Baptist church addition increases community missions, welcomes all, reduces crowding, in “green as can be” structure.

RALEIGH - Pullen Memorial Baptist church, which celebrates its 125-year anniversary in 2009, dedicates a 9,000 square foot addition on Sunday, February 1, 2009. After years of crowding, the 700-member, progressive Baptist church needed more space to house current programs and expand missions for its homeless, marginalized and job-seeking neighbors.

Designed for accessibility and energy efficiency by Dixon Weinstein Architects, a Carrboro-based firm, the addition won a North Carolina AIA Honor Award - which recognizes excellence in architecture, interior architecture and urban design - before it was built. The new, ramped entry welcomes people and allows public access to a quiet, planted area designed for contemplation. To preserve and protect the environment, the addition was built using recycled materials, and features a green roof, rainwater cistern, geothermal heating/cooling and daylighting to take advantage of natural light.

“We’ve been holding Sunday school in the hallways for more than 15 years, so it was clear the church needed a solution,” said Nancy Petty, co-pastor of Pullen Memorial Baptist.

The effort, which was inspired in part by co-pastor Jack McKinney’s observations about the church’s needs, involved “considerable research, plenty of congregational meetings and much prayer” before a decision was reached to build, stated Regina Parham, chair of Pullen’s Design and Construction committee. “The church's 2003 Master Plan named our goals to be more welcoming, more accessible and to expand our missions, but the more we discussed it, the clearer it became that we also wanted to design as 'green' a structure as we could. We’ve very proud to have included so many sustainable features in the project."

Pullen began its three-year capital campaign in 2006 with pledges totaling $2.2M of the needed funds. An unexpected bequest in 2008 was a welcome additional boost leaving the remainder of approximately 20% of total costs to be financed through First Citizens Bank. “The Pullen congregation is to be commended for its generosity and faithful stewardship,” said Steve Smith, chair of the capital campaign committee.
The new space will offer showers, laundry facilities and programs for job seekers. “The addition meets long-standing congregational needs and will house our new non-profit, The Hope Center at Pullen. By providing space for other community services, we can increase our impact” said Cathy Tamsberg, Minister of Outreach and Adult Education.

Libby Stephens, Minister of Children and Their Families, is delighted with the 3 additional classrooms and new playground because “Now our children’s programs are all in one part of the building and our youngest can reach the playground now without having to look both ways.” Adding a larger kitchen and social hall with adjacent courtyard, as well as a spacious rooftop patio outside a new chapel, the expansion provides new opportunities for informal gatherings and community fellowship.

The ribbon-cutting will be held after the 11 a.m. service, and the public is invited to enjoy tours and refreshments.

**Why Expand?**

Pullen’s 2003 Master Plan called for actions and goals not easily achieved in its current space. The actions and goals include:

- Maintaining a sense of community and inclusiveness
- Prioritizing youth and children welfare
- Accessible site and building
- Serve community members that are homeless, jobless and marginalized, and
- Relieve crowding.

To better understand how to reach its goals, Pullen retained a design firm to conduct a space analysis. The study revealed Pullen would need an addition 9,000 square feet to relieve crowding. However, the addition, which includes an ADA-compliant elevator, a chapel, fellowship hall, mission center, classrooms for children, roof garden and a new entrance, was designed to help Pullen meet its other goals.

**How Expansion Meets Pullen’s Goals**

The addition’s design is more visibly welcoming to visitors and neighbors on both Hillsborough Street and Cox Avenue. The public garden area is welcome to all, the new chapel will serve members and can be rented for community functions and the mission space and the new fellowship hall directly connect to the outdoors. Before it was built, the project won a North Carolina AIA Honor Award, which recognizes excellence in architecture, interior architecture and urban design.
The addition allows all child and youth activities to become a central destination instead of being parceled out to different floors, too-small spaces and hallways. It also allows safer access to the playground.

The ramped building entrance creates a single entry for all. Wheelchair accessible bathrooms on the first and third floors, and a larger elevator, better serve (and no longer separate) Pullen’s disabled population.

The new mission space will allow Pullen to better serve those in need by providing showers, laundry facilities and tools to help job-seekers.

The Hope Center will house Pullen’s newly created non-profit. It was designed to include administrative space so Pullen can accomplish more by partnering with local aid agencies.

