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<td>Lot 5:</td>
<td>William &amp; Christine Duncan</td>
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**Bambling-Perdue, LLC**

**Original Septic Field/Drain** (to be removed)

**Approved SDA**

---

**CRITICAL AREA EXISTING**

**CRITICAL AREA PROPOSED**

**SUPERFUND AREA EXISTING**

**SUPERFUND AREA PROPOSED**

---

**Mature Blue Atlas Cedar, Magnolia, Oak Trees for preservation**

**Garage**

**Replacement House**

---

**Elevation East Existing**

**Elevation East Proposed**

---

**Elevation North Existing**

**Elevation North Proposed**

---

**Elevation South Existing**

**Elevation South Proposed**

---

**ETD**

**SET**

**SUMMER 2016**

---

**1" = 80'-0"**

---

**1 Admin Variance**

---

**Approved Admin Variance**
Mitigation Plan

Note

Client

Written certification of completion at such time buffer establishment planting and related work is completed. The plantings will be completed by May 1, 2014 barring severe weather conditions.

VII

Area III

D

B

C

Garage

IV

H

16

9

V

G

Area IV

-symphyotricum novi-belgii
-andropogon virginicus
-spartina patens

High Marsh:

-Clover

-Cosmos

-Coreopsis

Area II

Maintained grass lawn

: Grass

: Transitional Shoreline

To include:

Tred Avon Drive

Area VI

ERNST MEADOW GUIDELINES (AREA II):

-Mondo Grass

-Ferns

-Liriope

(stormwater management plan)

Area III

see Major Buffer Management Plan

SITE PLANTING AND MAINTENANCE SCHEDULE OVERVIEW:

To include:

To seed.

Short term maintenance

ADDITIONAL LONG-TERM BUFFER & FOREST MANAGEMENT RECOMMENDATIONS:

Landscape stock planting areas: as directed in the plant installation specifications hereon, individual landscape plants shall be mulched with 2" covered "with mulch or ground cover until buffer plantings are established." Specific ground surface establishment shall be provided in accordance

GROUND SURFACE ESTABLISHMENT REQUIREMENTS:

Non-native invasive species control

Early pruning tasks should include:

B. Maturing Trees not otherwise pruned when young may require more extensive and on-going pruning:

At 3-4 years, begin removing branches on the lowest section of the trunk.

that join the trunk at a narrow angle; avoid angle less than 45 degrees, remove any branch that crosses or rubs another stem or branch.

compartmentalize wounds. Early pruning tasks should include:

On a 3-5 year cycle a crown clearning should be conducted. Remove the dead, dying, crossing and structurally unsound branches, reduce

B. Maturing Trees not otherwise pruned when young may require more extensive and on-going pruning:

1"-2" depth over exposed ground surface; or seeded in a short, warm season grass mix specifically formulated by Ernst and as outlined specifically

Area IV

-to seed.

agencies. Control measures may include but are not limited to selective herbicide use, burning, manually cutting and removing, fencing or other

eliminated from the stand. Periodic inspections of the site during the first 2 years will monitor and identify invasive species, pests and levels of

growing seasons. Additional mulch can be applied to control weeds around the landscape trees. If the larger trees are staked and wired the wiring

Total Provided Mitigation Coverage: 11,448 sq ft

Additional Warm Season Grass Plugs: 5,205 sq ft

Warm Season Grass Plugs: 4,243 sq ft

Living Shoreline disturbance= 5,243 sq ft

Buffer Requirement:

J Willow Oak 2"

I Loblolly 2"

E Japanese Maple 2"

D Deodar Cedar 2"

