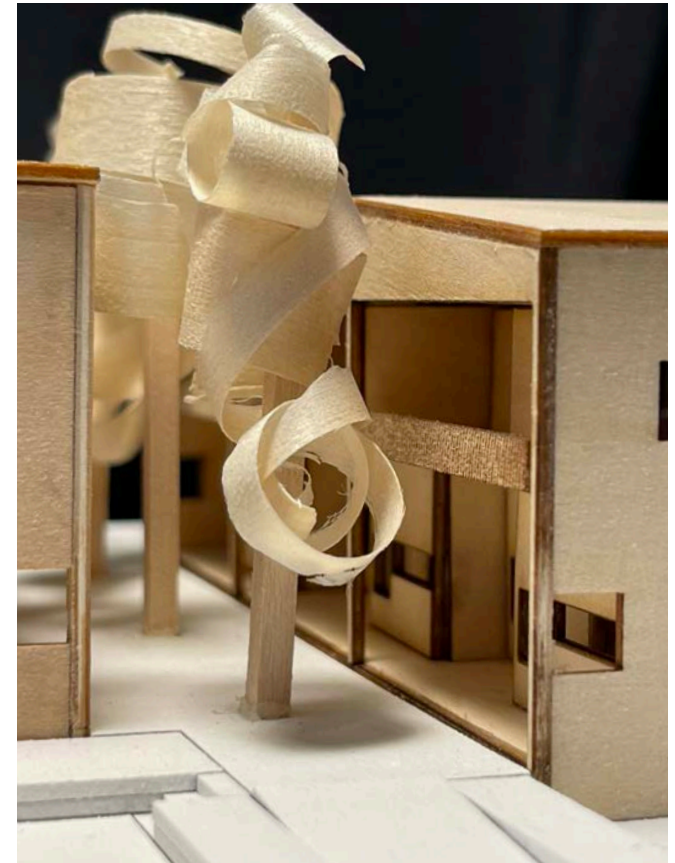




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# Design Objectives and Zoning Development

## Concept Statement

New Orleans and the Lower 9th

Ward have a rich heritage of community and resiliency, but reconstruction has been limited since the devastation of Hurricane Katrina in 2005. Being a demographically black and lower income neighborhood, funding for rebuilding efforts poses a challenge. Additionally, much of the neighborhood sits at or below sea level, creating an imposing threat with climate change, increasing intensity and occurrences of storms, and rising sea levels. The neighborhood deserves affordable and resilient design interwoven with the cultural infrastructure of the neighborhood, New Orleans, and local vernacular.

Thus, design goals are threefold: affordability, resiliency, and community integration.

Efficient and sustainable homes that can offer a level of protection against natural disaster lowers both initial and lifecycle costs for housing units in a historically disenfranchised community. Resiliency is reflected in layers of programmatic elevations which, alongside the longevity and inherent strength of precast concrete systems, creates a foundation to design homeplace resilient to the site's inherent threats. The site sits within two blocks of a multi-use/cultural center, an elementary school, and a library. Consequently, development of home spaces in conjunction with vernacular porch culture creates an opportunity to not just sit within, but to enhance the cultural infrastructure of the neighborhood.

Programming homes that utilize vertical elevation, daylighting, natural ventilation strategies, passive cooling, and thermal massing intrinsic to precast concrete systems allows

for sustainable and affordable lifecycle homes. There is opportunity in precast systems to create buildings that can be raised in elevation, allowing for resiliency to storms and flooding. The strength of the system also allows for buildings that can, to an extent, survive natural disasters and the threat of climate change. Design can utilize porch spaces that incorporate layers of dynamic opacity, such that occupants can adapt liminal outdoor space to join local vernacular and community or create privacy when desired. Interlocking spaces within the housing units create opportunity for the community within the complex, while the projection of liminal spaces between public and private (e.g., the porch) to the exterior of the site integrates the context with immediate cultural infrastructure.

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# Design Objectives and Zoning Development

## Matrix

Goals	<p><b>Affordable</b> - [cost-effective]</p> <p>Efficiently and sustainably create homes, lowering both initial and overall cost for clients in a disenfranchised community.</p>	<p><b>Resilient</b> - [materiality]</p> <p>Incorporate the longevity and strength of precast concrete systems to design a space resilient to the site's threats.</p>	<p><b>Interwoven</b> - [community]</p> <p>Develop home spaces that create opportunity to interact with cultural infrastructure</p>
Architectural Solutions	<p>Program buildings that (among other strategies) utilize daylighting, natural ventilation, and passive cooling techniques to create <b>affordable and sustainable housing</b>.</p>	<p>Take advantage of strengths of <b>precast concrete</b> to create buildings that, to an extent, can survive natural disasters and the threat of climate change to New Orleans.</p>	<p>Design porch spaces that incorporate <b>layers of dynamic privacy</b>, such that occupants can adapt outdoor space to join the local vernacular or create confidentiality.</p>

**Concept:** **affordable** and **resilient** design **interwoven** with the cultural infrastructure of the neighborhood, New Orleans, and local vernacular.

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# Design Objectives and Zoning Development

## Vicinity Map

- MLK Jr. High School
- Site
- MLK Jr. Elementary School
- MLK Jr. Library
- Sanchez and Copelin-Byrd Multiservice Center



Power located overhead on street, gas/water access on adjacent N Derbingy St., sewer access on adjacent Andry St., storm drains available at corner of lot on street. Near uniform elevation of 0' (sea level) across lot.

New Orleans Lower 9th Ward

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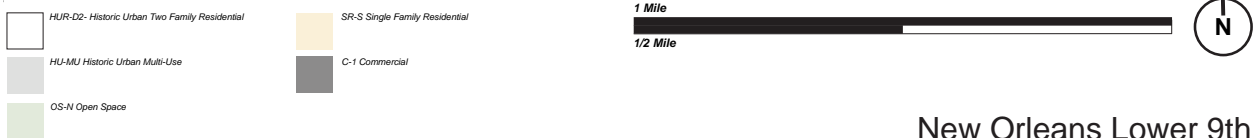
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# Design Objectives and Zoning Development

## Zoning & Vicinity Map

Site



New Orleans Lower 9th Ward

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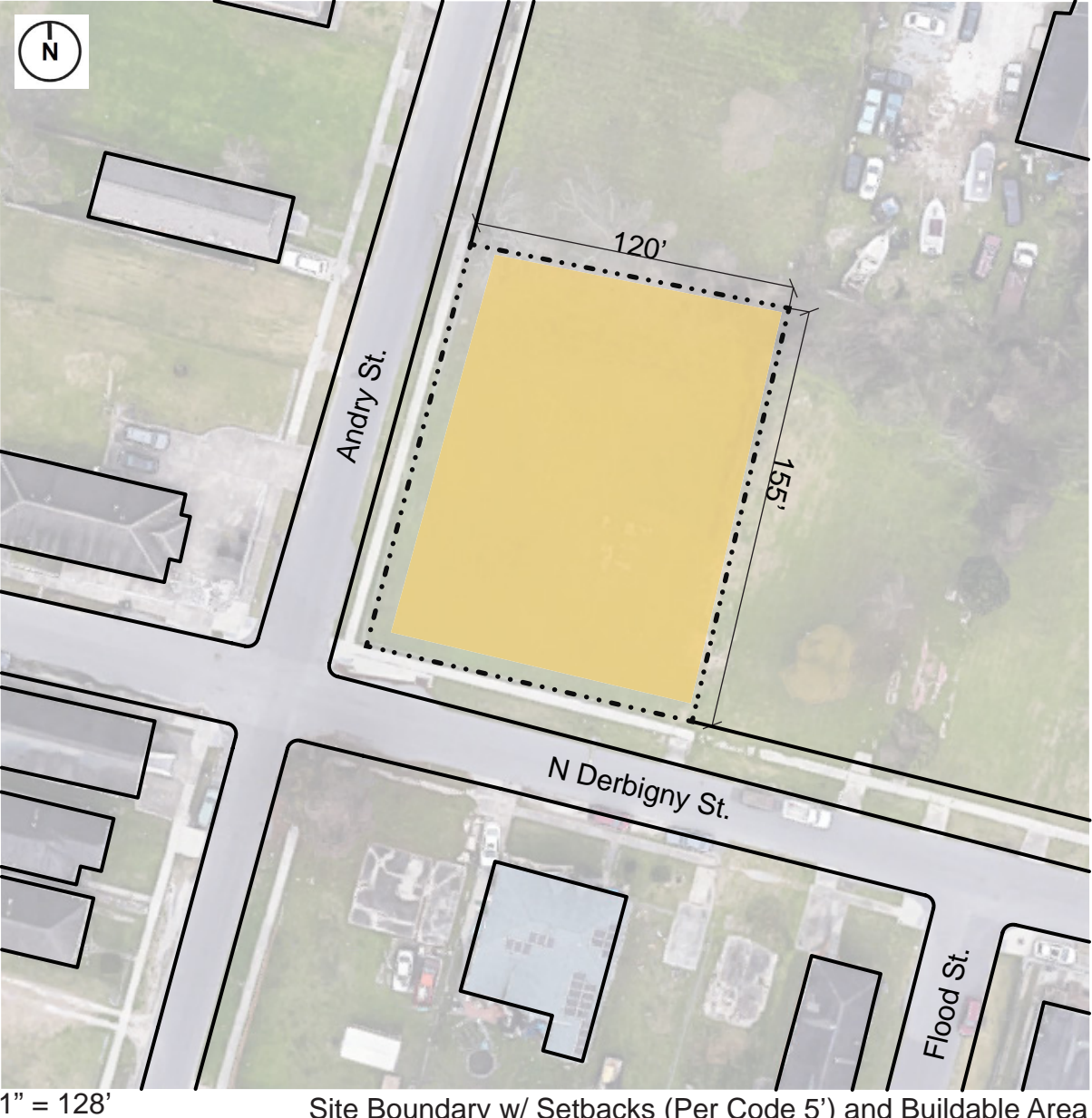
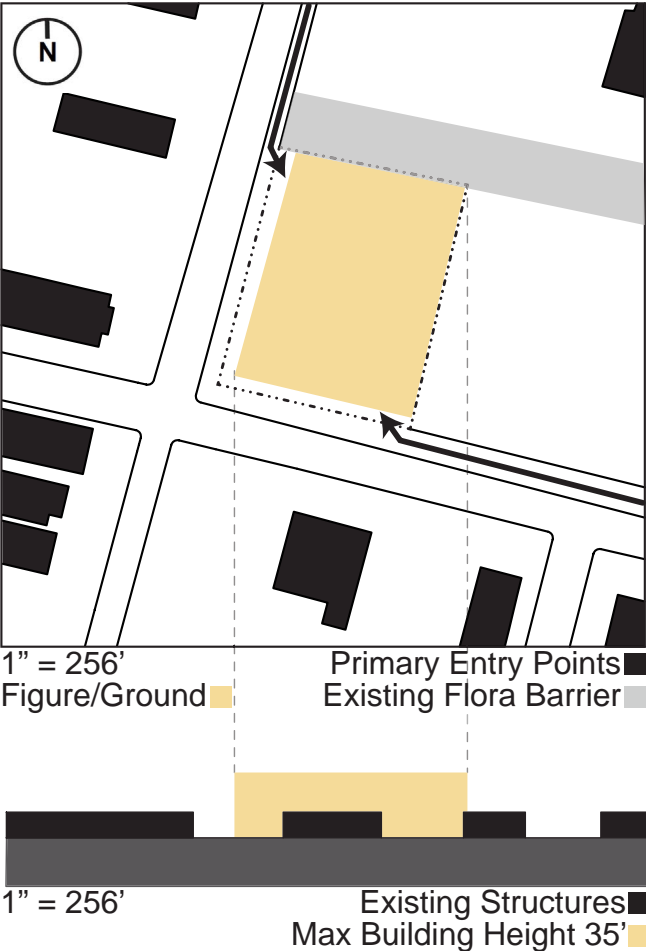
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# Design Objectives and Zoning Development

