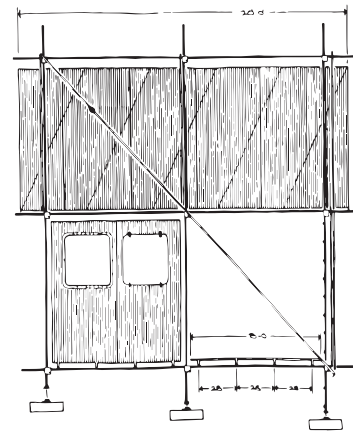
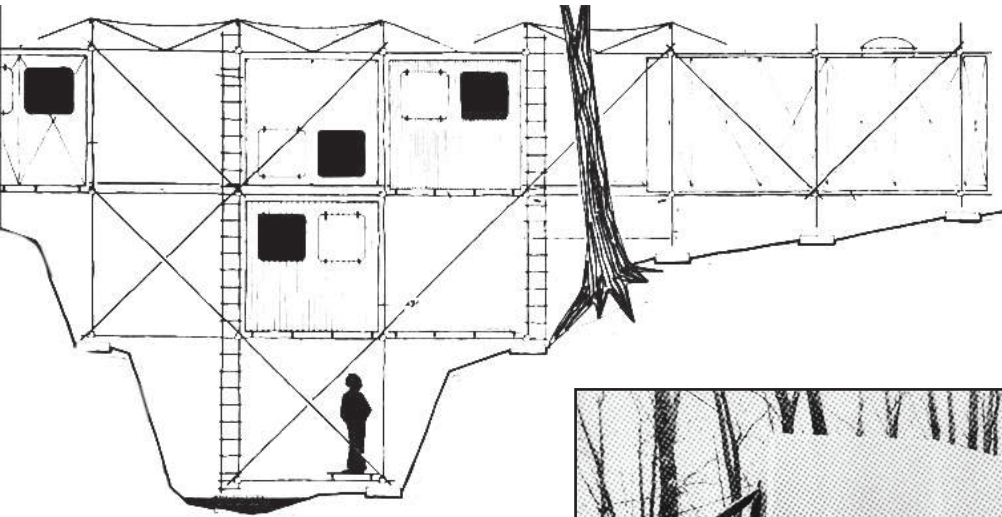
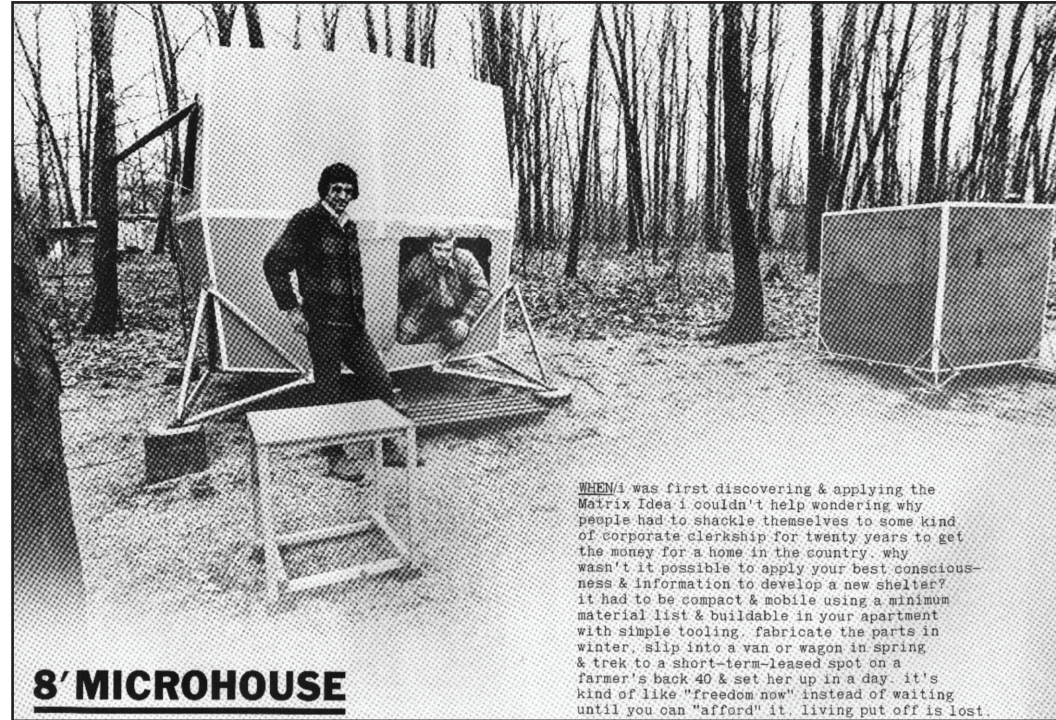


KEN ISAACS: MICRO HOMES



BACKGROUND KEN ISAACS IS AN AMERICAN DESIGNER KNOWN FOR HIS CREATION OF A MODULAR SYSTEM TO BUILD WHAT HE CALLS "LIVING STRUCTURES". ISAACS OUTLINES HOW TO BUILD THESE STRUCTURES IN HIS 1974 BOOK "HOW TO BUILD YOUR OWN LIVING STRUCTURES."

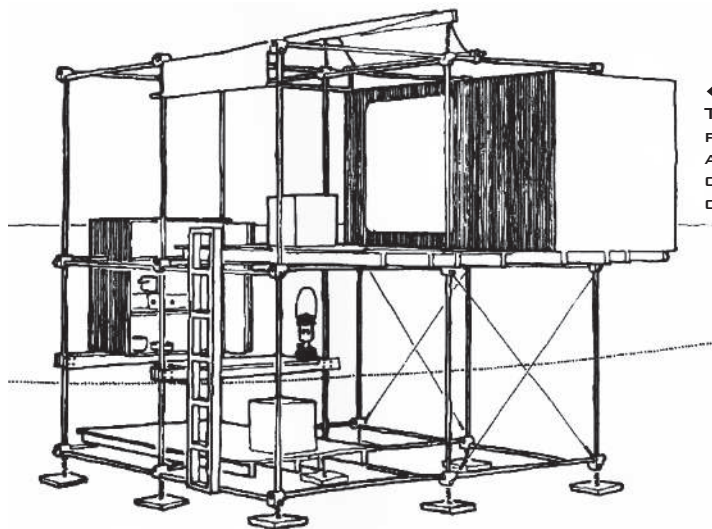
BUILDING MATRIX ISAAC'S DESIGNS ARE FOUNDED ON HIS CONCEPT OF THE MATRIX OR TOTAL ENVIRONMENT. HIS STRUCTURES WERE DESIGNED USING A THREE-DIMENSIONAL GRID AND TOOK THE FORM OF MODULAR UNITS HE CALLED LIVING STRUCTURES. THE UNITS UNIFIED MULTIPLE FUNCTIONS OF FURNITURE AND HOME, WITH SUSTAINABLE ARCHITECTURAL DWELLINGS OR MICROHOUSES.



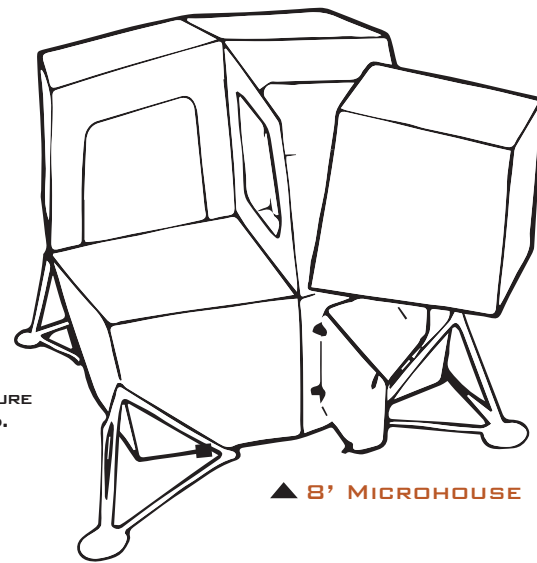
8' MICROHOUSE

WHEN I WAS FIRST DISCOVERING & APPLYING THE MATRIX IDEA I COULDN'T HELP WONDERING WHY PEOPLE HAD TO SHACKLE THEMSELVES TO SOME KIND OF CORPORATE CLERKSHIP FOR TWENTY YEARS TO GET THE MONEY FOR A HOME IN THE COUNTRY. WHY WASN'T IT POSSIBLE TO APPLY YOUR BEST CONSCIOUSNESS & INFORMATION TO DEVELOP A NEW SHELTER? IT HAD TO BE COMPACT & MOBILE USING A MINIMUM MATERIAL LIST & BUILDABLE IN YOUR APARTMENT WITH SIMPLE TOOLING. FABRICATE THE PARTS IN WINTER. SLIP INTO A VAN OR WAGON IN SPRING & TREK TO A SHORT-TERM-LEASED SPOT ON A FARMER'S BACK 40 & SET HER UP IN A DAY. IT'S KIND OF LIKE "FREEDOM NOW" INSTEAD OF WAITING UNTIL YOU CAN "AFFORD" IT. LIVING PUT OFF IS LOST.

THE FIRST MICROHOUSE/the first one ever built was a 72" (slightly more than average man height) cube in the Groveland timber. i built it in the early 1950's out of tempered masonite hardboard panels screwed & glued to some 2x2's salvaged from my first Living Structure.



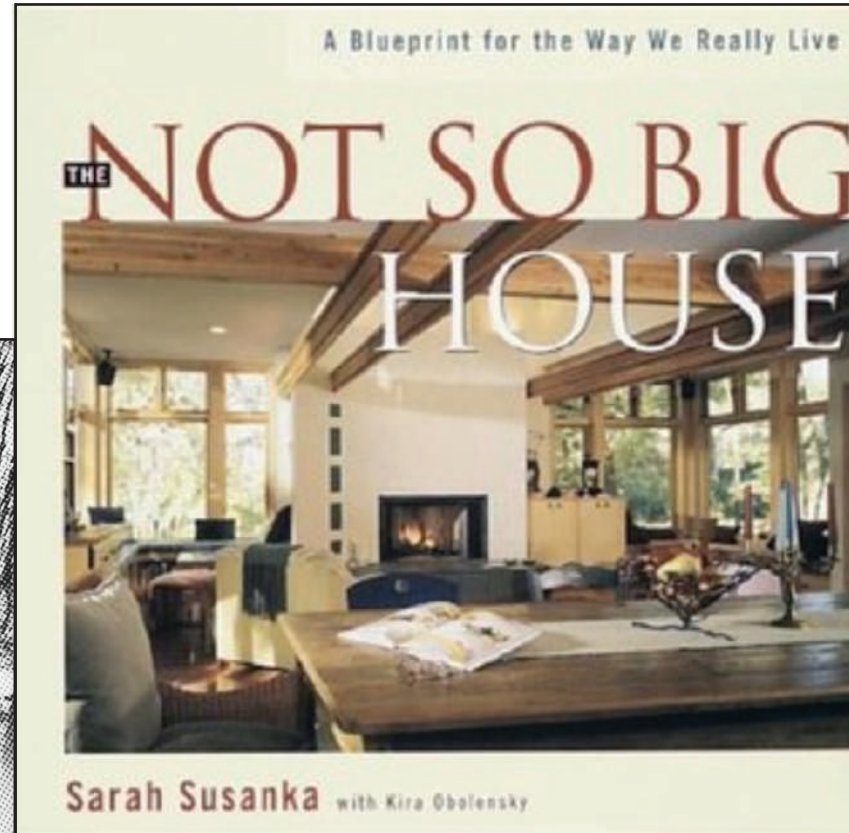
◀ **THE FUN HOUSE**
THIS STRUCTURE WAS BUILT FOR HIKERS & CAMPERS AS A BASE CAMP FOR A NEW KIND OF EXPLORATION. THE STRUCTURE CAN BE PERMANENT OR MOVED.



▲ **8' MICROHOUSE**

THE \$185 HOUSE/we took two old barns apart. they were just small barns but there was a lot of good lumber in them. no big romantic beams, like House & Garden magazine, just early twentieth-century 4x4's, 2x4's & siding but it was just the thing for framing up a little house in the woods. joe discovered a microwave relay

SARAH SUSANKA: NOT SO BIG HOUSE



◀ **SARAH SUSANKA** IS AN AMERICAN ARCHITECT AND AUTHOR, BEST KNOWN FOR HER BOOK "THE NOT SO BIG HOUSE". SARAH DELIVERS A NEW UNDERSTANDING NOT ONLY ABOUT HOW WE INHABIT OUR HOMES, BUT ALSO HOW WE INHABIT OUR PLANET, AND LIVE OUR DAY-TO-DAY LIVES.

SHELTER AROUND ACTIVITY CREATING SHELTER AROUND A SPECIFIC ACTIVITY IS A CONCEPT THAT PEOPLE INSTINCTIVELY UNDERSTAND. PEOPLE GRAVITATE TO THE CORNER OF A ROOM, WHERE WALLS WRAP AROUND US SO WE FEEL PROTECTED. THIS ALLOWS PEOPLE LOOK OUT INTO THE ROOM, MAKING THE SPACE FEEL LARGER.

