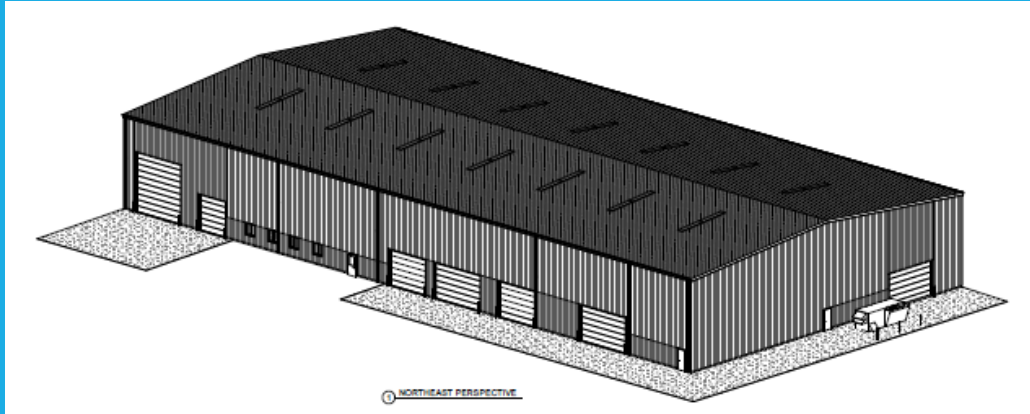


AFFORDABLE HOUSING MODULAR FACTORY



BOULDER VALLEY
SCHOOL DISTRICT



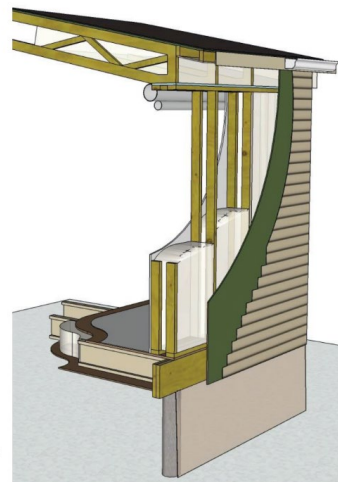
WHAT IS ZERO ENERGY MODULAR?

- All-Electric
 - Heating and Cooling
 - Ultra Efficient Appliances, Lighting and Mechanical
- Thermal Envelope and Air Sealing
- Fair Air Ventilation
- Quality Materials and Construction Practices
- Permanent Foundation



FLOOR	R-40
WALLS	R-43
ROOF	R-60

14" roof truss
Airtight ducts inside house
1 foot overhang
5/8" sheetrock
& low-VOC paints
Double stud walls,
10" cavity
Formaldehyde-free
plywood decking and
sheathing
9.5" floor system
Moisture-tight underbelly
Frost protected foundation



ZERO ENERGY MODULAR (ZEM) MARKET ANALYSIS

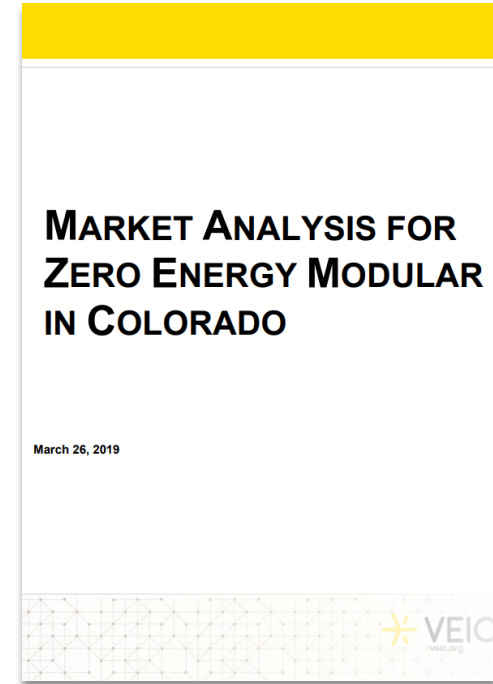
Lead Agencies:

Colorado Housing Finance Authority
Energy Outreach Colorado
City of Boulder
Colorado Habitat for Humanity

Purpose:

Assess demand for ZEM Homes in multiple scenarios

- Mobile Home Replacement
- Single Family, Multi Family and Infill
- Production Facility



<https://www.veic.org/resource-library/market-analysis-for-zero-energy-modular-in-colorado>

WHAT CAN MODULAR BE?