## Site

1200 sq. ft. minimum, street context influences entry/exit. Up to 70% of lot, 35 ft. maximum height.



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# Site Design and Optimization

## Matrix

Goals	<p><b>Affordable</b> - [energy]</p> <p>Reduce energy costs where possible.</p>	<p><b>Resilient</b> - [water management]</p> <p>Create a plan to handle flooding and rainwater runoff.</p>	<p><b>Interwoven</b> - [align]</p> <p>Align massing to take advantage of frontages and edge conditions to maximize interaction.</p>
Architectural Solutions	<p>Orient building masses to take advantage of natural ventilation and site conditions, and to help with solar gain.</p>	<p>Elevate finished floor and foundations above flooding levels, direct rainwater to storm water maintenance drains at corner.</p>	<p>Bring structure to frontage edges to utilize availability of porch conditions.</p>

**Concept:** **affordable** and **resilient** design **interwoven** with the cultural infrastructure of the neighborhood, New Orleans, and local vernacular.

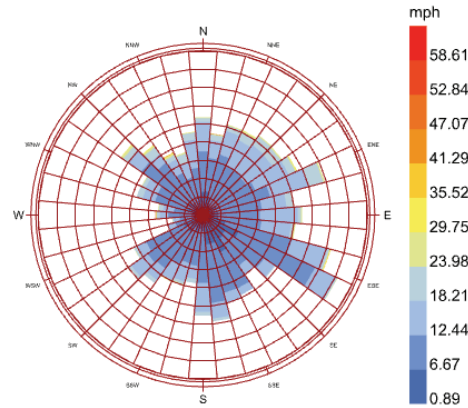
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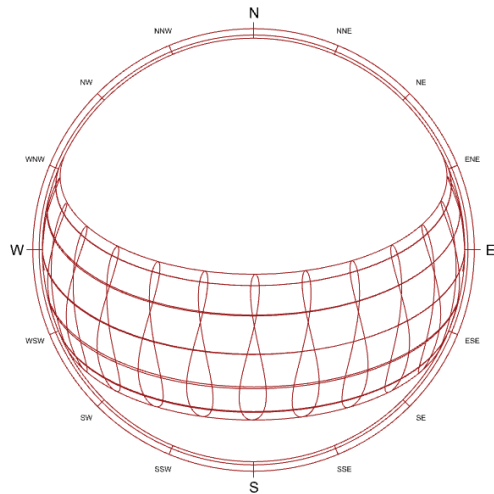
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# Site Design and Optimization

