



The Relocatable Green Modular Classroom in front of the main building at the Carroll School in Lincoln, Massachusetts.



**Cliff Cort,**  
Founder of Triumph Modular.

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## CASE STUDY

### TRIUMPH RELOCATABLE GREEN MODULAR CLASSROOM



# Creating Better Learning Environments for Children

## The Bard Quiet Climate 2 Helps Triumph Modular Develop A Smarter – Relocatable Green Modular Classroom For Learning

As Albert Einstein once said, “We can't solve problems by using the same kind of thinking we used when we created them.” That wisdom has been put into practice in the form of a smarter approach in the way modular schools can be built and used.

In 2006, the Montgomery County Public Schools in Maryland, in partnership with the Council for Educational Facility Planners (CEFPI), held a national design competition - The Portable Classroom Design Challenge - to create a pre-fabricated, modular classroom unit that was environmentally sustainable, or green. This competition led to eventual development and installation of one of the most uniquely created modular spaces ever conceived – indeed the award winner of the design competition.

Triumph Modular of Littleton, Massachusetts, in partnership with ARC/Architectural Resources and builder NRB Inc., won the design challenge because of their revolutionary, new modular classroom. Called Relocatable Green Modular Classroom, it's also the first modular classroom to be designed with many LEED-focused design elements.

“Our goal was to create a high-quality, portable classroom that was green – one with environmentally conscious materials used in its design and operation. The design was smart in the way that it used resources and provided heat, light, unsurpassed acoustics and air quality within the space,” said Cliff Cort, founder of Triumph Modular.

In fact it's estimated that the Relocatable Green Modular Classroom performs 56% better, in terms of overall energy costs, than similar, older style modular units that often use almost 3 times as much energy as a permanent school building.

### WHY BARD?

Thirty years ago, Bard began solving the comfort needs of schools across the country by providing wall-mounted heating and cooling equipment. Bard's products offer a combination of quiet operation, patented ventilation packages, unsurpassed quality and dependability that make them the #1 choice of many school officials.

With three, state-of-the-art manufacturing facilities and a global distribution network, Bard's commitment to quality and product innovation begins with its commitment to research and development. With features like self-programming energy monitors, unsurpassed energy efficiency, green refrigerants and the lowest acoustic profile on the market, Bard delivers products that provide tangible solutions for today's modern school facilities.

### BARD'S CONTRIBUTION

Already impressed from their previous working experience with Bard, Triumph Modular wanted to incorporate the Quiet Climate 2 into their green modular design.

“Building green is good for the environment, good for the wallet and good for the occupants of the building,” said Cort. “And Bard's HVAC unit is a big factor in why the Relocatable Green Modular Classroom performs as well as it does.”

According to an independent third party analysis, the green modular design provides a 68% reduction in heating energy and a 49% reduction in cooling energy, most of which can be attributed to Bard Quiet Climate 2.

An efficiently designed HVAC system is perhaps the single largest building component that can influence a building's sustainability. Bard's HVAC System in the Relocatable Green Modular Classroom Unit contributes significantly to its high energy efficiency and quiet, almost undetectable acoustic profile (37 bBHL) within the classroom.




# QuietClimate<sup>2</sup>

Bard's Quiet-Climate 2 heat pump is the most innovative wall-mount ever made. Designed specifically to provide superior energy efficiency and quiet operation in classrooms, the Quiet Climate 2 uses green refrigerants and provides operating sound levels that are 20 to 35 times quieter than a standard wall-mounted heat pump.

## **Bard's Quiet Climate 2 can provide the following features:**

- Higher energy efficiency and greater comfort through step-capacity technology
- Unmatched acoustical performance
  - Sound levels vary with applications and construction techniques, but integrated operating sound levels as low as 35 dbA have been achieved when combined with Bard Quiet-Climate acoustical accessories
- Improved ventilation
- Enhanced IAQ
  - Continuous blower operation – without noise – keeping fresh air constantly in the classroom
  - Optional UV lighting which keeps the coils free of bacteria and mold
  - Enhanced filtration capabilities
- A one-piece factory unit designed for fast installation and easy servicing
- Additional sound curbing accessories including, an isolation curb and return air and supply air plenums



A student from the Carroll School gazes out of a window within the Relocatable Green Modular Classroom modular unit.

## **THE CARROLL SCHOOL AND THE RELOCATABLE GREEN MODULAR CLASSROOM**

Serving over 75 communities around Lincoln, Massachusetts, The Carroll School was founded in part by Dr. Edwin Cole who wanted to provide a special school for children with language-based learning challenges. Today the Carroll School supports nearly 300 students, in grades 1 – 8, with a 3.4 student to teacher ratio using multi-sensory and individualized teaching methods for specific learning needs. Progressive by nature, The Carroll School's thriving community brings children together in an environment that values their differences and remediates their learning difficulties.

"Cliff Cort, a Lincoln resident and friend of the school, approached us with the idea to replace one of our existing modular building with the green modular design," said Margaret Gebhard, Director of Finance and Operations at The Carroll School. "Our existing modular space was not a popular one with either faculty or students due to its poor lighting, sound characteristics and overall appearance."

Things changed when teachers, students and administrative personnel moved into the Relocatable Green Modular Classroom for the first time.

The classroom incorporates many unique green components, including formaldehyde free, low VOC paints and coatings that reduce off-gassing, occupancy sensors that conserve energy by turning the lights off when people come and go, a vestibule that safeguards the inside from inclement weather while buffering outside noise and helps retain heating and controlling levels for the its green and virtually silent HVAC system – the Quiet Climate 2.

"The Relocatable Green Modular Classroom is truly amazing and smart to incorporate into any schools modular planning – we're quickly approaching our original 3 year leasing agreement with Triumph and I see us keeping the Relocatable Green Modular Classroom around for many more years to come," added Gebhard. "It has the best lighting, best HVAC system, and is the most energy efficient building on our campus – which is why it's also the most coveted space on our campus. Now we can not only say our kids here are special but now they have a truly special and smart environment in which to learn."



**Margaret Gebhard,**  
*Director of Finance & Operations.*

"The Relocatable Green Modular Classroom unit has a Bard HVAC system that we can't hear when it's on and accounts for better learning for students through an enhanced environment for instruction."

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