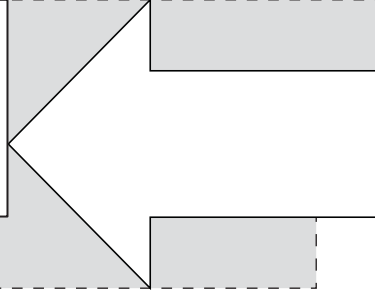


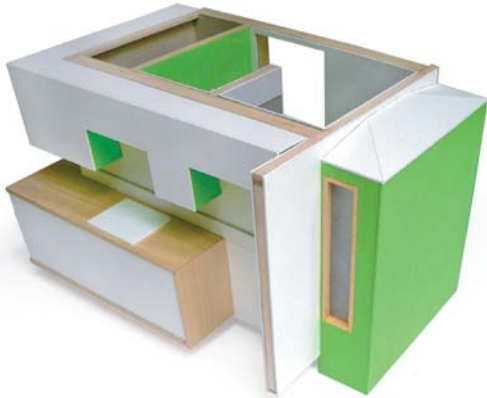




+OFFICE
MECH
BATH
+KITCHEN



THE IN HOUSE OUTHOUSE



OutHouse is a pre-fabricated residential core that consolidates major trade-dependent systems and finishes into a single deliverable unit. The concept of OutHouse is derived from the investigations of a prior Rice Building Workshop seminar that developed two distinct residential core strategies: a thickened wall that could be carried into existing structures; or units that arrived on site first around which the rest of the house would be constructed. This proposal swerves from earlier investigations at the point that it pairs the technical and design issues at play with a greater social vision: revitalizing the existing residential fabric of urban centers.

The packaging of the major fixtures, appliances and systems into a bathroom/kitchen unit relocates the work of the major trades off-site to a controlled factory setting, saving time, money, and material. These savings are put back into the core in the form of higher quality design, finishes, appliances, and construction. While OutHouse is being assembled off-site, a rough opening is constructed in the side of an existing house where, upon delivery, the core can be readily inserted and the entire structure quickly weather-proofed. The electrical, mechanical and plumbing systems are then coupled to on-site services and the systems branching out to the rest of the residence. The low-tech construction and flexibility of the core design allow for modest on-site finishing to customize the core to the specific house with which it has been paired.

This proposal works equally well with new construction. The new residence is framed and dried-in with the exception of a rough opening for the core insertion. OutHouse is inserted at this point, the systems are connected, and the interior finishes and trim applied. The late arrival of the core on-site provides a complete and secure shelter for its delivery, avoiding concerns of weather, vandalism or theft.



80% of the bungalows in the Menil Neighborhood could accomodate an OutHouse.

A CORE WITH A SOCIAL AGENDA

OutHouse offers an alternative to the perpetual outward expansion of the metropolis and its fetishization of the new. The housing stock of many urban centers (Houston and Los Angeles, among others) is reaching an age where the decision to renovate or demolish must be made.

While it was desired that OutHouse be flexible enough to accommodate both new and existing conditions, it was conceptualized as a renewal project. This is apparent in the presence it establishes in the facade of the residence in which it is inserted. A portion of the core overhangs the rest of the structure accommodating operable windows and the plumbing for the tub. This move announces the presence of the OutHouse to the street and surrounding neighborhood, acting as a badge or symbol that proudly asserts the residence's contribution to local urban renewal.

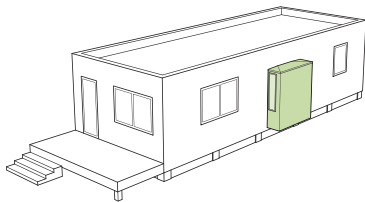
One OutHouse in one house produces only an anomaly in the neighborhood.

One OutHouse in every house creates a visible wave of changing sentiment in how we inhabit our maturing cities.

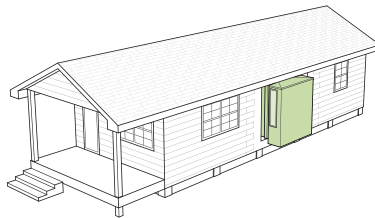


PERSPECTIVE OF OutHouse EXTERIOR VISIBLE FROM NEIGHBORHOOD.

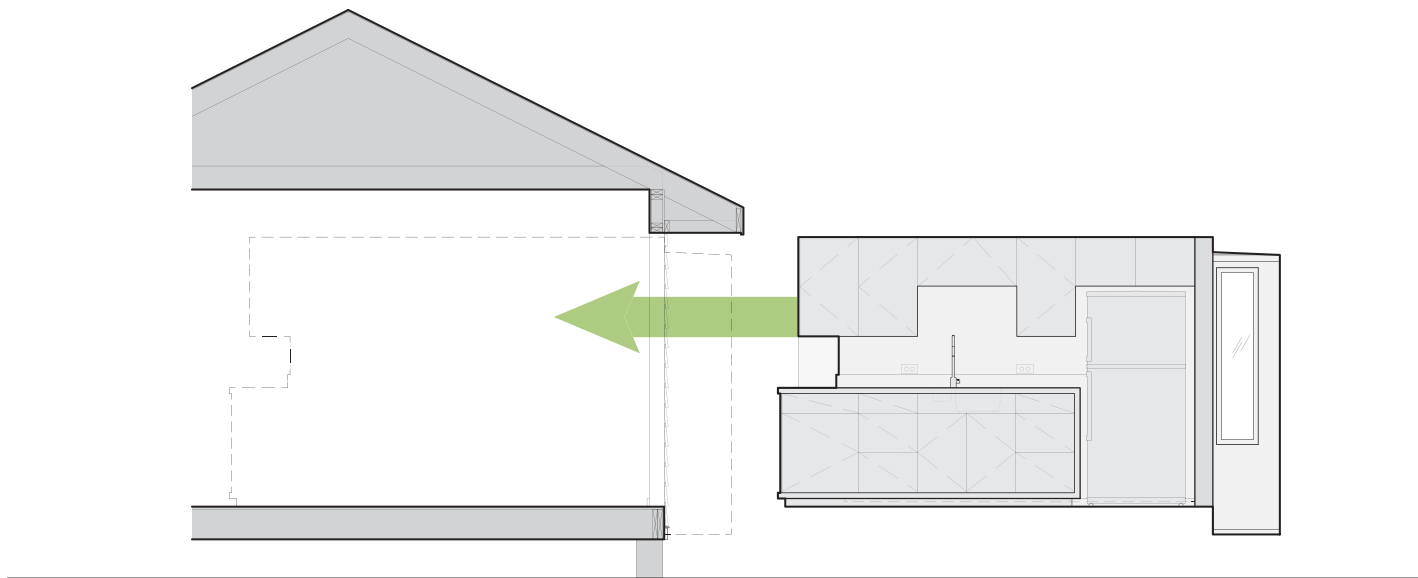
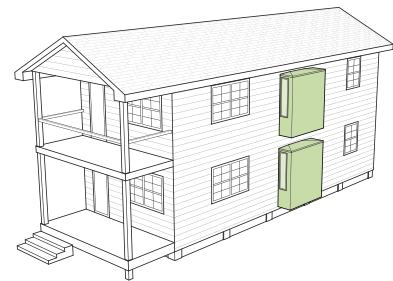
The flexibility of the OutHouse design allows for its use in:



