



## New Venture Placement



August 2008

## Corporate Mission and Structure

- Nubuild's mission is to deliver world-class manufacturing systems to production homebuilding.
- Nubuild's new business model will dramatically reduce cycle times, boost quality and lower costs for homebuilders, enabling the company to:
  - Introduce high productivity to residential construction, capturing revenue streams from all links in the homebuilding value chain: land, construction, materials, labor, finance and home sales.
  - Generate global growth by tapping into booming demand for housing in emerging markets.
  - Leapfrog current green initiatives by slashing waste, building energy-efficient homes and incorporating innovative, energy-saving products into the construction process
- Patented home-assembly system and Rhodemaster house-moving vehicles will serve as foundation for business model.
- Core competency will be construction services, engineering, R&D, intellectual property, logistics and process improvement.

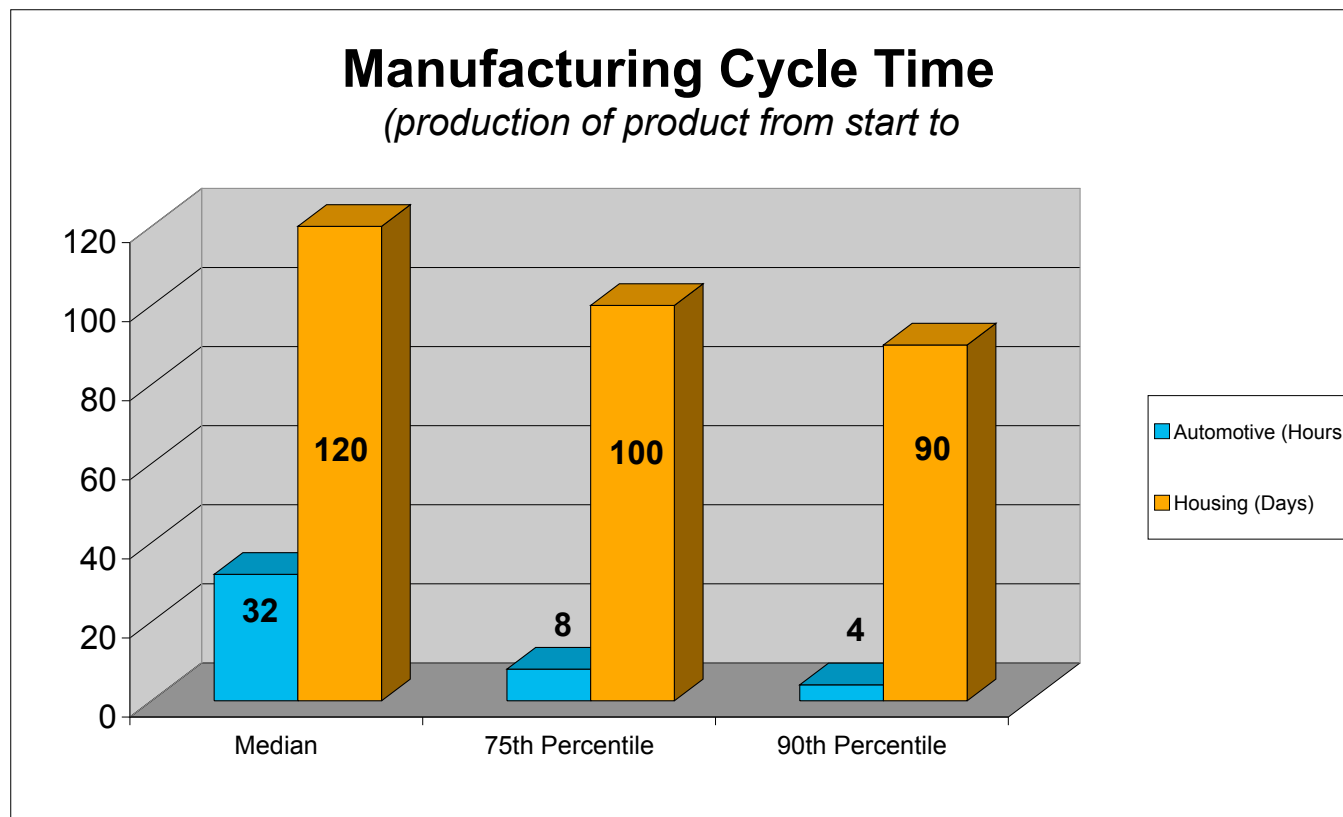
## Nubuild, Inc.