Mark Species Caliper Diameter

Location; Description; Removal Classification

4 Live Healthy Trees to be removed for Septic Field and Disturbance activity; no healthy trees removed otherwise.

1 Sugar Maple 31 Septic Field [LIVE]

9 False Holly Site Perimeter; Storm Damage/Decaying Stem [DEAD/DISEASED/DYING]

16 Catulpa 24 Main Lawn; Cracked/Damaged Limbs [DEAD/DISEASED/DYING]

17 Dogwood 3 House Perimeter; [LIVE]

18 Dogwood 3 House Perimeter; [LIVE]

7 False Holly Site Perimeter; Storm Damage/Decaying Stem [DEAD/DISEASED/DYING]

9 False Holly Site Perimeter; Storm Damage/Decaying Stem [DEAD/DISEASED/DYING]

1 Sugar Maple 31 Septic Field [LIVE]

8 Sugar Maple 31 Septic Field [LIVE]

9 False Holly Site Perimeter; Storm Damage/Decaying Stem [DEAD/DISEASED/DYING]

7 False Holly Site Perimeter; Storm Damage/Decaying Stem [DEAD/DISEASED/DYING]

8 Sugar Maple 31 Septic Field [LIVE]

4 Live Healthy Trees to be removed for Septic Field and Disturbance activity; no healthy trees removed otherwise.

SUMMER 2016

CRITICAL AREAS BUFFER MANAGEMENT PLAN

TOTAL SURETY BOND REQUIREMENT= $11,900

Surety Bond amount (110% x 8,140.70)= $8,955

Area II meadow grasses: 25,000 sq ft

Total: (1) 3/4" tree + (8) 2" trees

+ Front Entrance porch= (1) 2" caliper tree

+ Remove 2 trees for septic= (2) 2" caliper trees

IX Loblolly House Entrance Mitigation 2"

II Southern Magnolia House Mitigation 2"

V Southern Magnolia Tree Removal Mitigation: House 2"
Area I: Grass Maintained grass lawn

Area II: Meadow Grasses ~36,000 sq ft; To include:
- Coreopsis
- Cosmos
- Red Poppies
- Cornflower
- Clover
- Aster
- Black-Eyed Susan

Area III: Transitional Shoreline
- Low Marsh: spartina alterniflora
- High Marsh: spartina patens, solidago sempervirens, kosteletzkya virginica, hibiscus moscheutos
- Bank: panicum virgatum, andropogon virginicus, symphyotricum novi-belgii, chasmanthium latifolium, eupatorium dubiium, rudbeckia hirta, schizachyrium scoparium, vernonia noveboracensis

Area IV: Rain Gardens (part of stormwater management plan)
- Lotus + Iris plantings

Area V: House Plantings
- Autumn Ferns

Area VI: Drive Plantings
- White Vinca

House Stormwater Calculation for Rain Garden:
- Please see Berger Document for reference methodology.
- Roof area: 4,400 ft²; 2 downspouts = 2,250 ft²/each
- Calculated downspout size = 5"
- Each downspout to have collection basin with 6" downspout which will meet Maryland 100 yr storm water rate of 9.7"/hr.
- Each downspout to drain via 6" schedule 40 underground drain pipe to empty into two separate raingardens as specified on drawing (Area IV).
- Raingarden sizing: 4,400 x 2% = 90 ft²; Two raingardens total to equal ~140 ft²

Please Note- Due to unique design of Project, buildings do not contain gutters (glad-hand roof design). Garage stormwater from 3:12 gable to drain naturally onto grade.
<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Foyer</td>
<td>205 SF</td>
</tr>
<tr>
<td>2</td>
<td>Kitchen</td>
<td>492 SF</td>
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<tr>
<td>3</td>
<td>Bar</td>
<td>161 SF</td>
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<td>4</td>
<td>Great Room</td>
<td>583 SF</td>
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<td>5</td>
<td>Master Bedroom</td>
<td>214 SF</td>
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<tr>
<td>6</td>
<td>Master Study</td>
<td>217 SF</td>
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<tr>
<td>7</td>
<td>Master Bath Suite</td>
<td>309 SF</td>
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<tr>
<td>8</td>
<td>Powder</td>
<td>44 SF</td>
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<tr>
<td>9</td>
<td>Dining Room</td>
<td>332 SF</td>
</tr>
<tr>
<td>10</td>
<td>Guest Bedroom 1</td>
<td>244 SF</td>
</tr>
<tr>
<td>11</td>
<td>Guest Bath</td>
<td>63 SF</td>
</tr>
<tr>
<td>12</td>
<td>Guest Bedroom 2</td>
<td>274 SF</td>
</tr>
</tbody>
</table>
1 1/4" Aluminum Screed Top

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model</th>
<th>Screed Length</th>
</tr>
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<tbody>
<tr>
<td>DICO</td>
<td>4&quot;</td>
<td>194</td>
</tr>
<tr>
<td></td>
<td>1 1/4&quot; Aluminum Screed Top</td>
<td>576' - 9 1/4&quot;</td>
</tr>
</tbody>
</table>

1/8" = 1'-0" Ground Floor Joints

Structural Stiffener Schedule

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>DICO</td>
<td>Base</td>
<td>194</td>
</tr>
</tbody>
</table>

1/8" = 1'-0" Ground Floor Joints

194 Bases = ~65' total base length
5" Glulam Rafters @ 6' oc

(2) 36" Clay Fireplace Flues

Curb:
31" x 31" roof curb (exhaust fan)

Roof Plan - TPO Roof

Roof Insulation:
- R-38 roofing insulation (R402.2.1). This is compliant with 6" polyiso insulation board.
Knee/counter is not attached to wall and is freestanding. Fabricator (AK Metals) can build outlets into backsplash to make kitchen counters code compliant. Compliant requirements and approval needed. Outlets on single circuit to be connected to floor box.