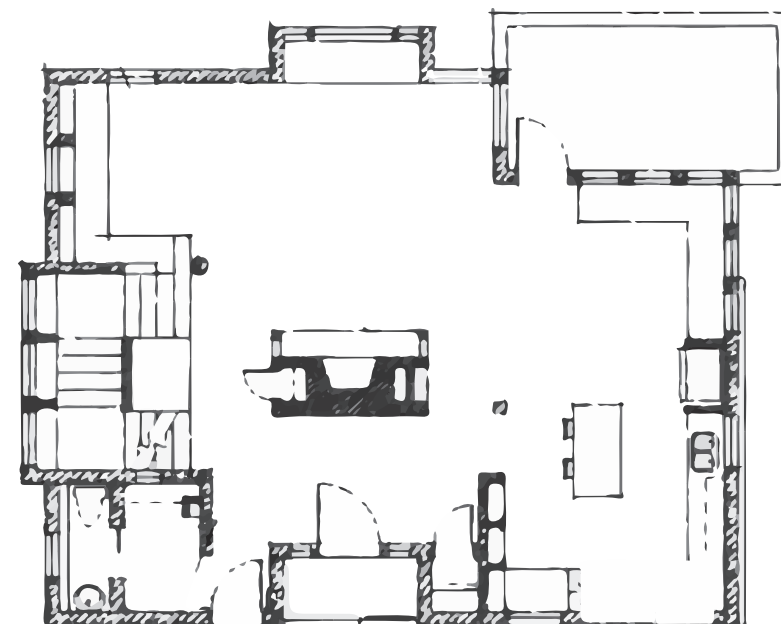
SHARING OF SPACES RATHER THAN BUILDING A ROOM FOR A SINGLE FUNCTION, THE NOT SO BIG HOUSE PROPOSES THAT WE THINK ABOUT WAYS PROGRAMS CAN BE SHARED HARMONIOUSLY WITHIN A SINGLE SPACE.



▲ **FRAMING VIEWS & OPENINGS** HOUSES ARE OFTEN DESIGNED TO TAKE ADVANTAGE OF EXTERIOR VIEWS, BUT IT IS ALSO IMPORTANT TO SPEND TIME LOOKING AT THE COMPOSITION OF INTERIOR VIEWS. IF THESE VIEWS ARE WELL DESIGNED, THE HOUSE CAN FEEL BIGGER AND MORE OPEN THROUGHOUT. ANOTHER SPATIAL CONCEPT TO CONSIDER IS THE EFFECT OF SPACE WITH FRAMED OPENINGS. BY SURROUNDING AN OPENING WITH TRIM, YOU SUBTLY COMMUNICATE THAT THE PLACES ON EITHER SIDE OF THE TRIM HAVE THEIR OWN SEPARATE IDENTITIES.

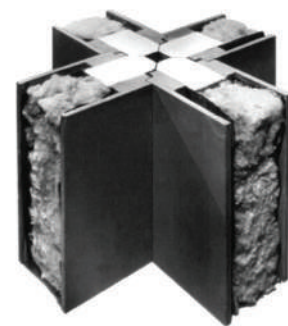
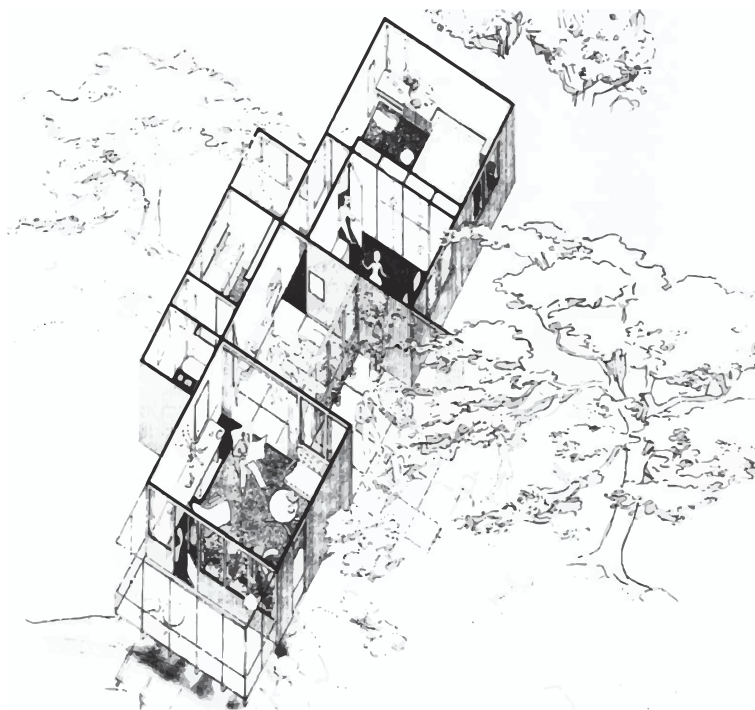
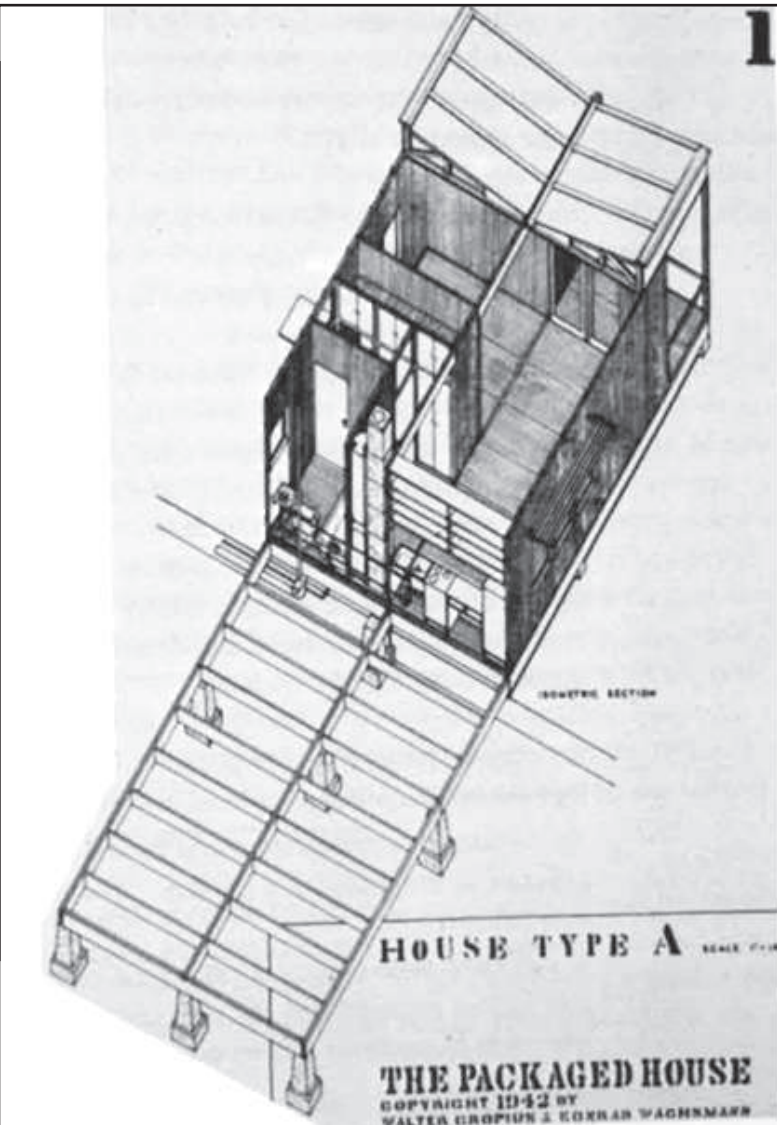
CREATING A NOOK BY MAKING A SMALL SPACE FOR A SINGLE ADULT TO MAKE THEIR OWN, JUST BIG ENOUGH FOR ONE, CAN CREATE A NOOK WHERE PEOPLE ARE MOST COMFORTABLE IN A SMALLER HOME.

THE 3RD DIMENSION THE KEY TO MANY OF THESE CONCEPTS RELIES ON THE HEIGHTS OF THINGS, AND HOW THOSE HEIGHTS RELATE TO HUMAN PROPORTIONS. IN THE NOT SO BIG HOUSE, SUSANKA DESCRIBES THE EFFECT THAT CEILING HEIGHT HAS. THE DARKER, AND MORE TEXTURED A SURFACE, THE HEAVIER IT WILL FEEL. HEAVY SPACES FEEL LOWER, WHILE LIGHT SURFACES WILL MAKE A SPACE APPEAR TO BE BIGGER.



WALTER GROPIUS: PACKAGED HOUSE

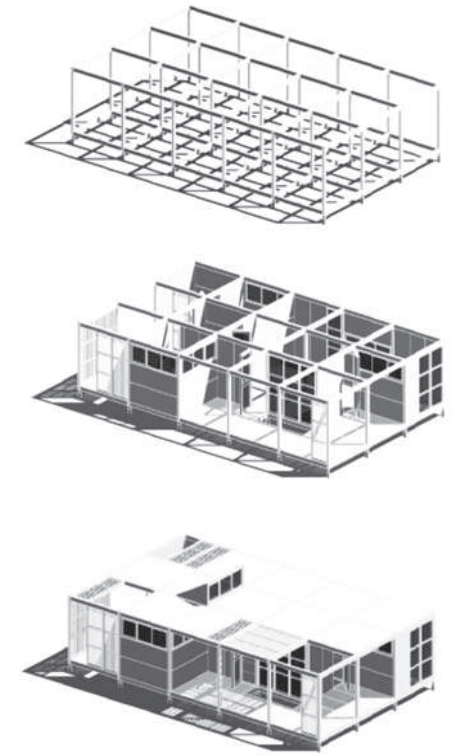
THE IDEA The "PACKAGED HOUSE" IS AN UNIQUE EXAMPLE OF A PREFABRICATED MODULAR CONSTRUCTION SYSTEM DESIGNED BY KONRAD WACHSMANN AND, AND THE FOUNDER OF THE BAUHAUS, WALTER GROPIUS DURING WORLD WAR II. PREFABRICATED, QUICKLY ASSEMBLED BUILDING SYSTEMS WERE NECESSARY DURING THE WAR TO HOUSE TROOPS AND EQUIPMENT. IN AN ATTEMPT TO SOLVE ISSUES WITH THE HOUSING MARKET AT THIS TIME, THEY DESIGNED A BUILDING SYSTEM USING PANELS AND WOOD JOINERY. THE JOINERY SYSTEM WAS DESIGNED BY WACHSMANN WHICH HE BASED ON A CHINESE PUZZLE, AND ALLOWED FOR THE HOMES TO BE CONSTRUCTED VERY QUICKLY AND EFFICIENTLY USING MINIMAL LABOUR.



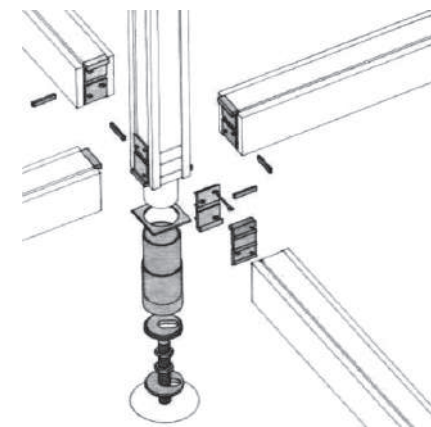
▲ CONNECTION DETAIL
PANEL WEDGE CONNECTIONS MOCK-UP

PANELS EACH PANEL MEASURED 3'4" x 10' (3x3'4" = 10'). THERE WERE 6 TYPES OF PANELS USED TO ASSEMBLE A HOUSE: WINDOW, DOOR, WALL, FLOOR, CEILING, AND ROOF. THESE PREFABRICATED PANELS MADE IT POSSIBLE TO ASSEMBLE AN ENTIRE HOUSE IN A SINGLE DAY WITHOUT THE USE OF MACHINERY AND WITH JUST TWO MEN.