NEW CONSTRUCTION or RENOVATION



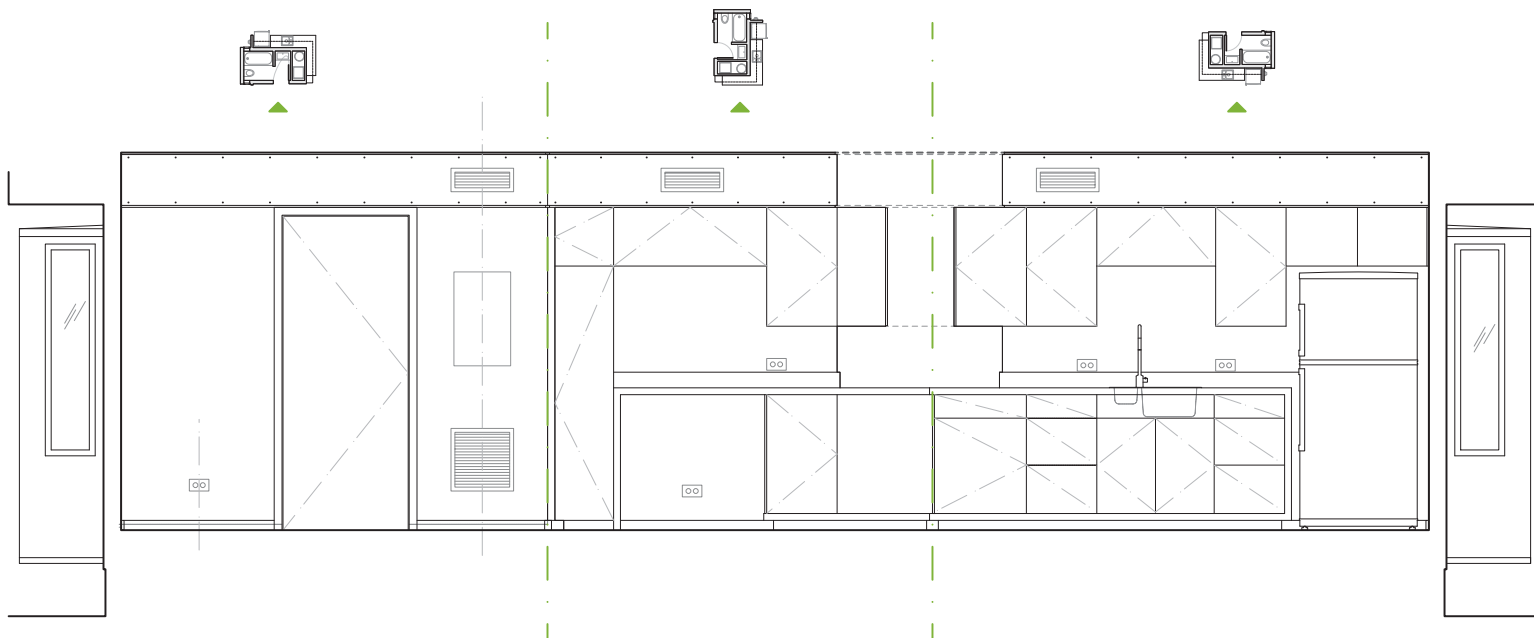
SINGLE FAMILY or MULTI-FAMILY



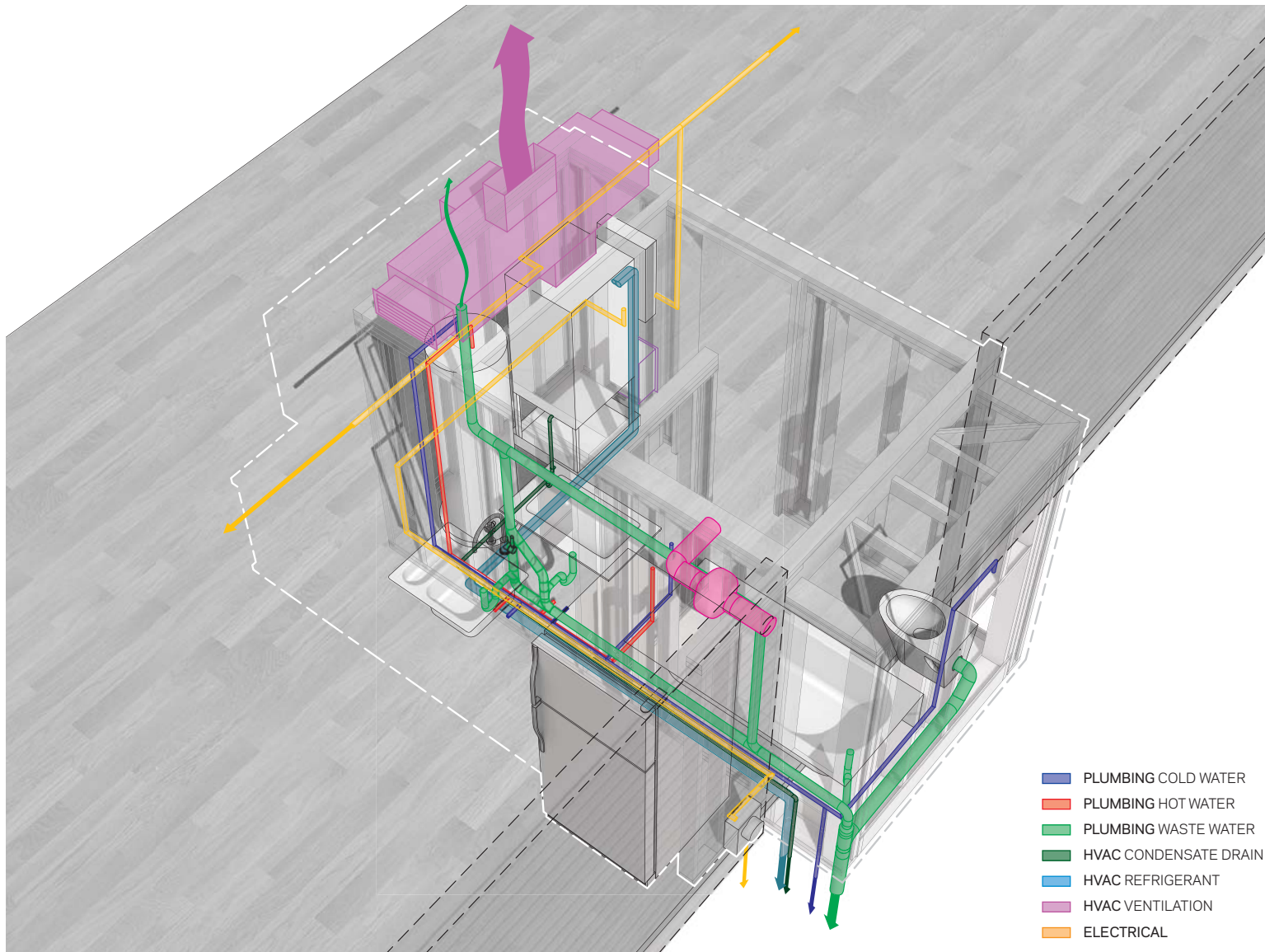
SECTION OF OutHouse INSERTION INTO EXISTING STRUCTURE.



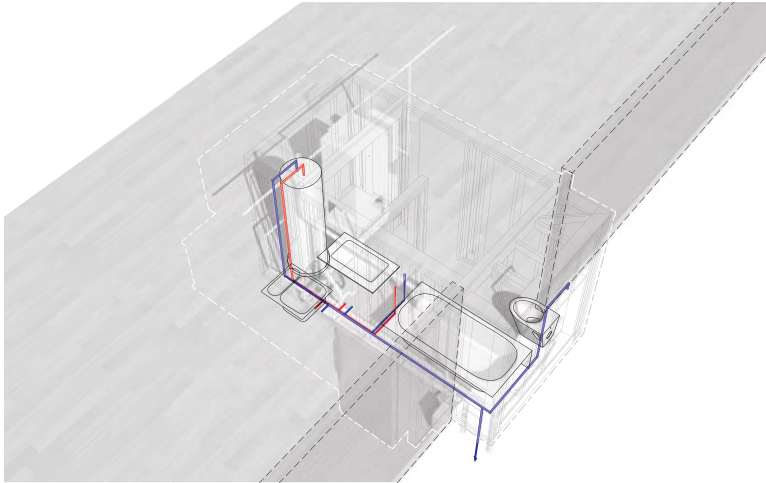
PERSPECTIVE OF OutHouse INTERIOR.



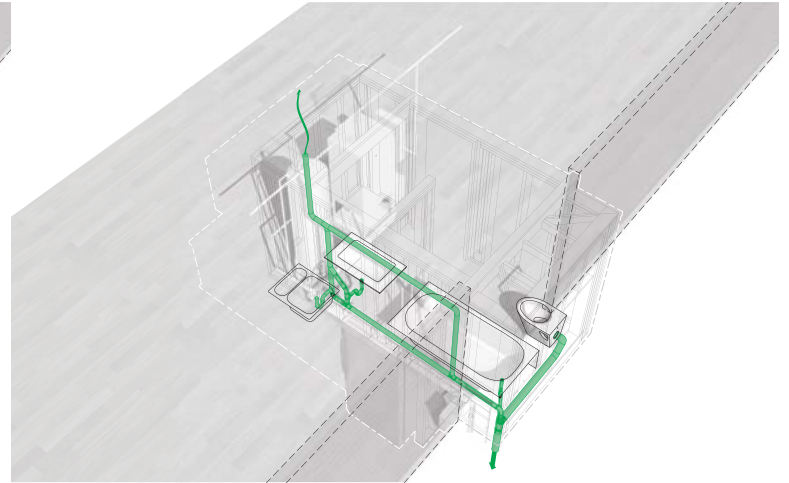
UNWRAPPED ELEVATION OF OUTHOUSE FIXTURES AND CABINET SYSTEM.



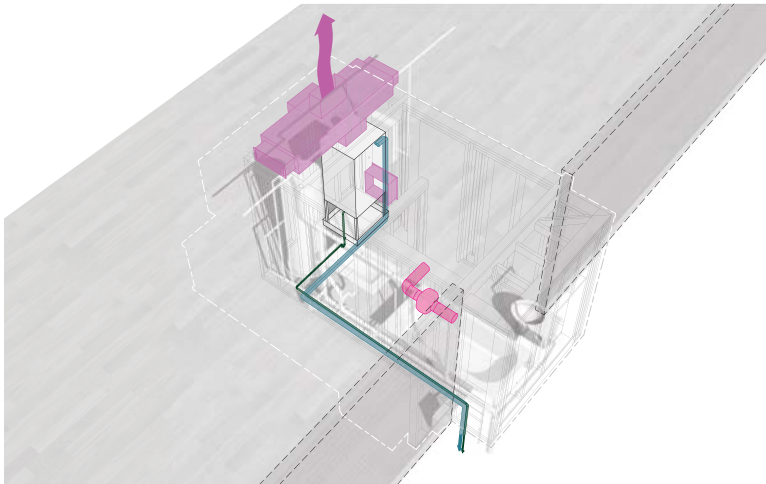
COMBINED SYSTEMS - MECHANICAL, ELECTRICAL, PLUMBING