All code compliant outlets to be located in concrete slab except for bathrooms and kitchen.

Guest house and dock will need to be disconnected prior to tear down. Power supply during construction via temporary utility connection.

### Electrical Schedule

<table>
<thead>
<tr>
<th>Type</th>
<th>Comment</th>
<th>Count</th>
<th>Manufacturer</th>
<th>Description</th>
<th>Model</th>
<th>Family and Type</th>
<th>Mark</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Vac Outlet</td>
<td>4</td>
<td>TBD</td>
<td>Arlington Electric</td>
<td>1-gang</td>
<td>CV Box: CV Box</td>
<td></td>
<td>1-gang</td>
<td></td>
</tr>
<tr>
<td>Floor Data Outlet</td>
<td>10</td>
<td>Arlington Electric</td>
<td>1-gang</td>
<td>Hubbel 1 gang box plus Hubbel 1 gang box data</td>
<td>1101-SMB Hubbel 1 gang box data</td>
<td>Requires frame (1101=DBE-A) and a cover (1018-4P-10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Outlet</td>
<td>70</td>
<td>Arlington Electric</td>
<td>1-gang</td>
<td>Hubbel 1 gang box</td>
<td>FLBCF101-SS Hubbel 1 gang box</td>
<td>Requires frame (1101=DBE-A) and a cover (1018-4P-10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GFI Outlet</td>
<td>8</td>
<td>TBD</td>
<td></td>
<td>1-gang</td>
<td>Outlet-GFI: Single</td>
<td></td>
<td>1-gang</td>
<td></td>
</tr>
<tr>
<td>Wall Switch</td>
<td>18</td>
<td>TBD</td>
<td></td>
<td>2-gang</td>
<td>Switch-Double: Double</td>
<td></td>
<td>2-gang</td>
<td></td>
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1/8" = 1'-0"
<table>
<thead>
<tr>
<th>Room</th>
<th>Lighting Schedule</th>
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<tbody>
<tr>
<td>2</td>
<td>Roberts Lighting</td>
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<tr>
<td></td>
<td>Viabizzuno</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/8" = 1'-0"
Central Vac system consists of 4 central vac floor outlets which are mounted on steel decking. Total slab thickness 8" (twin 4" slabs with 2" insulation)

- 2" or equivalent central vac line is run in 7'6" deep mechanical room below deck. Vac line runs are not encased in concrete.
- Total pipe length 100'
CAN TV1 & 2 HAVE SOUND BAR/SPEAKER FOR INDIVIDUAL SOUND AND HAVE OPTION FOR GENERAL CONTROL FROM AV FOR MUSIC, ETC?

AV CONTROL COULD BE LOCATED IN GREAT ROOM UNDER TV (TV MUST BE ON STAND ANYWAY) OR IN BAR AREA SHELVING

IDEALLY LOCATE 2 PS4'S IN BAR SHELVING BELOW BEAM

SOUND FOR MUSIC FOCUSED ON BAR AND GREAT ROOM/POTENTIALLY DINING ROOM- AS ALL ARE OPEN, DINING ROOM SPEAKERS MAY NOT BE NECESSARY

SPEAKERS IDEALLY MOUNTED ON FACE OF BEAM- FULLY EXPOSED, THIN, COMPLEMENTED BY SUBWOOFER

CAN PULL 3 CAT6 CABLES/TV; ALL RECEPTACLES ARE FLOOR MOUNT
*Need blockout size and locations for Rehau manifold chases*
Please note: reason for 4 rafter brackets is due to interference with splice in beam and bond beam with #5 rebar adjacent to where wall bracket would be placed on right side of hood.
Masonry walls to start on rough slab. Top wall is 4 1/2". First joint to be even with final slab elevation.
Wind Pressure = 34.7 psf with wind speed of 115 mph.