- Seeking \$25M first-round placement
- Developed Rhodemaster house-transportation vehicle
- Possess robust patent portfolio for Rhodemaster, as well as home manufacturing and assembly processes
- Letters of interest from initial customers and partners
  - **Harmony Homes**
  - **Emaar**
  - **Urbi**
  - **Weyerhaeuser / Pardee Homes**
  - **Eurasia City**

## U.S. Housing: A Productivity Crisis

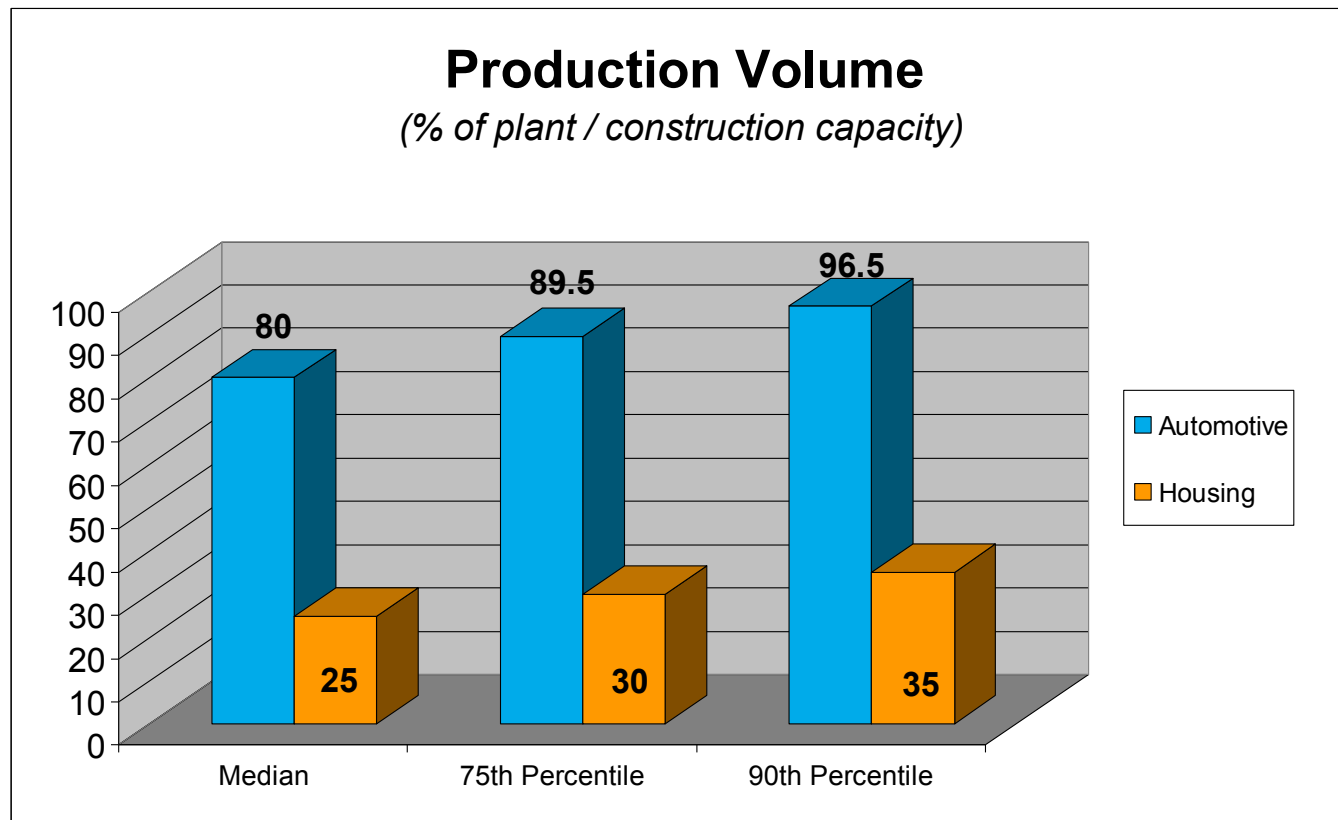
- Construction industry represents 8% of GDP
- Second largest U.S. economic sector behind healthcare
- Residential market represents half of all construction activity
- Bureau of Labor Statistics doesn't gauge productivity in this vital sector because metrics are fuzzy and outcomes poor
- By any measure, construction ranks dead last in productivity out of all sectors of economy