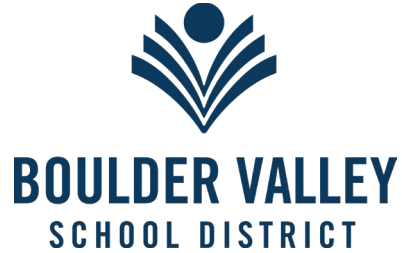
Images Courtesy
Jason Carter,
The Mod Coach
www.themodcoach.com







PURPOSE OF THE PARTNERSHIP

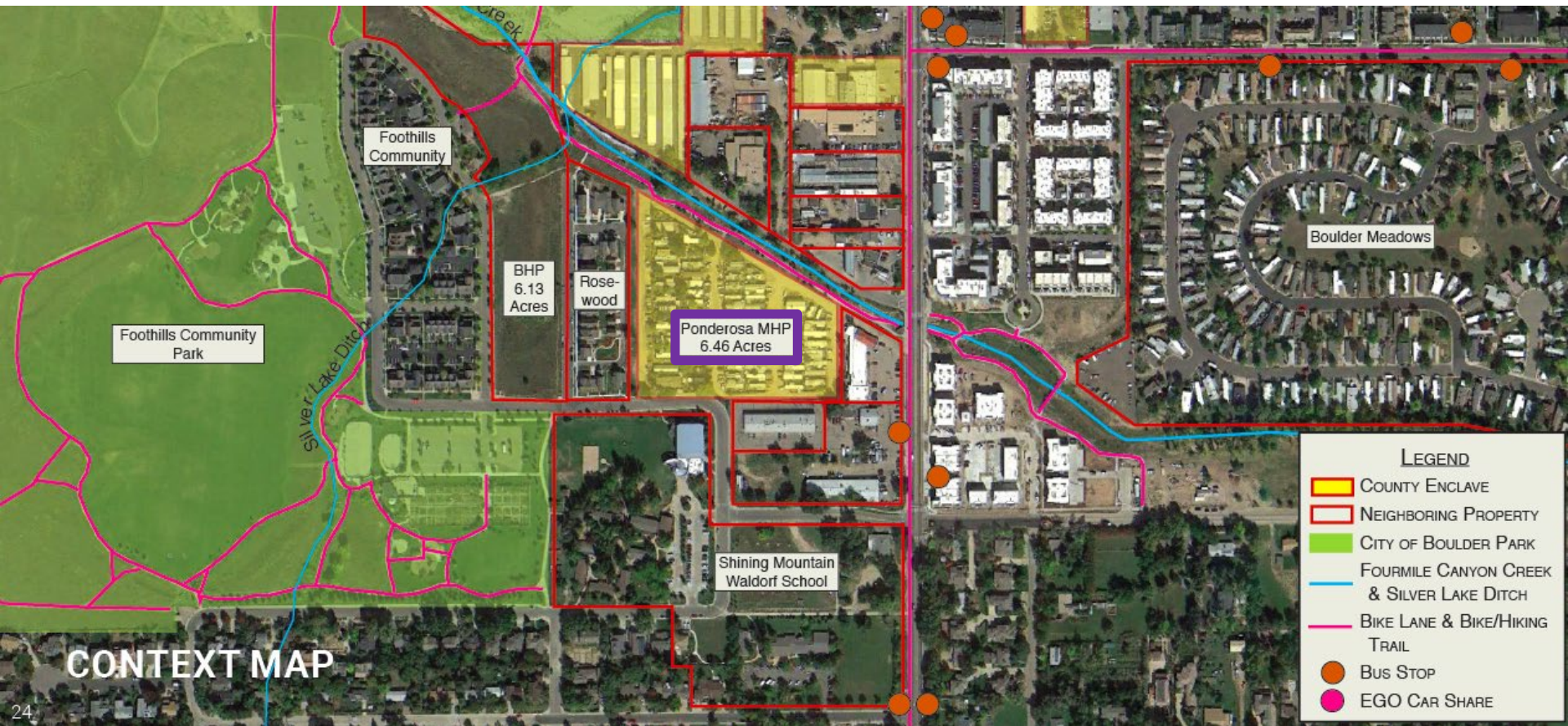


- Produce much needed affordable housing
 - ↪ Serve both Boulder Valley residents and workers (including BVSD staff)
- Provide workforce training for BVSD students
 - ↪ Emphasis on Process of Construction
 - ↪ Hands on experience with evolving construction industry



TEC STUDENTS





WHY MODULAR

- The Park has experienced infrastructure failure
- Existing manufactured homes are old and in need of replacement
- City's purchased Ponderosa in 2018
- New modular homes to replace 73 manufactured homes:
 - ↪ Allow residents to build wealth
 - ↪ Energy efficient
 - ↪ Permanently affordable to extremely low-, low-, moderate- and middle-income households