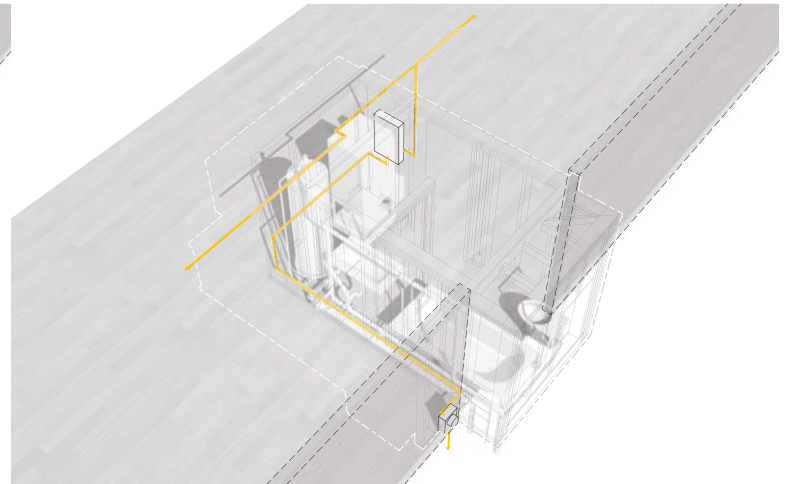
PLUMBING - HOT + COLD WATER



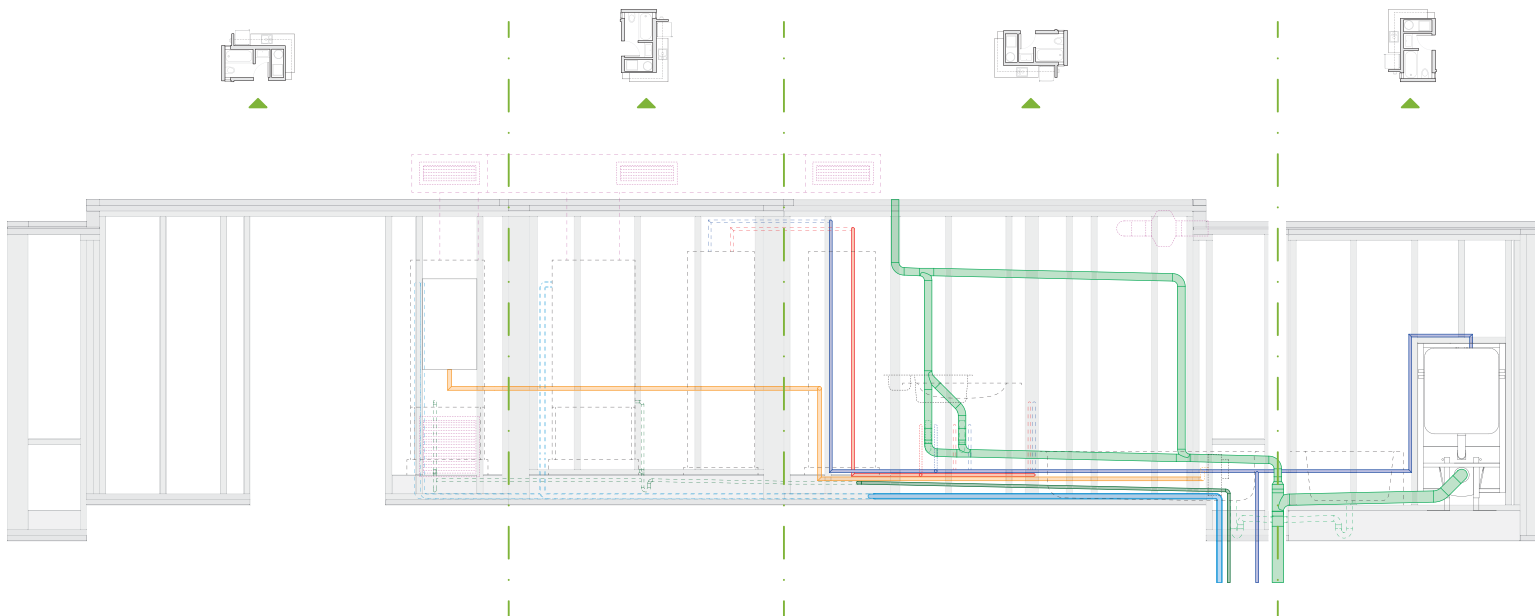
PLUMBING - WASTE WATER



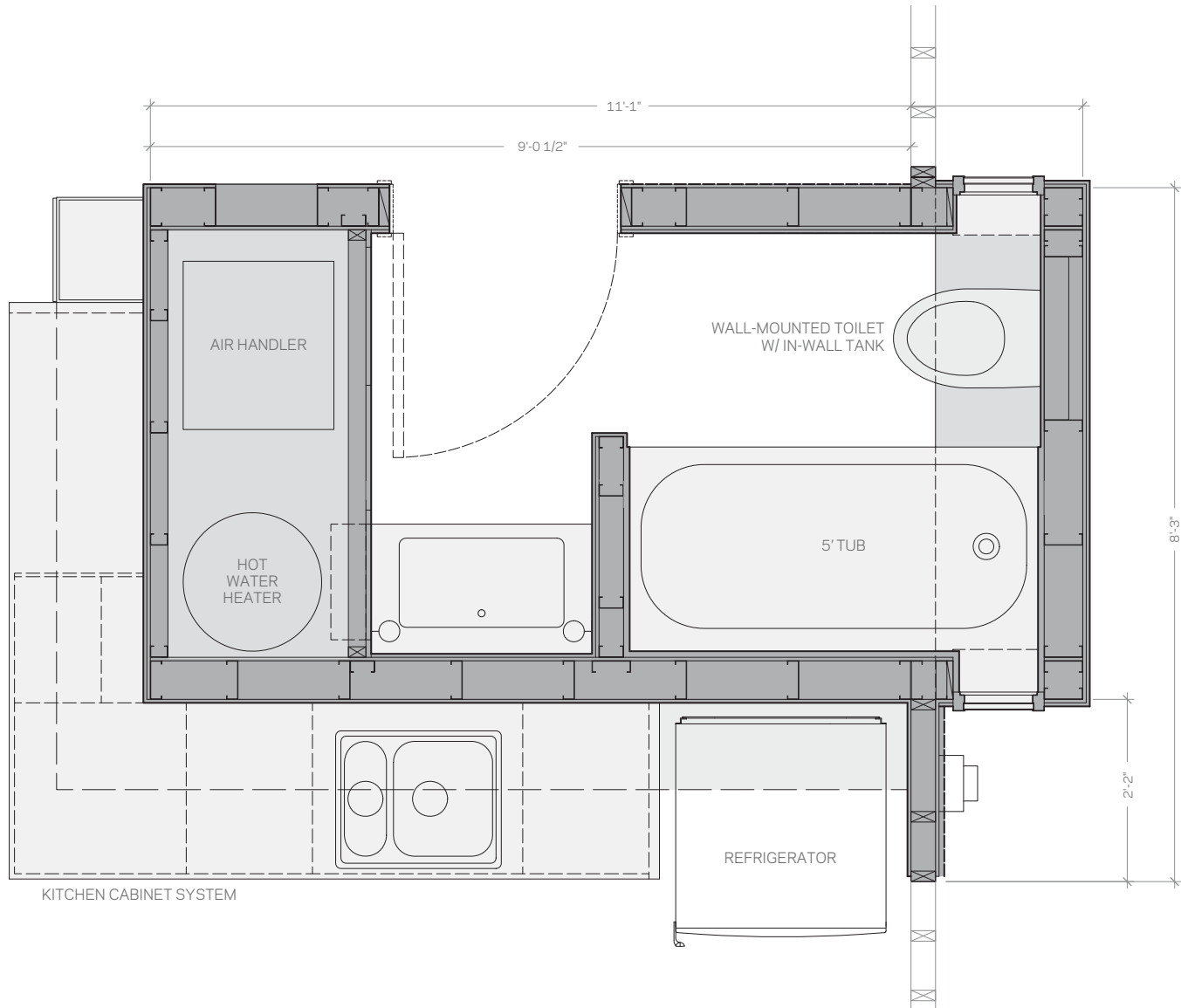
MECHANICAL



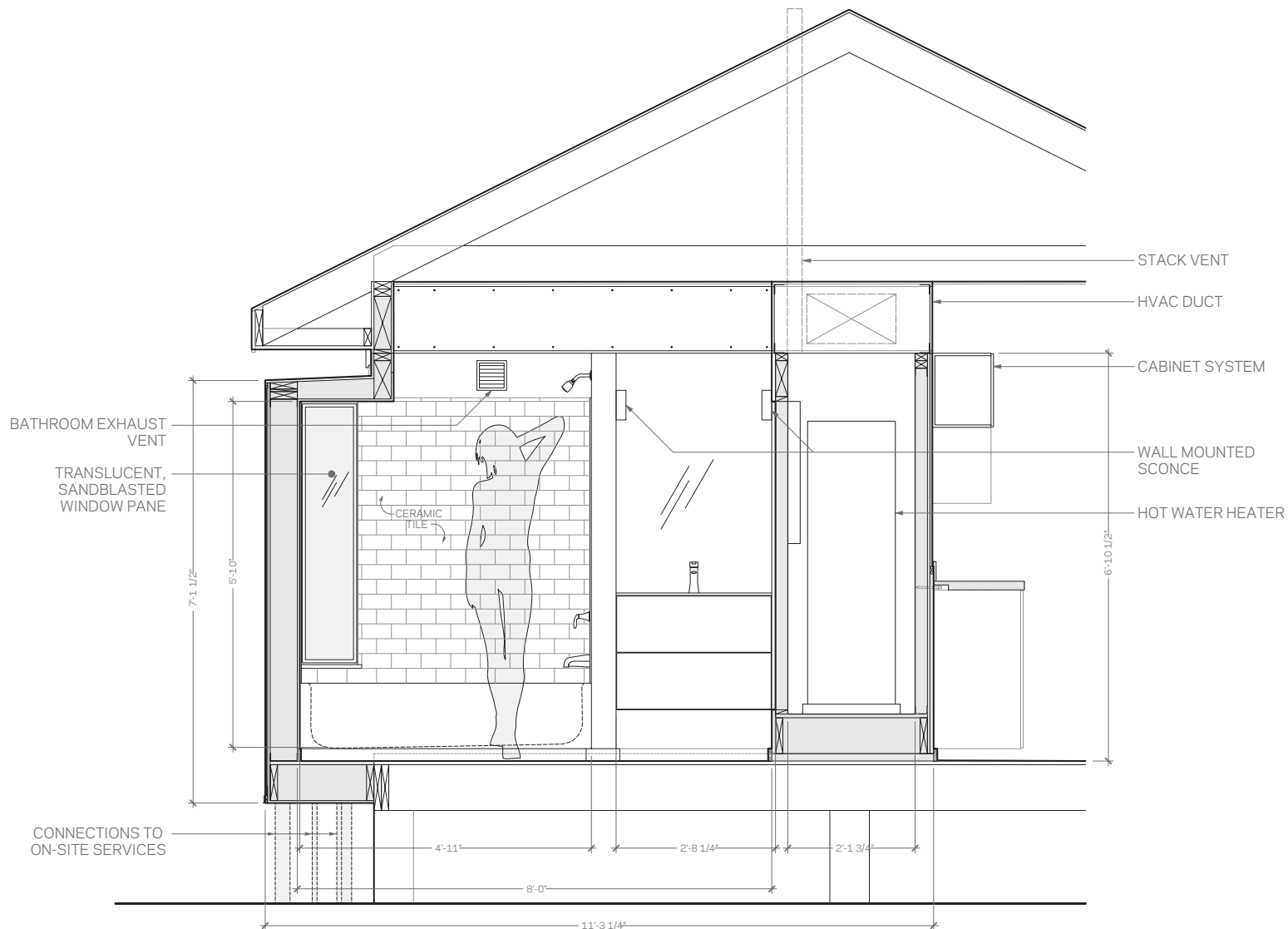
ELECTRICAL



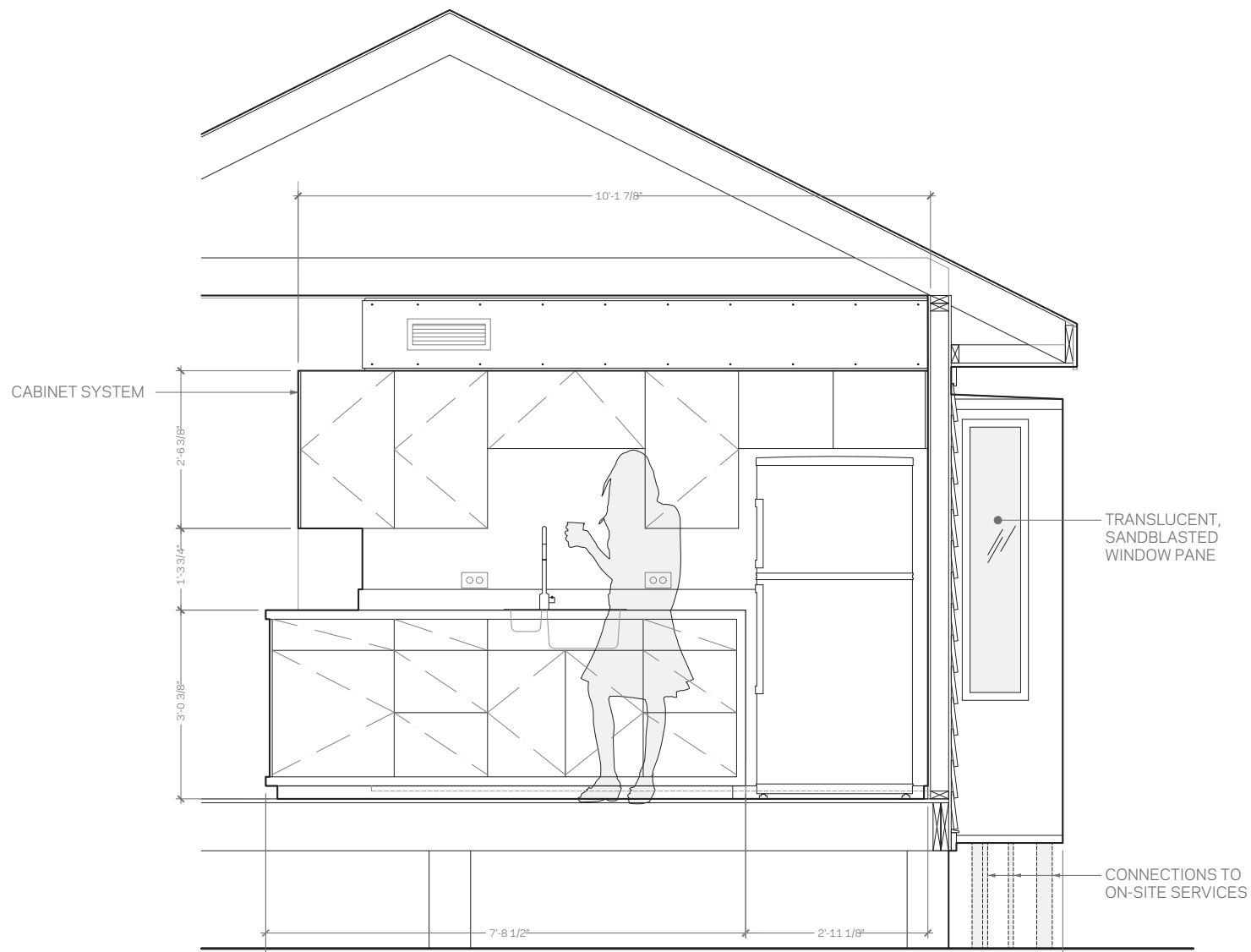
UNFOLDED ELEVATION OF OutHouse MECHANICAL, ELECTRICAL + PLUMBING SYSTEMS.