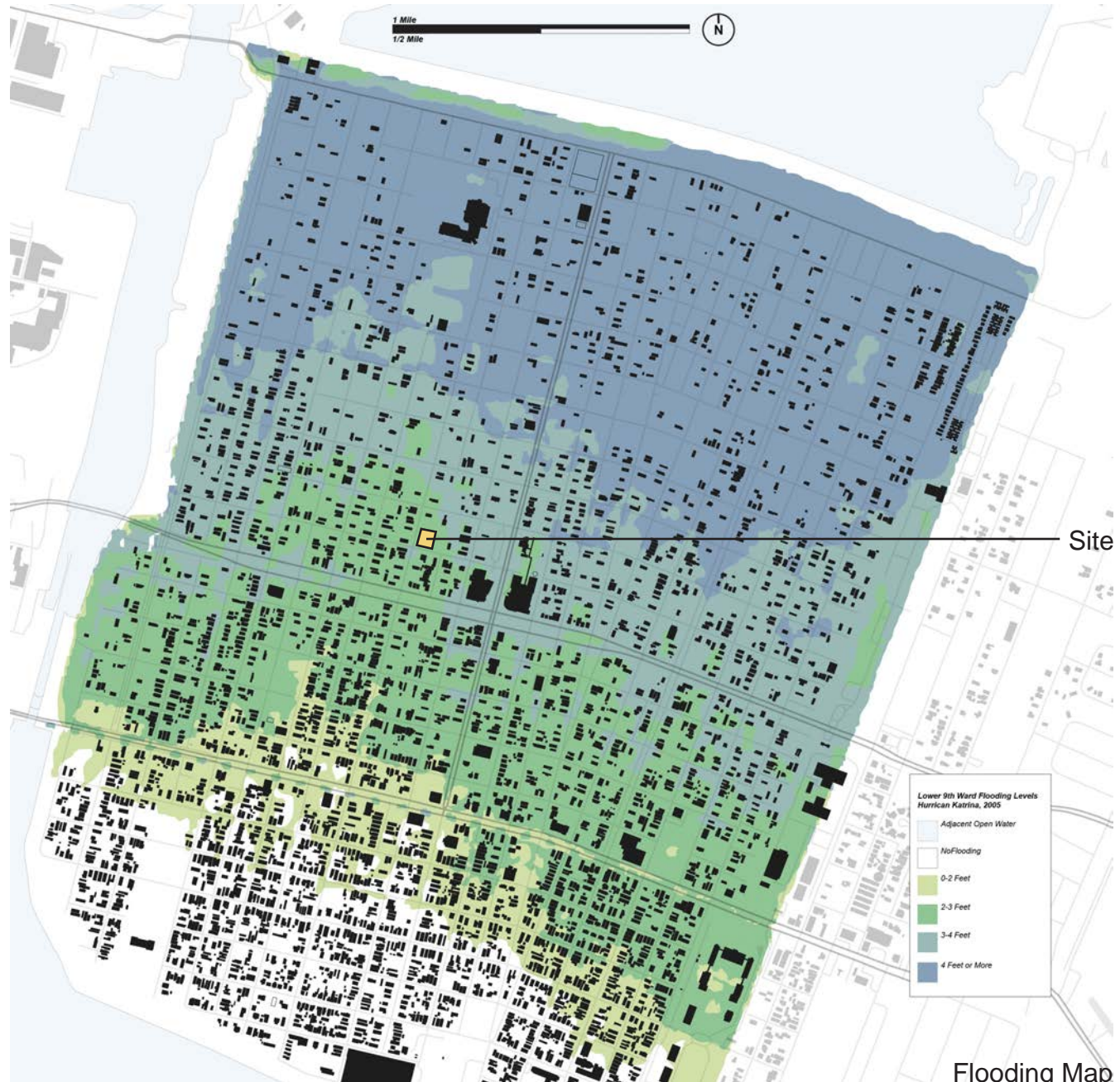
## Environmental Considerations



Wind Rose



Solar Geometry & Shading Patterns



Flooding Map

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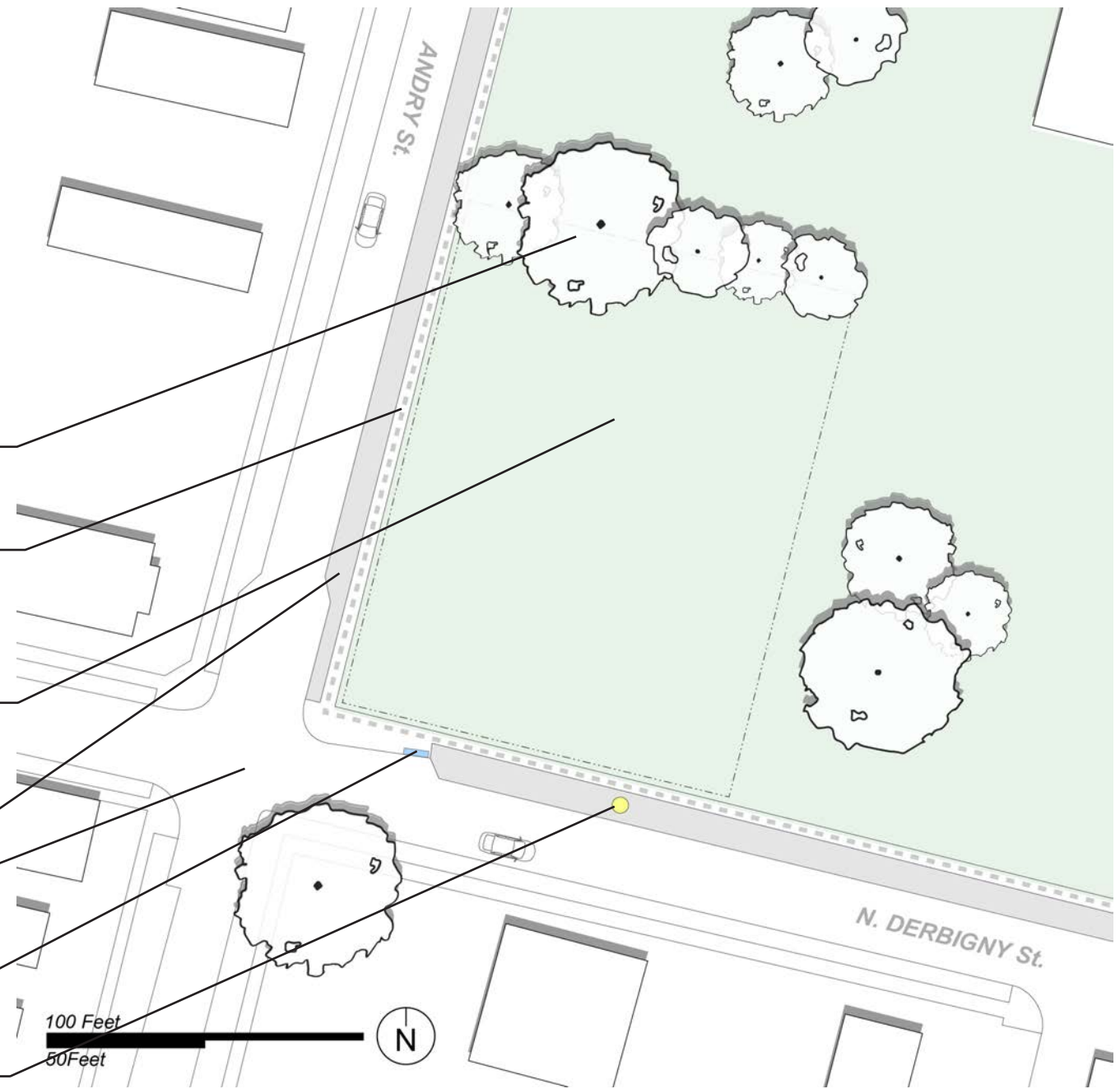
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# Site Design and Optimization

## Existing Site Diagram

- North Edge Foliage  
Minor Opacity/Privacy Condition
- Existing External Sidewalk  
Pedestrian Walkway - Dashed Line  
Primary Existing Circulation
- Green Space  
Lot and Surrounding Spaces Largely  
Open and Porous - Ample Sunlight
- Parking  
On Street Parking Typical
- N. Derbigny & Andry St
- Water Drainage  
Sewer Drain Under Curb
- Electrical Service  
Typical Electrical from Elevated Pole



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# Site Design and Optimization

## Proposed Site Diagram

Off Street Parking —  
Shaded Lot and Private Access to Units

Primary Circulation —  
Accessible Ramp and Stairs up to Finish Floor Level- Purple Dashed

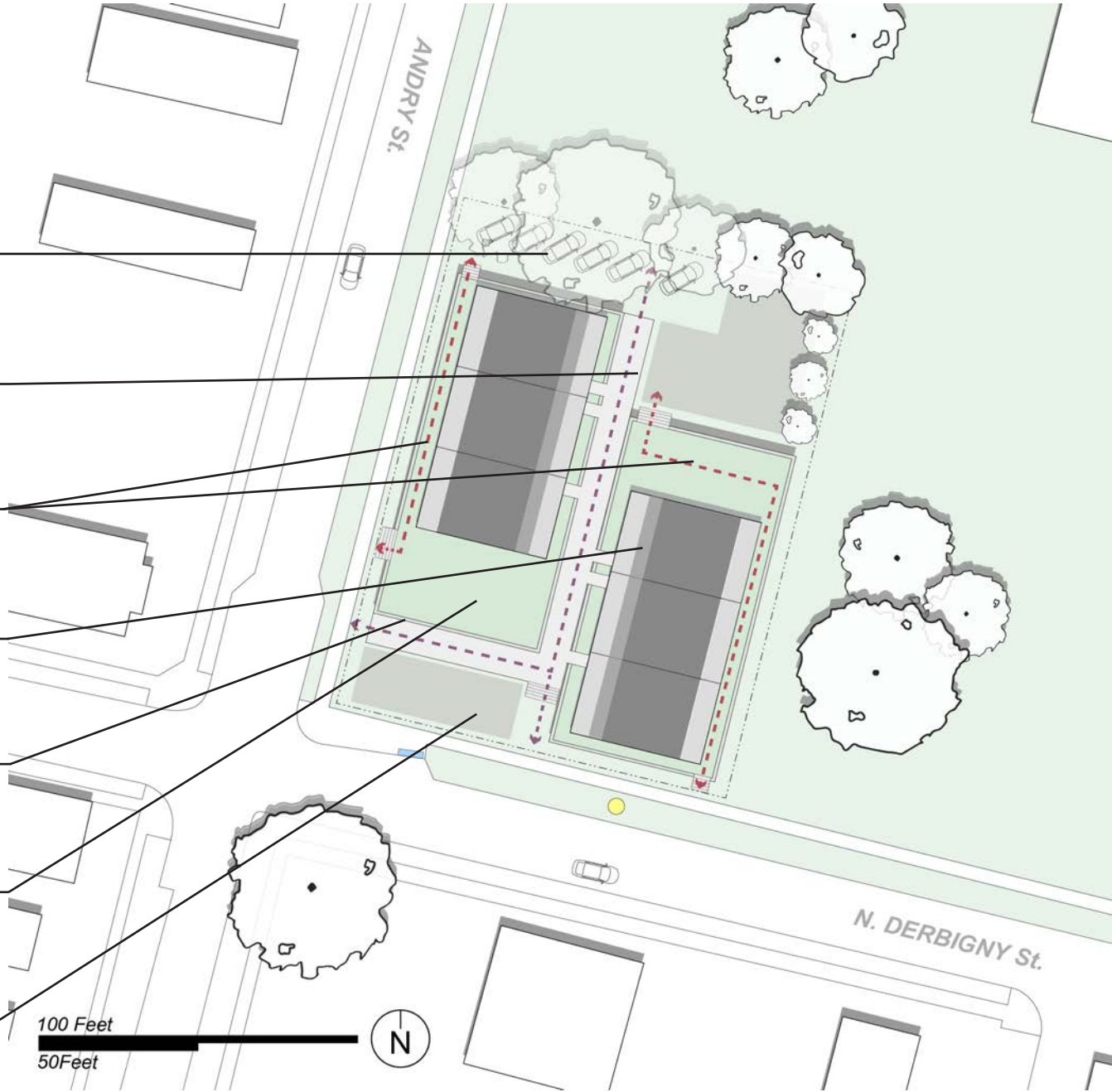
Secondary Circulation —  
Alternate Egress to Ramp or Stairs Away from Units- Red Dashed

Bands of Privacy from Exterior to Interior —  
Recessed Porches, Thresholds, Central Spaces- Light to Dark Gray

Retaining Wall for Elevated Green Space —  
Elevated "Plinth" Provides Flooding Resilience and Ground Permeability

Exterior Green Space on Plinth —  
Elevated Yards Create Layers of Semi- Private Outdoor Space

Exterior Green Space on Grade —  
Outdoor Space for Gatherings, Community Events or Recreation- One



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# Architectural Programming

## Matrix

<p>Goals</p>	<p><b>Affordable</b> - [efficiency]</p> <p>Create efficiency inherent to the architectural organizational systems.</p>	<p><b>Resilient</b> - [elevate]</p> <p>Protect the site against future flooding and high water levels.</p>	<p><b>Interwoven</b> - [internalize]</p> <p>Create micro and macro scales of community with programmatic orientation. Form layers of interstitial zones between public and private spaces.</p>
<p>Architectural Solutions</p>	<p>Design shared structural and utility walls between units reduce overall costs. Create a modularity inherent in the design, allowing adaptability to other sites.</p>	<p>Raise the finished floor of the units above the 100 year flood line (3 ft.).</p>	<p>Place a central corridor and porches facing internally. Build adaptable layers at the front and rear entrances to create interstitial porch spaces.</p>

**Concept:** affordable and resilient design interwoven with the cultural infrastructure of the neighborhood, New Orleans, and local vernacular.