ROLES OF PARTNERSHIP

- **City** – provide funding to construct the factory and the tools to equip
- **Flatirons Habitat for Humanity** – manage the facility, procure materials, and provide logistical support of organizing volunteers, homeowners, professional staff and integration of TEC students
- **School District** – provide land on the Educational Resource campus for the construction of the factory for a period of at least 10 years and use the operation as a teaching facility





115.17' ± 5.5'
410.64' ± 16.7'

115.17' ± 5.5'
410.64' ± 16.7'

PROPOSED
MODULAR
FACTORY
FFE: 532.94

4" CONCRETE VALLEY PARK

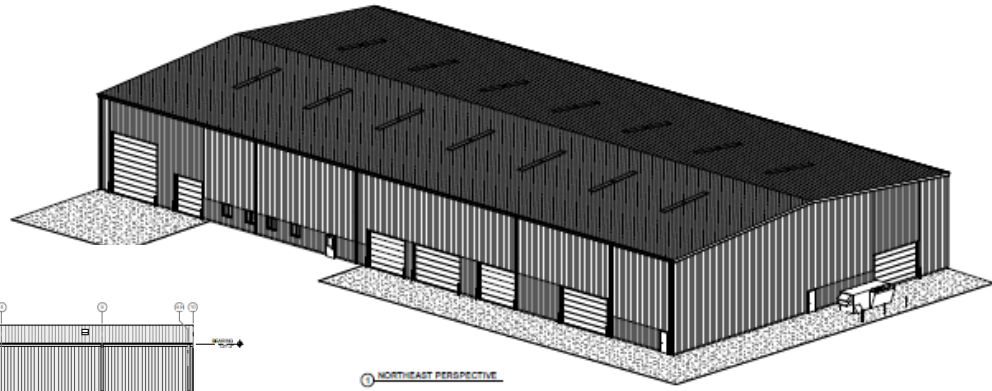
215' ± RETAINING WALL
MAX HGT = 6.00'

25.00'
ROADWAY

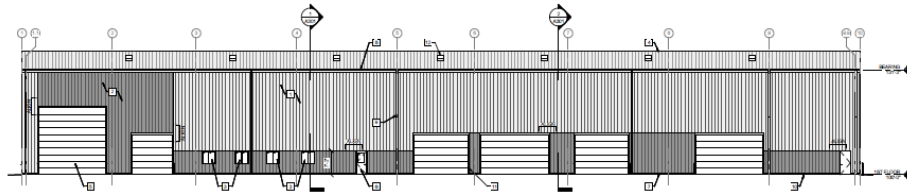
WHY MODULAR?