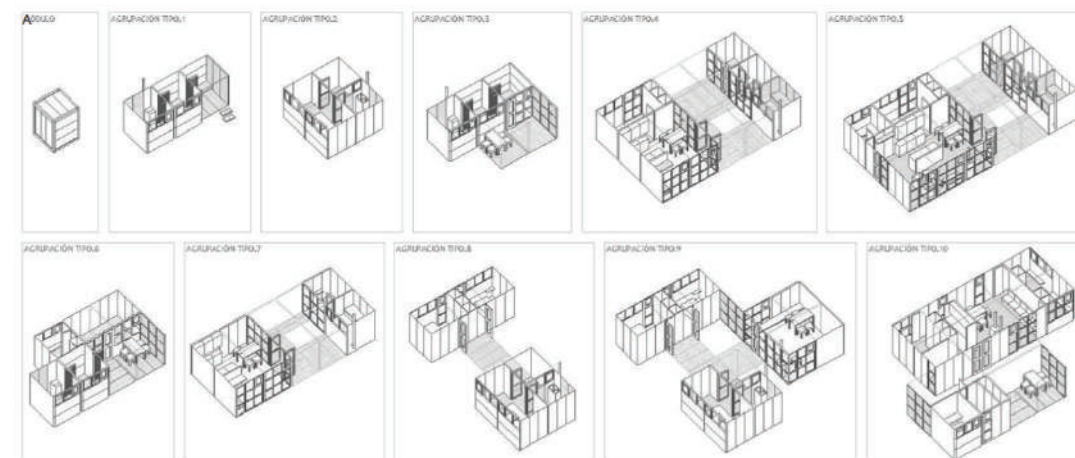
JUHANI PALLASMAA: MODULI 225



A REVOLUTIONARY SYSTEM ADVANCED IN TIME AND BASED ON SEVERAL FORMER ACHIEVEMENTS, THE MODULI 225 SYSTEM, DESIGNED BY FINNISH ARCHITECTS JUHANI PALLASMAA AND KRISTIAN GULLICHSEN IN THE LATE 60S, REPRESENTS A PURE YET SOPHISTICATED DESIGN SYSTEM. THEIR VARIOUS EXPLORATIONS LEFT GREAT ADVANCES NOT ONLY IN THE ARCHITECTURAL ENVIRONMENT BUT ALSO IN THE CONSTRUCTION FIELD. BY BEING CONSCIOUSLY ABSTRACT AND DIRECTED BY A VERY PRECISE SET OF ORDERS, THIS SYSTEM REACHES A PURE STATE OF UNIVERSAL ARCHITECTURE. THE DESIGN IS COMPOSED OF MOSTLY CUBIC STRUCTURES, CAREFULLY MODULATED AND RECTIFIED, TO REFLECT THE SEARCH FOR LIGHT AND AN OPEN ATMOSPHERE.



▲ CONNECTION DETAIL
BUILDING ELEMENT JOINTS AND FOUNDATION SOLUTION AXONOMETRIC



FLEXABLE DESIGN ARCHITECTURALLY, THE SYSTEM IS A RENDITION OF MODULAR JAPANESE TIMBER BUILDINGS, AND IS AN EXAMPLE OF TIMELESS DESIGN PRINCIPLES. THE FLOOR PLANS CAN BE FREELY CHOSEN, AND THE EXTERNAL APPEARANCE INCLUDING THE ROOF FORM CAN BE CUSTOMIZED FOR THE CUSTOMER'S PREFERENCES. THE SYSTEM'S VARIETY OF CONFIGURATIONS AND THE CAPABILITY OF BEING ASSEMBLED WITH NO TOOLS GAVE THE SYSTEM A UNIVERSAL CHARACTER AND IMMEDIATE ACCEPTANCE.

INVESTIGATION INTO WOOD CONSTRUCTION



WOOD PRODUCTS

CATEGORY	DEFINITION
LIGHT FRAME	REPETITIVE SYSTEM OF WOODEN 2X AND 3X MEMBERS, WITH MORE VERTICAL SUPPORTS THAN OTHER SYSTEMS.
MASS TIMBER CONSTRUCTION	USES LARGE PREFAB WOOD MEMBERS (CLT). GLUED-LAMINATED TIMBER CAN ALSO BE USED IN BEAM AND COLUMN APPLICATIONS
TIMBER FRAME	INCLUDES POST FRAMED, POST AND BAM, AND HEAVY TIMBER BRACED FRAME. USES MEMBER TYPICALLY LARGER THAN 4X6 ARRANGED IN TWO DIMENSIONAL FRAMES AT A CONSISTENT INTERVAL THROUGHOUT A BUILDING.
HEAVY TIMBER	RELATES TO FIRE RESISTANCE AND IS SPECIFICALLY DEFINED A CONSTRUCTION TYPE. BUILDINGS WITH MASS TIMBER AND TIMBER FRAME SYSTEMS CAN BE USED WITHIN THE HEAVY TIMBER CATEGORY

SAVES TIME & MONEY

FIRE PROTECTION

ENVIRONMENTAL IMPACT

BUILDING STRENGTH & DURABILITY

PREFABRICATION

4% COST SAVINGS
20% TIME SAVING
\$5.81/SF AVG. SAVINGS

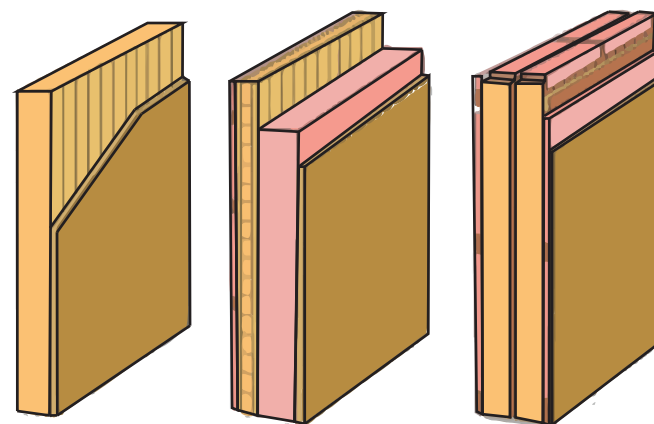
THE USE OF WOOD AS A CONSTRUCTION MATERIAL HAS BEEN PROVEN TO BE A VERY COST EFFECTIVE AND ENVIRONMENTALLY FRIENDLY OPTION AROUND THE WORLD. NOT ONLY DOES THE USE OF WOOD MAKE SENSE WHILE DESIGNING A STRUCTURE, THE CHOICE OF A WOOD SYSTEM HAS BENEFITS THROUGHOUT THE ENTIRE LIFE CYCLE OF A BUILDING; DESIGN, CONSTRUCTION, OCCUPANCY, AND POST OCCUPANCY.

FRAMING

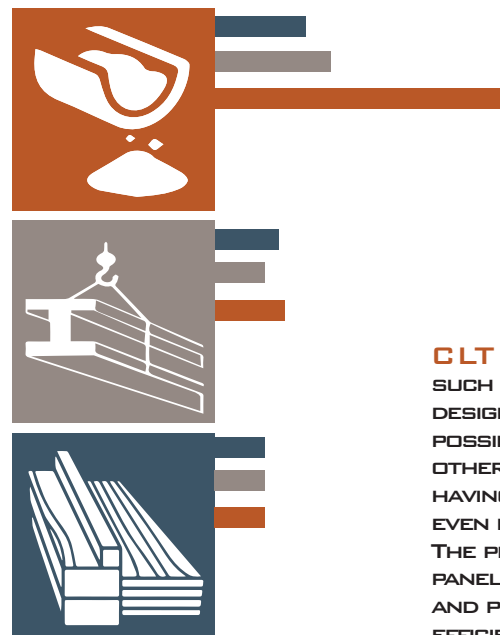
	MANUFACTURING CO2	CONSTRUCTION CO2	TOTAL EMISSIONS CO2	CO2 STORED IN WOOD
LIGHT FRAME	1,402	398	1,800	16,340
2X4 WALLS	1,327	377	1,704	16,807
STANDARD INSULATION	3,198	416	3,614	16,340
TRADITIONAL	1,037	462	1,499	24,245
LIGHT FRAME INFILL	1,343	436	1,779	21,656
SIP'S	1,755	498	2,253	19,773

■ BEST PERFORMANCE
■ WORST PERFORMANCE

CLT WOOD BUILDING SYSTEMS, SUCH AS CLT CAN PROVIDE A DESIGNER WITH DIFFERENT POSSIBILITIES TO INCORPORATE OTHER SYSTEMS, WHILE ALSO HAVING ACOUSTIC, SEISMIC, AND EVEN FIRE-RESISTANT PROPERTIES. THE PREFABRICATION OF CLT PANELS ALLOWS FOR ACCURACY AND PRECISION, TO ENSURE ENERGY EFFICIENCY, WHILE ALSO LIMITING CONSTRUCTION TIME ON SITE, REDUCING THE OVERALL COST OF A PROJECT.



▲ CONNECTION DETAIL
EXAMPLES OF CLT INSULATED WALL PANELS



■ FOSSIL FUEL ENERGY
■ RESOURCE USE
■ OZONE DEPLETION

* NORMALIZED WOOD VALUE TO 0.75

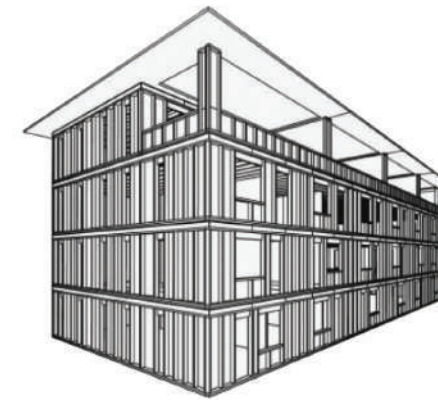
TIMBER FRAMING

SOLID TIMBER CONSTRUCTION



THESE TYPES OF BUILDINGS ARE STRUCTURED ENTIRELY OUT OF WOOD, WITHOUT ANY GAPS BETWEEN MEMBERS. ONE FACE OF THE WALL IS USUALLY EXPOSED, WHILE THE OTHER IS INSULATED AND SHEATHED IN ORDER TO PROVIDE A MORE WELL-TEMPERED ENVIRONMENT.

TIMBER FRAMING



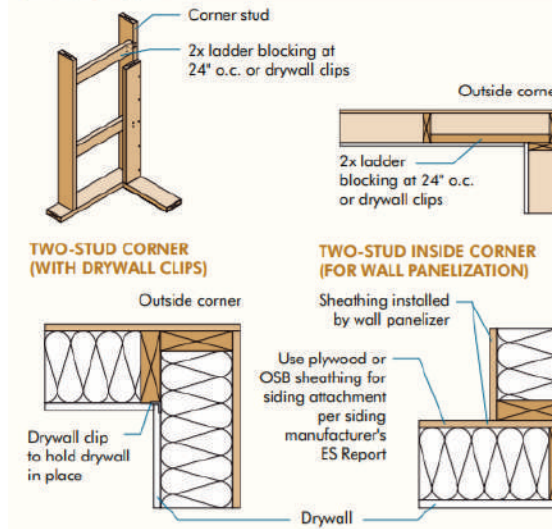
TRADITIONAL TIMBER FRAMING IS ACCOMPLISHED USING FRAMES OF STANDARD-SIZED TIMBER. THE ENTIRETY OF THE STRUCTURE IS ENCLOSED WITHIN SOME TYPE OF SHEATHING. THE GAPS BETWEEN THE TIMBER ARE FILLED WITH INSULATION.

TIMBER SKELETON STRUCTURE

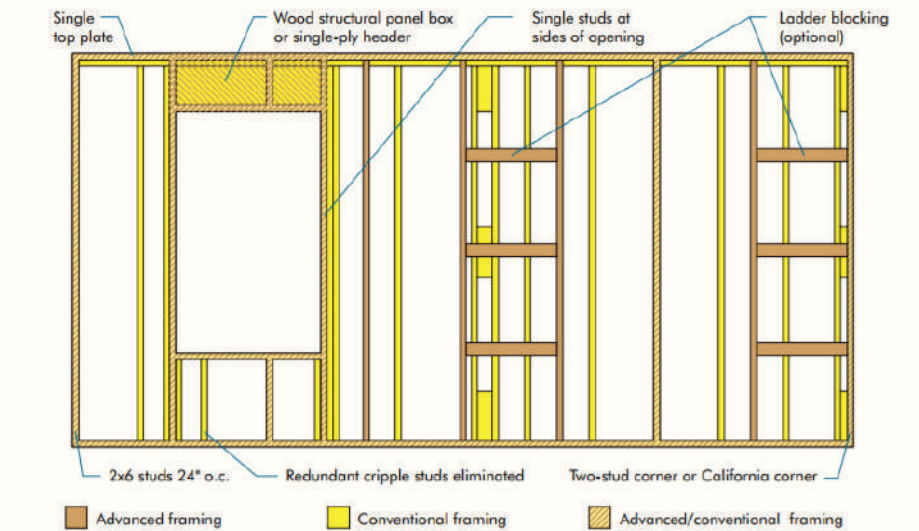


THIS TYPE OF STRUCTURE IS COMPOSED OF PILLARS AND BEAMS SPREAD AT LARGER DISTANCES, ALLOWING FOR MORE FREEDOM WITH FACADES SINCE THE WALLS ARE NOT LOAD-BEARING. THE STRUCTURE IS USUALLY LEFT EXPOSED IN ORDER TO HIGHLIGHT THE LARGE WOODEN BEAMS.