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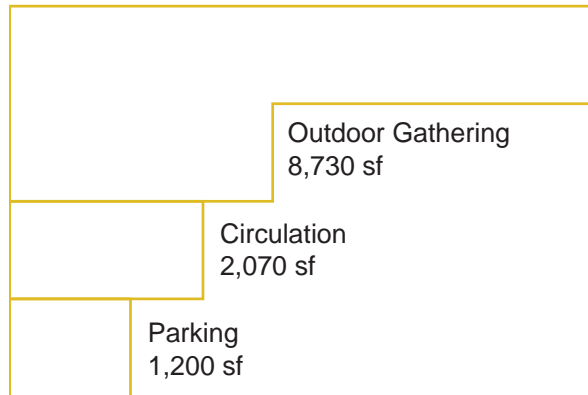
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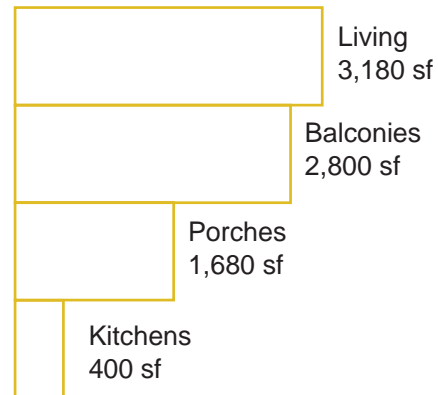
# Architectural Programming

## Cascading Program

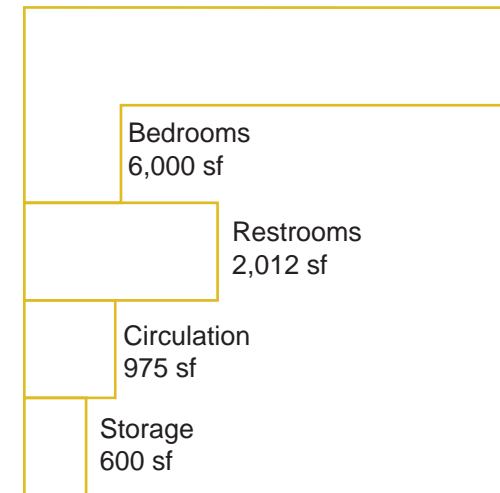
### Public




### Interstitial



### Private



 = 1,000 sq. ft.

*Note: Square footage varies by program per unit (1 bed - 5 bed). Program on site includes 6 units.*

# Architectural Programming

## External Adjacency

Modular Programmatic Spaces  
Adaptable from 1 to 4 Bedrooms & Balconies

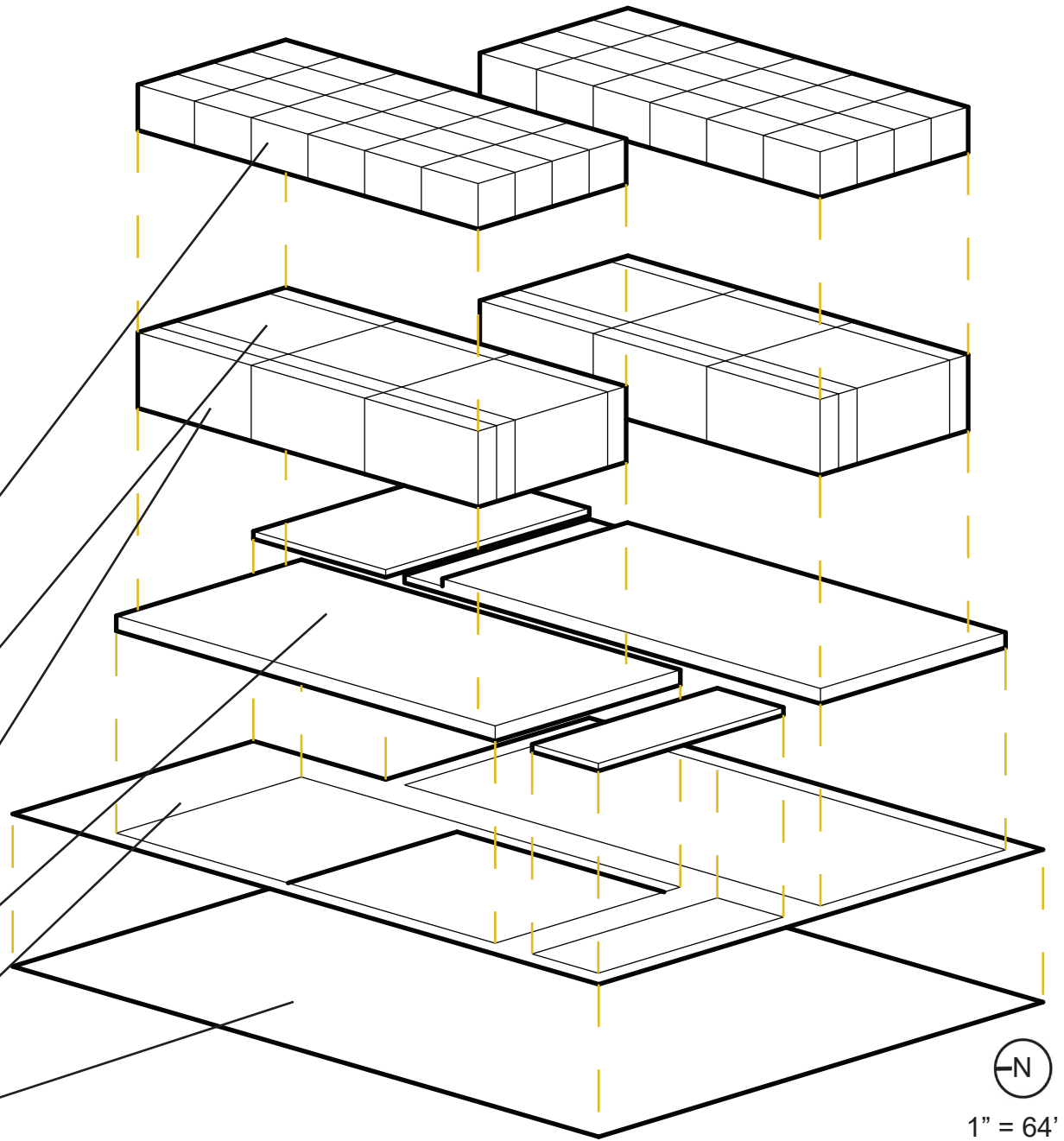
Central Core  
1 Bath, 1 Bed, Living, Kitchen,  
Indoor Circulation

Interstitial Bands  
Patios, Front & Rear Egress

Elevated Flood Plinths & Outdoor Gathering

Outdoor Circulation & Parking

Base Site Lines



1" = 64'

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# Architectural Programming

## Internal Adjacency

2nd Floor Bedrooms

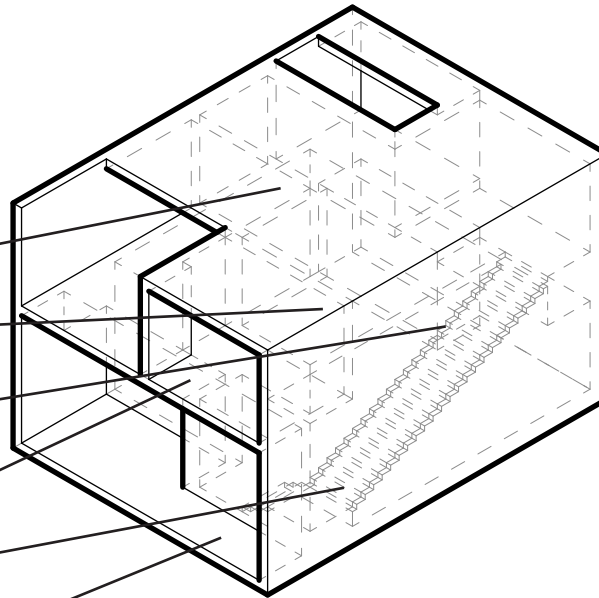
1st Floor Bedroom

Kitchen and Bathroom

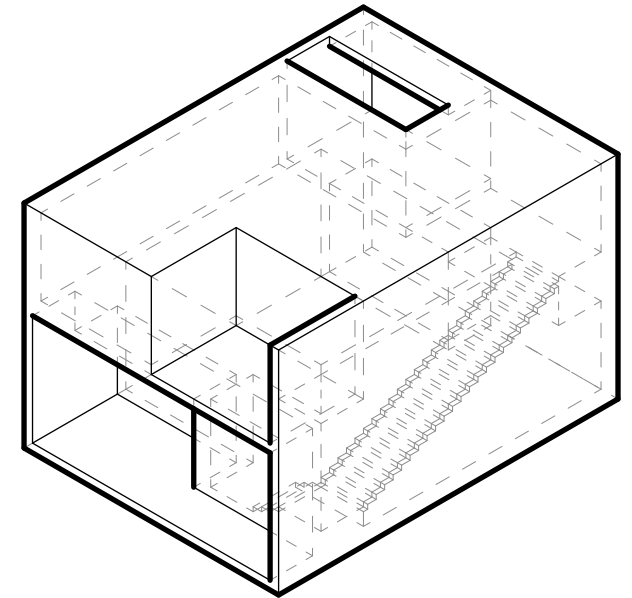
Living

Internal Circulation

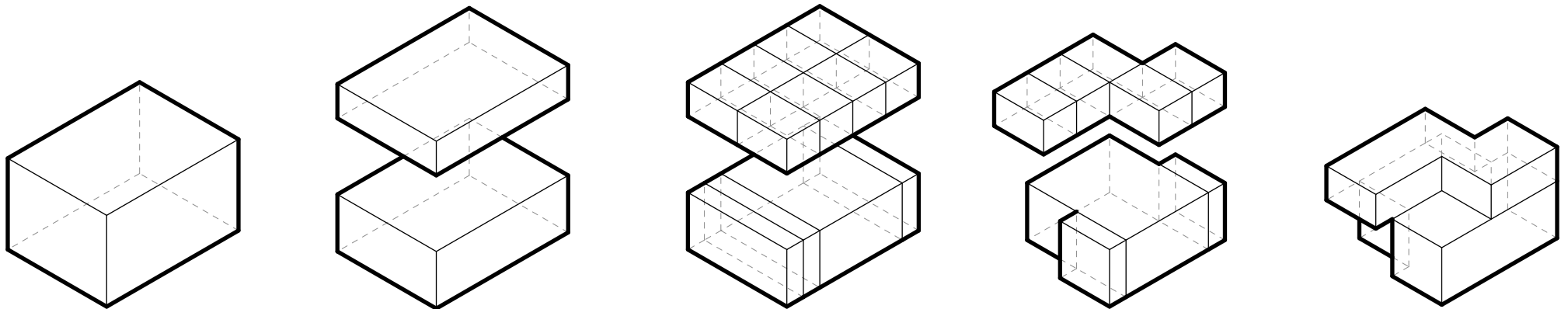
Porch



3 Bed 2 Bath 1" = 16'



5 Bed 2.5 Bath 1" = 32'



Unit Morphology 1" = 64'