## Productivity Metrics (Cycle Time): Housing vs. Automotive



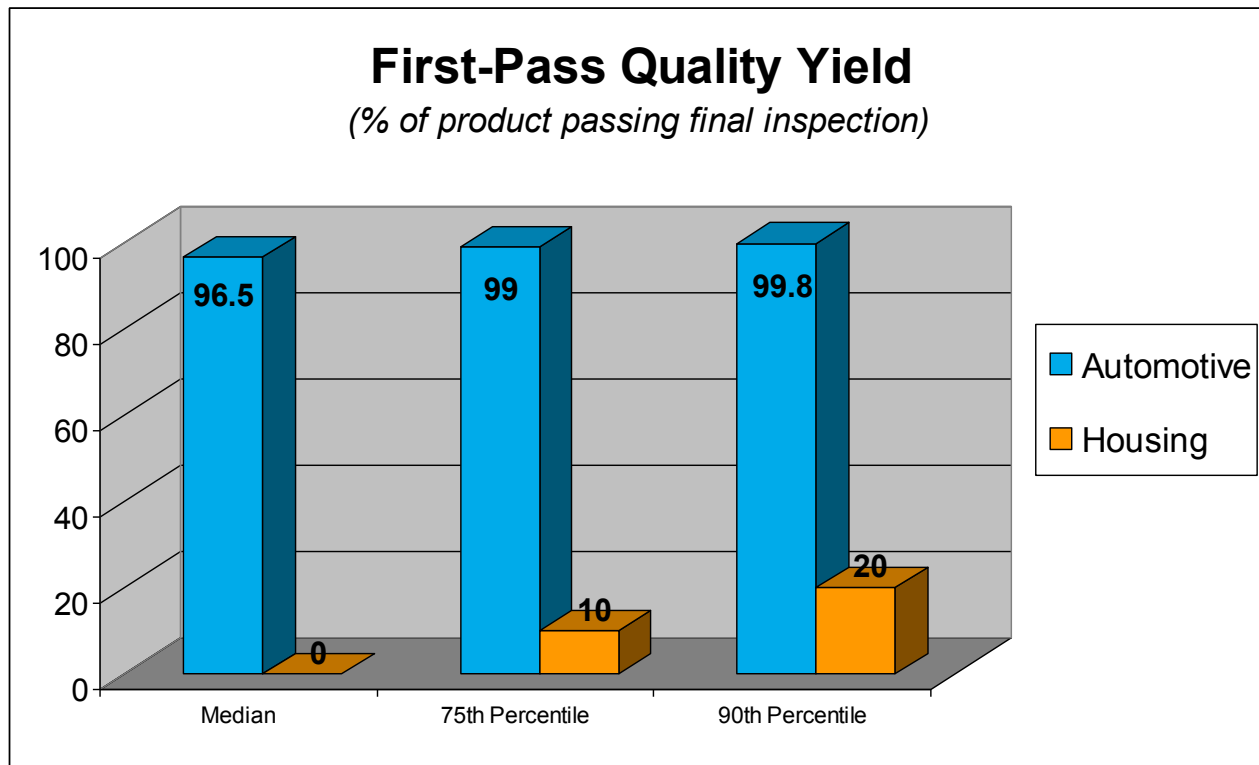
Sources: Industry Week, NAHB, Deloitte Research, McGraw-Hill Construction, Interviews with VPs of Quality for Major Builders