TWO-STUD CORNERS

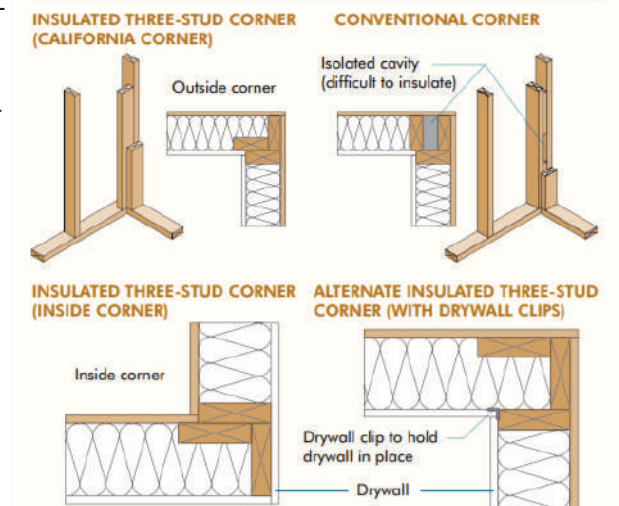


WALL FRAME COMPARISON

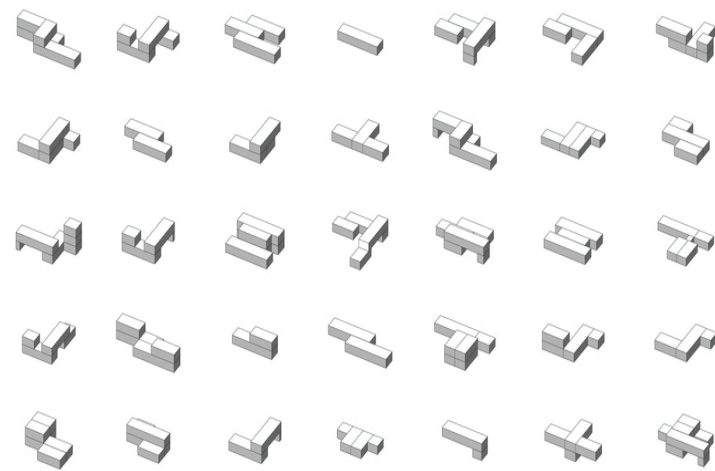


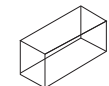
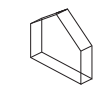
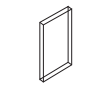
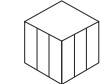
FRAMING THERE ARE MANY DIFFERENT STRATEGIES FOR STICK FRAMING, ALL DEPENDING ON THE DIMENSION OF LUMBER USED TO ASSEMBLE THE STRUCTURE. THE MOST COMMON STRATEGY BEING 2"x4"s SET 16" APART. HOWEVER, WHEN USING 2"x6" MEMBERS, IT ALLOWS FOR LARGER GAPS BETWEEN STUDS. WHEN FRAMING CORNERS, THERE ARE MANY DIFFERENT METHODS TO CONSIDER DEPENDING ON THE SIZE OF THE LOADS THAT THE STRUCTURE WILL NEED TO SUPPORT.

THREE-STUD CORNERS

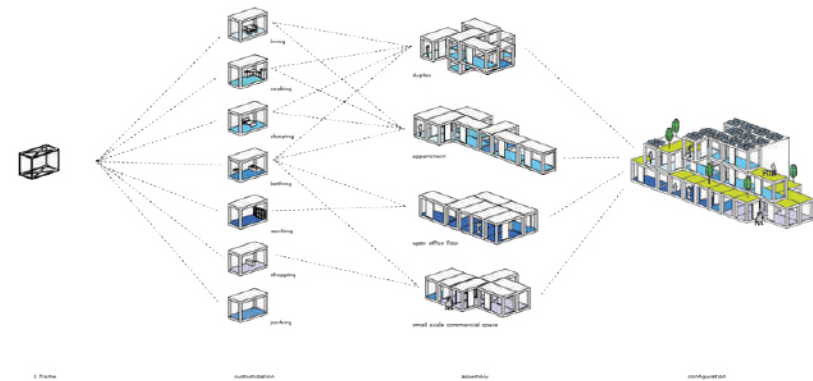


MODULAR DESIGN



-  **SINGLE MODULE** - SIMPLE CONNECTIONS TO THE FOUNDATION
- SINGLE UNIT, INDIVIDUAL
-  **SECTIONAL MODULE** - TRANSPORT EASILY
- POTENTIAL FOR DIGITAL FABRICATION
- CAN COMBINE MODULES TO MAKE LARGER FORMS
-  **COMPONENT** - FACTOR MADE COMPONENTS TO SAVE LABOUR TIME
- ALLOWS FLEXIBLTY WITH BUILDING FORM
- INCLUDES PANELIZED, AND KIT SYSTEMS
-  **HYBRID** - PREFAB POSTS AND BEAMS FORM A FRAMING SYSTEM
- INTERCHANGABLE WALL PANELS & FLOOR COMPONENTS

TERM	DEFINITION
PREFABRICATION	MANUFACTURING PROCESS TAKES PLACE IN A CONTROLLED ENVIRONMENT, LIKELY A FACTORY.
MOBILE HOME	HOME MADE IN A FACTORY AND TRANSPORTED TO THE BUILDING SITE. CAN STAY IN A PERMANENT LOCATION OR BE MOBILE FOR A VARIETY OF USES.
MANUFACTURED HOMES	FACTORY MADE HOME, MUST BE PERMANENTLY ATTACHED TO A FOUNDATION WITH THE CHARACTERISTICS OF SITE-BUILT HOUSING.
MODULAR HOUSING	FACTORY MADE HOME THAT MUST BE PERMANENTLY ATTACHED TO A FOUNDATION AND MEET LOCAL BUILDING CODES.
CONTAINER HOME	MODIFIED SHIPPING CONTAINER AS A MODULAR LIVING SPACE.
PANELIZED HOME	PANELIZED FACTORY BUILT WALLS ARE AFFIXED TO A POST AND BEAM STRUCTURE BY THE BUILDER ON SITE. COULD BE SOLD AS A DO IT YOURSELF KIT.



DEVELOPING TYPOLOGIES

	1 MODULE	2 MODULES	3 MODULES	4 MODULES
SINGLE SERIES				
H SERIES				
C SERIES				
L SERIES				
T SERIES				
Z SERIES				

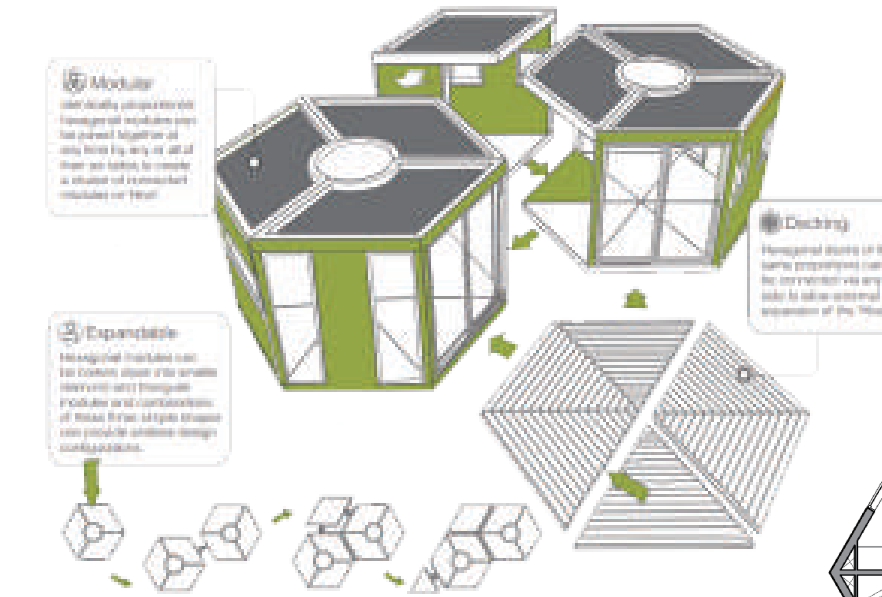
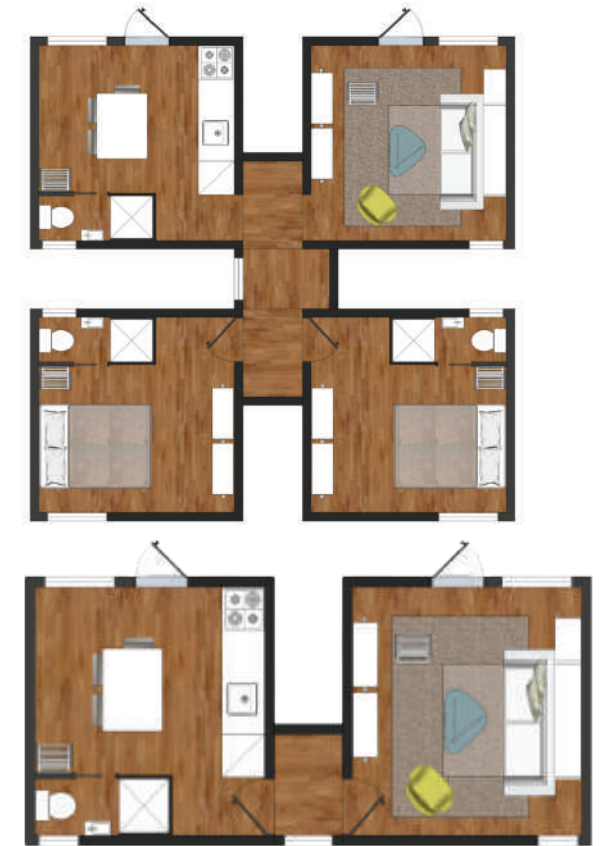
MODULAR DESIGN ALLOWS FOR MAXIMUM CUSTOMIZATION FOR THE USER. THIS GIVES THE HOMEOWNER THE FREEDOM TO DESIGN THE HOME TO SUIT THEIR NEEDS RATHER THAN PURCHASING AN ALREADY-BUILT HOUSE TO FIT THEIR LIVES INTO. MODULAR CONSTRUCTION ALSO ALLOWS FOR EXPANSION, WHICH CAN BE VERY USEFUL TO PEOPLE WHO WANT TO EXPAND THEIR FAMILIES. THE ABOVE CHART SHOWS FIVE DIFFERENT MODULAR TYPOLOGIES DEVELOPED FOR THE SAKE OF THE PROJECT. EACH TYPE IS THEN MODIFIED TO INCORPORATE AS MANY MODULES AS THE USER REQUIRES



TINY CASE STUDIES

NOMAD MICRO HOME

THE NOMAD MICRO HOME IS A MODULAR HOUSING SYSTEM COMPRISED OF MULTIPLE TYPED CUBE UNITS, WHICH ARE JOINED USING THE NOMAD CONNECT SYSTEM. USING A METAL CONSTRUCTION, THE MICRO HOME CAN EASILY EXPAND AFTER THE INITIAL INSTALLATION.



HIVEHAUS BY BARRY JACKSON

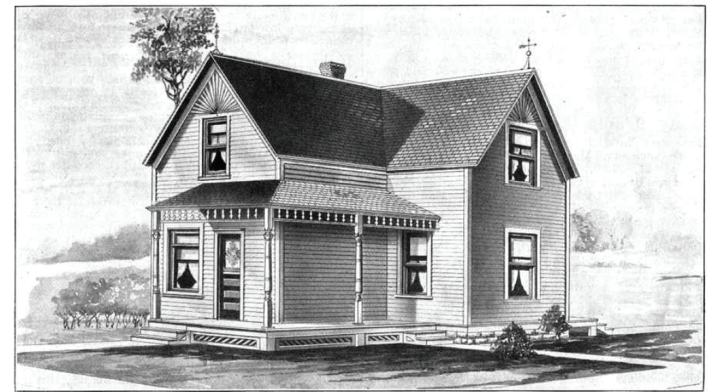
THE HIVEHAUS, DESIGNED BY BARRY JACKSON IS A MODULAR CONSTRUCTION SYSTEM COMPRISED OF HEXAGONAL UNITS. THE SYSTEM IS BUILT WITH WOOD AND ALLOWS FOR FULL CUSTOMIZATION, INCLUDING DIFFERENT TYPES OF WALL PANELS AS WELL AS DECK AND PATIO OPTIONS THAT CAN BE ADDED TO THE SIDES OF THE STRUCTURE.



SEARS CATALOGUE HOMES

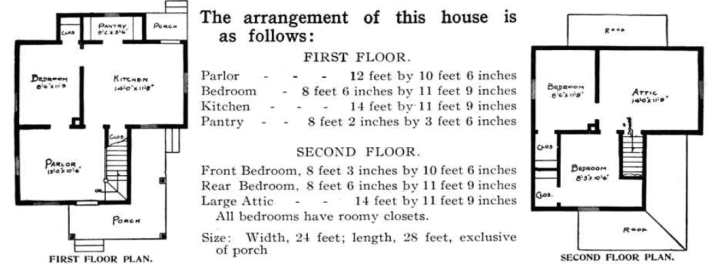
\$725⁰⁰ and Our FREE BUILDING PLANS
 WILL BUILD, PAINT AND COMPLETE, READY FOR OCCUPANCY,
 THIS INVITING \$1,100.00 SIX-ROOM COTTAGE.

We tell you on page 2 how we furnish, free, the plans for this house, or any of the many houses shown in this book.