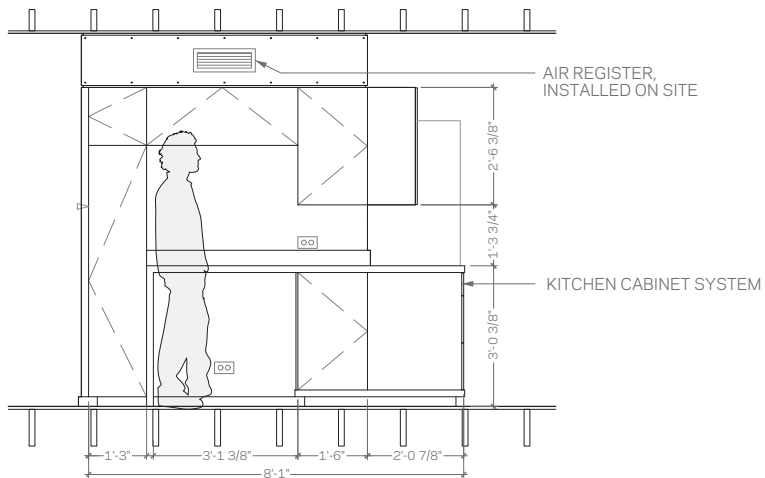
FLOOR PLAN



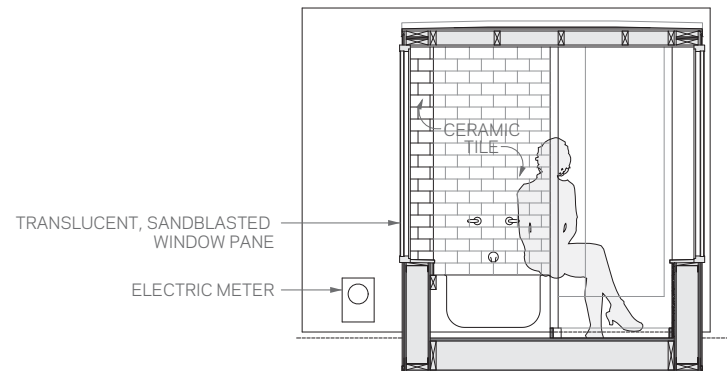
SECTION : BATHROOM



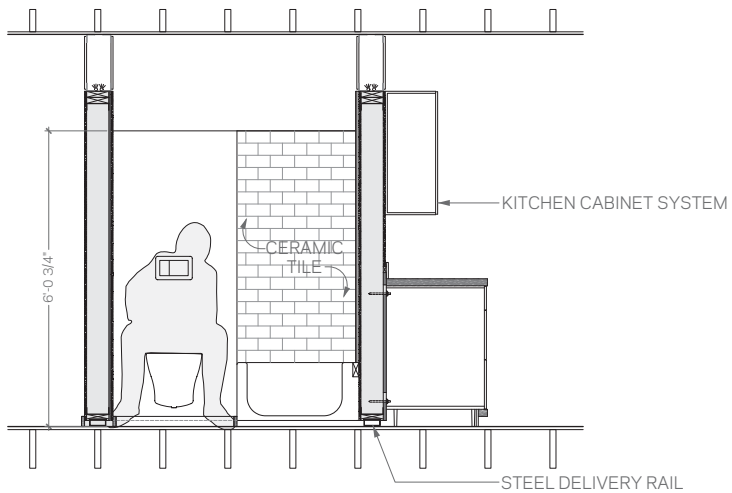
SECTION : KITCHEN



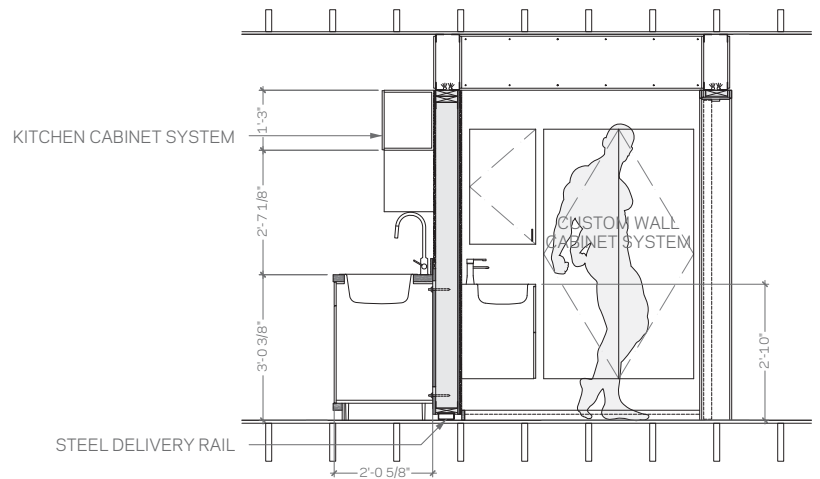
ELEVATION : DESK



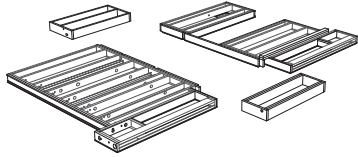
SECTION : DROP FLOOR



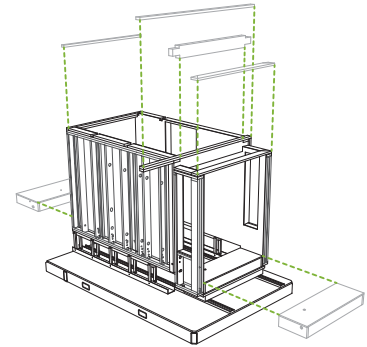
SECTION : TUB AND TOILET



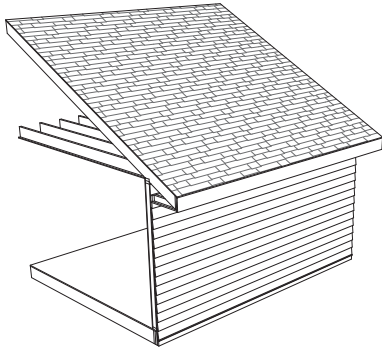
SECTION : SINKS



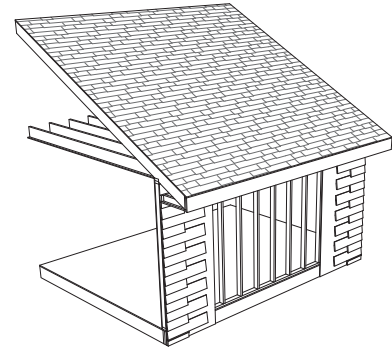
FLAT ASSEMBLE PRIMARY WALLS.
FACTORY SEQUENCE



ERECT WALLS + ATTACH FLOOR ASSEMBLIES.

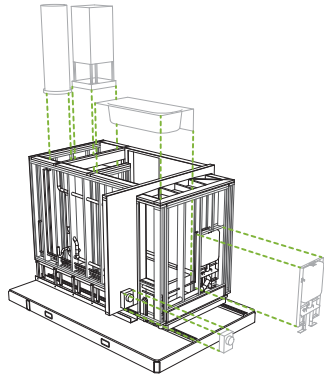


EXISTING HOUSE.
ON-SITE PREPARATION SEQUENCE

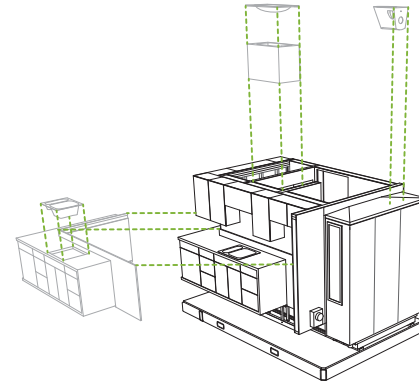


REMOVE + SALVAGE EXISTING EXTERIOR CLADDING.

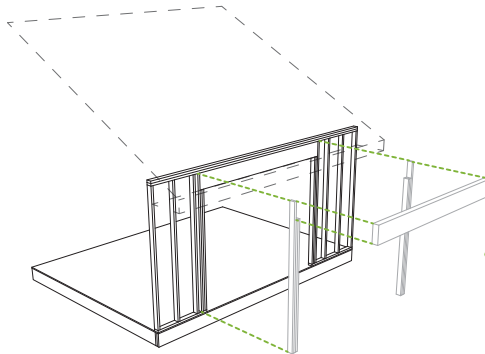
SEQUENCE OF OutHouse ASSEMBLY, DELIVERY AND INSERTION.



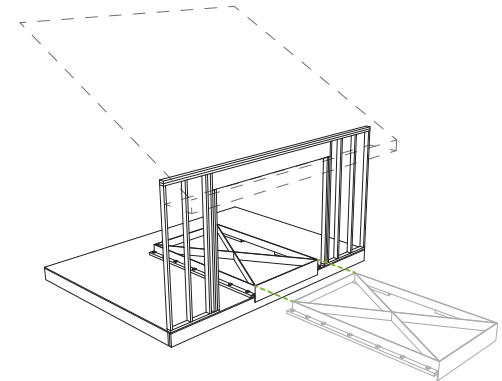
ROUGH-IN MECHANICAL.



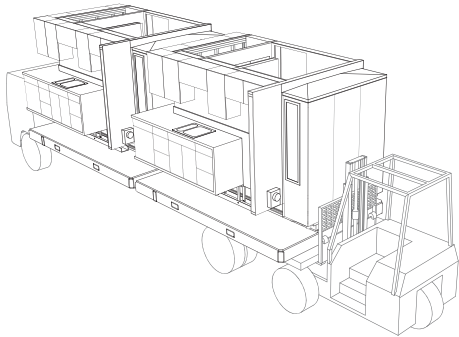
INSTALL CABINETS + FIXTURES.



FRAME OPENING.

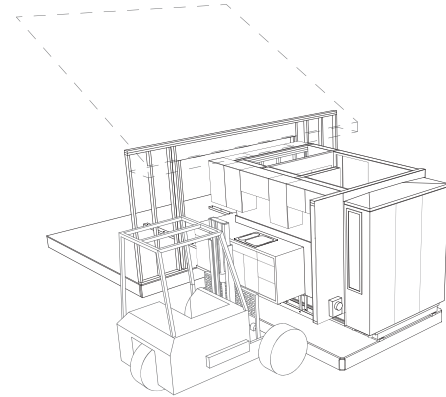


INSTALL + LEVEL GUIDE TRACKS.



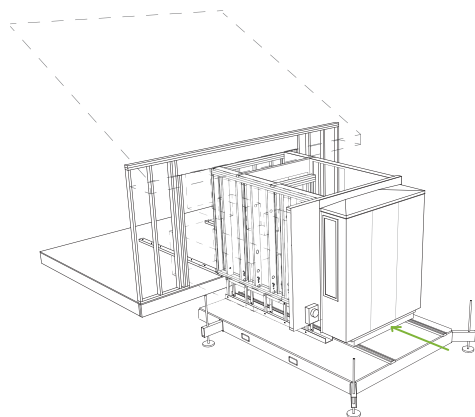
DELIVER TO SITE.

DELIVERY SEQUENCE

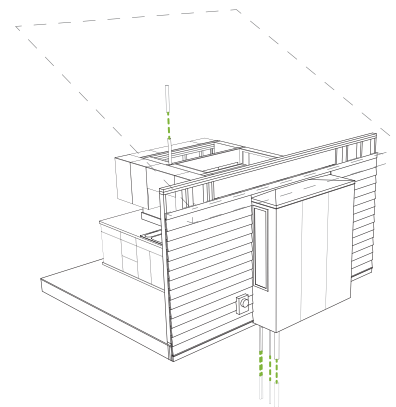


POSITION OutHouse.

SEQUENCE OF OutHouse ASSEMBLY, DELIVERY AND INSERTION.



INSERT OutHouse.
INSTALLATION SEQUENCE



CONNECT SERVICES.

URBANISM



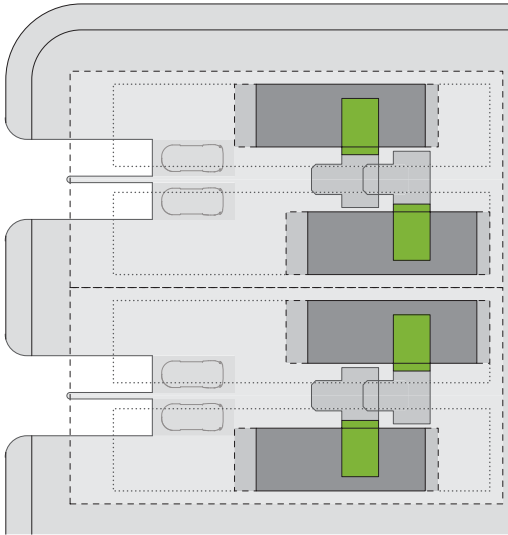
NEIGHBORHOOD FEASIBILITY

The OutHouse was inspired by Houston's increasing urban sprawl and need for inner city renewal, a situation familiar to many growing U.S. cities. The prototype and its insertion are intended to demonstrate the promise of OutHouse as an alternative to new construction and traditional renovation methods. Extensive deployment of OutHouse as a strategy for renewal within a neighborhood would satisfy broader social goals that aim to improve the quality of life in Houston's existing communities.