## Productivity Metrics (Factory Uptime): Housing vs. Automotive



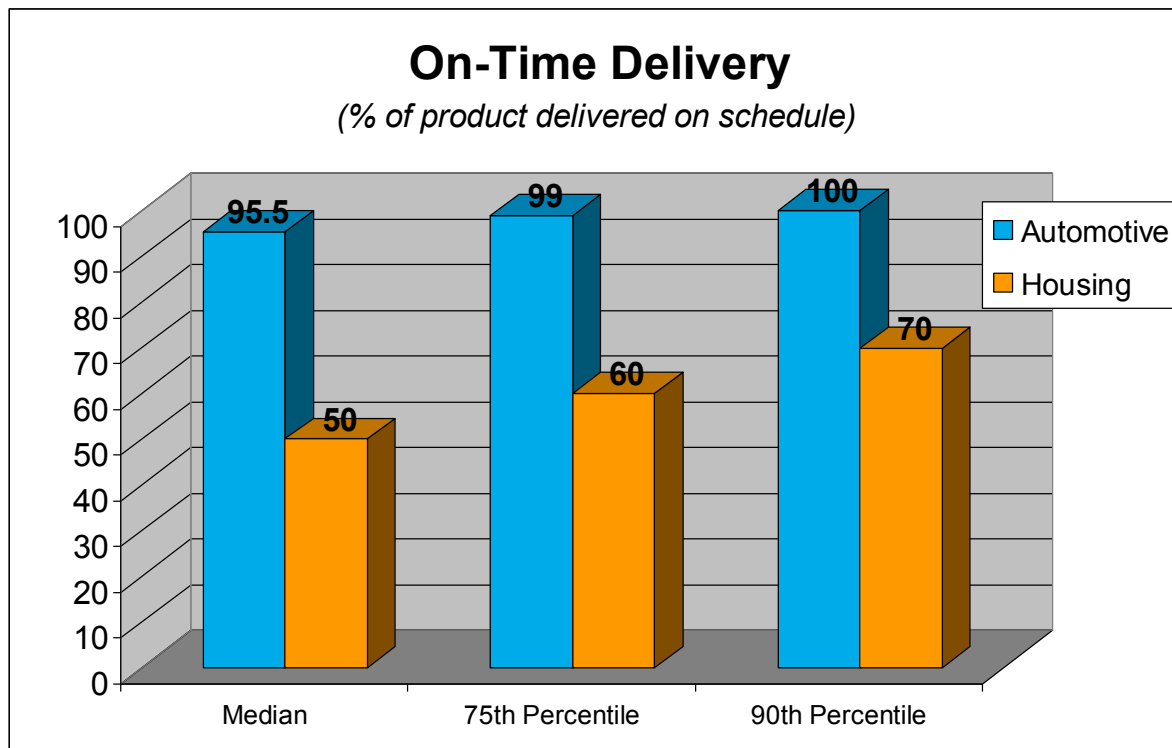
Sources: Industry Week, NAHB, Deloitte Research, McGraw-Hill Construction, Interviews with VPs of Quality for Major Builders

## Productivity Metrics (Quality): Housing vs. Automotive



*Sources: Industry Week, NAHB, Deloitte Research, McGraw-Hill Construction, Interviews with VPs of Quality for Major Builders*

## Productivity Metrics (On-Time Delivery): Housing vs. Automotive



Sources: Industry Week, NAHB, Deloitte Research, McGraw-Hill Construction, Interviews with VPs of Quality for Major Builders



## The Problem

“Building homes entirely on site makes as much sense as building your car in your driveway.”

- Kent Larsen, MIT, Open Source Building Alliance

“The activity that occurs most often in home building is nothing.”