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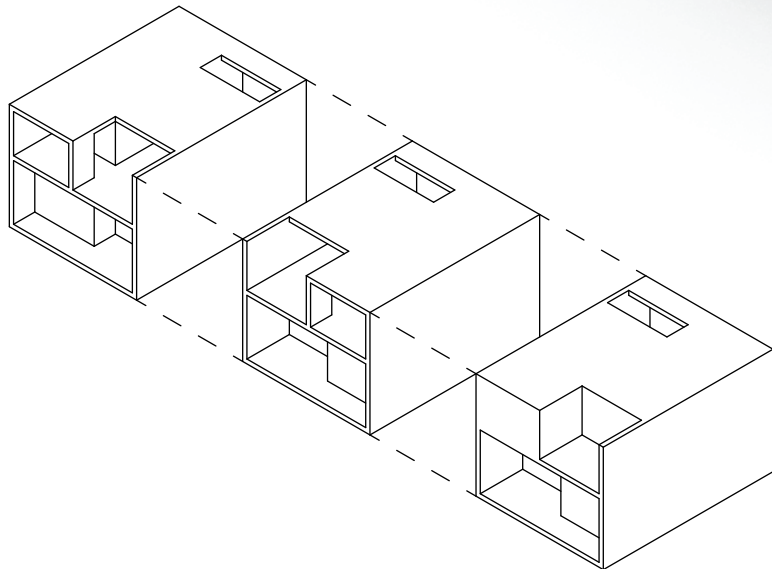
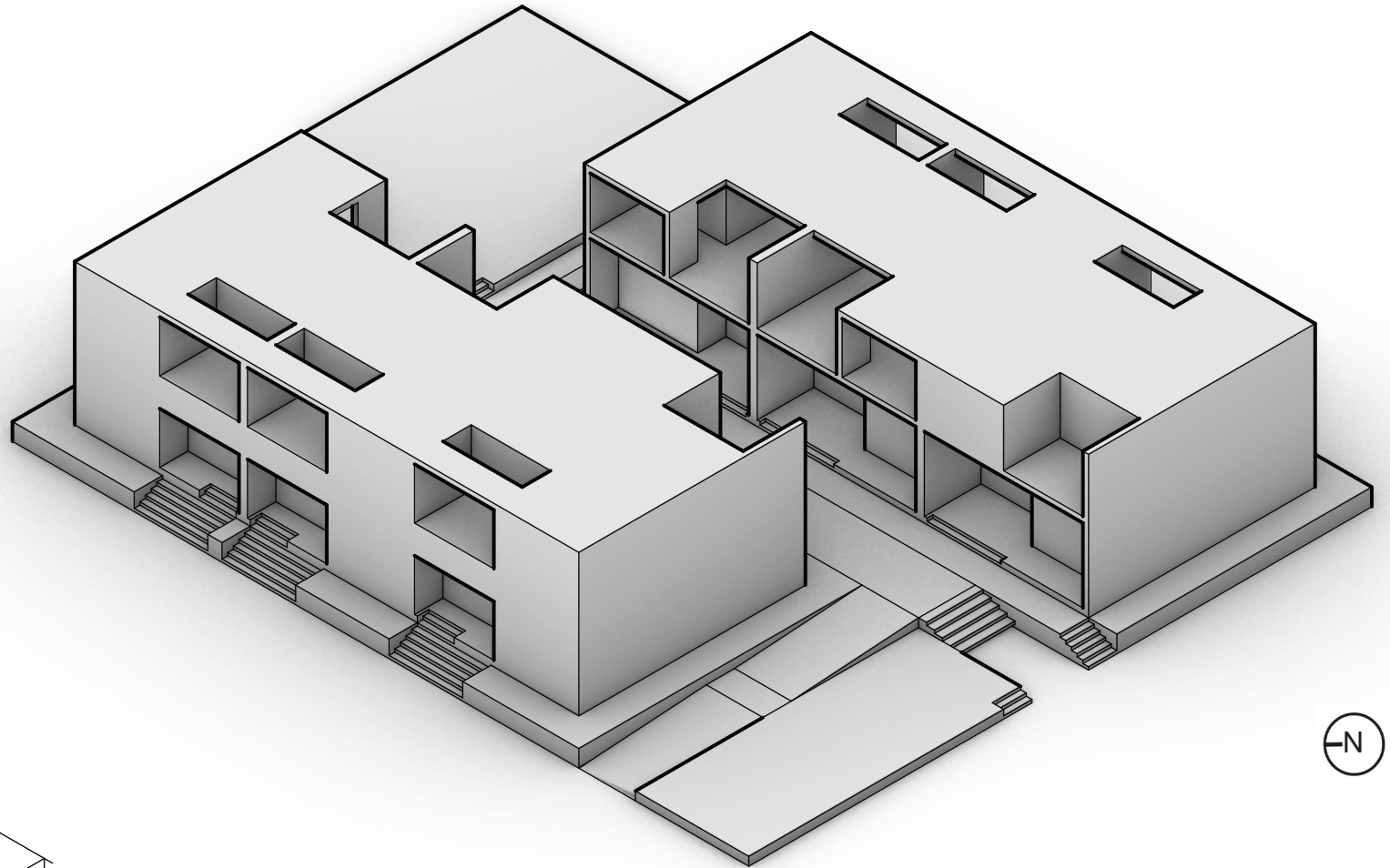
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# Architectural Programming

## Unit Adjacency



SW Isometric 1" = 64'

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# Building Types and Aesthetics / Style / Form

## Matrix

<p>Goals</p>	<p><b>Affordable</b> - [size]</p> <p>Keep low built square footages while maximizing outdoor habitable space.</p>	<p><b>Resilient</b> - [fold]</p> <p>Incorporate a series of interwoven and folded forms as layers from public to private spaces, creating an architectural protection for occupants.</p>	<p><b>Interwoven</b> - [threshold]</p> <p>Create layers of dynamic privacy thresholds in patio conditions as to allow occupants to engage with or retreat from public life.</p>
<p>Architectural Solutions</p>	<p>Within the architectural building mass envelope, make reductive moves to create outdoor space and lower square footage.</p>	<p>Build opportunities for layers into the morphology of the architecture on the first floor.</p>	<p>Design semi-transparent opacities on balconies and patios that are adaptable (can be removed or strengthened) by the occupant.</p>

**Concept:** **affordable** and **resilient** design **interwoven** with the cultural infrastructure of the neighborhood, New Orleans, and local vernacular.

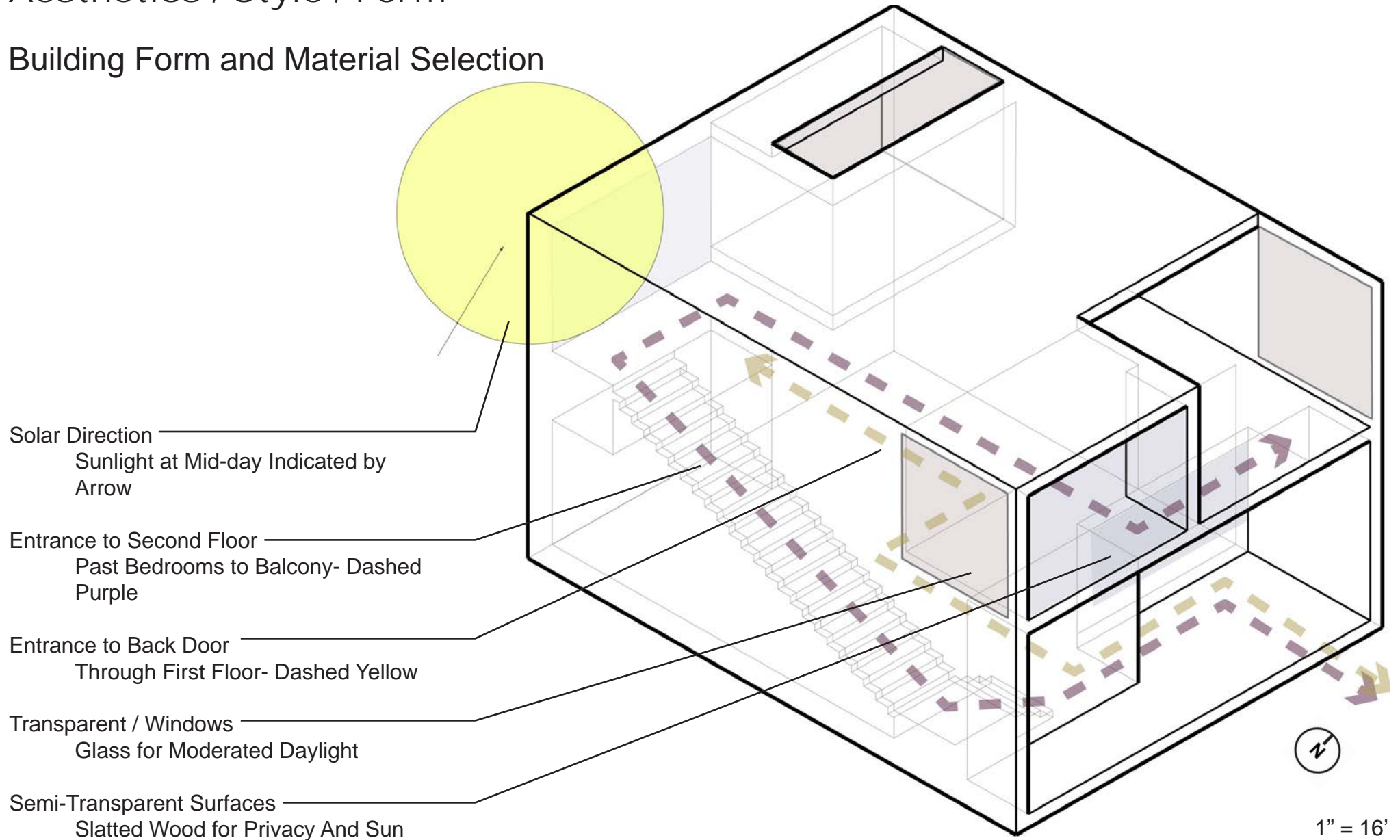
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# Building Types and Aesthetics / Style / Form

## Building Form and Material Selection



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# Building Types and Aesthetics / Style / Form

## Materiality Ideogram

While these homes rely on the inherent resilience of concrete to provide safety in a neighborhood under yearly threat of flooding, it is paramount that they offer more than the aesthetics of a storm shelter. On the first floor, shifting planes and overhangs offer shady spaces in the New Orleans summer. Utilizing variations in transparency, openings to the sky, and carefully placed windows, the second floor of the unit selectively dematerializes, encouraging views and natural light. Leaving home, a resident passes through a series of grassy levels before arriving on the street.