- Higher production - capacity to build 50+ homes / year
- Lower cost / higher quality
- Less exposure to weather
- Worker safety
- Less material waste
- Minimizes disruption to the community

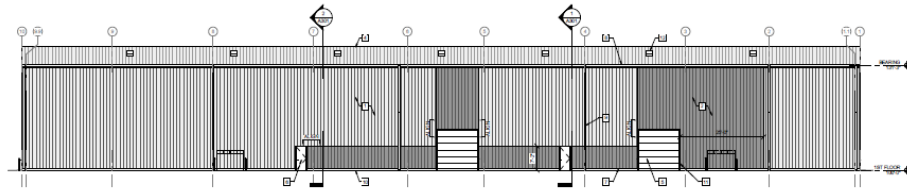
FACTORY LAYOUT



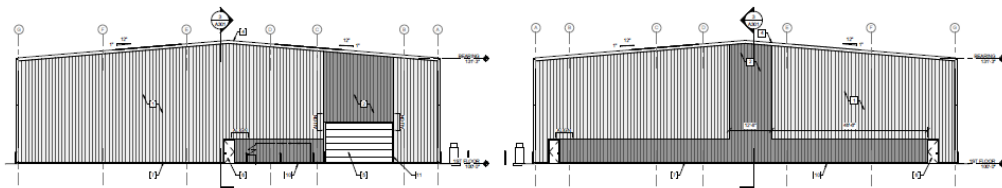
① NORTHEAST PERSPECTIVE



② EAST ELEVATION
3/32" = 1'-0"



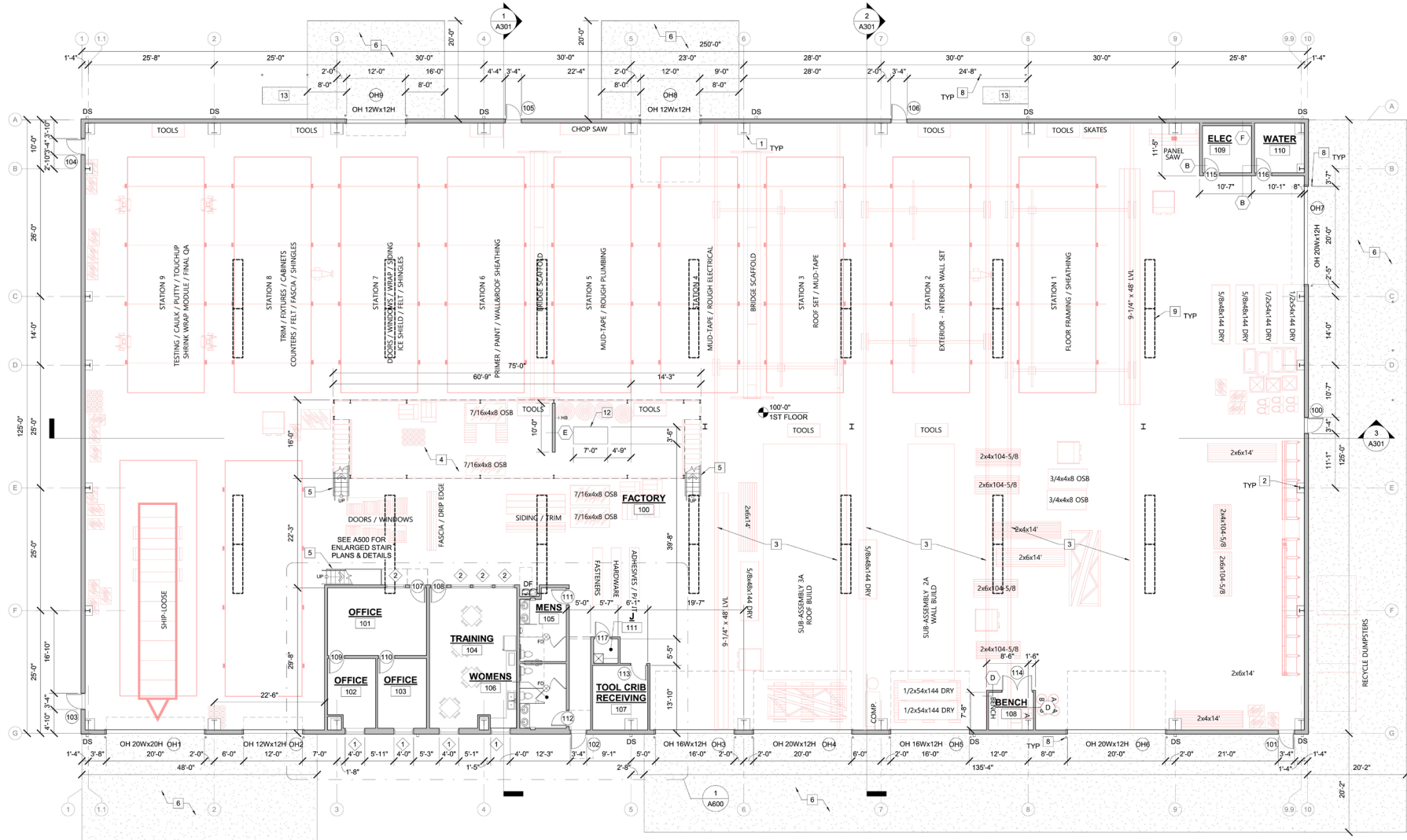
③ WEST ELEVATION
3/32" = 1'-0"