- Dr. Howard Bashford, “ Del Webb School of Construction, Arizona State University

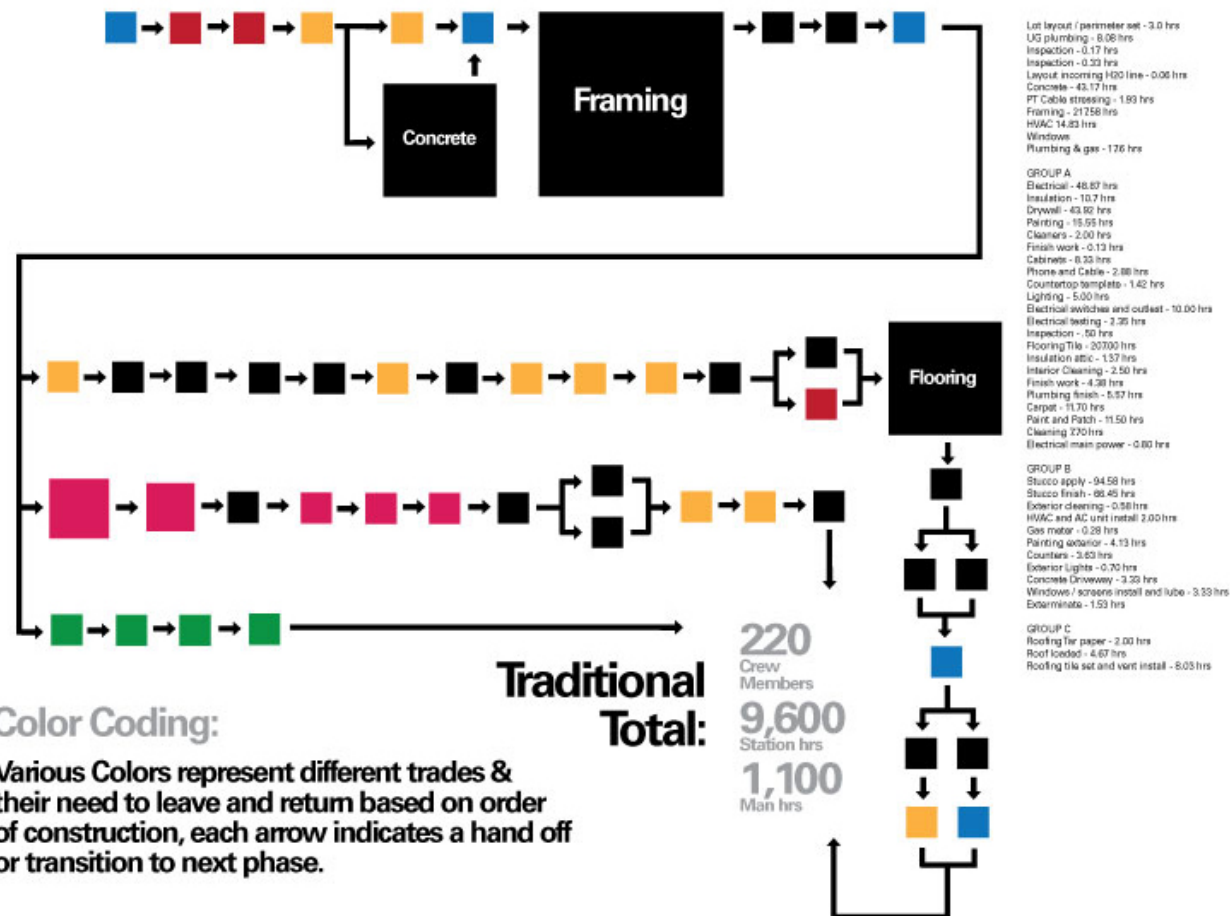
## U.S. Homebuilding: A Model of Inefficiency

- Construction processes are sequential
- Work is performed on specific home site only 25% of time
- 30 to 40 trades are involved in process
- Each trade must wait for other to finish
- Materials are handled and distributed in relatively small increments
- Materials are distributed to dispersed construction sites
- Materials are subjected to heat, cold, rain, wind and dirt
- Construction waste represents 22% of all landfill volume in California
- Green initiatives fail because trades serve as barrier to innovation
- Work is performed outdoors and is often delayed by weather
- Production home cycle times average over 120 days
- For every 100 homes produced, 250 units must be in production