Wrapshield SA to grade, overlapping bitumen membrane

Bitumen membrane starts 1' below grade to cover slab edge (slab edge utilizes adeka p-201 water sealer, double barrier)

Dow Board below grade insulation

Final Slab @ 19' - 6" elevation

Grade @ 18' - 0" elevation
The structure has been designed in accordance with the 2012 IRC for the following loads:

Dead Load: Self-Weight of the building materials
Roof Live Load: 30 psf (no area reduction allowed)
Floor Live Load: 40 PSF
Wind Load: 100 MPH (3 Sec gust) f_1=1.0, P_g=30
Snow Load: PV=2.2 PSF, C_1=1.0, C_0=1.1, C_s=1.0, S_1=1.0, P_g=30
Earthquake: (Exempt per IBC 1613.1.1) DES CAT-B, Site Class=D, S=10, S_e=0.5, S_d=0.5, S_d=0.5

The foundation for the project was designed for an assumed design soil bearing capacity of 2,000 PSF.
Concrete Plinth 3" inside masonry edge

Concrete Plinth 8" inside masonry edge

6' − 8"

2' − 4"

6' − 0"

56 Firebrick

63 Firebrick

SUPERIOR CLAY 30" ROUND CLAY FLUE (1' − 6" MODULE)

SUPERIOR CLAY 20" ROUND CLAY FLUE (1' − 6" MODULE)

REINFORCED AND FILLED TRENDSTONE PLUS 8" BLOCK USING BLACK MORTAR

SUPERIOR CLAY 24" X 24" SMOKE CHAMBER (SIX PIECE KIT)

48" VESTAL DOME DAMPER (POKER CONTROL)

8" REINFORCED BLACK CONCRETE PLINTH (HARD TROWEL FINISH)

SUPERIOR CLAY TILE THROAT ASSEMBLY (6)

SUPERIOR CLAY ASTM C27 MEDIUM DUTY 9" X 4 1/2" X 2 1/2" FIREBRICK

FIREBOX: 12 X 14= 168

HEARTH= 63

TOTAL: 231

8" REINFORCED BLACK CONCRETE PLINTH (HARD TROWEL FINISH)

INCLUDES 3" INSERT FOR FIREBRICK (DIMENSIONS ON A5)

REINFORCED AND FILLED TRENDSTONE PLUS 8" BLOCK USING BLACK MORTAR

TO INCLUDE TWO− 8" X 1' − 4" ACCESS PANELS FOR GAS CONTROL

SUPERIOR CLAY 30" ROUND CLAY FLUE (2' MODULE)

SUPERIOR CLAY 20" ROUND CLAY FLUE (2' MODULE)

REINFORCED AND FILLED TRENDSTONE PLUS 8" BLOCK USING BLACK MORTAR

SUPERIOR CLAY 24" X 24" SMOKE CHAMBER (SIX PIECE KIT)

48" VESTAL DOME DAMPER (POKER CONTROL)

8" REINFORCED BLACK CONCRETE PLINTH

INCLUDES 3" INSERT FOR FIREBRICK

REINFORCED AND FILLED TRENDSTONE PLUS 8" BLOCK USING BLACK MORTAR

TO INCLUDE TWO− 8" X 1' − 4" ACCESS PANELS FOR GAS CONTROL

GREAT ROOM (STANDARD OPENING) FIREPLACE CORE MATERIAL CHECKLIST:
−FIREBRICK, ASTM C27 MEDIUM DUTY 9" X 4 − 1/2" X 2 − 1/2" (250)
−HEATSTOP 50 HYRDRAULIC REFRACTORY MORTAR (3)
−SEGMENTED RUMFORD THROAT: (6) THROAT TILES, 2 COVING EXT.)
−48" VESTAL DAMPER
−24" X 24" SMOKE CHAMBER (6) PIECES TOTAL
−20" X 1' − 6" (HEIGHT) ROUND CLAY FLUE LINER (7)
−20" X 1' (HEIGHT) ROUND CLAY FLUE LINER (1)
−30" X 1' − 6" (HEIGHT) ROUND CLAY FLUE LINER (7) [OPTIONAL]
−30" X 1' (HEIGHT) ROUND CLAY FLUE LINER (1) [OPTIONAL]

BAR (THREE SIDED OPENING) FIREPLACE CORE MATERIAL CHECKLIST:
−FIREBRICK, ASTM C27 MEDIUM DUTY 9" X 4 − 1/2" X 2 − 1/2" (230)
−HEATSTOP 50 HYRDRAULIC REFRACTORY MORTAR (3)
−SEGMENTED RUMFORD THROAT: (8) THROAT TILES, 2 COVING EXT.)
−48" VESTAL DAMPER
−24" X 24" SMOKE CHAMBER (6) PIECES TOTAL
−20" X 1' − 6" (HEIGHT) ROUND CLAY FLUE LINER (7)
−20" X 1' (HEIGHT) ROUND CLAY FLUE LINER (1)
−30" X 1' − 6" (HEIGHT) ROUND CLAY FLUE LINER (7) [OPTIONAL]
−30" X 1' (HEIGHT) ROUND CLAY FLUE LINER (1) [OPTIONAL]