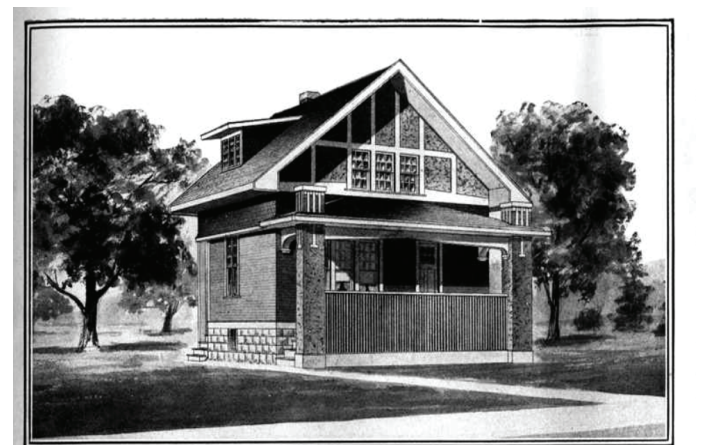
MODERN HOME No. 115
 With Wood Foundation, Not Excavated.

On the opposite page we illustrate a few of the materials we specify on this, our \$725.00 house.



GOOD MATERIALS MAKE GOOD HOUSES

THE ABILITY TO MASS-PRODUCE THE MATERIALS USED IN SEARS HOMES LESSENED MANUFACTURING COSTS, WHICH IN TURN LOWERED PURCHASE COSTS FOR CUSTOMERS. NOT ONLY DID PRECUT AND FITTED MATERIALS SHRINK CONSTRUCTION TIME UP TO 40% BUT SEARS'S USE OF "BALLOON STYLE" FRAMING (DRYWALL, AND ASPHALT SHINGLES) GREATLY REDUCED CONSTRUCTION FOR THE HOMEBUYERS. SEARS ALSO HELPED POPULARIZE THE LATEST TECHNOLOGY AVAILABLE TO MODERN HOMEBUYERS DURING THIS TIME. THESE INCLUDED CENTRAL HEATING, INDOOR PLUMBING, AND ELECTRICITY, WHICH WERE ALL NEW DEVELOPMENTS IN HOME DESIGN, THAT MODERN HOMES INCORPORATED, ALTHOUGH NOT ALL OF THE HOMES WERE DESIGNED WITH THESE CONVENIENCES.

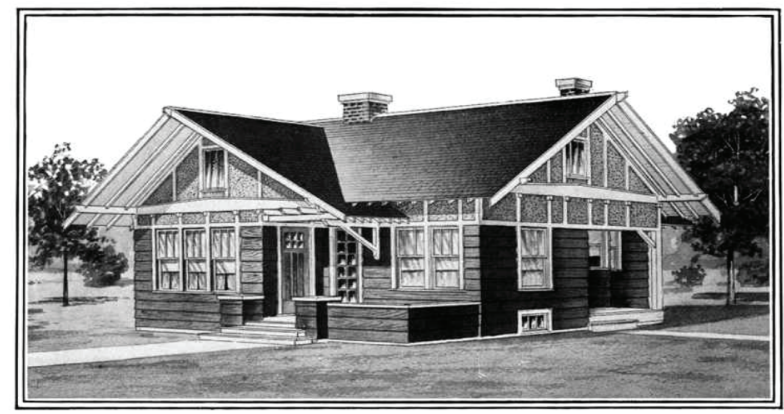


MODERN HOME No. 161

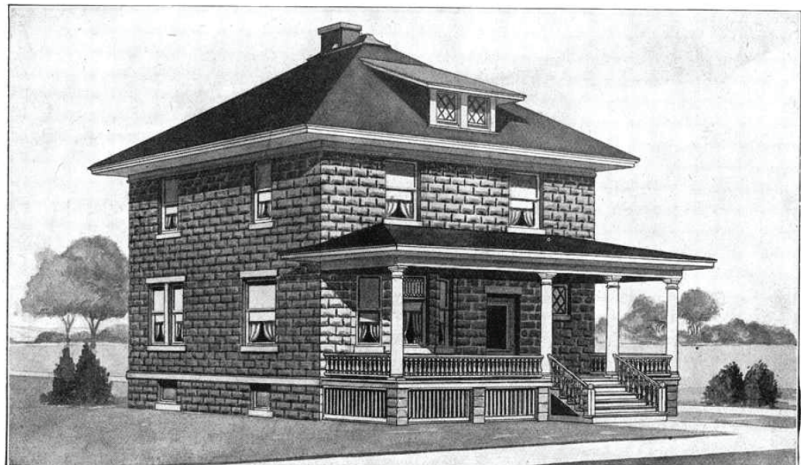
SEARS, ROEBUCK & CO.

WE SELL EVERYTHING BY MAIL ORDER ONLY. YOUR MONEY WILL BE PROMPTLY RETURNED FOR ANY GOODS NOT PERFECTLY SATISFACTORY AND WE WILL PAY FREIGHT OR EXPRESS CHARGES BOTH WAYS

FROM 1908-1940, SEARS, ROEBUCK AND CO. SOLD OVER 70,000 HOMES THROUGH THEIR MAIL-ORDER MODERN HOMES PROGRAM. THROUGHOUT THAT TIME SEARS DESIGNED 447 DIFFERENT HOUSING STYLES. ALTHOUGH SEARS WAS NOT AN INNOVATIVE HOME DESIGNER, IT WAS VERY POPULAR FOR HOME DESIGNS DUE TO THE ADDED ADVANTAGE OF MODIFYING HOUSES AND HARDWARE ACCORDING TO BUYER TASTES. INDIVIDUALS COULD DESIGN THEIR OWN HOMES AND SUBMIT THE BLUEPRINTS TO SEARS, WHICH WOULD THEN SHIP THE APPROPRIATE PRECUT MATERIALS, GIVING THE OWNER FULL CREATIVE CONTROL.



MODERN HOME No. 191



MODERN HOME No. 52

Concrete Block Construction. On the opposite page we illustrate a few of the materials we specify on this our \$1,995.00 house.



IKEA FLAT PACK HOMES

THE CONCEPT WHEN IKEA'S FOUNDER INGVAR KAMPRAD MET SKANSKA'S CHAIRMAN MELKER SCHÖRLING AT A HOUSING FAIR IN 1996, ALL NEW HOMES WERE BUILT TO BE EXPENSIVE AND LUXURIOUS. NO ONE EXCEPT IKEA AND SKANSKA DARED TO BUILD AFFORDABLE HOUSING, REGARDLESS OF THE URGENT NEED IN THE MARKET. TOGETHER THEY REALISED THEIR VISION TO CREATE AFFORDABLE HOMES FOR ORDINARY PEOPLE. IN 1997 THE FIRST FOUR BOKKLOK DEVELOPMENTS WERE COMPLETED.

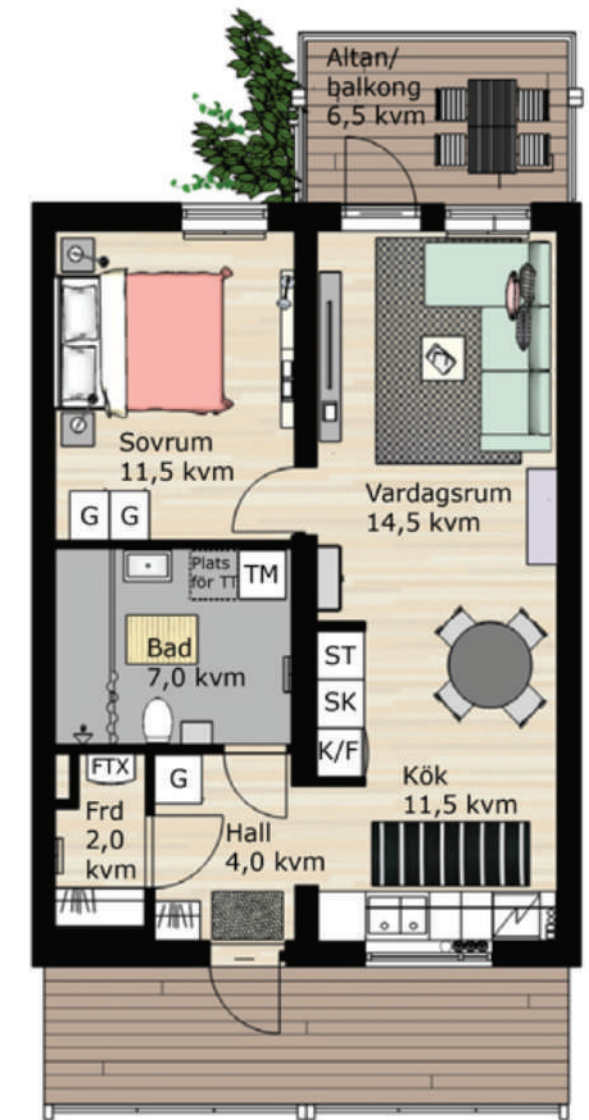
BLOCK OF FLATS THE CLASSIC MULTI FAMILY HOUSE COMBINES THE CONVENIENCE AND AFFORDABILITY OF A FLAT, WITH THE AMMENITIES THAT USUALLY COME WITH A HOUSE.

TERRACED HOUSE FOR THOSE WHO ARE LOOKING FOR SOMETHING OF THEIR OWN. INSIDE, THE HOUSES ARE SPACE-EFFICIENT AND BRIGHT, WITH ONE FLOOR DEDICATED TO COMMON AREAS AND ONE FLOOR DEDICATED TO BEDROOMS.

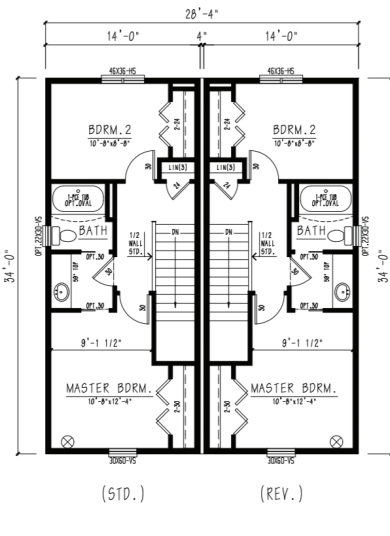
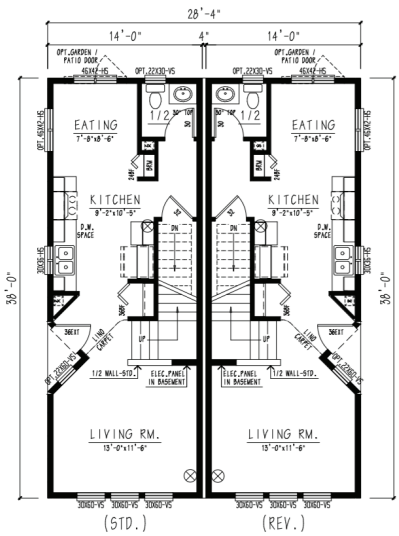
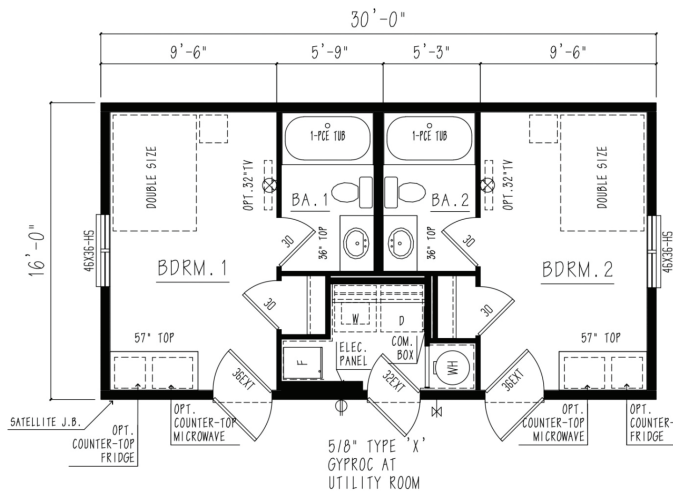
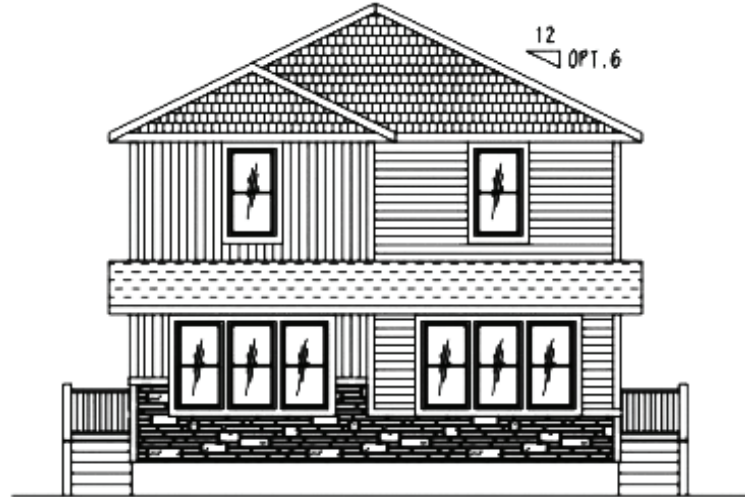
FLEX BLOCK OF FLATS THE FLEX BLOCK OF FLATS IS GREAT WHEN THERE IS A NEED FOR MORE FLATS THAN THE CLASSIC BLOCK PROVIDES. THE SIZES OF THE FLATS CAN BE COMBINED TO SUIT THE NEED OF A SPECIFIC AREA, AND THE BUILDINGS CAN BE UP TO FOUR FLOORS.



