

Atascocita Springs Elementary School

By Irene Nigaglioni and Deborah Yocham

As the design developed, the building evolved into a facility that is best described as an important and exciting place to learn. Every decision made on the design side was linked to learning and vetted against the three overarching goals for the facility.

With the significant amount of time invested in researching the best techniques for delivering instruction to their students, Humble ISD is always on the forefront of education. From the High Schools of the Future Task Force, which led to the creation of Small Learning Communities in all of their high schools, to the Humble ISD “Go Green” Initiative, where community members participated in months of meetings to determine what the green and sustainability goals for all future projects in the district would be, focusing on the best environments for learning is always the top priority in the district.

Taking the recommendations of their active and vocal community groups, the district embarked in the design of the 26th elementary school, Atascocita Springs Elementary School (ASES). From the onset of design, goals were established that would help form the educational specifications and shape the built environment for the new elementary school. The goals were:

GOAL 1. A sustainable, high performance school that would meet CHPS verified and LEED certified criteria.

GOAL 2. A building that would be a learning tool and that would support the district’s established curriculum goals.

GOAL 3. A building that would embrace the community’s strong history and rich traditions.

Some of the challenges in achieving each of these goals were:

- Tying the curriculum into the building to ensure the building is a true teaching tool in a manner that is relevant and not superficial. This included discussions with the Children’s Museum of Houston, as well as the district’s science and math curriculum coordinators.
- Achieving the CHPS and LEED goals without adding unnecessary costs. The design team had to evaluate each of the inclusions and ensure a payback of less than five years. Given the humid climate in Houston, this posed some unique challenges, particularly in the mechanical system.
- This part of Humble was all zoned in a very successful and popular elementary school, presenting a challenge in obtaining community buy-in. The large community acknowledged the need for the new school, as the existing elementary was overcrowded and was using several temporary buildings to accommodate the increased capacity. When boundary discussions began, the community was not

pleased that they would be divided into two schools, and everyone wanted to be certain they would not be rezoned for attendance at the new school.

Armed with these goals, the design team approached the challenges with an open mind, looking for innovative ways to blend the built environment with instruction. The team took each of the goals and identified possible ways to best respond with the built facility. Initial thoughts and ideas focused on the following:

GOAL 1. The design team evaluated the CHPS and LEED criteria and recommended adoption of those items that positively impact learning and would be energy efficient, helping to reduce the operational costs of the facility. Each of the items was evaluated individually and measured for its initial cost and ease of implementation, long-term costs and return on investment, impact on learning and curriculum possibilities. A list was developed that became the road map for meeting the sustainability goals for the facility. The main additions were items that impacted the learning environment by the inclusion of day-lighting strategies, improved acoustics, enhanced ventilation and minimized site disturbances.

GOAL 2. Building on the sustainability goal, the design team worked with



Atascocita Springs Elementary School - front

district instructional team members to identify possibilities for linking instruction to the built facility. The design team carefully studied the state-mandated science and math knowledge and skills requirements, and developed opportunities for the building to provide real-life, actual learning platforms for the students. Utilizing techniques, such as uncovering the inner workings of the building and developing teaching stations related to the operation of the facility, the design team created a menu of items that would be highlighted and incorporated in the facility to provide a seamless connection between learning, construction and sustainability was seamless.

GOAL 3. The Humble community is well known for its rich oil and energy history. Settling in the area years ago as they gained employment with Humble Oil, many families have stayed in the area generation after generation. They are strong advocates of this rich heritage and are active participants in district activities. This valued tradition also became embedded in the design solutions for the facility. Tying the sustainability goals and their strong emphasis on energy with the Humble Oil background led to the integration of systems such as solar panels into the facility, which again, are part of the instruction and learning that takes place at ASES.

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and vetted against the three overarching goals for the facility.

Some of the basics of the building are:

- Two-story facility – kindergarten through second grade on the first level; third through fifth grades on the second level.
- Classroom wings face north-south to take advantage of natural light. Every classroom has windows, and there are sun shades on the north side to control glare and allow for light to bounce off the ceiling in the rooms.
- All ceilings in the classroom areas are at 10', and lighting is provided through direct/indirect pendant light fixtures so that the white ceiling glows, creating bright and sunny classrooms.
- All classroom areas open up to outdoor learning courtyards that include learning tools, such as hundreds charts, rulers and sun dials. These areas allow students to learn while moving – there is a direct impact between movement and the brain, so engaged movement that is focused on these learning tools helps students succeed.
- In addition, the wings are teamed vertically, so the outdoor activities are focused on the age group that uses it – kindergarten and third grade; first and fourth grades; second and fifth grades.

- Each classroom wing has a collaboration space that serves as the hub of learning for the wing. This area is lit by natural daylight and includes learning tools such as movable marker boards and tack boards, a marker/projection wall, projector, hundreds charts, rulers and other math and science activities.
- The walls in the classroom wings have tiles that were specifically selected to be proportional – this allows for fractions and proportions to be taught in the classroom hallways. Windows from the classrooms to the hallways allow for monitoring of learning activities that take place outside the classroom.
- Each classroom wing has its own theme and is based on the ecosystems taught at the different grade levels in science. These ecosystems are expressed in the ceiling treatment of the collaboration space, as well as through the use of learning specific magnetic boards at the entry to each wing. Students spend time addressing questions posted on the boards, adding flora and fauna to each lesson at hand, based on the essential science skills.
- A Main Street hallway separates the classroom wings from the commons spaces, such as the gym, cafeteria and library. The Main Street walls are highlighted in Austin natural stone, bringing the outside into the building, and enhancing the goal of a natural, green facility. In addition, natural light permeates this space through the use of clerestories.
- The Main Street ceiling is wood, which again, incorporates natural materials into the heart of the building.
- The gymnasium shares an operable wall with the cafeteria, so a large community space can be created for gatherings.