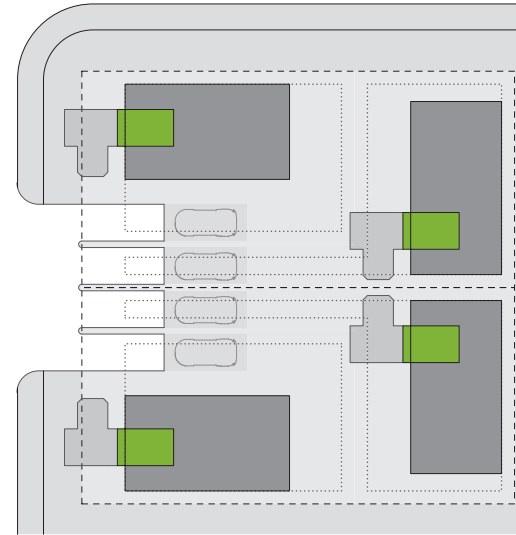
Gentrification is frequently heard in discussions about Houston's historic wards. Through conversations and interviews with local community members, advocates, developers, and academics we established some opinions about gentrification, its damaging effects, its benefits and its causes. Through observation of Houston's historical development patterns we cultivated an argument for the OutHouse based on the preservation of scale and constituency. By revitalizing the housing stock while maintaining the efficient, vernacular housing footprint, the OutHouse can offer new domestic amenities and design for the residents that have historically called the wards their home.

By using an existing structure and existing urban infrastructure, OutHouse exhibits "urban sustainability," an approach to sustainability that relies not on high technology but rather re-use, re-densification, and re-habitation of once established neighborhood communities.

The following studies represent a sampling of possibilities for OutHouse as a strategy for renewal in neighborhoods in Houston, TX, Detroit, MI, Washington, DC, and New Orleans, LA.

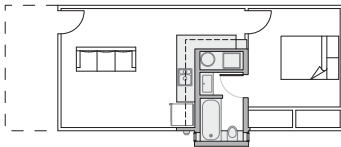


SITE PLAN ONE BEDROOM UNITS

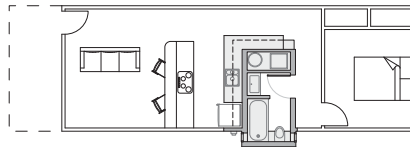


SITE PLAN TWO BEDROOM UNITS

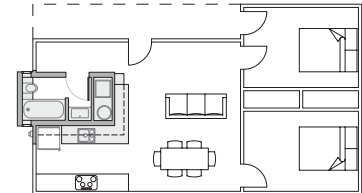
SITE PLANS STUDYING LOT LAYOUTS FOR OUTHOUSE DELIVERIES.



ONE BEDROOM 480 sf

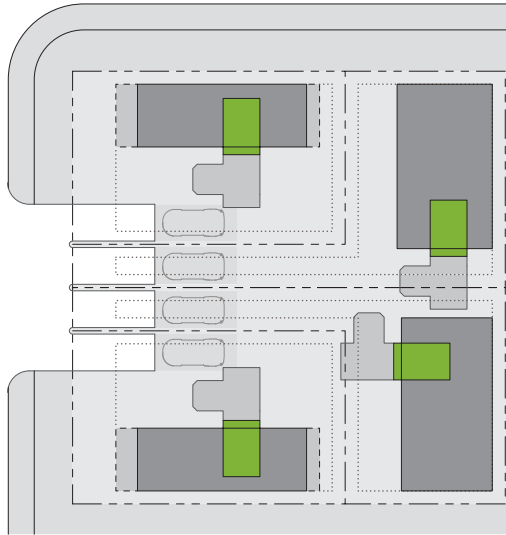


ONE BEDROOM 600 sf

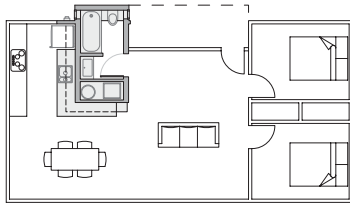


TWO BEDROOM 840 sf

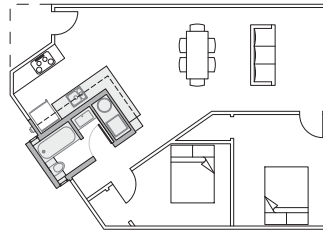
FLOOR PLANS FOR OUTHOUSE USE IN RENOVATION AND NEW CONSTRUCTION.



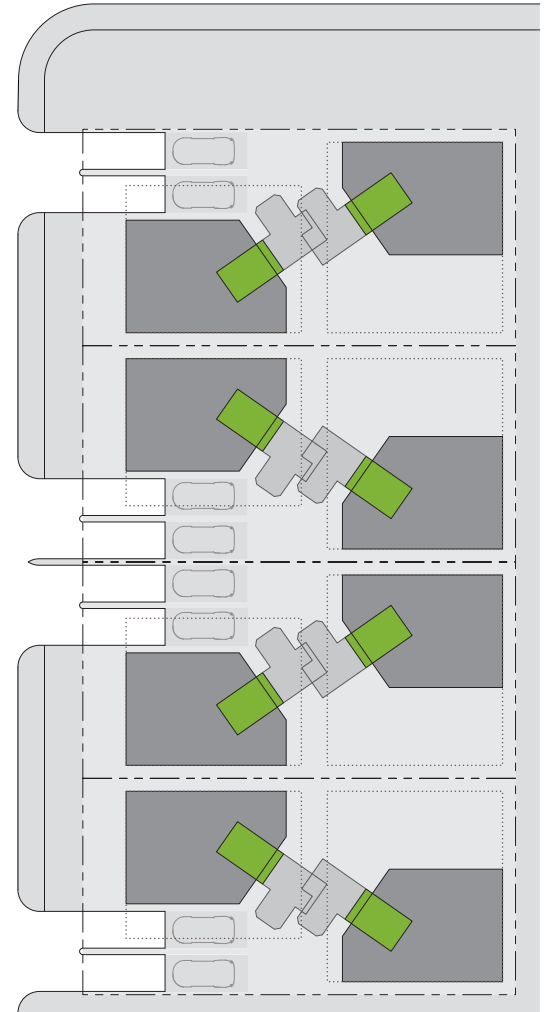
SITE PLAN MIXED UNITS



TWO BEDROOM 840 sf



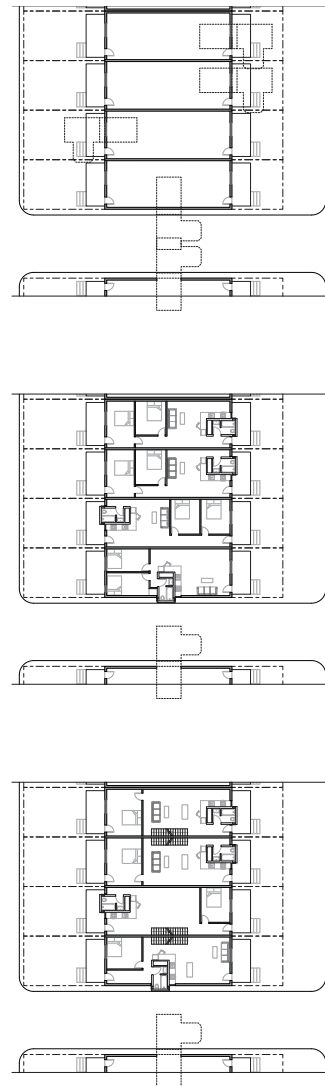
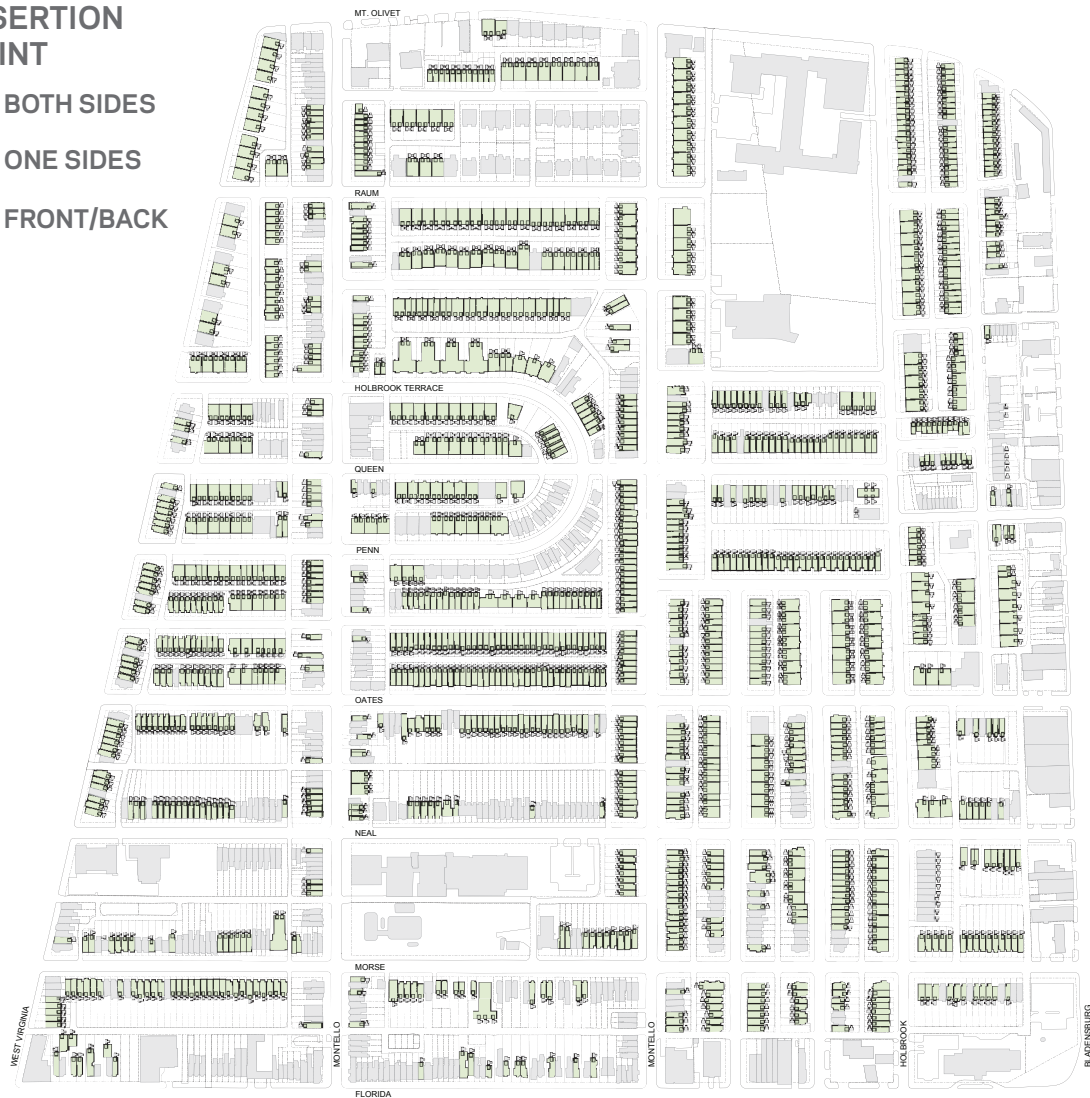
TWO BEDROOM 880 sf