ADDITIONAL MATERIAL:
−STAIN FOR FIREBRICK (JET BLACK) [OPTIONAL]
−CERAMIC FIBER PAPER
−RAINGUARD (2) FOR 30" FLUE

BAR (BROKEN CORNER) FIREPLACE CODE REQUIREMENTS:
R402.4.2− NEW WOOD−BURNING FIREPLACES SHALL HAVE TIGHT−FITTING FLUE DAMPERS AND OUTDOOR COMBUSTION AIR
−VESTAL DAMPERS COMPLY WITH "TIGHT'FITTING" REQUIREMENT
−OUTDOOR COMBUSTION AIR PROVIDED BY MAKE−UP AIR UNIT FOR HVAC SYSTEM; SYSTEM WILL PROVIDE ATLEAST 1 CFM PER 1" FLUE AREA (21" FLUE =346 CFM X 2 FIREPLACES= 700 CFM TOTAL)

THE CFM CONTROL WILL BE PROVIDED IN ACCESS PANEL FOR PROPANE GAS CONTROL. ALL DUCTWORK IS UL−LISTED AS PER 2012 IRC CODE.

RAINGUARD TO BE PROVIDED AND SIZED FOR 30" CLAY FLUE.
## Plumbing Fixture Schedule

<table>
<thead>
<tr>
<th>Mark</th>
<th>Description</th>
<th>Count</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Model Count</th>
<th>Model Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Commercial Flushometer HET - 1.28 GPF with SanaGloss</td>
<td>2</td>
<td>TOTO USA, Inc.</td>
<td>CT705ELNG</td>
<td>Powder, Guest, Master Baths</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Flushometer Valve - 1.6 GPF (1-1/2&quot; V.B.)</td>
<td>3</td>
<td>TOTO USA, Inc.</td>
<td>TMT1NNC</td>
<td>Powder, Guest, Master Baths</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Backsplash Mounted</td>
<td>2</td>
<td>Chicago Faucet</td>
<td>540-2109091B</td>
<td>Kitchen, Master Bath</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Backsplash Mounted</td>
<td>2</td>
<td>Chicago Faucet</td>
<td>540-206122AB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Thermostat Valve</td>
<td>3</td>
<td>TOTO USA, Inc.</td>
<td>TS630T</td>
<td>Powder, Master Baths</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>1 Way Valve</td>
<td>1</td>
<td>TOTO USA, Inc.</td>
<td>TS630C2</td>
<td>Powder, Master Bath</td>
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<tr>
<td>G</td>
<td>Shower Head</td>
<td>1</td>
<td>TOTO USA, Inc.</td>
<td>TS100AL</td>
<td>Guest Bath</td>
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<tr>
<td>H</td>
<td>2 Way Valve</td>
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<td>TOTO USA, Inc.</td>
<td>TS630D2</td>
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<td>I</td>
<td>11&quot; Shower Head</td>
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<tr>
<td>J</td>
<td>Master Tub Faucet</td>
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<td>TOTO USA, Inc.</td>
<td>TS626E</td>
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<td>K</td>
<td>Hand Held Shower</td>
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<td>TS960F2L</td>
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<td>L</td>
<td>Shower Drain</td>
<td>1</td>
<td>Suggested</td>
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<td>Guest, Master Baths</td>
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</tr>
<tr>
<td>M</td>
<td>Backsplash Mounted</td>
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<td>Chicago Faucet</td>
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<tr>
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<td>Backsplash Mounted</td>
<td>1</td>
<td>Chicago Faucet</td>
<td>540-206122AB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Guest House and Dock need to be disconnected prior to demolition.**

**Rinnai Instant Hot Water Heater needs to be relocated from current residence master bath to guesthouse.**

Waste plumbing to have 10% slope (versus minimum 1/4" per 12" as per P3005.3 in the 2012 IRC).