- The stage opens off the gymnasium and has windows to the exterior to bring natural light into the gymnasium when it is not being used as a stage.
- The district has a joint use agreement with the YMCA, and the gym and cafeteria are used frequently for children’s camps and activities.
- The cafeteria and library also share an outdoor learning courtyard, which includes the following components:
 - An arbor with built-in benches for outdoor classes to take place.
 - A garden that is maintained by the students and irrigated with water collected from a rainwater harvesting cistern located in this area.
 - Fun outdoor learning activities, such as tubes that allow sound to be heard throughout the entire courtyard area.
 - Solar panels behind the library are used to power up the computers in the library, serving as a learning tool.
- The library is lit by daylight through a combination of translucent panels and windows. Indirect/direct pendant lights are also provided, but are only needed on rainy days and nights.
- The library’s radial design was highlighted with the inclusion of a solar system that hangs below the ceiling. Again, incorporating the science curriculum helped form a building that is truly a teaching tool.
- All of the library’s shelves are on casters so that they can be easily moved, allowing library to be used for a multitude of purposes.
- The vast majority of the furniture in the school is ‘green’ and therefore contributed to the CHPS and LEED criteria – yet another example of the thought put into every detail of the school.
- The building’s main distribution frame room, or main network room, has windows to the hallway so students can see the inner workings of the technology system in the building.
- Interactive displays are located throughout the building and help showcase the building’s systems, energy use and sustainable features. Students can monitor and log solar, water, gas and electrical loads and use, as well as track demands against climate. They are also able to click on the building’s sustainable features and understand what makes the building environmentally-friendly.
- The second floor includes two learning bridges where the science curriculum is also integrated. One of the bridges is a magnetic bridge, where metal plates on a grid serve to teach magnetism to students. The second bridge includes racing lanes and different floor materials, so friction, speed and inertia can be studied.
- Nooks and niches were incorporated along Main Street in preparation for a finalized agreement with the Children’s Museum of Houston to install manipulatives and learning tools, such as inclined planes and friction plates. These will be provided by the museum and rotated on a regular schedule, highlighting different activities throughout the year. This building will serve as a community facility, so students from other district schools can come and visit either during the school day on scheduled field trips or after school with their family.
- The use of natural Austin stone and local masonry ties the exterior of the building to the interior. The building’s exterior color palette is also complementary to the neighborhood where the school is located.
- The site includes visitor and parent drop-off areas, as well as a bus loop.
- Irrigation is done through the rainwater harvesting system and recycling bins are provided for the community at large.



Atascocita Springs Elementary School - Library



Atascocita Springs Elementary School – collaborative space

The challenges posed by building this elementary school were successfully met by the uniqueness of the building, and the thoughtfulness of the composition. As the variety of the building's features demonstrate, this building truly is a learning tool, inside and out, and addresses the strengthened educational requirements for the math and sciences curriculum. The CHPS- and LEED-inspired incorporation of windows into the hallways, classrooms and library save the school money on lighting costs, and has been proven to be better for learning. The rainwater cistern and solar panels are also relatively inexpensive ways to help reduce the school's water and energy costs, while teaching the students important lessons about conservation and energy re-use. To obtain community buy-in, the school had to become an integral part of the community. The open and flexible floor plan for the gymnasium and adjacent cafeteria provides a large gathering space, allowing the school to join in a partnership with the YMCA in hosting children's camps and activities. The partnership with the

museum and the installed manipulatives bring the Children's Museum of Houston to the residents of Humble. Both ventures with the YMCA and the Children's Museum of Houston are a great way to introduce the school to the entire community and to future students. ■

Irene Nigaglioni, AIA, REFP, offers varied experience in institutional facilities. Her experience in the design of academic facilities ranges from renovation to new construction. As a partner with PBK, Irene is involved in all aspects of a project, including master planning, schematic design, design development, construction documents and contract administration. Irene acts as PBK's national planning director, as she keeps up with the latest instructional curriculum trends in school design, ensuring PBK's buildings are designed with student success in mind. She is active in CEFPI and has served as a board member at the International, Regional and Chapter levels. She is also very active in the lecture circuit, presenting at conferences such as CEFPI-International, TASBO, CEFPI-Southern Region, TASA/TASB, TASB Summer Leadership Institute, TCSWE and the Department of Education's Office of Safe and Drug Free Schools Conference.

Deborah Yocham, a native Houstonian, has been a professional educator for more than 27 years. She received her Masters of Educational Administration from the University of Houston and has worked in several southeast Texas school districts. With teaching experience at both the elementary and middle schools, she has also served as assistant principal and principal at both the elementary and secondary levels in both the public and private sectors of education. Currently the director of facility planning and construction in Humble Independent School District, Deborah relies on a wealth of experiences to lead a fast-growing district through unprecedented facility planning and construction phases. She has worked with the District's "Go Green" initiative to bring best practices, sustainability and quality learning environments to every Humble ISD student. Recently, Deborah served on the committee to bring TX-CHPS to fruition and has opened the newest school in Humble ISD designed for LEED Certification and TX-CHPS Verification.