BLOCK PLAN TWO BEDROOM UNITS

INSERTION POINT

- BOTH SIDES
- ONE SIDES
- FRONT/BACK



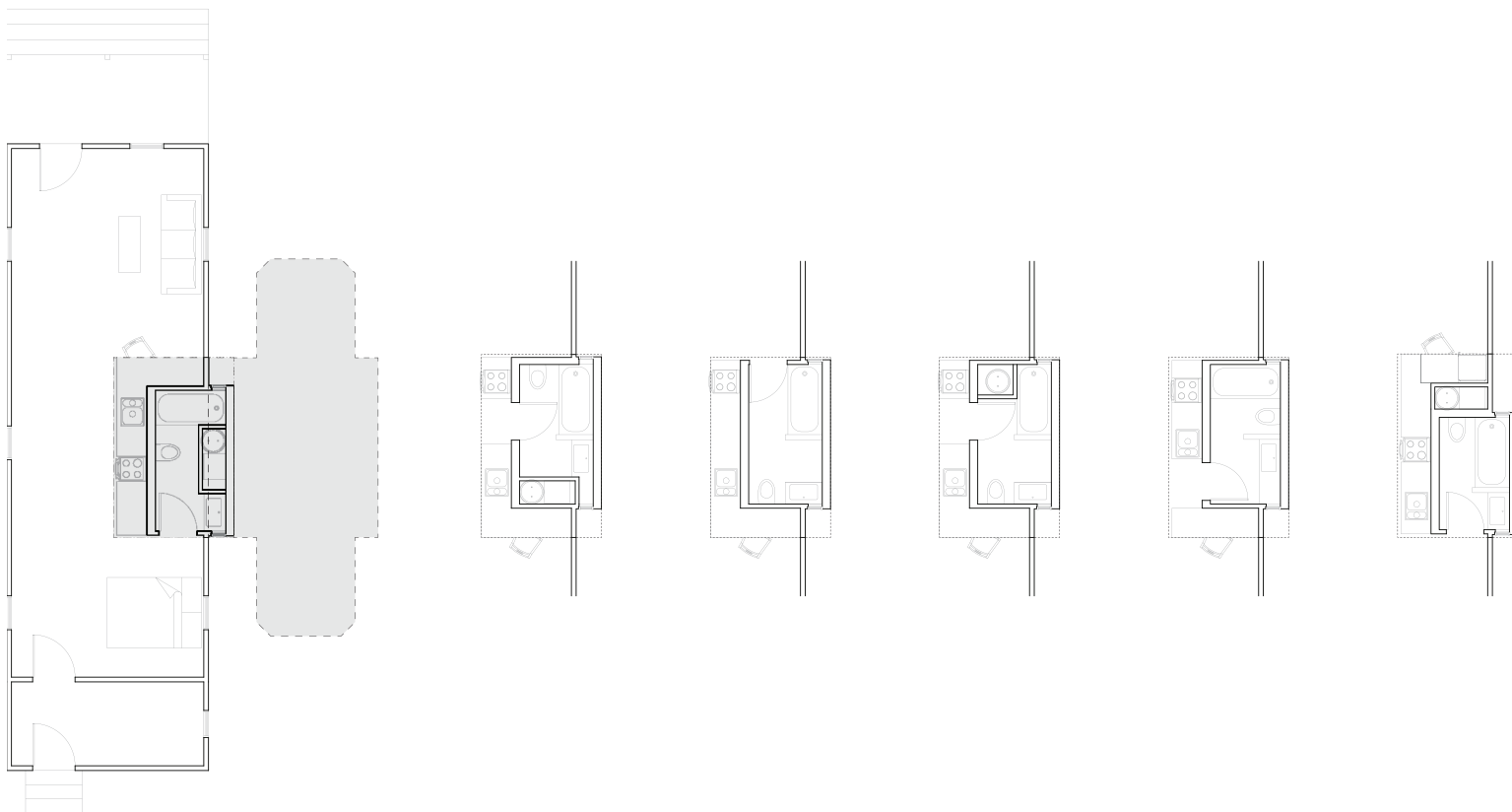
URBAN FEASIBILITY DIAGRAM : TRINIDAD, WASHINGTON, DC (L); TENAMENT HOUSING PROPOSALS (R)



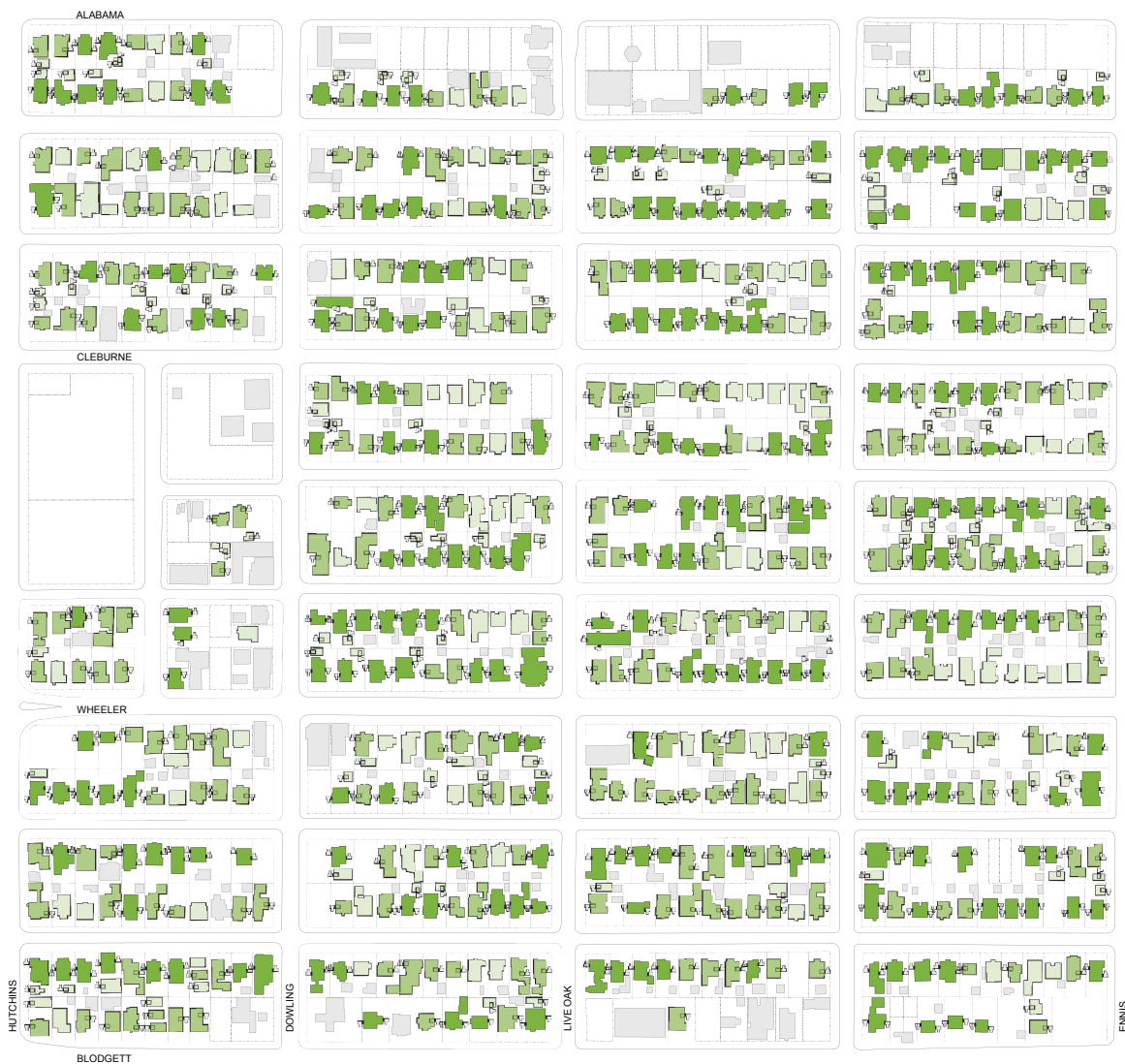
PROJECTING FUTURES : BACK LOT CONDITION IN TRINIDAD