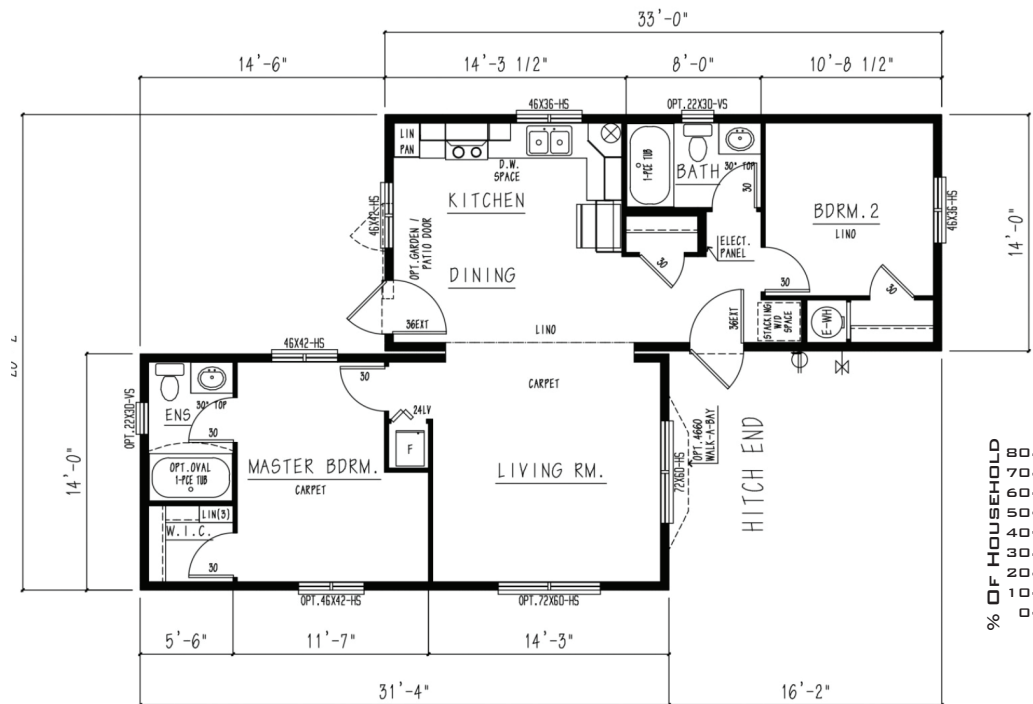
VARIETY OF HOME DESIGNS IKEA HOMES OFFER SEVERAL DIFFERENT PLANS IN ORDER TO ACCOMMODATE MANY DIFFERENT PURPOSES. THE IMAGES SHOWN ARE EXAMPLES OF THEIR ONE-BED, TWO-BED, AND FLEX-SINGLE DESIGNS. ALL OF THE PLANS FEATURE AN OPEN FLOOR PLAN THAT IS VERY SPACE EFFICIENT. THE HOMES ALSO CONSIDER THE ADDITION OF A SMALL DECK AS AN ADDITIONAL OUTSIDE SPACE.



TRIPLE M: DOUBLE-WIDE MANUFACTURED HOMES



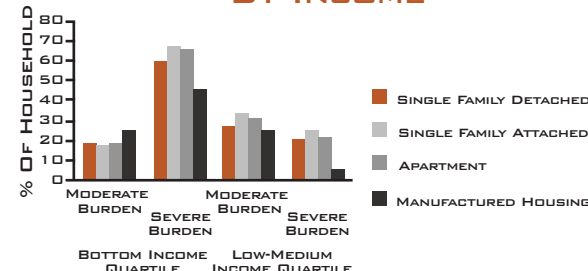
▲ **TRIPLE M HOUSING** BUILDS A WIDE VARIETY OF MODULAR AND MANUFACTURED HOMES, AND CAN BE BUILT AS CAN BE BUILT AS A 2 OR 3 PIECE HOME OR AS A SINGLE UNIT.



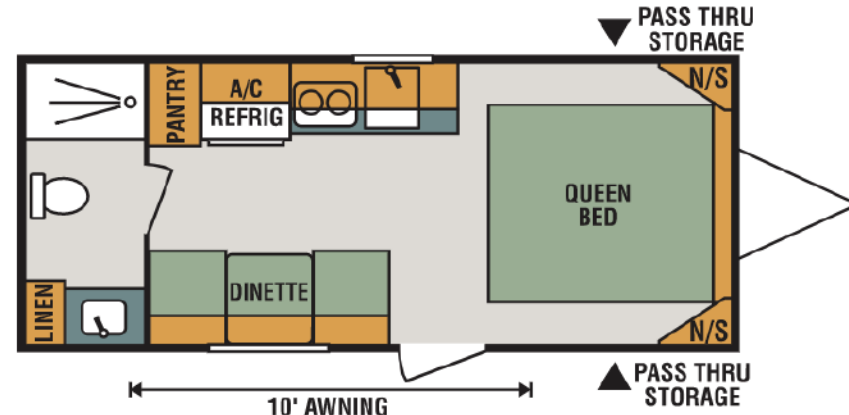
DOUBLE WIDE MANUFACTURED FLOOR PLAN

▲ **TRIPLE M'S** BUILDING PROCESS ALLOWS FOR EFFICIENT COLLECTION OF WASTE MATERIAL FOR RECYCLING, AND OFFER A VARIETY OF DIFFERENT PLANS. PLANS INCLUDE SINGLE UNITS, DOUBLE WIDE UNITS, MULTI-LEVELLED UNITS, AS WELL AS STAGGERED MODELS, THAT ARE ANYWHERE FROM 500-2000sq/FT.

HOUSING COST BURDEN BY INCOME



K-Z TRAVEL TRAILERS

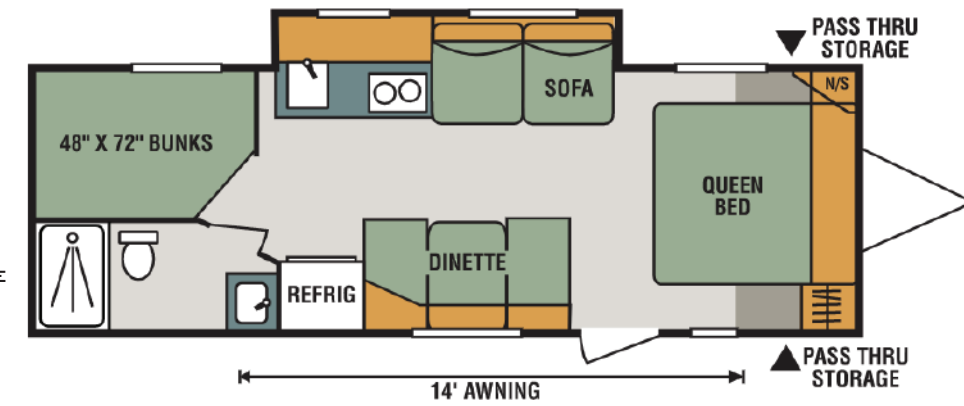


▲ THIS 10' TRAILER OFFERS A OPEN DESIGN WHERE THE BEDROOM AND SOCIAL SPACE ARE COMBINED.



TRAVEL TRAILERS

TRAVEL TRAILERS ALLOW THEIR USERS A VARIETY OF AMENITIES WHILE USING A FRACTION THE SPACE OF OTHER MOBILE HOMES. MOST DESIGNS FEATURE A LINEAR LAYOUT, TYPICALLY WITH BEDS AND WASROOMS AT THE ENDS, WHILE THE KITCHEN AND SOCIAL SPACES ARE TYPICALLY IN THE MIDDLE OF THE TRAILER. MANY DESIGNS FEATURE MURPHY BEDS, AND MULTI-FUNCTIONAL FURNITURE THAT CAN BE USED IN A VARIETY OF WAYS.



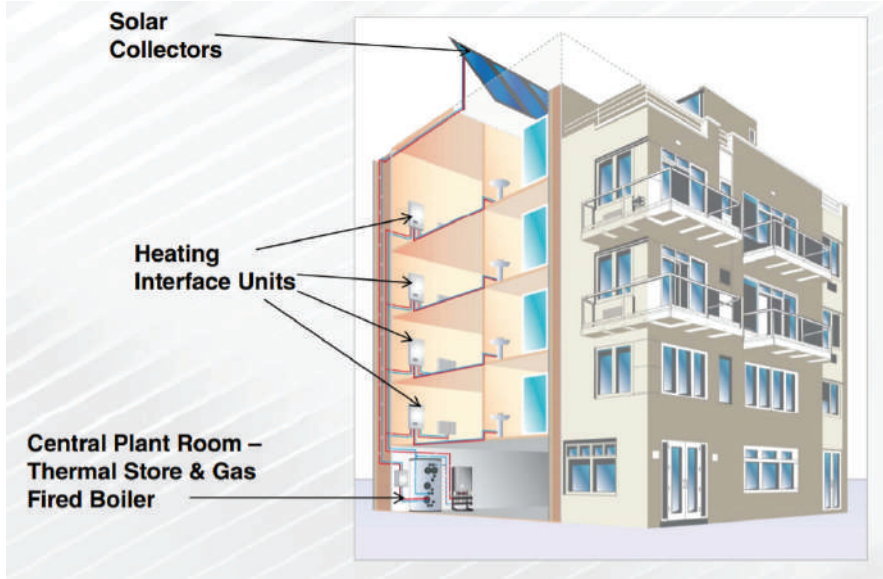
▲ **VARIETY OF MODELS**
K-Z OFFERS A VARIETY OF FLOOR PLANS ON SEVERAL DIFFERENT MODELS, RANGING FROM 10'-18' LONG.



TRAILER DESIGN & CONSTRUCTION

1. SUPERFLEX 1-PIECE ROOFING
2. 3/8" WALKABLE ROOF DECKING
3. R-7 BATT INSULATION
4. 1/2" ARCHED TRUSS RAFTERS
5. LED BRAKE LIGHTS
6. AERODYNAMIC FIBERGLASS FRONT
7. HEAVY-DUTY RESIDENTIAL LINOLEUM
8. 5/8" TONGUE & GROOVE PLYWOOD DECKING
9. 3" STRINGERS
10. 20# LP TANKS W/ FLIP LID
11. 1/8" LUAN DECORATIVE WALLBOARD
12. EXPANDED R-7 INSULATION
13. RADIUS ENTRANCE DOOR W/ WINDOW
14. 110V OUTLET
15. LARGE GRAB HANDLE
16. CORRUGATED MOISTURE BARRIER
17. HEATED, INSULATED UNDERBELLY
18. WELDED OUTRIGGERS
19. HEAVY DUTY I-BEAM CONSTRUCTION
20. RADIUS TRIPLE ENTRY STEPS
21. 1.5" RADIAL TIRES
22. OPTIMAL ALUMINUM RIMS
23. AUTO-ADJUSTING BRAKES
24. DEXTER AXELS
25. HEAVY DUTY LEAF SPRINGS
26. RACK & PINION ELECTRIC SLIDE W/MANUAL OVERRIDE & BOX TUBE SLIDEOUT RAM
27. 2" x 3" FLOOR JOISTS, 16" O.C
28. R-7 BATT INSULATION
29. TINTED GLASS WINDOW
30. SATELLITE & CABLE HOOKUPS
31. SANDLEWOOD EXTERIOR FIBERGLASS
32. EXTRA LONG DRIP SPOUTS
33. PORCH LIGHT
34. POWER AWNING W/ SPEAKERS
35. HEAVY DUTY ALUMINUM HEADERS

COMMUNAL HEATING AND COOLING



HEATING

COMMUNAL HEATING IS A SYSTEM OFTEN APPLIED IN APARTMENT BUILDINGS, WHICH PROVIDES THE HOME WITH HEAT AND/OR HOT WATER. THIS IS ACCOMPLISHED USING A SYSTEM OF PIPES THAT ARE CONNECTED TO A CENTRAL BOILER. USING THIS TYPE OF SYSTEM ALLOWS FOR THE HOMEOWNERS TO BE AUTONOMOUS IN THE HEATING OF THEIR HOMES WITHOUT BUILDING MULTIPLE SEPARATE SYSTEMS.

NEWTERRA ADVANTAGES

SCALABLE SYSTEMS: CAN EXPAND AND/OR BE MODIFIED TO FIT A VARIETY OF USES. CAN BE EASILY RELOCATED TO OTHER SITES.

NO COSTLY ON-SITE CONSTRUCTION: SYSTEMS ARE FACTORY-BUILT AND TESTED IN MET-CERTIFIED PRODUCTION FACILITY

MICROCLEAR® MEMBRANES: MANUFACTURE OWN PATENTED UF MEMBRANES FOR SEWAGE TREATMENT SYSTEMS

MINIMAL DOWNTIME: SYSTEMS ARE BUILT WITH PROVEN STANDARDIZED COMPONENTS AND FEATURE STRATEGIC REDUNDANCY IN DESIGNS TO ALLOW CONTINUOUS OPERATION EVEN DURING MAINTENANCE.