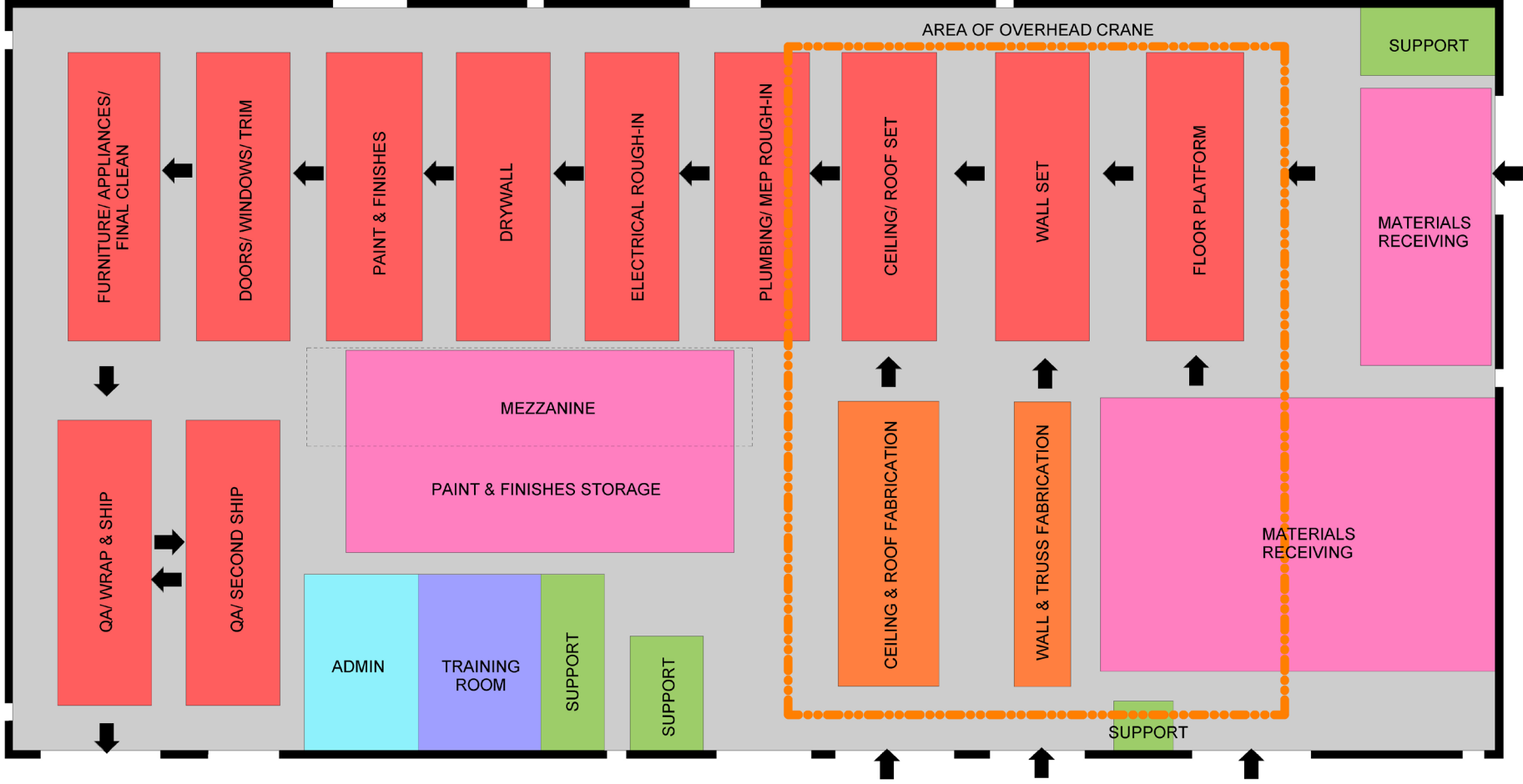


④ NORTH ELEVATION
3/32" = 1'-0"

⑤ SOUTH ELEVATION
3/32" = 1'-0"