URBAN FEASIBILITY DIAGRAM : MENIL NEIGHBORHOOD, HOUSTON, TEXAS



ALTERNATE ORIENTATIONS : OUTHOUSE WAS TESTED AS A UNIT REQUIRING LESS CLEARANCE



INSERTION POINT

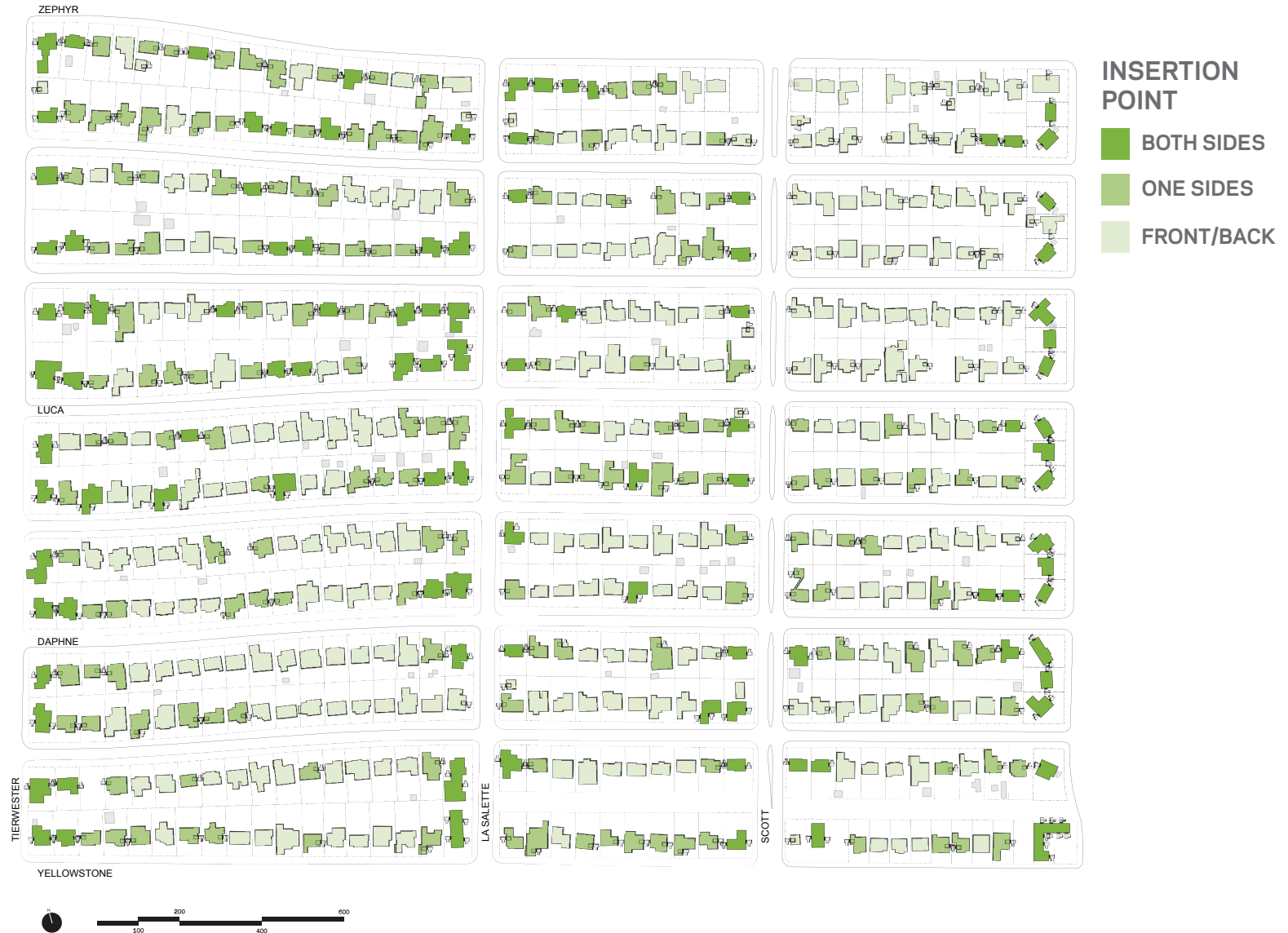
■ BOTH SIDES

■ ONE SIDES

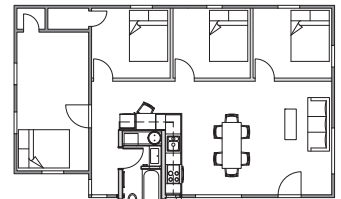
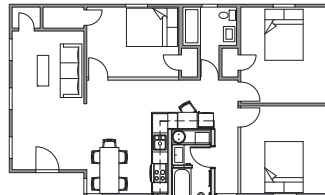
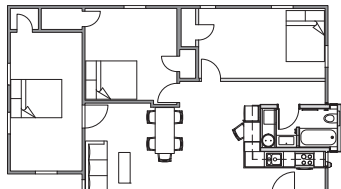
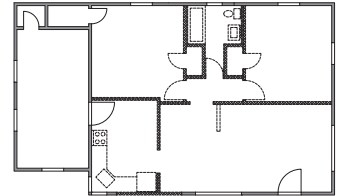
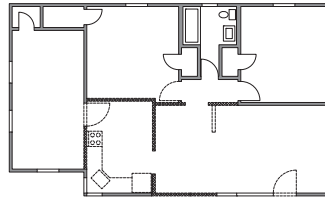
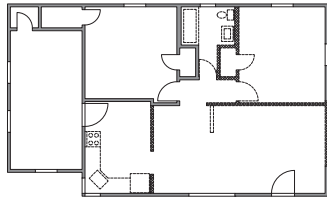
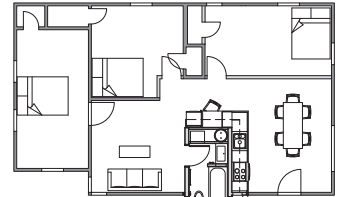
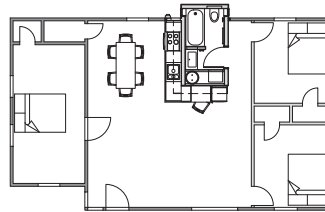
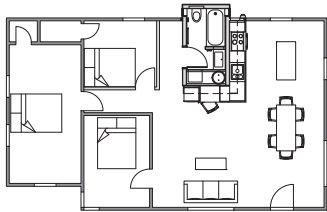
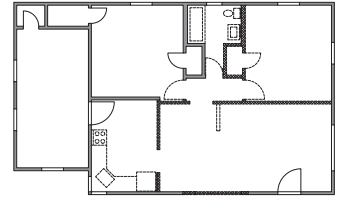
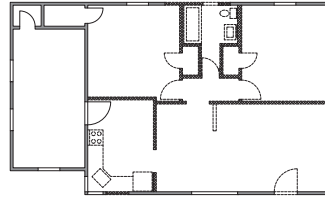
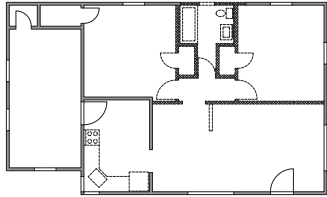
■ FRONT/BACK



URBAN FEASIBILITY DIAGRAM : INDEPENDENCE HEIGHTS, HOUSTON, TEXAS



URBAN FEASIBILITY DIAGRAM : OST / SOUTH UNION, HOUSTON, TEXAS



PLANAR STUDIES: SPECULATIVE STUDIES OF EXISTING THREE BEDROOM HOUSE



PROJECTING FUTURES : STREET CONDITION IN CENTRAL CITY, NEW ORLEANS



CONSTRUCTION



PROTOTYPE: CONTEXT HOUSTON

Born out of an integrated research/design seminar in the Fall of 2010 at the Rice University School of Architecture and through the Rice Building Workshop (RBW), OutHouse was imagined in response to a simple yet incredibly nuanced and complex prompt: How can a shippable, prefabricated unit, that incorporates a full kitchen and full bathroom, and can also service an entire house (existing or new construction) with completely new and upgraded mechanical, electrical, and plumbing systems be designed?

The greatest issue facing the idea of a prefabricated core unit inserted into existing homes is the potential necessity of altering floor and roof structure. Structural systems are designed to act together and allow continuous members to remain as such. By interrupting this continuity, massive modification of the entire assembly would be required, forcing much greater levels of time and cost to both the construction process and directly to the client, whether a developer or end-user. When thinking about renovation in an affordable sense through prefabrication, it is critical to conceive of as few on-site alterations as possible.

With this framework in place, as well as a prior and productive relationship with local Houston CDC and non-profit, Project Row Houses (PRH), OutHouse was given the potential for reality. Nothing could possibly be more real than a physical site and house ready to receive the OutHouse prototype. Through PRH, located on a corner lot, an historic shotgun row house was identified as the perfect petri dish. It afforded a tangible “receiver” necessary to further the project. Perfect to test all of the intentions and implications of OutHouse, the site offered room to work and experiment with delivery.



MOCKUP : MOCKUPS TESTED THE JOINTS AND CONNECTIONS OF THE STRUCTURAL PLYWOOD SYSTEM



STEEL FABRICATION : A LOCAL STEEL FABRICATOR HELPED TO DEVELOP THE DELIVERY TRAY SYSTEM



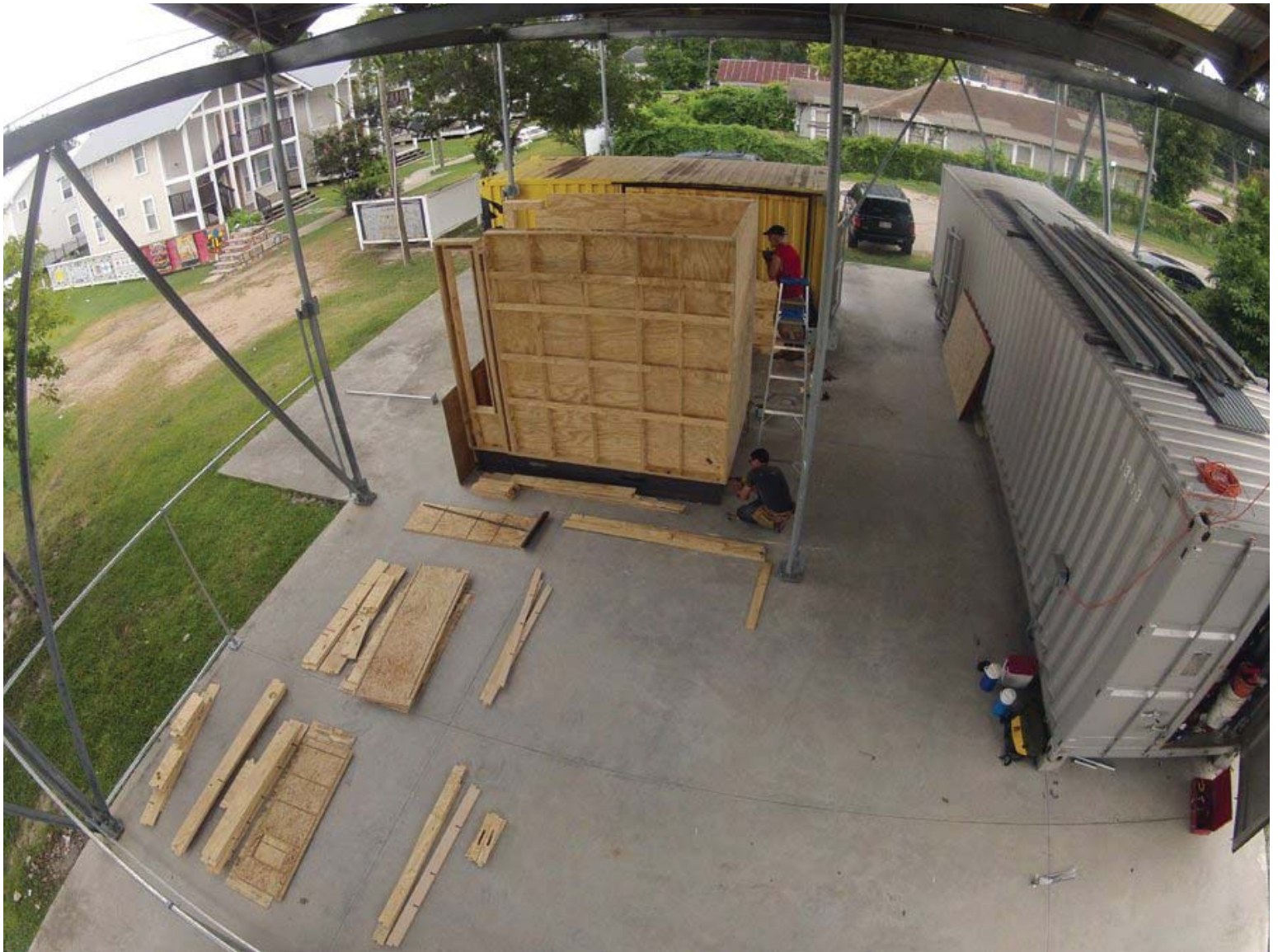
STEEL FABRICATION : THE PROTOTYPE WILL BE BUILT ON THE TRAY SO THE FORKLIFT CAN LIFT IT



TESTS : ALONG WITH TESTS CAME FAILURES WHICH LED US BACK TO THE DRAWING BOARD



WALL ASSEMBLIES : AS A KIT OF PARTS, THE WALLS FOR INHOUSE OUTHOUSE ASSEMBLY QUICKLY



BOXING OUT : AS THE WALLS COME TOGETHER, THE STRUCTURAL SHELL BECOMES APPARENT



COLLABORATION : CONSTANT COLLABORATION AND COMMUNICATION WAS ESSENTIAL



STRUCTURAL SHELL : COMPLETED INHOUSE OUTHOUSE STRESSED STRUCTURAL PLYWOOD SHELL



MOCKUPS : WHILE WAITING FOR TRADES, MOCKUPS OF CRITICAL CONNECTIONS ARE FABRICATED



ROUGH IN : TRADESMEN BEGIN TO ROUGH IN THE SYSTEMS THAT OPERATE IN THE INHOUSE OUTHOUSE



WINDOWS + SIDING : AS TRADES WORK, OTHER PORTIONS OF THE PROJECT ARE ADDRESSED



BATHROOM : INTERIOR VIEW OF BATHROOM ROUGH IN, IN PROGRESS



BATHROOM : VANITY (LEFT) ROUGH IN; TUB SET (RIGHT)