---

**Diagram notes:**
- Plumbing lines are shown in black.  
- Waste plumbing in Master Bath to have 10% slope.  
- Callout of Plumbing in Master Bath.
GFI

Backsplash mounted Faucets (2)
Chicago Faucets: 540-LDE29ABCP

Plumbing: Sink Details

1/2" = 1'-0"

1. Sink Kitchen Plan
   1/2" = 1'-0"

2. Sink Kitchen Front
   1/2" = 1'-0"

Kitchen Sink has access to crawl space

3. Sink Bar Plan
   1/2" = 1'-0"

4. Sink Bar Front
   1/2" = 1'-0"

Bar Sink is over slab

5. Sink Guest Bath Plan
   1/2" = 1'-0"

6. Sink Guest Bath Front
   1/2" = 1'-0"

7. Sink Guest Bath Plan
   1/2" = 1'-0"

8. Sink Guest Bath Front
   1/2" = 1'-0"

Powder Sink has access to crawl space
1" thick wall (tile + adhesive)

1.5" thick floor (tile + adhesive)

Over 4" concrete reinforced slab

Bottom of Track

4" Structural Slab (already in place)

3' - 0 1/2" Tub Depth (to bottom of door track)

4 1/2" top slab

3' - 4" Shower Tray

3' - 4" x 4' - 0"

7' - 0"

3' - 4" x 5' - 4 1/2"

77

1/4" = 1'-0"

Tile Guest Shower Plan

Tile Master Plan

Master Bath Tub Section

ETD

SET

SUMMER 2016

P6

Tile Layout
1. Glulam Rafter (5" x 18") A
   \[ \frac{3}{16"} = 1'-0" \]

2. Glulam Rafter (5" x 18") B
   \[ \frac{3}{16"} = 1'-0" \]

3. Glulam Rafter Type A
   \[ \frac{3}{16"} = 1'-0" \]

4. Glulam Rafter Type B
   \[ \frac{3}{16"} = 1'-0" \]

5. Callout Rafter A
   \[ \frac{3}{16"} = 1'-0" \]

6. Callout Rafter B
   \[ \frac{3}{16"} = 1'-0" \]
Door Schedule

<table>
<thead>
<tr>
<th>Mark</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Comments</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fleetwood</td>
<td>Glacier 3300</td>
<td>ox</td>
<td>Master</td>
</tr>
<tr>
<td>2</td>
<td>Fleetwood</td>
<td>Glacier 3300</td>
<td>oxxo</td>
<td>Great Room</td>
</tr>
<tr>
<td>3</td>
<td>Fleetwood</td>
<td>Glacier 3300</td>
<td>oxxo</td>
<td>Bar</td>
</tr>
<tr>
<td>4</td>
<td>Fleetwood</td>
<td>Glacier 3300</td>
<td>oxo</td>
<td>Kitchen</td>
</tr>
<tr>
<td>5</td>
<td>Fleetwood</td>
<td>Glacier 3300</td>
<td>xo</td>
<td>Entrance</td>
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<tr>
<td>6</td>
<td>Fleetwood</td>
<td>Glacier 3300</td>
<td>oox</td>
<td>Master Bath</td>
</tr>
<tr>
<td>7</td>
<td>Fleetwood</td>
<td>Double Door</td>
<td>xx</td>
<td>Guest Egress</td>
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</table>

Scale: 1/8" = 1'-0"
Window Schedule

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<th>#</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fleetwood</td>
<td>Kona with TDL insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Master Bedroom</td>
</tr>
<tr>
<td>2</td>
<td>Fleetwood</td>
<td>Kona with operable awning insert (Westwood series)</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Master Bedroom</td>
</tr>
<tr>
<td>3</td>
<td>Fleetwood</td>
<td>Kona with TDL insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Master Bedroom</td>
</tr>
<tr>
<td>4</td>
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<td>Kona with TDL insert</td>
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<td>Great Room</td>
</tr>
<tr>
<td>5</td>
<td>Fleetwood</td>
<td>Kona with TDL insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Great Room</td>
</tr>
<tr>
<td>6</td>
<td>Fleetwood</td>
<td>Kona with operable awning insert (Westwood series)</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Great Room</td>
</tr>
<tr>
<td>7</td>
<td>Fleetwood</td>
<td>Kona with TDL insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Great Room</td>
</tr>
<tr>
<td>8</td>
<td>Fleetwood</td>
<td>Kona with TDL insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Great Room</td>
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<tr>
<td>9</td>
<td>Fleetwood</td>
<td>Kona with operable awning insert (Westwood series)</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Bar</td>
</tr>
<tr>
<td>10</td>
<td>Fleetwood</td>
<td>Kona with TDL insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Bar</td>
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<tr>
<td>11</td>
<td>Fleetwood</td>
<td>Kona with TDL insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Kitchen</td>
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<td>12</td>
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<td>Kona with TDL insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Kitchen</td>
</tr>
<tr>
<td>13</td>
<td>Fleetwood</td>
<td>Kona with operable awning insert (Westwood series)</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Kitchen</td>
</tr>
<tr>
<td>14</td>
<td>Fleetwood</td>
<td>Kona with TDL insert</td>
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<td>Kitchen</td>
</tr>
<tr>
<td>15</td>
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<td>Westwood with operable awning insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Master Suite</td>
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<tr>
<td>16</td>
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<td>Westwood Cardinal</td>
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<td>Master Suite</td>
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<tr>
<td>17</td>
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<td>Westwood Cardinal</td>
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<td>Master Suite</td>
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<tr>
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<tr>
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<td>Guest Bedroom 2</td>
</tr>
<tr>
<td>22</td>
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<td>Westwood with operable awning insert</td>
<td>Cardinal 1&quot; 366 mm T 0.5 Argon</td>
<td>Guest Bedroom 2</td>
</tr>
<tr>
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<td>Master Bath</td>
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<td>1&quot; 366 mm T 0.5 Argon</td>
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</tr>
<tr>
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<td>Westwood Cardinal</td>
<td>1&quot; 366 mm T 0.5 Argon</td>
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<td>1&quot; 366 mm T 0.5 Argon</td>
<td>Master Study</td>
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<tr>
<td>36</td>
<td>Fleetwood</td>
<td>Westwood Cardinal</td>
<td>1&quot; 366 mm T 0.5 Argon</td>
<td>Master Study</td>
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Window Plan