Because building an addition would further Pullen’s goals, both church leadership and members prayerfully and pragmatically examined Pullen’s resources. A capital campaign consultant was retained and analysis revealed Pullen as a strong candidate to raise $2M in a three-year campaign designed to finance the addition’s approximate cost of $3.2M.

How Building “Green” Meets Pullen Goals

Green design recognizes the relationship between structures, people and the environment. Green design also upholds Pullen’s tradition of cherishing the earth. There are many ways to be green, so Pullen chose design elements that allowed it to meet its goals within a healthy and comfortable structure that offers reduced maintenance and operation costs. Pullen’s desire to be “as green as can be” and still be affordable, resulted in choices that provide both fiscal and environmental stewardship.

Air Quality

Power plant emissions contribute to air pollution so Pullen chose a geothermal heating and cooling system for the addition. The systems cost more to install, but use less power to cool or heat the air. Financially, Pullen’s system will save at least $6K annually, compared to conventional HVAC systems. Environmentally, the system offsets burning 34 tons of coal annually, which prevents 250,000 pounds of CO2 emissions.

Future energy demands will be reduced by the use of energy efficient lighting fixtures and motion-activated controls, high-efficiency appliances and a well-sealed building envelope.

Pullen’s addition also makes the best use of natural light by orienting the building in specific directions and strategically placing windows. The design will provide natural light to 80 percent
of the new space, including work and dining areas. Solar shading devices will allow occupants to control brightness and glare.

By installing a planted, “green” roof and using wall and roof materials that store less of the sun’s energy, Pullen’s addition will emit less heat after sundown. This helps reduce the ‘heat island” effect, where urban air is often several degrees warmer than rural areas because the energy stored in daytime is released at night.

Interior air quality is protected by choosing carpet, floor coverings, paint and coatings that are non-toxic and emit fewer volatile organic compounds.

**Water Quality and Quantity**

Dual flush commodes, waterless urinals and water-conserving appliances will allow Pullen to reduce its water usage in the addition.

Stormwater runoff will be reduced with a 7,500 square foot green roof, which will retain and filter rainwater before releasing it slowly to the city’s stormwater system. Stormwater falling on the chapel roof, paved garden and part of the existing church roof will be directed to a 3,000 gallon cistern. The water will be used to irrigate the grounds.

By using hardy native plants, the grounds can be maintained using captured stormwater runoff although potable water can be used during drought conditions.

Erosion control measures taken during construction prevented loose soil from being carried offsite by rainwater during storms. Once finished, the design calls for best management practices to be installed that reduce the chance of sediment entering local waterways.

**Recycling/Reusing Construction Materials**

Before the site was cleared, Pullen made every attempt to save existing trees and plantings. Some plants were given temporary homes. They will be re-planted after construction. Other plants were sold to members as a fundraiser. Where trees could not be saved, the wood was harvested for use by Pullen members for future projects. The remainder was chipped for use on-site. To further reduce waste, demolition materials were separated and sent to local recyclers...

Wherever possible, recycled materials were used in the new construction. The wall and roof shingles are made of recycled metal and will never need painting. The linoleum floors have a linseed base and jute backing, both renewable resources.

**In summary**

Pullen’s goals were varied and its resources limited, so it spent more time preparing to build. After the goals were determined, the church deliberated how best to meet those goals.
The congregation pondered many choices: A satellite church? Staggered worship times in the old building? A new building? Build an addition? After congregational meetings, surveys and interviews, the choice was made to explore construction.

A space analysis was the next step. If we are to build, the church wanted to know, how much space is needed and how much can we afford? A space analysis answered the first question and a feasibility study answered the second. Pullen needed nine thousand additional square feet, which would cost approximately $3.2M to build. The feasibility study showed the amount was an attainable goal and the capital campaign began. As of January 2009, with five months remaining, Pullen has collected 87 percent of the budget pledged so far. A line of credit established with a local bank will be used to pay vendors when construction is complete. As with any project conducted over a seven-year period, some changes were inevitable and frustrations flared. Pullen’s efforts to navigate the changes and soothe its congregant’s souls will continue after the dedication and throughout the occupation of the building. And no wonder! The process of discerning how to do justice, love kindness and walk humbly with our God is not a question but a dialogue. Pullen began that dialogue in 1884 in one location and it continues in its present, expanded location. The building Pullen calls home and the members who flock there may change, but its mission is constant.