REMOTE MONITORING & CONTROL: SYSTEMS FEATURE SOPHISTICATED CONTROLS AND ADVANCED TELEMETRY FOR 24/7 ACCESS.

SIMPLIFIED DECOMMISSIONING: SYSTEMS ARE PORTABLE AND REQUIRE VIRTUALLY NO INFRASTRUCTURE.

FLEXIBLE AND DURABLE: SYSTEMS OPERATE IN SOME OF THE HARSHTEST ENVIRONMENTS ON THE PLANET, AND ARE BUILT TO PROVIDE RELIABLE, LONG-TERM PERFORMANCE.

Extreme Heat:
Dominican Republic Camp
104°F / 40°C



Extreme Cold:
Baffin Island Camp
-40°F / -40°C

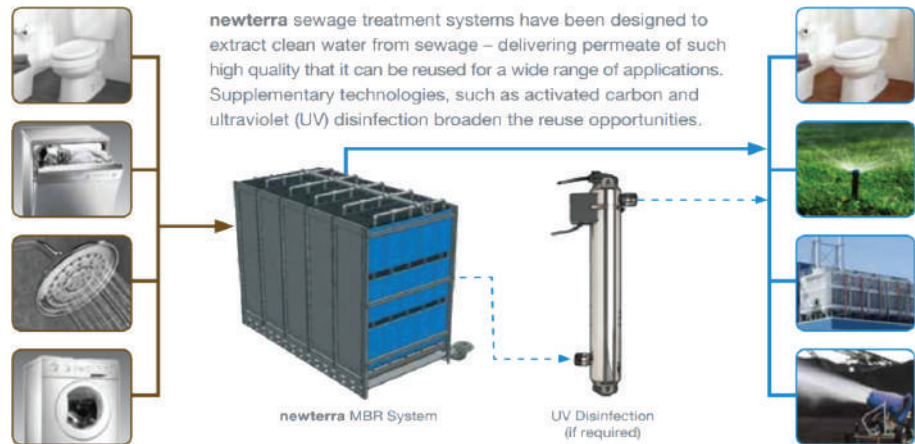
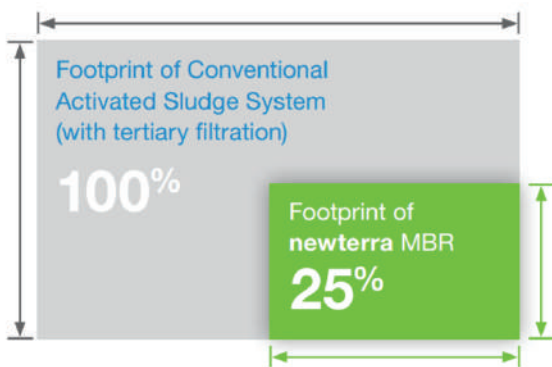


High Altitudes:
Chilean Camp
13,125 ft. / 4,000 m



WATER SUPPLY

THE COMMUNITY'S WATER SUPPLY WOULD BE TAPPED FROM THE CITY OF SUDBURY'S WATER DISTRIBUTION PIPE. HOWEVER, IT IS POSSIBLE TO SUPPLY WATER TO THE ENTIRE COMMUNITY OF HOMES USING A NETWORK OF PIPES TO DISTRIBUTE THE WATER TO EACH INDIVIDUAL UNIT. THERE ARE TWO STRATEGIES TO DO THIS, EACH PROPOSING ADVANTAGES, BUT IN THIS PARTICULAR CASE, THE LOOPED NETWORK DISTRIBUTION SYSTEM WOULD BE MORE EFFECTIVE.



SPACE SAVING STRATEGIES

IN ORDER TO MAXIMIZE THE EFFICIENCY OF SPACE WITHIN THIS TINY HOME, IT IS NECESSARY TO INCLUDE SOME SPACE SAVING STRATEGIES. THESE FOLDABLE, CONCEALABLE, AND COMPRESSIBLE FURNITURE TECHNOLOGIES WILL HELP MAKE SUCH A SMALL SPACE SEEM MUCH LARGER.



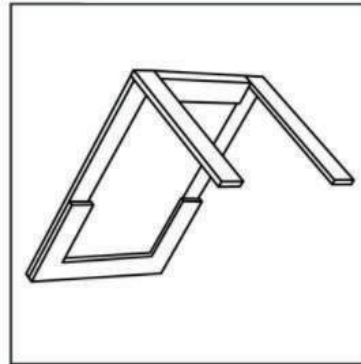
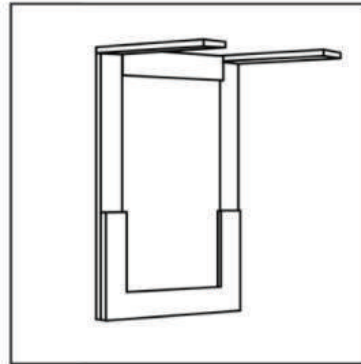
FLEXIBLE LOVE



▲ **RESOURCE FURNITURE** THE TV RACK BY RESOURCE FURNITURE IS A TELEVISION MOUNT THAT OPENS UP TO REVEAL STORAGE FOR ANY TYPE OF MEDIA. THIS IS PARTICULARLY EFFECTIVE SINCE IT TAKES UP 0 FLOOR SPACE.

◀ **EXPAND FURNITURE** THE MURPHY SOFA BY EXPAND FURNITURE IS A BED THAT CAN BE FOLDED UP TO REVEAL A SECTIONAL COUCH, CONSERVING THE SPACE THAT WOULD BE TAKEN UP BY BOTH A BED AND A COUCH.

▶ **IVY DESIGN** THE PICTURE TABLE BY IVY DESIGN IS CAPABLE OF FOLDING BACK UP INTO A PICTURE FRAME WHEN IT ISN'T BEING USED. THIS ERASES ANY IMPACT ON THE SPACE UNLESS NEEDED.



RESEARCH SUMMARY

THIS REPORT TOUCHES ON MODULAR DESIGN IN MULTIPLE WAYS. FROM PRE-FABRICATED BUILDING PANELS TO CUSTOMIZABLE SHELVING, THIS SHOWS MANY DIFFERENT WAYS TO USE A PRE-DETERMINED SYSTEM TO CREATE A CUSTOM LIVING ARRANGEMENT. WHILE THE OBJECT OF THIS ASSIGNMENT IS TO DESIGN A STANDARD UNIT OF 225 SQ FT TO ACCOMMODATE A LOW-INCOME FAMILY, IT IS QUITE CLEAR THAT THEY WILL BE CAPABLE OF EXPANDING AND MAKING THIS PLACE THEIR OWN. WITH EXAMPLES OF HOMES THAT ARE CUSTOMIZABLE PRE-CONSTRUCTION AND POST-CONSTRUCTION, THIS CREATES AN OPPORTUNITY FOR THESE LOW-INCOME FAMILIES TO REALLY MAKE THIS MODULAR TINY HOUSE SUIT THEIR PERSONAL REQUIREMENTS.

THE CUSTOMIZABLE CONSTRUCTION COMBINED WITH SPACE SAVING FURNITURE MAXIMIZES THE USE OF THE SMALL SPACE WHILE PROPERLY SUITING THE NEEDS OF THE USER. CUSTOM TINY HOME DESIGN IS POSSIBLE THROUGH BUILDING TECHNOLOGIES FOUND IN THE PACKAGED HOUSE BY WALTER GROPIUS, MODULI 221 BY JUHANI PALLASMAA, HIVE-HAUS BY BARRY JACKSON, AND MICRO HOMES BY KEN ISAACS. BY USING STANDARDIZED MODULAR PANEL CONSTRUCTION, IT GIVES THE USERS FULL CONTROL OF THE SPACES IN THEIR HOME, ALSO GIVING THEM THE POTENTIAL TO EXPAND THE SPACE IN THE FUTURE AS THEY SEE FIT. IN ORDER TO MAXIMIZE THEIR SPACE, COLLAPSIBLE FURNITURE TECHNOLOGIES FROM RESOURCE FURNITURE, EXPAND FURNITURE, IVY DESIGN, FLEXIBLE LOVE, CAMPAIGN FURNITURE, AND TYLKO WILL BE USED. ALSO, WHILE THESE TECHNOLOGIES MAY BE EFFICIENT IN THEIR USE OF SPACE, THE STUDIES OF SARAH SUSANKA IN "THE NOT SO BIG HOUSE" WILL HELP IMPROVE THE PERCEPTION OF THE SMALL SPACE, MAKING IT APPEAR MUCH BIGGER.

IN ORDER TO KEEP THESE HOMES COMFORTABLE, THE STRUCTURES WILL SHARE A COMMUNAL WATER AND HEATING SYSTEM THAT USES BIOMASS TO GENERATE ENERGY. THE COMBINATION OF ALL THESE TECHNOLOGIES AND DESIGN STRATEGIES MAKES IT POSSIBLE TO CREATE A FUNCTIONAL, CUSTOMIZABLE TINY HOME.

THE INITIAL DESIGN WILL TAKE PLACE ON THE CORNER LOT OF BLOOR STREET AND BESSIE AVENUE, FITTING THE MAXIMUM ALLOWED OF 5 RESIDENCES WITHIN THE 5000 SQ FT LOT. THIS WILL PROPERLY TEST THE SPACIAL EFFICIENCY OF THE BUILDING SYSTEM DESIGN IN A LOW INCOME AREA, GIVING IT REAL-LIFE CONTEXT. THE AMALGAMATION OF ALL THESE DIFFERENT BUILDING SYSTEMS AND TECHNOLOGIES WILL ALLOW FOR THE CREATION OF A FUNCTIONAL AND EFFICIENT TINY HOME DESIGN.



PERKOVICH LN. LOOKING SOUTH



BLOOR ST. FACING NORTH



SITE LOOKING EAST



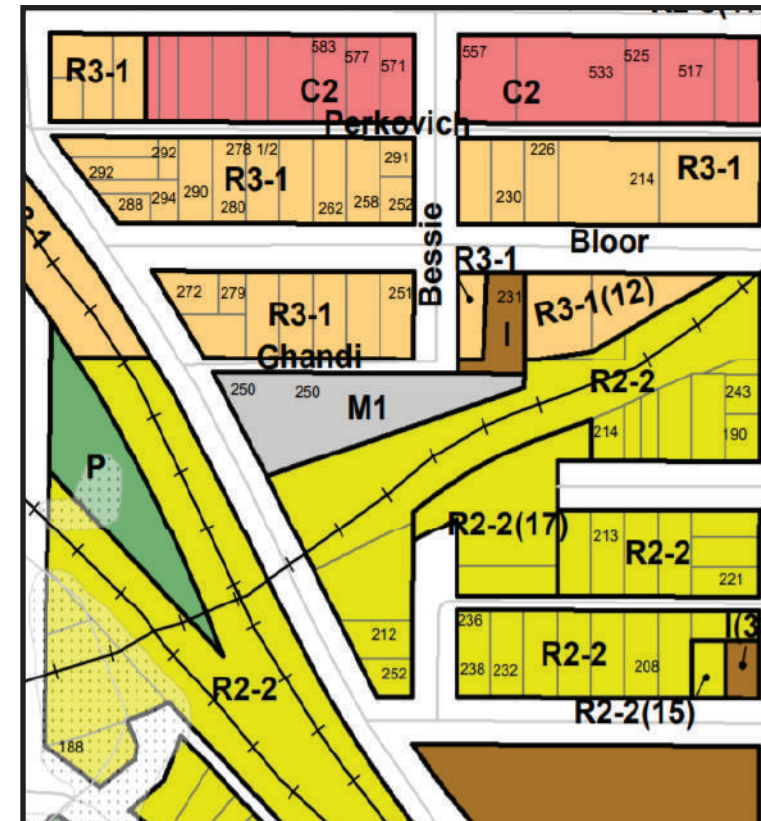
SITE TOWARDS KATHLEEN ST.

▲ **SITE IMAGES** THE IMAGES BELOW SHOWCASE DIFFERENT VIEWS ON TO THE SITE, AS WELL AS FROM THE SITE LOOKING OUT TOWARDS THE SURROUNDING CONTEXT. CURRENTLY THE SITE IS AN EMPTY LOT AVAILABLE FOR SALE FOR \$70,000.