*Sources: Dr. Howard Bashford, ASU; NAHB, Hanley Wood Market Intelligence, PATH*

# Current Home Construction Process

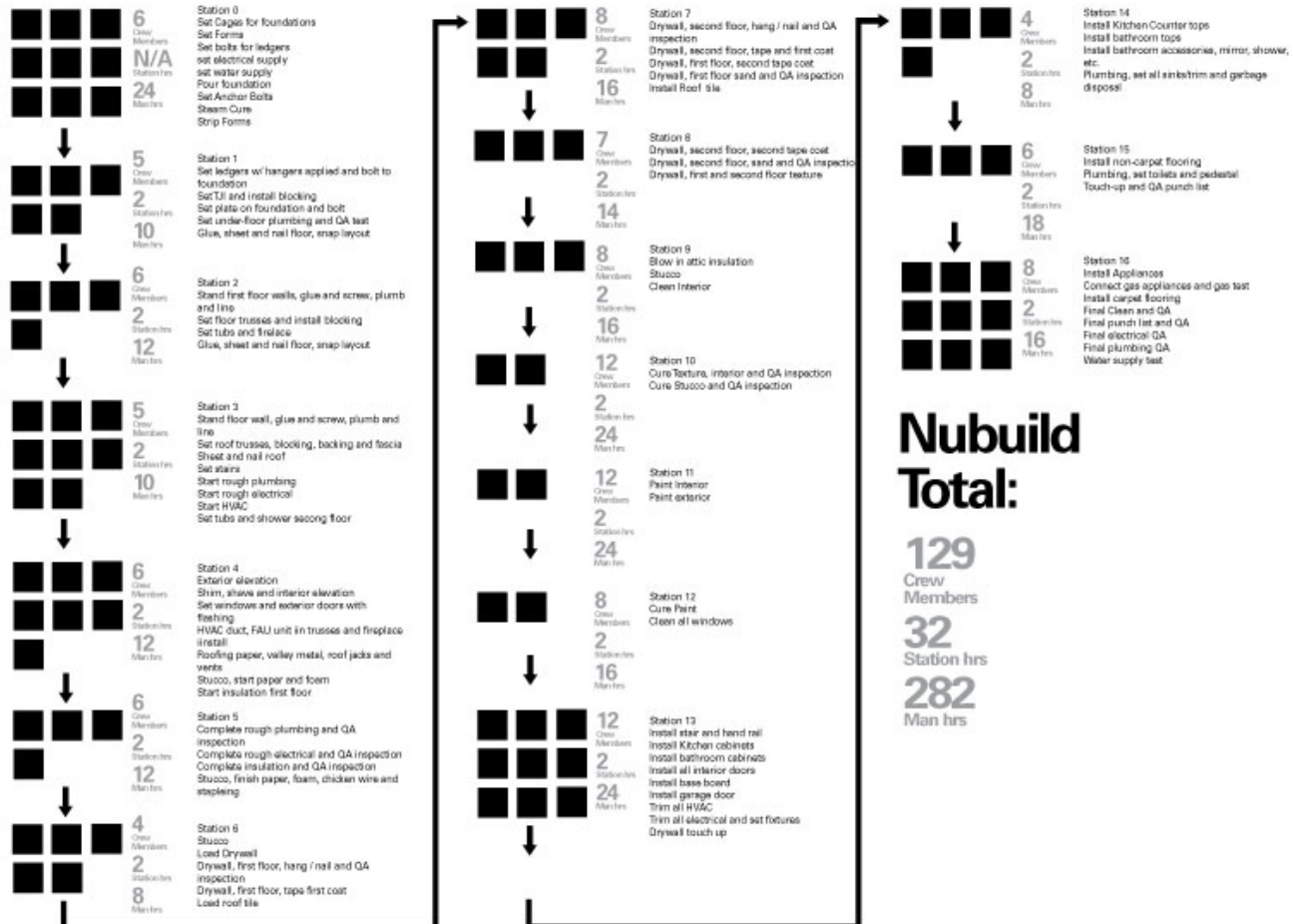
## Traditional Sequential Method



Source: Dr. Howard Bashford, Del E. Webb School of Construction, Arizona State University

# Nubuild Process

## Nubuild Concurrent Method



## Nubuild Assembly & Distribution



- Nubuild changes the homebuilding business model, enabling the company to control the homebuilding value chain from direct materials through delivery of finished home
- Upon reaching critical mass in specific markets, Nubuild would be able to establish material distribution centers, as well as component assembly centers located adjacent to each other
- Distribution centers would acquire bulk materials in batched orders direct from manufacturers
- At the Assembly Centers, components such as structural wall panels, cabinetry, wiring, etc., would be pre-assembled for developments underway
- The components would then be packaged and shipped to Nubuild's Whole House Factory, where final assembly of components would be completed in rapid fashion.
- This system would allow for centralized procurement, bulk orders, precise cutting, temperature-controlled storage, batched shipping and delivery, etc.