**Finances & Fundraising**

**The Issue**

Pullen Memorial Baptist Church, which was founded in 1884, is growing. More than 200 people have joined the church since 2000. The church now has 700 members and more than 1,000 active participants that meet in a building constructed in 1923. In a 2003 study of the church’s future goals, the following priorities were revealed:

- Maintaining a sense of community and inclusiveness
- Prioritizing youth and children welfare
- Accessible site and building
- Serve community members that are homeless, jobless and marginalized, and
- Relieve crowding.

In order to meet the first four goals, the fifth – crowding – needed to be addressed.

To better understand what space might be needed, Pullen retained a design firm to conduct a space analysis. The study revealed Pullen would need an additional 9,000 square feet to relieve crowding and meet its other goals.
Because construction is costly, the church first retained Dr. John Hewitt, CFRE, a stewardship consultant to conduct a feasibility analysis for a capital campaign. The total estimated cost of all projects, including a prospective new building, totaled $2.8M to $3M, so this figure was used as the “goal amount.”

**How We Dealt With It**

Pullen is a deliberative congregation and the feasibility study both reflected and honored that attribute. The study was divided into three phases: planning and readiness assessment, congregational survey and leadership interviews. The study was designed to:

- Receive advice, note impressions and opinions, and gather information about Pullen
- Measure the perceived need and importance of the proposed projects
- Evaluate the congregation’s perceived priorities for the projects
- Measure giving interest towards the projects
- Measure the viability of a major capital stewardship program
- Receive suggestions for leadership of a capital stewardship program

After interviews with staff and lay leaders were complete, the survey phase began with 967 surveys sent to 572 households. A total of 196 completed surveys were received. To augment these findings, 39 personal interviews were conducted.

The findings revealed that 63 percent of survey respondent and 67 percent of the interviewees identified Pullen’s building project as *Very Important* or *Important* to Pullen’s mission and ministries. Further, 60 percent of survey respondents and 99 percent of interviewees stated they would support the project *above their current giving.*

An analysis of Pullen’s “giving history” revealed two significant statistics. On average, Pullen members pledge 92 percent of its operating budget and a remarkable 97 percent of these pledges are paid. Further, nearly 75 percent of Pullen’s households contribute

In conclusion, the church’s strong giving history coupled with its support for the future project revealed the church could reasonably expect to raise $1.6M to $2M in a three year capital campaign to meet its future goals. Using this data, the church decided to proceed with an annual campaign.

As of December 19, 2008, with five months remaining in the three-year campaign, the amount pledged is $2,277,165.50 and approximately 87 percent has been collected. This amount does not reflect memorial gifts, unpledged receipts and a sizable bequest from an estate. The church has established a line of credit with a local bank to handle the reminder, which is needed to pay when construction is complete. The amount will be paid down as future pledges are received.
Community & Missions

The Issue

Built in 1923, Pullen’s original building allowed limited access from Hillsborough Street, one of Raleigh’s “main” streets, and primary access from Cox Avenue, a smaller side street. As a result, the building did not appear welcoming or accessible to the community at large.

Pullen’s congregation feel called to be more involved with its immediate community, especially those that are homeless, marginalized and jobless. However, the original structure’s size and configuration barely accommodated Pullen’s 700-member congregation, much less those its members feel called to serve.

How We Dealt With It

The new design reflects that sentiment with easier access, a more accessible and welcoming exterior. The 9,000 square foot addition includes a mission space that houses The Hope Center at Pullen, a new 501(c) 3. The 40 percent larger chapel better serves the congregation and can be rented for community use.

Chapel

The new chapel is close to Cox Avenue and visible from Hillsborough Street. It is easily accessed by a new courtyard and ramp and can accommodate up to 125 people. It sits atop the new mission center, where additional space allows Pullen to continue their own programs and, by reserving space to partner with other non-profits in the new Hope Center, allows Pullen to better meet its members needs and those if the immediate community it serves.

By orienting the addition in the north-south direction, the new chapel takes best advantage of the available sunlight for health and energy efficiency. Instead of meeting at traditional 90 degree angles, the southeast walls form a welcoming 100 degree entry from the southeast Cox Avenue entrance.