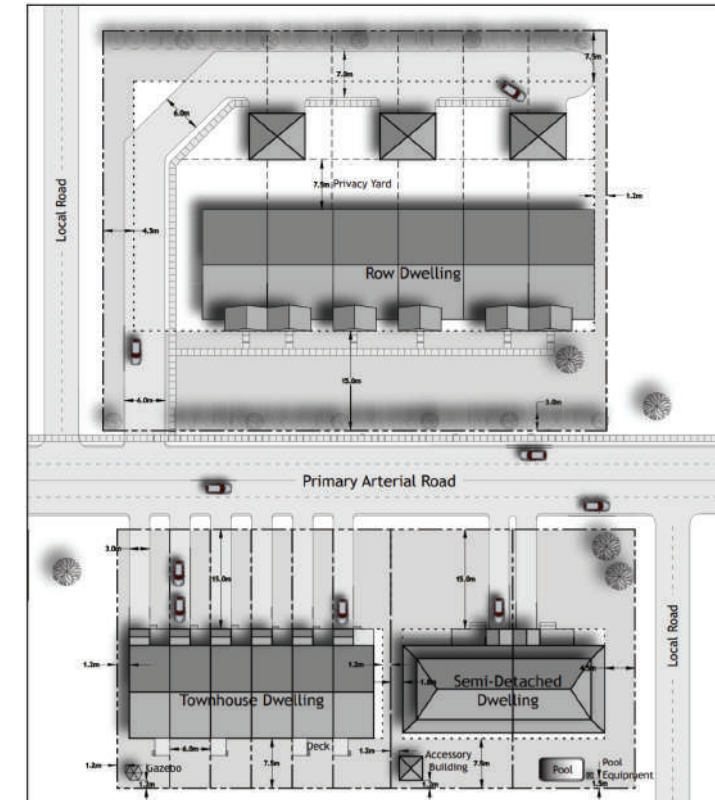
ZONING & SITE LAYOUT

ZONING BY-LAWS R3-18 (FIVEPLEX) NOT WITHSTANDING ANY OTHER PROVISION HERE-OF TO THE CONTRARY, WITHIN ANY AREA DESIGNATED R3-18 ON THE ZONE MAPS, ALL PROVISIONS OF THIS BY-LAW APPLICABLE TO THE "R3", MIXED MULTIPLE RESIDENTIAL ZONE SHALL APPLY SUBJECT TO THE FOLLOWING MODIFICATIONS:

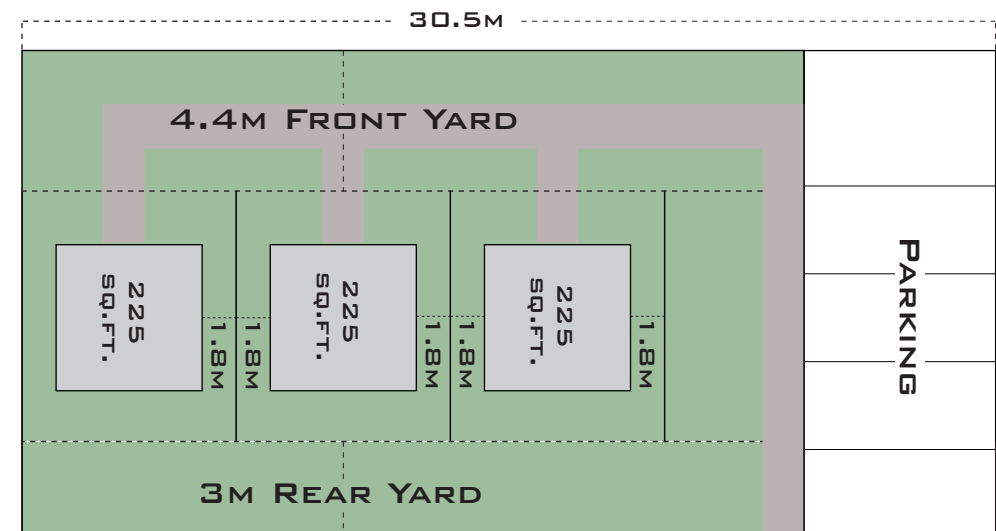
- i) A MULTIPLE DWELLING CONTAINING NOT MORE THAN FIVE (5) DWELLING UNITS SHALL BE PERMITTED;
- ii) A MINIMUM OF ONE (1) PARKING SPACE PER DWELLING UNIT SHALL BE PROVIDED, TO BE PERMITTED IN THE REQUIRED CORNER SIDE YARD;
- iii) THE FOLLOWING BUILDING SETBACKS SHALL APPLY:
 1. THE MINIMUM FRONT YARD DEPTH SHALL BE 4.4 METRES;
 2. THE MINIMUM INTERIOR SIDE YARD WIDTH SHALL BE 1.8 METRES;
 3. THE MINIMUM REAR YARD DEPTH SHALL BE 3 METRES.



ZONE SUDBURY ZONING MAPS SHOW THAT THE SITE FALLS UNDER R3-1, FOR MEDIUM DENSITY RESIDENTIAL.

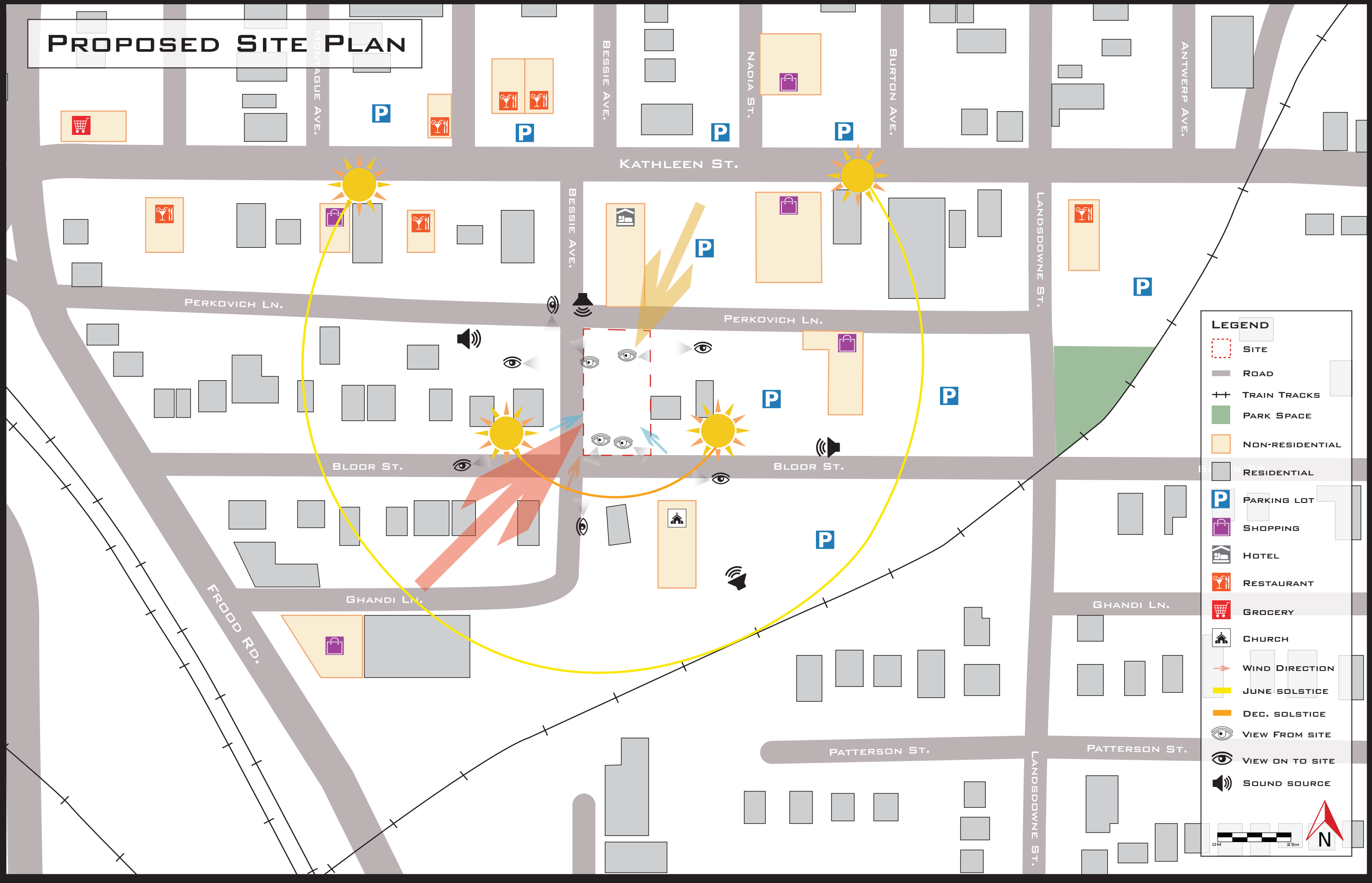


▲ **MULTIPLE DWELLING OCCUPANCY**
THE ABOVE IMAGE SHOWS AN EXAMPLE OF A MULTIPLE DWELLING OCCUPANCY. A GOOD COMPARABLE FOR THE PROJECT.



◀ **INITIAL SPATIAL PLAN**
THE ABOVE PLAN SHOWS THE SPATIAL REQUIREMENTS OF A 225 SQ.FT MODULE ON THE SITE AS WELL AS ALL NECESSARY SETBACKS FOR A ZONE OF ITS TYPE. THE PLAN SPLITS THE INITIAL LOT INTO 4 SECTIONS, 3 FOR RESEDENTIAL USE, WITH THE NORTH MOST SECTION DESIGNATED AS PARKING FOR THE HOUSES.

PROPOSED SITE PLAN



LEGEND

- SITE
- ROAD
- TRAIN TRACKS
- PARK SPACE
- NON-RESIDENTIAL
- RESIDENTIAL
- PARKING LOT
- SHOPPING
- HOTEL
- RESTAURANT
- GROCERY
- CHURCH
- WIND DIRECTION
- ☀ JUNE SOLSTICE
- ☀ DEC. SOLSTICE
- 👁 VIEW FROM SITE
- 👁 VIEW ON TO SITE
- 🔊 SOUND SOURCE

0M 25M

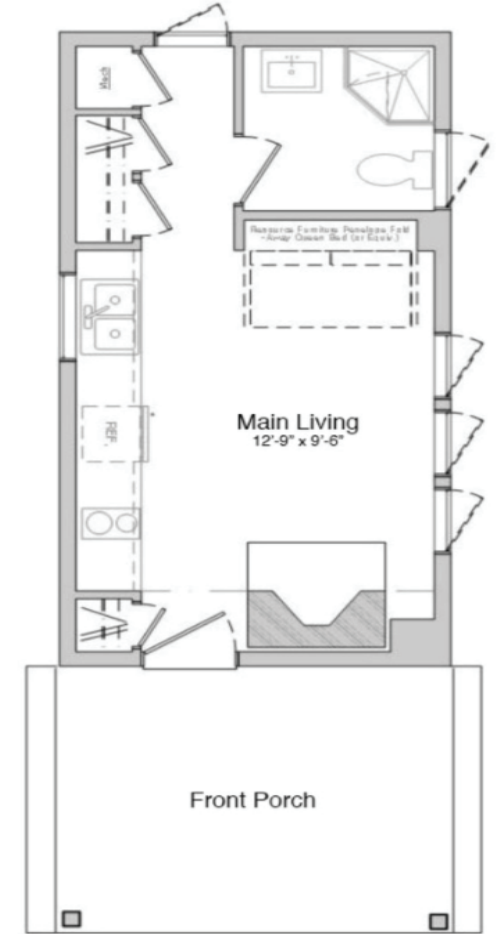
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DETROIT TINY HOME COMMUNITY



TINY HOMES DETROIT IS A PROGRAM FOR LOW-INCOME PEOPLE TO BECOME HOMEOWNERS. OTHER TINY HOME COMMUNITIES HAVE STARTED IN THE US, BUT DETROIT'S DIFFERS IN A FEW WAYS. DETROIT'S COMMUNITY IS THE ONLY RENT-TO-OWN MODEL IN THE COUNTRY, WHERE THE RESIDENTS RENTAL PAYMENTS GO TOWARDS THEM EVENTUALLY OWNING THE HOME. THIS MODEL GIVES RESIDENTS AN ASSET, WHICH WILL HELP THEM BORROW MONEY IN THE FUTURE, AS THEIR HOMES CAN BE USED AS COLLATERAL.

THIS PROJECT AIMS TO HELP THOSE WHO DON'T HAVE A LARGE INCOME, OWN A HOME IN A SOCIETY THAT IS BECOMING INCREASINGLY DIFFICULT TO DO SO. THE HOUSES VARY BETWEEN 250-400 SQUARE FEET WITH EACH BEING ARCHITECTURALLY DIFFERENT. SOME ARE STUDIOS, WHILE OTHERS HAVE A LOFT, AND SOME HAVE A SEPARATE BEDROOM. EACH HOUSE WILL BE RENT-TO-OWN BASED ON SQUARE FOOTAGE AND COSTS \$1 PER SQUARE FOOT. A 300-SQUARE-FOOT HOME IS ESTIMATED TO COST \$48,000 TO BUILD, BASED ON PROFESSIONAL TRADES AND PURCHASED MATERIALS.



THE PLOTS OF LAND THE TINY HOMES ARE BUILT ON MAKE USE OF THE VACANT LOTS THAT LITTER DETROIT SINCE THE CITY FILED FOR BANKRUPTCY. THE PLOTS OF LAND ARE THEN SUBDIVIDED TO ACCOMMODATE SEVERAL TINY HOMES ON EACH LOT.