Window Scale

1/16" = 1'-0"
Powder Room: (1) 9' x 3'-6" Door Panel
Kitchen Pantry: (3) 9' x 6' Door Panels

Interior Door Axon

Door Axon
B. Construction Documentation
Conclusion:

While architecture does not conclude, the thesis does. This thesis started in the fall of 2012 and concluded in the fall of 2016. The process challenged and refined my thoughts of and approach to producing architecture. Part of the challenge resulted from living on the jobsite for four years. During this time I worked amongst the trades and acted as an architect, engineer, mason, carpenter, plumber, electrician, site contractor, and jobsite laborer. During the last four years I was told “that is impossible” or “why” too many times to count. The members of my committee were the only source of encouragement and direction during this time.

I. The Architecture of...

Primary to architecture is the site. A work of architecture is inseparable to the site. Conception of architectural ideas for a situation requires a thorough understanding of the particular site. Sovereignty over the site requires environmental stewardship- not certifiable direction or legislation which results from corruption and guise. The work is of the site, not on the site- an idea that Wright dedicated his life to expressing.

Primary to the development of architecture is a repertoire of tools to the architect. The key to implementation of tools is an elementary understanding of construction and material. This understanding is driven by passion. The tools for my thesis started with ludic representations which included sketches, hand-drafting, and models of various scales. The models were in accordance with Alber’ti’s intention: single expressions of material. Models facilitate material connection, representation, and understanding better than any other tool I used. Models were often sent (and destroyed) to the subcontractors to help them understand when they clearly did not understand the drawings. The computer can be a tool, but that is a delicate balance and dangerous servant. The computer was used in the production of construction drawings and analysis of the site and the conditions impacting the building, including digital models.

Primary to conception of architecture is an understanding of the tectonic. Tectonic separates architecture from other industries: interior design, graphic design, fashion, engineering, and construction. Tectonic representation is simple and beautiful: “the reasoned harmony of all the parts of a body so that nothing can be added or taken away except for the worse.” -Alber’ti. All the parts include every element required for the modern building: HVAC, components, exhaust fans, plumbing vents, outlets, toilets, etc. these are all under the realm of the architect and should not be left unconsidered.

Primary to the establishment of architecture is craft. Traditional craft is lost in modern construction. Without craft architecture will not happen. This issue was a fundamental challenge to the project and has impacted my approach to architecture. One way forward that became apparent during construction was the idea of industrial craft. Industrial craft can provide a realm for the future practice of architecture. Industrial craft allows a digital model to be fabricated into a particular material by a machine instead of a human hand. The human element remains as long as it is carefully kept as part of the digital design process. The challenge often exists due to the nature of industrial craft: trying to produce uniqueness amidst an industry built for mass production. While traditional trades are dying out industrial craft provides hope for the future of craft, especially that of concrete.

II. Concrete

Concrete is a vast realm in and of itself. It is impossible to understand all its possibilities in a lifetime. An architect must follow passion and instinct to master concrete and understand its limitations. During the four years I investigated newer expressions of concrete such as UHPC (ultra high performance concrete) such as Ductal concrete by Lafarge. Sadly, bureaucracy and liability limited my experience during my thesis so I focused on a number of other avenues including: tilt-up, cast in place, and precast concrete. Significant time was spent developing a personal relationship to the many aspects, experiences, and conditions of concrete.