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# Life Safety and Accessibility

## Matrix

<p>Goals</p>	<p><b>Affordable</b> - [Access]</p> <p>Create ADA accessible circulation system that can be modularly applied to any unit, create accessible external circulation.</p>	<p><b>Resilient</b> - [Fire Protection]</p> <p>Safety inherent in the precast system - concrete demising and structural walls help protect from fire.</p>	<p><b>Interwoven</b> - [Opportunity]</p> <p>Create home spaces that offer the same degree of life safety and accessibility to all residents through the modular system.</p>
<p>Architectural Solutions</p>	<p>Develop a site plan with <b>ADA accomodating</b> ramps, stairs, rails, and circulation pathways.</p>	<p>Utilize precast concrete demising and structural walls to <b>protect units from fire.</b></p>	<p>Create a modular yet accessible floor plan and system, such that <b>any unit can accomodate ADA requirements</b> when desired.</p>

**Concept:** affordable and resilient design interwoven with the cultural infrastructure of the neighborhood, New Orleans, and local vernacular.

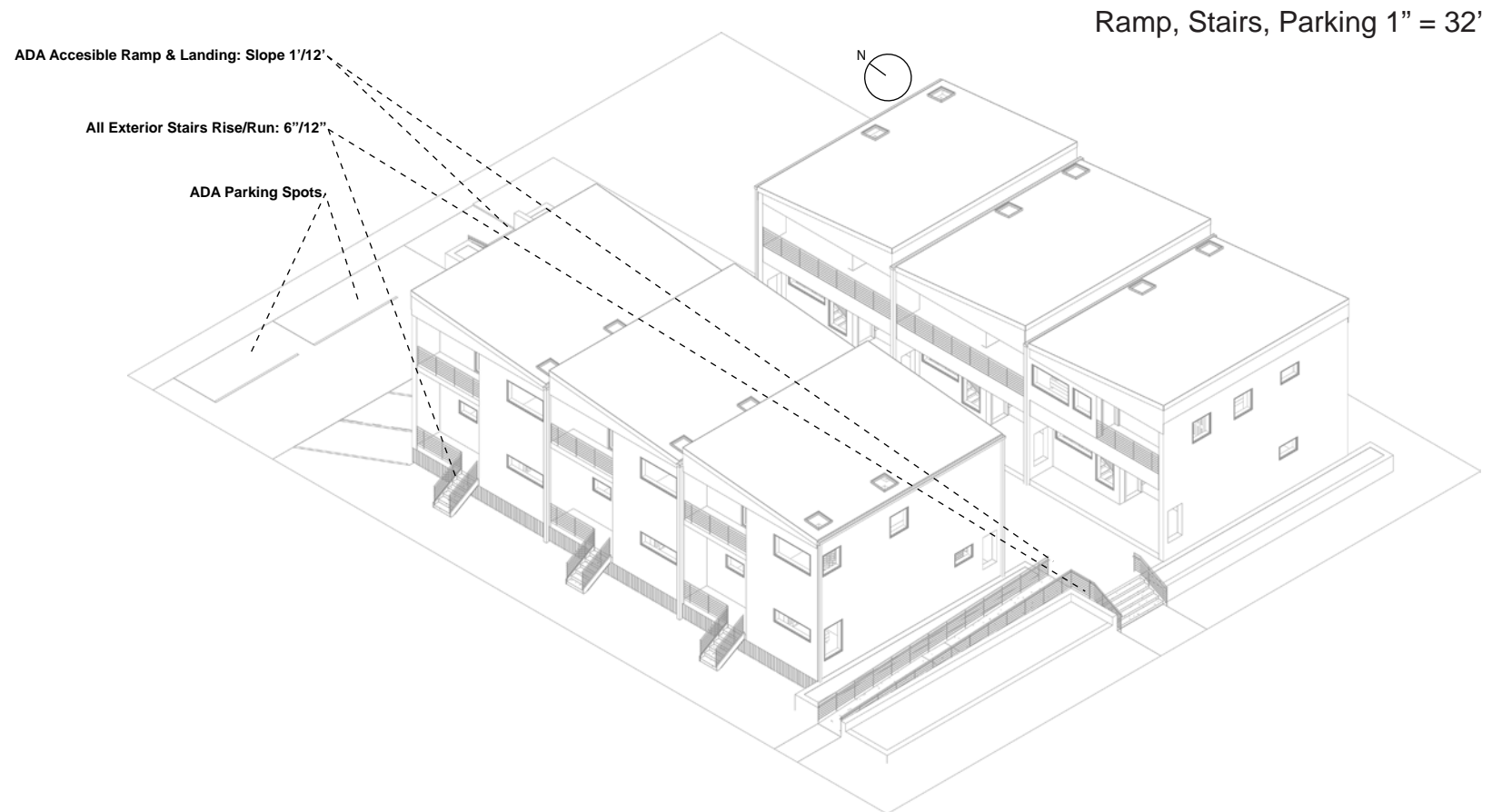
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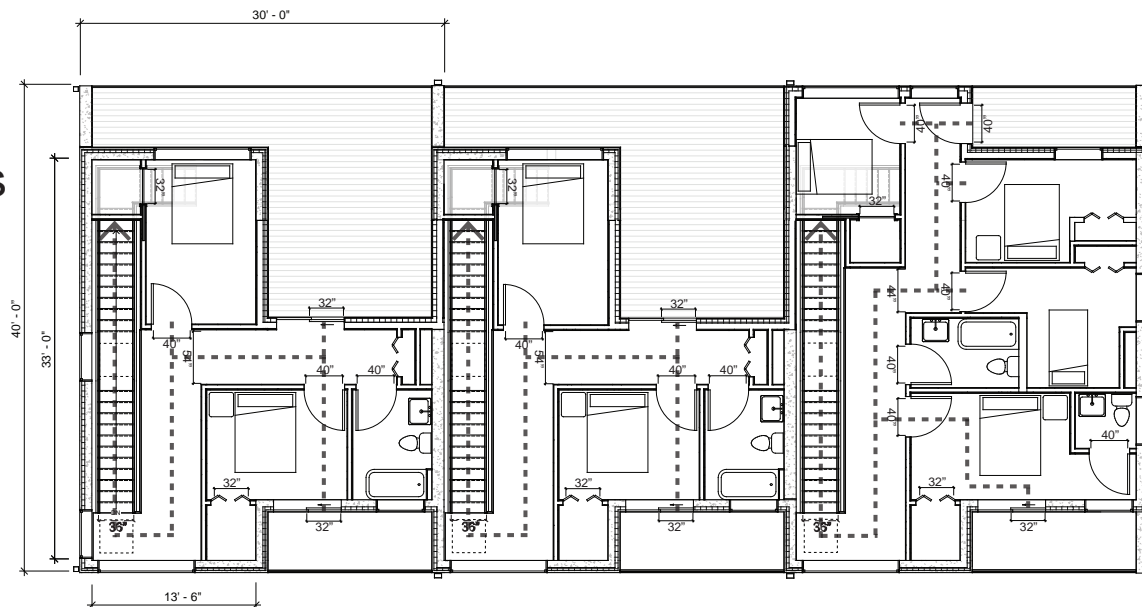
# Life Safety and Accessibility