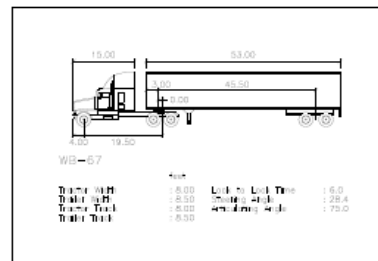
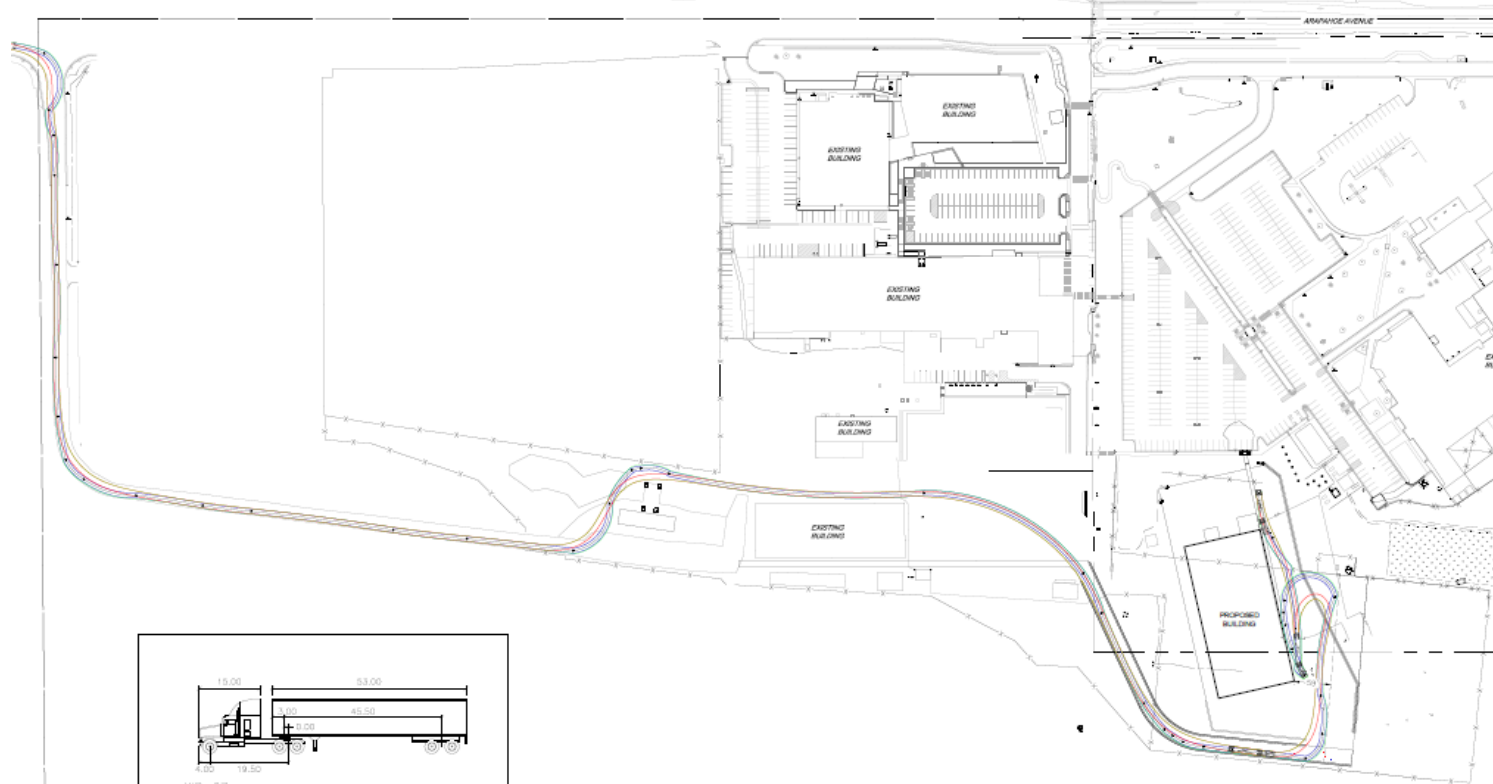
0' 8' 16'





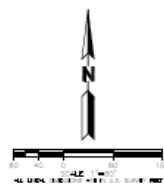
FACTORY ACTIVITY

- Capacity = 50 units / year
- Actual Construction will be closer to 12-15 homes each year
- Approximately 1 module each working week
- Deliveries:
 - ↩ Small Delivery Trucks (1-2 each week)
 - ↩ Large Delivery Truck (1-2 each month)
- Module Pick Up: once every 8-12 weeks
- Factory Hours: 8am – 4pm Tuesdays through Saturdays (excluding holidays)



AUTOTURN LEGEND

FRONT TIRE: —
 CHASSIS: —
 REAR TIRE: —



THE FUTURE

- Modular construction gaining momentum
- Wood or steel
- Multifamily / student housing / modular classrooms
- Prepare students for a changing industry



<https://archinect.com/news/article/150174575/modular-construction-startup-katerra-cuts-200-jobs-to-embrace-automation>

32 story modular apartment building under construction; Atlantic Yards B2 Tower, Brooklyn, NY: SHoP Architects



Image Courtesy Jason Carter, The Mod Coach www.themodcoach.com

REQUIRED ACTIONS

- ✓ Feasibility Study
- ✓ Partnership Memo of Intent
- ✓ Environmental Assessment
- ☐ Intergovernmental Agreement (BVSD, City)
- ☐ Annexation Approval
- ☐ Lease (BVSD, Habitat)
- ☐ Financing (HUD Section 108 loan + city \$)
- ☐ Civil Design (stormwater, sanitary, sewer)
- ☐ Permitting (city, county and state)
- ☐ State Factory Licensing
- ☐ Detailed Factory Operational Design
- ☐ Factory Construction (winter 2022-23)
- ☐ Equipping and Staffing Factory (winter 2023-24)

