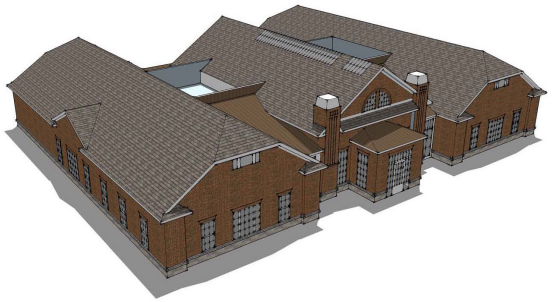
Baby Haven Childcare



Project Type:	Childcare & Adult Education
Owner:	Friends of the Haven
Construction Cost:	$2.7MM
Building Size:	9000 sf
Number of Floors:	1
Completion:	January 2011

Project Team:

Architect:	Intergroup Architects
Contractor:	Saunders Construction, Inc
Mechincal/ Electrical Engineer:	Beaudin Ganze Consulting Engineers, Inc
Structural Engineer:	Monroe & Newell Engineers, Inc

GEO High Performance Consultant (HPC)
Hutton Architecture Studio / ME Group

Information and renderings courtesy of Intergroup Architects and Friends of the Haven

cost effective high performance strategies on a tight budget

high performance goals

- Reduce energy use.
- Enhance daylighting.
- Provide a healthy indoor environment.

project description

Founded in 1992, the Haven at Fort Logan provides housing, educational and daycare facilities for women in treatment. The program's success lies in its ability to keep families together and provide a safe and supportive environment. The previous facility for the Baby Haven was built in the late 1800's and no longer matched the programmatic needs for infant care. A new childcare facility will have four classrooms, a multipurpose area, warming kitchen, dining area, and administrative offices.

the power of partnerships and community support

The Haven program has had extraordinary success with its family based approach. With over a 90% success rate after two years, it provides the lowest substance abuse recidivism rate in the state. The success of this program has earned recognition from the mayor's and governor's offices. Over 27 of the leading state foundations have contributed financially to the new Baby Haven project. Additionally many of the project team members have donated a substantial portion of their time and professional services because this facility is such a community asset.

high expectations within a low budget

The challenge for the Baby Haven project was to achieve the highest performance possible within a strict budget, while matching the historic character of the existing campus. The owner was committed to providing a healthy environment for the children and staff, while recognizing the long term value of high performance building strategies. The owner and project team sought the assistance of the GEO early in the design process to assist with this commitment.

The GEO consultants worked with the project team to review and analyze the building envelope and proposed HVAC systems for efficiency and cost considerations. The GEO consultant analyzed the performance of the selected wall system and offered additional suggestions for appropriate insulation details. The wall system included a continuous layer of exterior insulation and fiberglass batts between 6" studs. In addition, under-slab and perimeter footing insulation help to optimize thermal performance and comfort. The GEO helped the project team evaluate the proposed mechanical system for efficiency, first cost, and maintenance. The selected Variable Air Volume (VAV) HVAC system provides hydronic heating, DX cooling, and a digitally controlled economizer cycle for fresh air as needed. Once the structural building envelope and mechanical systems were selected, the energy model helped the GEO

consultant and the project team to identify high performance glazing as a more cost effective strategy than additional insulation. This simple enhancement reduced energy use another 10 kBTU/sf/yr and enabled the project to exceed a 62 kBtu/sf/yr energy use benchmark.

With these primary high performance features in place, the owner followed a unique approach to additional strategies as the project moved forward. Rather than removing strategies from the project, the owner and project team worked to include them as alternates. As funding became available these alternates could readily be included in the building if construction still allowed. This approach paid off when Xcel Energy awarded a grant that funded a radiant floor solar thermal system to be included in the infant and toddler rooms.

high performance strategies for childcare

The Baby Haven project ultimately aims to provide a healthy and safe environment for children. Many high performance features supported this mission. The radiant floor system in the infant and toddler classrooms will not only provide efficient heat, but a warm surface for the children to play on. The high performance glazing was increased by 6" in height to bring the sill closer to the floor level so that toddlers could pull themselves up and see their mothers returning.

Fiberglass window frames reduce thermal transfer while standing up to the rigors of a child care facility. Multi-level switching for the fluorescent lights with interior window shading, help save energy and allow the child care supervisor to control the classroom environment for nap and quiet times.

The donation of professional design and construction service and the determination to deliver a healthy and efficient facility will have personal and financial benefits for years to come.

high performance design features

- High performance building envelope with continuous exterior rigid insulation.
- Fiberglass frame, double pane, low-e windows.
- VAV HVAV system with economizer.
- Partial solar thermal radiant in-floor heating supplemented with high efficiency boiler hydronic heat.
- High efficiency water heater with ability, in the future, to add supplemental solar thermal radiant heat.
- Occupancy sensors for lighting with occupant controlled switching for light levels.
- Under slab vapor barrier for radon protection.
- Minimized site disturbance during construction.
- Irrigation controlled by moisture sensors.
- Low flow plumbing fixtures.
- Energy star appliances specified.

project results

The project started with general goals for performance and energy efficiency. However, the team had no specific energy use numbers to target. The GEO consultant helped the project team to establish:

- **62 kBtu/sf/yr** – benchmarked energy use goal.
- **69 kBtu/sf/yr** – modeled energy use prior to high performance glazing selection.
- **59 kBtu/sf/yr** – final projected energy use with enhanced glazing.

Features of the healthy interior environment:

- **Fresh air** brought into the building on a monitored basis.
- **Natural daylight** in all occupied spaces with insulated skylights over internal meeting area. Internal shading on east, west, and south windows.
- **Low VOC** – finishes, carpet, and adhesives.