## External Site Accessibility



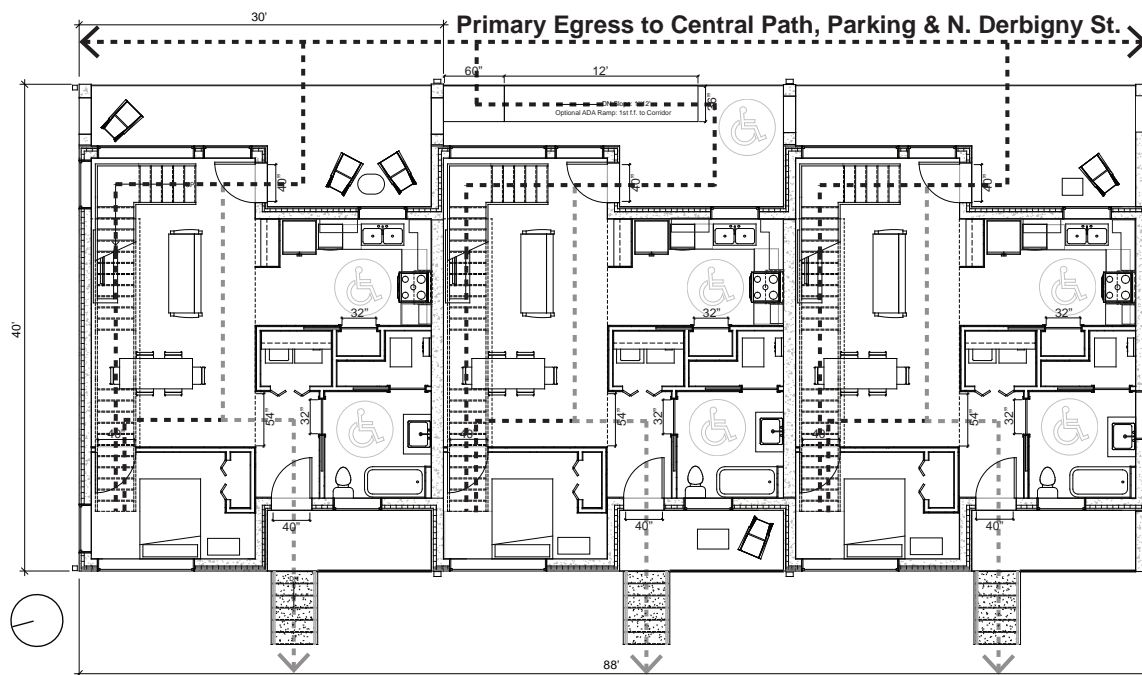
# Life Safety and Accessibility

## Fire Exits: Access/Egress



**Second Floor Egress**

Path of travel from bedrooms to stairs down.  
Max 2nd floor dist. = 42'



**First Floor Egress**

Path of travel from top of stairs down to primary exit = 50'  
Maximum Egress Pathway = 92'

Secondary Egress to Exterior

Note: fire rated stair, safe refuge in fire stairs, elevator access N/A. Fire and smoke detection located as needed in soffit/plenum.

Secondary Egress to Andry St.

1" = 32'

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# Systems Integration and Sustainability

## Matrix

Goals	<p><b>Affordable</b> - [efficient/sustainable]</p> <p>Incorporate affordable, sustainable passive and mechanical systems for the design.</p>	<p><b>Resilient</b> - [long-lasting systems]</p> <p>Design passive systems into units such that replacement costs are minimal.</p>	<p><b>Interwoven</b> - [adaptability]</p> <p>Allow for modularity in mechanical systems, such that design can be manipulated per context/environment.</p>
Architectural Solutions	<p><b>Fully insulate and place thermal mass within thermal envelope.</b> Include air-air heat pump for the Louisiana climate.</p>	<p><b>Passive systems</b> drive the core of the systems design, and are merely buffered by mechanical systems when climate exceeds limits for the passive heating/cooling.</p>	<p><b>Cross and stack ventilation,</b> raise finished floor to allow for ventilation underneath the building.</p>

**Concept:** affordable and resilient design interwoven with the cultural infrastructure of the neighborhood, New Orleans, and local vernacular.

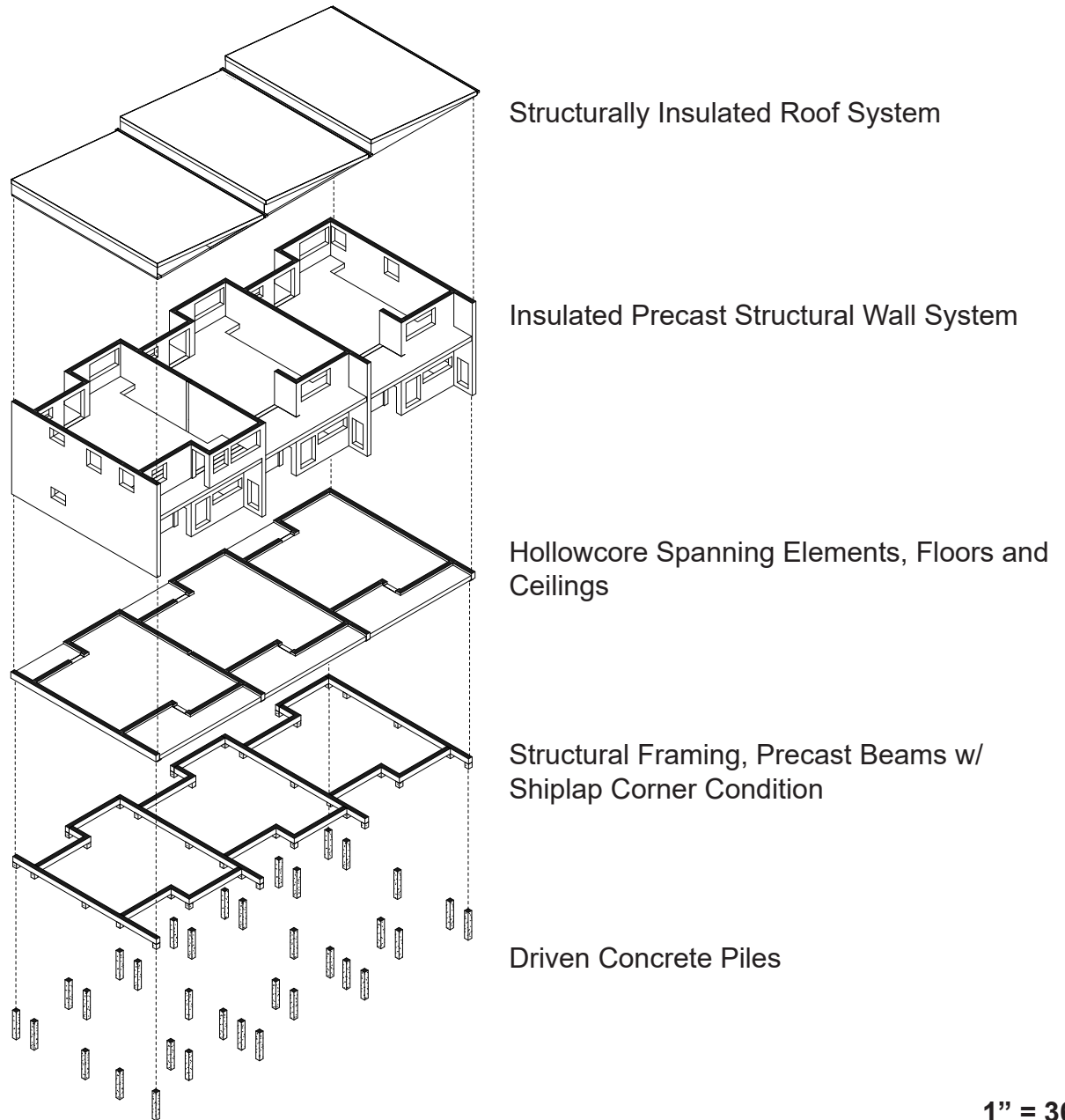
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# Systems Integration and Sustainability

## Structural Grid and Framing



1" = 36'

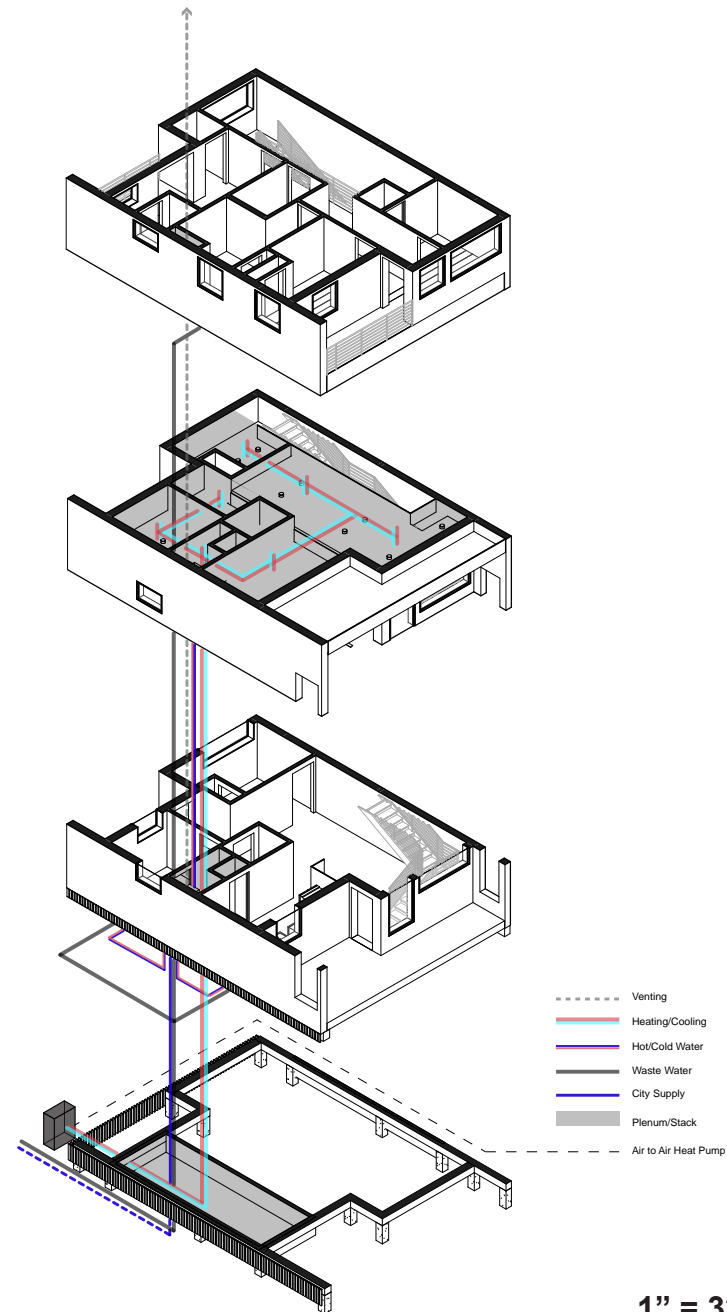
# Systems Integration and Sustainability

## System Integration

Cross and stack ventilation allow for night flushing of heat in the New Orleans climate in concert with the thermal masses of structural concrete floors/walls.