## Nubuild Whole House Factory



- Nubuild's Whole House Factory can be constructed within the boundaries of a specific community
- Estimated cost for a Nubuild Factory ranges from \$750k to \$3m, depending on scope, scale and complexity of project
- The Factory comprises a staging area for concrete foundation pours
- The cured foundation is shuttled through the Factory on a rail system
- The Factory features 16 work stations, each grouped to most effectively utilize related trades, work processes and materials



## Nubuild Whole House Factory



- Each station is designed to complete its workflow within 2 hours
- For example, Station 2 constructs first-floor walls, sets tubs, and sheets-and-nails the floor
- Station 4 sets windows and exterior doors, HVAC duct, roofing paper, etc.
- Station 6 stuccos exterior, drywalls the first floor and loads roof tiles
- Station 11 paints interior and exterior
- Station 14 installs kitchen countertops, bathroom tops, bathroom mirrors, shower, etc.
- Station 16 installs appliances and carpet, tests gas connections and water supply, performs final cleaning, and reviews all QA punch lists
- Total construction time from Station 1 through Station 16 would be 32 hours
- Total construction crew would number 123
- Total man hours expended per house would be 282 from start to finish.

## Rhodemaster: The Lynchpin to Innovation



- Rhodemaster comprises two GPS-guided Rhodesters that pick up finished house in tandem
- Twin vehicles attach to foundation with steel tendons, using lateral compression to lift home
- Rhodemaster carries house and foundation, using GPS system to place house precisely on lot
- Utilities are connected, and home is fully operational
- Rhodemaster is revolutionary concept and plays crucial role in effective home factory system



## Rhodemaster: Engineered to Perfection

- Nubuild assembled a world-class design and engineering team to create Rhodemaster:
  - **The Wheel Thing, Inc.:** Concept development and preliminary engineering
  - **Martinez & Turek, Inc.:** Engineering and manufacturing of Rhodemaster
  - **ATA Engineering:** Structural and design analysis
  - **GR Engineering:** Control systems engineering
  - **Lockheed Martin:** Engineering of Rhodemaster's massive structure, ensuring that it exceed strenuous demands
- Rhodemaster system required \$7m in engineering and R&D
- Prototype Rhodemaster cost \$7m to manufacture
- Production Rhodemasters will cost \$3m to manufacture
- First Rhodemaster (pictured here) manufactured and located in Rialto, Calif.
- Rhodemaster is four months away from being fully operational, requiring only hydraulics adjustments and final testing protocols



## Rhodemaster Technical Specifications



Length	81' 8"
Width (Single Rhodester)	8' 4"
Height	10' 9" to 16' 11"
Tire pressure	90 psi
Tire load capacity	52,000 lbs.
Speed Range	4 to 10 mph
Nominal Loaded Horsepower	408 hp
Maximum Grade Climb	9%
Maximum Payload Size	60' x 60'
Maximum Payload Weight	250,000 lbs.

<u>Modes</u>	
Drive	High-speed travel, wheel perpendicular to chassis
Crab	Low-speed travel with wheel axis parallel to chassis
Creep	Low-speed tight maneuvering
Nudge	Low-speed for accurate positioning
Lift	Initial lifting of house and calibration of sensors



## Rhodemaster Operation Specifications

Personnel Required	2 min
Duty Cycle (3-man crew)	
Attach to House	25 min
Lift and Check House	15 min
Transit to Lot	15 min
Final Positioning	15 min
Set House Down	10 min
1st Rhodester Returns to Factory	20 min
Remove and Store Tendons	20 min
2nd Rhodester Returns to Factory	<u>20 min</u>
Total	2.33 hrs