Large windows provide views of nature, from the nearby city park, the streetscape of Hillsborough Street and views of the original building tower provide a sense of continuity with the existing building.
The Hope Center at Pullen

Founded 125 years ago as a ministry to the working poor, Pullen can maintain and expand its legacy of service within the 1,500 square foot Mission Space. Designed to house a new 501(c) 3, the Hope Center at Pullen, the space will hold two offices for staff, a multi-purpose space with computers to aid job seekers and the newly expanded Pullen-Wiley Elementary tutoring partnership. Two ADA-compliant restrooms with two showers and a washer and dryer allow Pullen to offer a shower and laundry facilities to its homeless, marginalized and jobless community members.

Created to fill the “gaps that people fall through,” The Hope Center at Pullen will serve populations other programs often miss. The job readiness program and tutoring partnership are funded by a City of Raleigh grant, but the plan is to seek other grants to develop and implement new programs. By forming a 501 (c) 3, Pullen enhanced its ability to seek and receive grant funding. “The Hope Center at Pullen enhances our ability to see that people are housed, fed, employed and don’t just survive, but thrive,” said one board member, “This is what God wants in the world and what we are called to do.”

Contemplation Garden

Infill construction has created a busier, more crowded environment through the years, so the new space will offer a planted area designed for restful contemplation that is open to the public.

By preserving trees where possible, building a green roof and re-planting many treasured flowers, shrubs and bushes, Pullen seeks to preserve nature in a crowded city center. The area will also give some of the area’s crowded wildlife a place to call home.

Youth and Children

The Issue

Pullen’s 700-member congregation is growing, and youth and children make up a large part of that growth. Crowded conditions required Sunday school, programs and activities to be scattered among three floors, with some classes taking place in hallways and others in a room with persistent roof leaks. Singing or other noise-generating activities had to be curtailed to keep from disrupting other nearby programs. The on-site playgrounds were very popular, but reaching
them required crossing a busy parking lot, and the aging equipment did not meet safety standards.

**How We Dealt With It**

The new addition will allow Pullen to house its youth and children on the first floor of both the addition and existing building. Youth will receive their ‘own’ classrooms for the first time, and by mingling age groups on one floor, there is more opportunity for activities and service projects involving different age groups. Another benefit is that both Pullen’s youth and children can ‘make a joyful noise’ without disturbing other programs and participants.

Pullen’s new Fellowship Hall and mission space will allow youth and children to meet as a group. It also provides a more comfortable environment for young members living with developmental disabilities to participate in activities.

The nearby mission space will allow Pullen’s youth to participate in more “hands-on” service projects. And by seeing adults administer programs, they will witness Pullen’s powerful model of how faith intersects with service.

Building the addition meant less playground area, so the two playgrounds have been consolidated to a single site. Any serviceable playground equipment was donated, but the iron fencing will be recycled to enclose the new play space. New, safer equipment – offering more activity areas and play panels – is housed atop a safer rubber surface.

The public contemplation garden, planted walkways and green roof also allow Pullen’s youth and children to better experience nature, despite Pullen’s urban setting. Pullen’s sustainable design features will also teach stewardship by example, which teaches a powerful lesson about caring for creation.

**Geothermal Heating and Cooling**

**The Issue**

Heating and cooling account usually account for 30 percent of an average building’s energy consumption. Power plant emissions significantly contribute to air pollution. By choosing an efficient geothermal heating and cooling system, Pullen reduces the demand on an
 aging power grid along with the air pollution generated by coal-fired power plants.

How We Dealt With It

Geothermal heating, ventilation and air conditioning systems (HVAC) use less energy to heat and cool air because they use the constant temperature of the earth as the exchange medium instead of outside air temperature. Raleigh’s average soil temperature is 64 degrees Fahrenheit, so less energy is needed to create a comfortable indoor temperature.

Geothermal system consists of three major parts: the ground heat exchanger, the heat pump and the ductworks. First, Pullen needed to learn if the building site could be excavated so test holes were dug. Because the site excavated well, a vertical ground loop system was chosen and 20 vertical 12-inch wells were dug to a depth of 375 feet. The closed loop system of pipes circulates a solution of water and environmentally safe antifreeze. The system then ‘transfers’ this temperature to the interior heat pump, which heats or cools from the constant 64 degrees, and then pumps the air through the ducts.

Because large rooms with high ceilings require more energy to heat and cool, the addition will use large, multi-functional spaces that tie into circulation areas. The ceilings are lower in the hallways and restrooms, which also reduces the amount of air that needs heating or cooling in these areas.

