



Green Portable Classrooms

Draft Meeting Notes

September 6, 2011

Attendees: Dennis Wilde, Alan Duer, Kendra Cox, Caty Skogland, Sherry Shao, Margarete Leite, Sergio Palleroni, Tim Dacey, Matt Sedor, Christian Sinai, Stefee Knudsen, Dan Weldon, Seth Moody, Jo Brickman, David Kenney, Ron Young, Mark Heizer, Gabrielle Schiffer, Sarah Giles, and Kim Travis

Project Purpose Statement and Time Line:

The purpose of this Oregon Solutions project is to focus on designing, developing, testing and monitoring a prototype green portable classroom during the 2012-2013 school year.

PHASE I – DESIGN August 2011 – March 2012

- Build partnerships to leverage design commitments
- Solidify agreements/commitments for building and installation
- Prepare and complete all needed documentation and agreements

PHASE II – DEVELOP/BUILD/INSTALL April 2012 –July 2012

- Build the prototype
- Prepare the site
- Install the unit

PHASE III – TESTING AND MONITORING July 2012 – June 2012?

***Need to engage additional partners for this phase*

The Prototype Design:

Portability

The Portability Task Force recommended the prototype be designed to be portable even though school districts rarely move these buildings currently. Designing for portability can provide benefits whether the classroom is moved or not. It can allow for a reduction in site-related costs that can be used to upgrade the building itself which results in a classroom of greater all round value.

Envelope Design

Margarete Leite reviewed the highlights of initial designs (presentation available online).

The designs support the “*Whole Building Approach*” – developing a building envelope that maximizes natural daylight, ventilation and HVAC in relation to one another and to all other building systems. The building will be designed as a more self-contained unit which can help reduce cost of foundations and ramps. Current overall plan configuration and construction typologies will be maintained due to maximized material and transportation

efficiencies. Innovation will focus on roofing and ceiling options which can improve natural daylight and ventilation. Three main options are:

- The Gable- maximizes the current envelope by upgrading building systems and materials (cheapest).
- The Shed- asymmetrical configuration, increases natural ventilation and daylight.
- The Butterfly – symmetrical configuration, highest ceiling, greatest natural daylight (most expensive).

Energy efficiency

The current portable classroom systems are designed for a "maximum egress" density based on square footage. This gives a load of 50 occupants/1000 sqft which gives the portable classrooms a capacity (based on 870sqft) of 42 occupants/classroom.

2010 Oregon mechanical building code, chapter 4, states that for purposes of ventilation, classroom density is based on 35 occupants/1000sqft(or greater as long as minimum ventilation rates are met under chapter 4 requirements) which gives the portable classrooms a capacity (based on 870 sqft) of 31 persons/classroom.

Typical classrooms hold 30 students, 1 teacher and an aide. In order to reduce heating and cooling load requirements and be under the maximum egress capacity our proposal is to design the individual classrooms for 32 occupants, the typical classroom capacity.

The 24% reduction in occupants, from 42 to 32, will result in heating and cooling load (annual energy consumption) and capitol cost (HVAC sizing) reductions while conforming to 2010 Oregon building code for maximum density for egress and ventilation the code requirements.

The team will consider over-head distribution versus in-floor distribution. There was discussion regarding removal of the drop ceiling to expose duct work. This concept will be explored.

Next Steps:

- Blazer provides cost estimates on initial options for the design team to help make decisions
- Technical specialists will conduct performance modeling
- Oregon Building Codes Division will provide information regarding egress and ventilation
- The School District Engagement Task Force will conduct outreach and recruit participants

Task Force Members:

Ron Young, Alan Duer, Dan Weldon, Stefee Knudsen, Margarete Leite

"Parking Lot" Topics to discuss at future meetings:

1. Look for funding and incentives to help support the project
2. Engage product manufacturers (windows, etc)
3. Developing a Business Model that considers broader modular/portable usages
 - Engage with an economist
 - Reducing energy costs/looking for energy credits
4. Outreach and education on the benefits of "portability"
 - The classroom is an investment with resale value
 - The foundation/ramp remains with the unit and less concrete is needed