JOB MEETINGS : SOMETIMES THESE TOOK PLACE AT ODD HOURS, WHENEVER WORK STOPPED



MECHANICAL : THE MECHANICAL SUBCONTRACTOR HARD AT WORK



DRYWALL : HANGING DRYWALL BEGINS



DRYWALL : ONCE COMPLETELY HUNG, JOINT TAPE AND JOINT COMPOUND ARE APPLIED TO SEAMS



DRYWALL : MANY COATS OF JOINT COMPOUND ARE NECESSARY



PAINT : THE LAYERS OF JOINT COMPOUND ALLOW FOR A SMOOTH FINISHED SURFACE FOR PAINT



CABINETS : FOLLOWING MULTIPLE COATS OF PRIMER AND PAINT, WALL CABINETS ARE HUNG



CABINETS : BASE CABINETS ARE ADDED AND HUNG FROM THE STRUCTURAL FRAME AS WELL



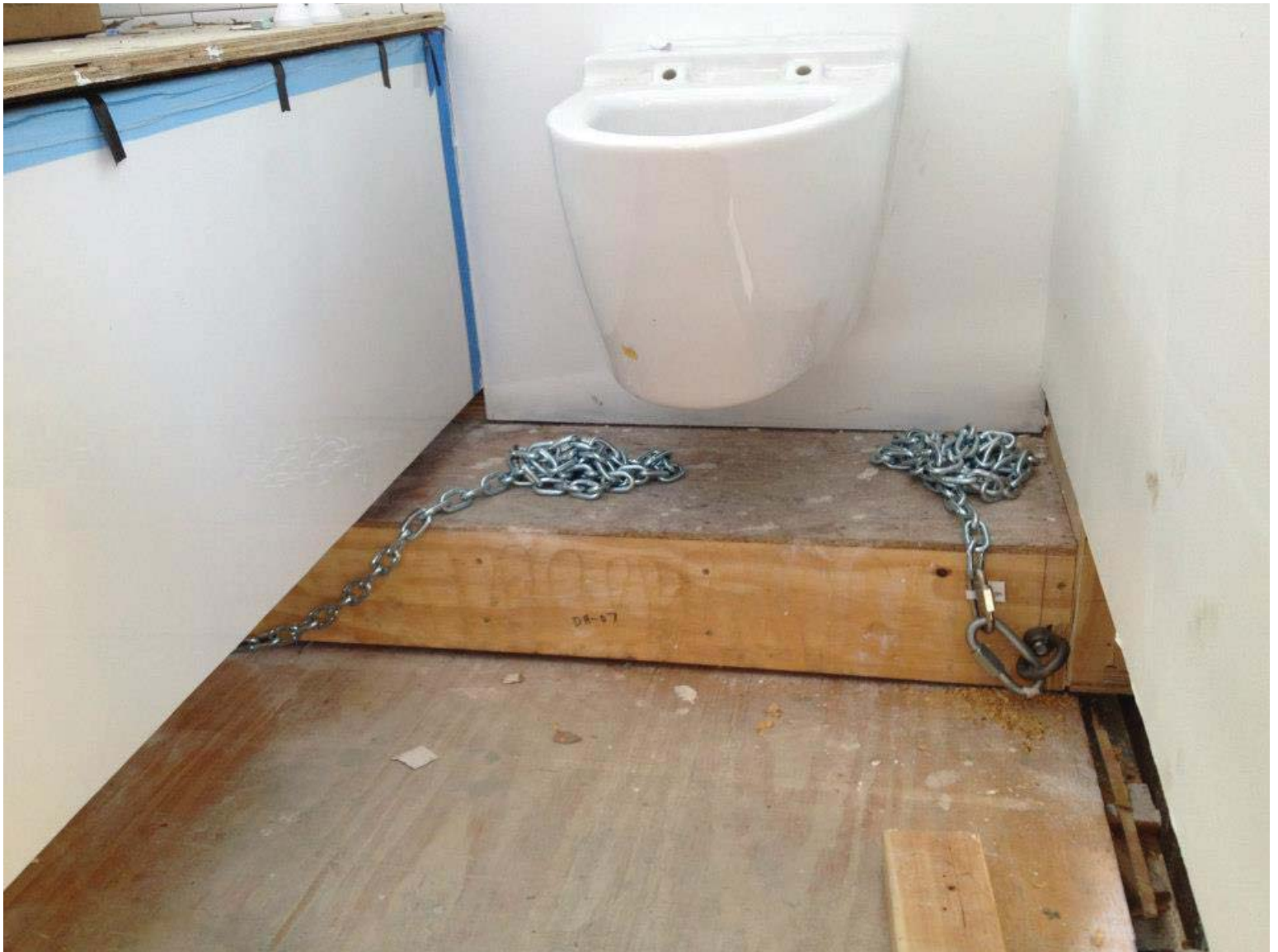
NEARLY COMPLETE : THE DAY BEFORE THE FORKLIFT ARRIVES, THE PROTOTYPE IS READIED



FORKLIFT : THE FORKLIFT CARRIES THE PROTOTYPE FROM THE WORK SITE TO A FLATBED TRUCK



PREPERATION : A 4X6 MEMBER IS USED AS A BRACE



PREPERATION : BOLTS ATTACH THE 4X6 TO CHAINS TO HELP PULL THE PROTOTYPE INTO PLACE



SITE PREPARATION : DAYS BEFORE THE MOVE, THE HOUSE IS READIED



SITE PREPARTION : A NEW STRUCTURAL HEADER IS ADDED AS WELL AS A TEMPORARY SHORING WALL



THE MOVE : THE PROTOTYPE IS LIFTED SO THAT THE FLATBED CAN BE MOVED UNDER IT



THE MOVE : LIKE JEAN PROUVE BEFORE US, THE PROTOTYPE WAS MOVED WITH FLOWERS



THE MOVE : THE PROTOTYPE, AT 8'-6" WIDE IS MEANT TO SIT ON A TRUCK WITHOUT WIDE LOAD STATUS



THE MOVE : ONCE AT SITE, THE FORKLIFT IS READY TO ACCOMPLISH THE MAJOR POSITIONING



THE MOVE : THE INHOUSE OUTHOUSE SPECIFIES AN ALL-TERRAIN FOKRLIFT FOR ROUGH SURFACES



THE MOVE : LOCAL TELEVISION AND MEDIA OUTLETS DOCUMENT THE PROCESS



TRAY SYSTEM : A CRUDE SYSTEM OF RAILROAD TIES SERVES AS A BASE FOR THE DELIVERY TRAY



THE MOVE : ONCE ROUGHLY IN PLACE, A LONG PROCESS OF ADJUSTMENTS TOOK PLACE



THE MOVE : ALMOST IN PLACE



THE MOVE : SETTING THE FINAL PLACEMENT



THE MOVE : ONCE IN PLACE, COME-ALONGS ARE USED TO CRANK THE PROTOTYPE INTO THE HOUSE



THE MOVE : SUCCESSFUL DEPLOYMENT AND INSTALLATION OF THE FIRST INHOUSE OUTHOUSE UNIT



IN SITU : INHOUSE OUTHOUSE PROTOTYPE INSTALLED WITH NEW INSULATION AND REUSED SIDING



IN SITU : INHOUSE OUTHOUSE PROJECTS A MERE 20" FROM THE FACE OF THE EXISTING HOUSE



IN SITU : INHOUSE OUTHOUSE MAKES A BOLD YET RESPECTFUL STATEMENT IN THE NEIGHBORHOOD



KITCHEN : BOSCH - COOKTOP, OVEN; MIRABELLE - SINK; SUMMIT - FRIDGE; IKEA - CABINETS, COUNTERS



BATHROOM WINDOWS : TALL, NARROW WINDOWS BY RAM ALLOW OBLIQUE VIEWS AND NATURAL LIGHT



BATHROOM CLERESTORY : A "CLERESTORY" CONNECTS INHOUSE OUTHOUSE TO THE EXISTING HOUSE



CLERESTORY : THE "CLERESTORY" MITIGATES BETWEEN NEW AND OLD



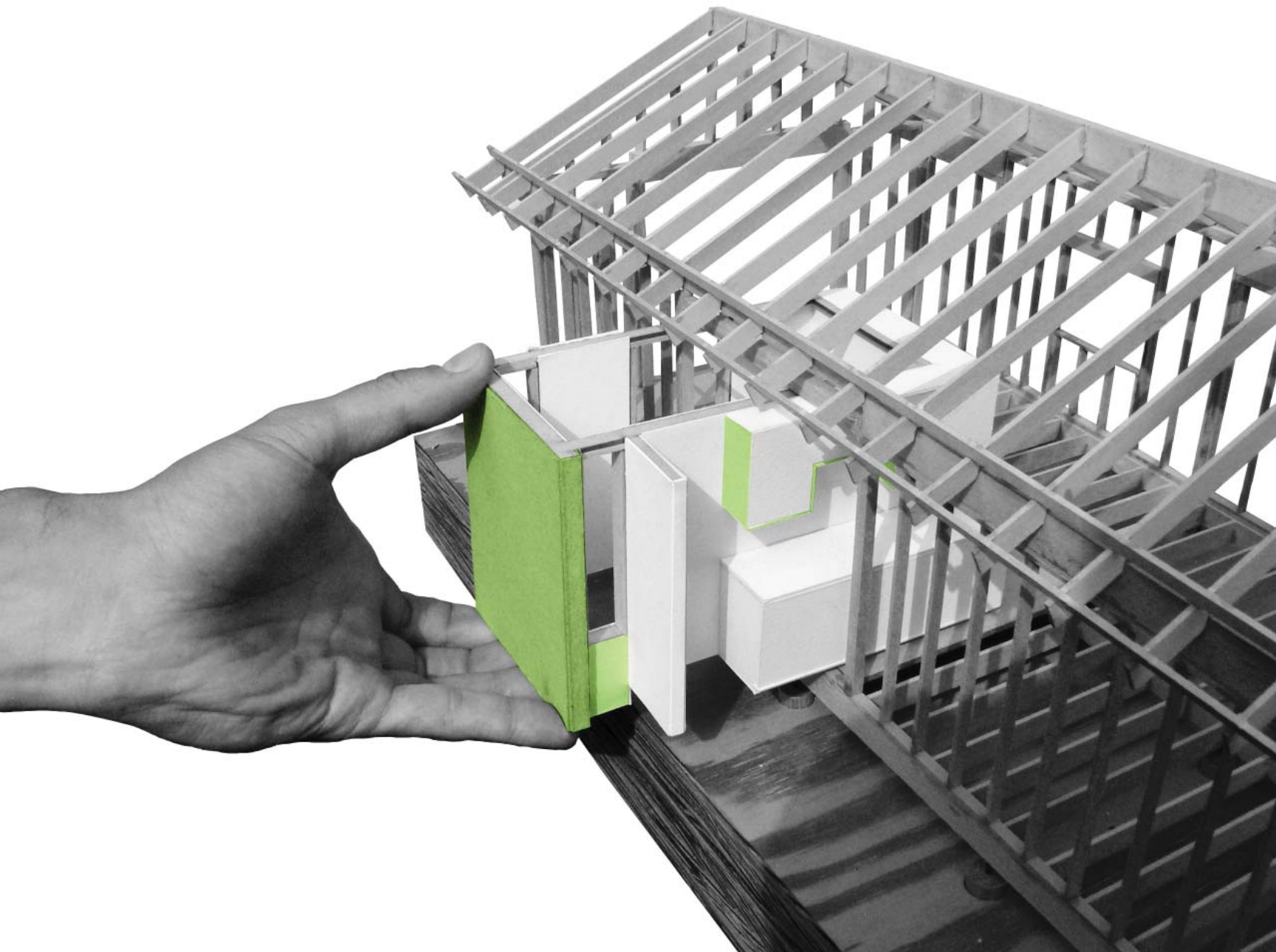
LED LIGHTS : IT ACTS AS GASKET AND ACCENT LIGHTING TROUGH



CLERESTORY : THE "CLERESTORY" IS SEEN INSIDE AND OUTSIDE THE INHOUSE OUTHOUSE UNIT



LED LIGHTS : IN ADDITION TO UNDER COUNTER LIGHTS, THE "CLERESTORY" PROVIDES ACCENT LIGHT



Awards

Texas Society of Architects, Studio Award 2011
Architecture Center Houston Foundation, Grant Recipient 2011
Margaret Everson Fossi Traveling Fellowship, Project Nominated 2011
Rice Design Alliance Initiatives for Houston, Grant Recipient 2012
AIA Houston Design Awards, "On the Boards" Award 2012
AIA Innovation and Practice in House Design Research, Grant Recipient 2012
SEED Awards for Excellence in Public Interest Design, Honorable Mention 2013

Project Team

Andrew Daley
Jason Fleming
Peter Muessig

Faculty Directors

Nonya Grenader, FAIA
Danny Samuels, FAIA

Rice Building Workshop

Spring 2011 / Studio: Osman Dadi, Andrew Daley, Jason Fleming, Matthew Ganster, Sara Heib, Peter Muessig, Emily Tzeng, Karla Wallace, Jason Wu

Fall 2010 / Seminar: Georgio Angelini, Christopher Ball, Kelly Barlow, Sue Biolsi, Aaron Bush, Edgar Cervantez, Anne Chen, Aaron Cote, Andrew Daley, Nick Elliott, Eléna English, Ethan Feuer, Jason Fleming, Carrie Gammell, Alex Gregor, Joshua Herzstein, Meera Kachhla, Kerim Miskavi, Jason Pierce, Yoni Pressman, Peter Stone, Chuck Swanson, Sam Tannenbaum, Lyon Train, Antonia Wai, Amy Westermeyer

Thanks

A special thank you goes to the AIA, Leonard Kady, Denise Everson, and Kathleen Simpson. Without the generous support of the AIA and the guidance and encouragement from Leonard, Denise, and Kathleen this research would not have progressed to the great extent that it has. We are indebted to their efforts.