Installing pipe is costly, but estimates show the closed loop system, which has a 50 year life span, will begin paying for itself in 10 years. Using current costs, Pullen’s geothermal system will save $6K annually versus conventional heat pumps. Because energy and carbon costs are expected to rise, the amortization period will probably shrink over time.

The benefits extend to the environment and allow Pullen to better care for creation. Compared to conventional HVAC systems, Pullen’s geothermal system will save more than 250,000 pounds (or 125 tons) of CO₂ emissions, which harm air quality. This is the equivalent of taking close to 22 cars off the road each year.

It is hard to visualize 250,000 pounds of anything, so here are some fun equivalents.

The steel frame of the statue of liberty
Daylighting

The Issue

Energy used to heat, cool and light buildings not only costs money, it places demand on coal-fired power plants that release airborne pollutants like CO2 and particulate matter. Daylight can provide both warmth and light, so Pullen’s addition was designed to take advantage of these natural benefits.

Daylighting is the practice of placing windows or other transparent media, and reflective surfaces so that, during the day, natural light provides effective internal illumination. Daylighting reduces energy costs and research shows the practice can increase productivity, reduce absenteeism, improve general health, and healthful rest by supporting circadian (sleep) rhythms.

How We Dealt With It

Before creating a design, Pullen’s architects, Carrboro-based Dixon & Weinstein, carefully studied the site during different times of the year and day

To take advantage of the natural light, the addition was oriented along a north-south axis and windows were strategically sized and placed to gather light most efficiently. The windows themselves use glazes that reduce glare and shading designs were carefully chosen and placed to increase the entry of light and warmth in colder months and reduce it during hotter summer months.

The reflective properties of paint, wall and floor coverings and the exterior and roof shingles were also taken into account. Pullen’s architects, also advised using low-albedo (less light reflective) recycled metal shingles to reduce the heat island effect created when city’s roofs, roads and structure absorbs the day’s heat, only to reflect it back during evening hours. The result is higher urban temperatures, which increase energy demand, and can also affect weather patterns.

Pullen’s addition (both Chapel and Fellowship Hall) will provide a minimum daylight illumination level of at least 25 foot candles at 30 inches above the finished floor elevation as
determined by modeling performed for clear sky daylight conditions at 12:00 PM on the Spring Equinox (March 21).

By taking care to orient the building properly, strategically placing windows to absorb more sun in winter months than the summer, and using materials that either absorb or reflect the sun’s light, Pullen’s addition will use less energy to heat, cool or light the interior. The windows also extend occupants’ line of sight, to bring nature closer and to strengthen Pullen’s connection to the community it serves.

**Water Conservation and Stormwater Management**

**The Issue**

Stormwater runoff is the number one source of water pollution today. Controlling stormwater quantity by directing runoff to cisterns or allowing a green roof to slowly release water, reduces the strain on the area’s overwhelmed system and helps prevent localized flooding. Stormwater quality is improved by filtering rain through green roofs, using erosion control measures to reduce sediment and avoiding the use of pesticides, fertilizers and herbicides.

**How We Dealt With It**

Pullen’s stormwater control plan is designed to prevent damage to the building and vegetation. The control measures reduce runoff by 25 percent from pre-existing conditions.

**Green Roof**

When the roof of a building is partially or completely covered with vegetation and soil over a waterproofing membrane, it is called a green roof. When it rain or snows, the water does not “run off” into gutters and the public stormwater system. Instead, green roofs absorb rainwater and release it slowly back into the environment. Green roofs also provide natural filtering for many airborne pollutants. Pullen’s green roof measures 7,500 square feet. It will be planted with sedums, succulents, and some grasses. These plants can withstand extremes of moisture and temperature.
Cistern

Cisterns are usually large rain barrels that capture and store storm water for later use. Pullen’s underground cistern will receive runoff from three areas: the chapel roof (1,000 square feet), the paved garden (1,700 square feet) and the existing church roof (1,600 square feet). The total drained areas equal 4,800 square feet. Because Raleigh’s average rain event measures one-inch storm, Pullen’s 3,000 gallon cistern is just the right size to capture the runoff from an average storm.

Appliances

To further conserve water use, Pullen installed waterless urinals and dual flush toilets, low-flow showerheads, and faucet aerators, in addition to a water-conserving dishwasher and washing machine. The area has experienced droughts in the past decade, so these appliances help preserve a precious natural resource while also preserving Pullen’s financial resources.