Soffit/plenum spaces allow for myriad of climate-specific mechanical systems to be integrated as necessary and within budgets; from water-water heat pump radiant within hollowcast topper to traditional HVAC systems. These can be adapted per site.

Specific to our units, each utilizes crawl space air flow beneath the 1st floor thermal envelope and an air-air heat pump system.



1" = 32'

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# Building Envelope and Materials

## Matrix

<p>Goals</p>	<p><b>Affordable</b> - [Efficiency] Create an efficient envelope construction system.</p>	<p><b>Resilient</b> - [Reliable] Use fenestration enclosures and cladding elements with long life spans.</p>	<p><b>Interwoven</b> - [Integrate] Use instances where cladding is variable within the modular system to connect with context.</p>
<p>Architectural Solutions</p>	<p>Use the strengths of precast systems to <b>minimize construction and labor costs</b> with a single structural shell for all unit varieties.</p>	<p>Precast concrete cladding allows for significant <b>lifespan cost reduction</b>, high quality window units should be specced when possible.</p>	<p>On balcony conditions, <b>clad areas with materials specific to the neighborhood and context.</b></p>

**Concept:** **affordable** and **resilient** design **interwoven** with the cultural infrastructure of the neighborhood, New Orleans, and local vernacular.

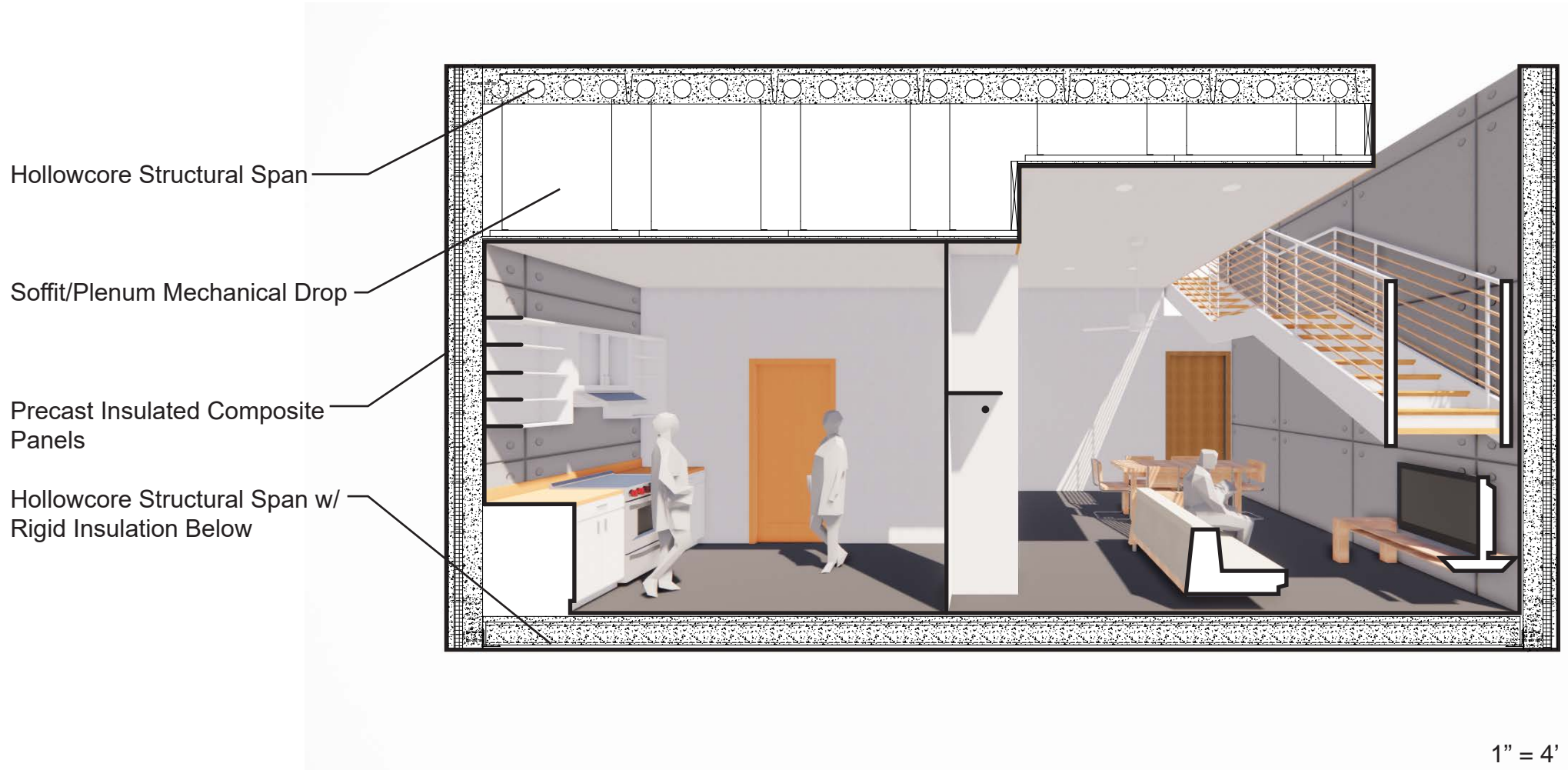
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# Building Envelope and Materials

## Slice of Life/Wall Sections



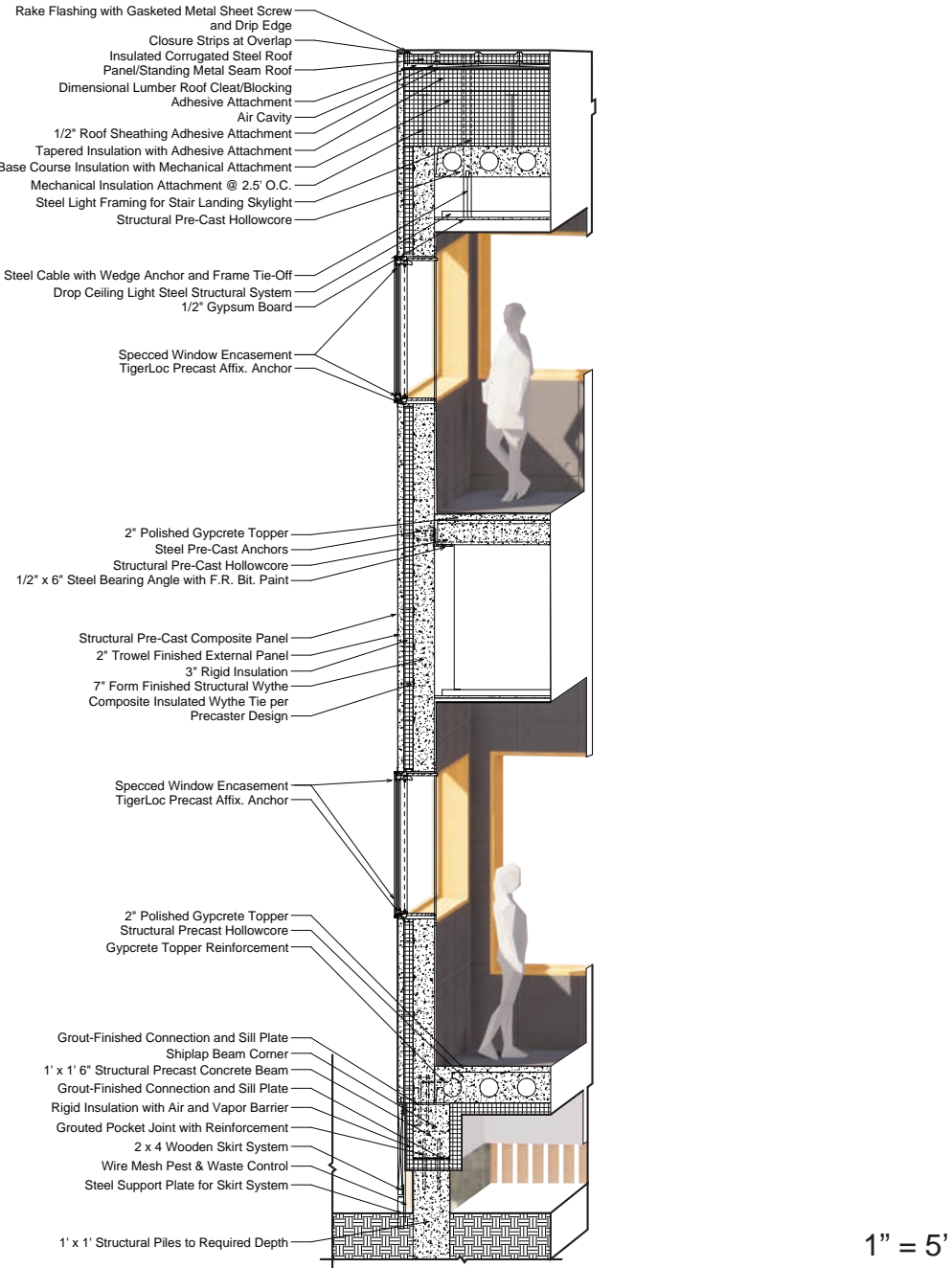
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# Building Envelope and Materials

## Foundation to Parapet Detail



Note: Exploded axonometric exploration of the envelope can be seen in phase 6.

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# Visualization

Physical Model 1" = 16'



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# Visualization

Physical Model 1" = 16'



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# Visualization

Physical Model 1" = 16'



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# Visualization

## Renderings



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# Visualization

## Renderings



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# Visualization

## Renderings



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