Spending time trying to understand concrete taught me how little we still know about it both from design and construction perspectives. The excellence of traditional concrete craft as demonstrated by the steps at Falling Water and some of the older Museums in Washington DC is mostly gone. The modern practice of cast in place concrete lacks tectonic significance. Precast concrete in contrast requires a very different approach in its implementation for construction. The significance largely derives from the formwork. Once significant curing is established, the components are then assembled. The joints and attachments of the components are altogether different- there can be significant architecture with the various connections. Many of the connections require other materials. In my project much of the relationship was with Douglas Fir. Jaan Holt had a significant impact on the relationship between concrete and wood for my project. Many iterations were required to arrive at the final approach.

At the start of the thesis Susan Piedmont Palladino stated my thesis involved the investigation of a unicorn. I did find a unicorn, but in a dramatically different way than I expected. Concrete is a beautiful unicorn; it serves as a metaphor for humanity and is an ideal material for the architect.
III. Next steps

During the last four years, I have had significant exposure to other architects and modern construction. The experience left me disappointed. Modern representations of the word architect are dichotomous to the etymological origins. Consider archi, or authority over the realm. The modern architect has the authority to have no authority due to a simplistic stamp. The actual authority is a bureaucratic realm derived from unrelated professions. Permission for my project took over sixteen months of time and hundreds of pages of applications and paperwork submitted to the county, state, army corps of engineers, a planning commission, and numerous departments within those departments. The tectonic approach of the project did not fit into distinct regulations as outlined by the IRC, IECC, and NFPA manuals. It took many battles, some legal, to get past a myriad of bureaucratic intervention.

The realm itself has become saturated and complex in the information age. Technology has made Architecture more convenient but less reachable. Significance is arbitrary. Virtue is value. Tecton is drywall. The repertoire of tools is a machine. Craft is an imported Revit family. Representation is graphic design. The professional production of architecture is an unprofessional attempt to sell merchandise. Lord of the site is now the lord named LEED. Architects who should be in direct opposition to these substantial changes remain mostly silent. In his book, Kenneth Frampton shares a similar perspective when he quotes Guy Debord:

“It is indeed unfortunate that human society should encounter such burning problems just when it has become materially impossible to make heard the least objection to the language of commodity; just when power—quite rightly because it is shielded by the spectacle from any response to its piecemeal and delirious decisions and justifications—believes that it no longer needs to think; and indeed can no longer think.

It is sometimes said that science today is subservient to the imperatives of profit, but that is nothing new. What is new is the way the economy has now come to declare open war on humanity, attacking not only our possibilities for living, but our chances of survival. It is here that science—renouncing the opposition to slavery that formed a significant part of its own history—has chosen to put itself at the service of spectacular domination...

What is false creates taste, and reinforces itself by knowingly eliminating any possible reference to the authentic. And what is genuine is reconstructed as quickly as possible, to resemble the false…. “

With this in mind, what should be the next step? That remains the challenge. There are several ways forward.

There are some architects who are architects. Brian MacKay-Lyons, Rick Joy, Glenn Murcutt and Peter Zumthor produce architecture. It appears these and a few others share a similar approach to architecture that I have attempted in my thesis. It would be nice to produce architecture in good company.

While architects lead construction, my experience as a licensed general contractor suggests that there are other ways to lead craft forward without being a craftsman. There must always be a close connection to the understanding and implementation of construction as it pertains to the tecton, but the role and authority of an architect can be compromised if they are caught up in another role.

Industrial craft is still a largely underutilized approach to producing architecture. Industrial craft requires a sense of awareness regarding the role of the computer and the process of representing and producing architecture. I found it highly useful to investigate architectural elements by hand (drawings and hand models) followed by implementation of Revit models so that they could then be produced in an industrial setting. The concrete rain screen panels were produced in this way. The Douglas Fir glulam elements were produced off-site in this way. These were some of the smoothest construction transitions of the project. UHPC precast walls and elements are an opportunity to further the architecture of Concrete.

The architecture of concrete is an esoteric pursuit. It is possible. While there has been a void of leadership, ignoring the realms that now extended beyond an architect’s reign is not the answer. The way forward involves restoring virtue to the virtual and noting the difference between worth and value. Tools of the trade which have become machines should become tools again. The oversaturation of information needs to be simplified but not simplistic. Architect’s need to listen: listen to the site and the materials utilizing a unique repertoire of tools; listen to our humanity. That is the next step forward.
Bibliography: