The sustainable features of the school were always discussed as energy and cost savings strategies in an effort to make them irrefutable to the district.

When “Savings by Design” and CHPS were introduced as an approach to the design solution, the district began to emphasize the advantages of the environmental features. At that point in the process, the sustainable aspects of the solution were looked upon as an educational tool for the district, as well as the community. All design decisions began to reflect a responsible, environmental attitude, while simultaneously providing lower operating and maintenance costs to the district.

An efficient central plant was introduced to heat and cool the new campus, and classrooms were no longer immediately conceived with fixed windows and direct lighting. Research began to prove the benefits of natural ventilation and indirect lighting. Common areas and circulation spaces were flooded with natural daylight through the use of light monitors, clerestories and protected openings. The aesthetics of the design began to incorporate devices, which would showcase the environmental nature of the solution such as light wells, clerestories, “green” screens, sustainable materials, and indigenous landscape.

The school was planned holistically, responding to and incorporating LEED requirements. After a single year in operation, Cesar Chavez Elementary School has performed over 33% better than the Title 24 Requirements and utilizes over 100,000 gallons less water per year than a school of similar size. In addition, this school has received honors from both Southern California Edison and The Coalition for High Performance Schools.

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**GENERAL CONTRACTOR:**
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**MASONRY CONTRACTOR:**
FTR International

**BLOCK PRODUCER:**
Angelus Block Company, Inc.

**OWNER:**
Long Beach Unified School District

Photography: Cris Costea, Costea Photography
The new high school for Jurupa High School District is located a few miles west of downtown Riverside. A portion of the site has been set aside as a nature preserve, with many mature eucalyptus, pepper and palm trees.

The district has chosen to focus on the classroom as a true “learning laboratory,” resulting in many of the classrooms being larger than the State standard of 960 square feet. The size of the standard classroom is being increased to 1,150 square feet. The district stressed the importance of natural lighting in all of the learning laboratories. The integration of computer technology is also another priority for the classrooms. Flexibility should be inherent to the high school, allowing for alternative educational philosophies to be easily integrated.

The Patriot High School campus utilized concrete masonry unit materials at a number of locations. The entire campus has been finished with a masonry wainscot, that in addition to providing a durable exterior wall finish that can stand up to high school facility abuse, also provides a visually attractive concrete masonry base to each of the buildings.

The Physical Education complex at Patriot High School was selected to be constructed completely of masonry for a number of reasons. Masonry offered the best solution as a type of building construction as it offers superior resistance to abuse, it is an integral structural system that is also the finished product, and for this project was the most cost effective solution for this particular building.

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MASONRY CONTRACTOR:
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BLOCK PRODUCER:
ORCO Block Company, Inc.

OWNER:
Jurupa Unified School District
Rosemont High School was designed with state-of-the-art educational technology integrated throughout the campus. The classroom houses were designed around a technology center with wired and wireless Internet access for laptop carts and student/teacher workstations. Technology centers include audio/visual systems for large and small group presentations. Wireless access is provided in the library/media center, small auditorium and other student commons areas. The science lab houses include data, voice and video systems that support a cutting-edge science and technology curriculum. Rosemont is truly a 21st Century school that prepares students to utilize information technology in their chosen careers.

Providing the ultimate in educational flexibility, Rosemont offers four classroom clusters revolving around a central flex-lab: an open space designed for a variety of project-based or collaborative learning opportunities across disciplines. Classroom clusters can be organized departmentally, in a grade level configuration, or into smaller learning communities. Each story of the classroom building typically contains 12-14 multi-purpose classrooms, a centrally located flex lab, and a teacher - planning center.

The campus is divided by a 40-foot topographic elevation drop into two distinct areas: main campus school buildings and a unique first-class stadium.

The type of construction is concrete masonry bearing with steal beams. Materials include integral colored concrete masonry units on exposed concrete stem walls, exterior insulated finishing system, and metal. The concrete masonry units selected are both standard and split face units with various coursing and face finish.

Concrete masonry units were selected for the exterior wall material based on advantages for durability/longevity, ease and maintenance, load bearing capability and lower construction costs.

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**Masonry Contractor:**
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**Block Producer:**
Blocklite

**Owner:**
Sacramento City Unified School District
ALDER CREEK MIDDLE SCHOOL
TRUCKEE, CALIFORNIA

The Alder Creek Middle School, in Truckee, California, is situated at a 6,000 foot elevation with high annual snowfall and one of the coldest climates in the country. Located in the Lake Tahoe region, there is a community culture of environmental awareness and protection. This culture is embraced in the Alder Creek Middle School – selected as a demonstration school for California’s Collaborative for High Performance Schools (CHPS) program. The 85,000 square foot facility was constructed with a holistic approach to creating the best learning environment for its students.

In spite of the site’s slope to the east the building is oriented on an east-west axis to take advantage of optimum daylight and to create a large south facing student plaza – a sunny gathering place in the cold Truckee climate. The two-story building is cut into the hillside, using its concrete masonry exterior to provide insulation against extreme temperatures, while minimizing the visual impact of the building within a scenic corridor and maintaining the mature trees so valued in the community. Concrete masonry units in varied forms, textures and colors become the major structural and finish material, as well as an exposed durable interior finish throughout the project.

Layered against the concrete block masses of the school’s exterior are scale lending forms – the “little red school houses” - that compliment historic Truckee and that evoke the memory of school buildings past.

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MASONRY CONTRACTOR:
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BLOCK PRODUCERS:
Basalite Concrete Products, LLC
Northfield Block Company

OWNER:
Tahoe Truckee Unified School District
JOSEPH E. THIRIOT ELEMENTARY SCHOOL
LAS VEGAS, NEVADA

Due to the decreasing size of available sites for new urban schools, Clark County School District has developed new prototype plans for two-story elementary schools. The anticipated site sizes for these more compact facilities will be roughly 5 acres, with smaller sites potentially in tighter urban areas of Las Vegas. The program for the new 2-story prototype elementary school includes 720 students in kindergarten through 5th grades and is identical to the District’s one-story prototype schools, many of which have been built on 10 to 12 acre sites.

One of the first of these two-story schools is the Joseph E. Thiriot Elementary School, located at 5700 W. Harmon Avenue in Las Vegas, Nevada.

Some key goals of the design of the elementary school include functional similarity with the District’s one-story elementary school design, safety and security, clear way finding throughout the facility, welcoming to visitors and the community, efficiency and economy, durability and easy maintenance, and site adaptability. In addition, the building is designed to take advantage of natural daylighting following District Guidelines for energy efficiency.

An essential component of the building design is its strong, linear organizational strategy. The resulting circulation spine is articulated with bands of clerestory glass shaded with an undulating roof structure. This brightly colored structure provides shade for the centrally located courtyard space. The form of this feature is intended to reflect the mountainous horizon surrounding the relatively flat Las Vegas valley, while also enlivening the school’s image for elementary students.

Concrete masonry was chosen for the exterior skin over other materials for quick erection of the exterior walls. Pre-colored block was used to reduce long term maintenance. One main color was chosen for the body of the building. Honed concrete masonry of this same color was used at the base of the building. This provided a surface at a low level that was easy to the touch. A continuous white split face course at mid point of the walls was included to tie all the horizontal elements together.

The site amenities include parking for 100 cars, loading and unloading for six buses, on-site parent drop-off, a secured play area for kindergarten students, and a variety of other paved and turf play areas.
Stanford University Auxiliary Library III

California

This facility provides high-density archival storage for special books and rare collections of Stanford University, capable of storing 2.88 million volumes in a low-temperature and low-humidity environment. In addition to the storage areas, the program also includes a processing room, delivery area, reading room, staff lounge, and offices. Future phases will eventually quadruple the storage capacity of the facility.

The value of the collection meant that risk management informed almost every aspect of the design. In response, the design team collaborated with representatives from the insurance industry and local fire authorities on a wide range of issues, including site layout, envelope detailing, and fire detection and suppression systems.

The design team recognized that the distance of the facility from Stanford, and its location in an anonymous industrial park, could work against staff retention; therefore, the creation of a pleasant and welcoming human environment took on paramount importance. Outer and inner gardens provide a buffer against the surrounding industrial park and bring a sense of intimacy to the facility, while the processing area and adjacent staff rooms are characterized by generous natural light and warm colors. Abundant views to the outside emphasize either the distant hills or the adjacent gardens.

The exterior palette, consisting mostly of buff-colored split face concrete masonry units with smooth face accent bands, both ties this building into the natural hues of the costal hills, and brings some of the character of the distant Stanford campus to this new, and very important, outpost.

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General Contractor:
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Masonry Contractor:
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Block Producer:
Calstone Company, Inc.

Owner:
Stanford University
The La Jolla Playhouse and the University of California in San Diego (UCSD) collaborated to build a play development and education center located in the Theater District of the campus. The project enhances the capabilities of the independent La Jolla Playhouse to develop and stage professional theatrical productions and will support the instructional programs of the UCSD Department of Theater and Dance.

The Facility will act as an experimental state-of-the-art fully-flexible laboratory for artists and educators. The center consists of a 450-seat black box theater, three classroom/rehearsal spaces, outdoor public spaces, restaurant, technical and storage support spaces and permanent artistic and administrative home for the La Jolla Playhouse.

Within its three building sections built of concrete masonry and steel frame, the Center maintains fundamental design principles, including honesty in materials. Concrete masonry was selected as the main perimeter wall material in response to practical, economic and aesthetic considerations. Acoustical isolation for all performing and teaching spaces dictated the use of a wall material that could perform well at lower frequencies. Consequently, concrete masonry was chosen as the most cost-effective solution.

Integral color, inspired from a composite of natural site materials, was used in the enclosure of the black box theatre and the main rehearsal room to create interest and accentuate these volumes. Additionally, 4” high block was used in the black box enclosure, utilizing the tradition of corbelling in a more contemporary and innovative manner. The lines of the stacked masonry are non-parallel, creating parabolic surfaces that diminish parallax on the interior, while creating an undulating “mask” on the exterior that appears to be in a dynamic state, reflecting the movement in performance within. The offices and rehearsal rooms with their straight walls are an exposition of the many subtle patterns created by masonry units laid in a variety of ways with minor plane offsets.

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**General Contractor:**
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**Masonry Contractor:**
Dittman Masonry, Inc.

**Block Producer:**
RCP Block & Brick, Inc.

**Owner:**
La Jolla Playhouse/University of California, San Diego
This three-story 71,000 square-foot public school was designed in tandem with a major redevelopment in the downtown core of a growing city. In addition to facilities for education, the school provides open recreation space and a multi-purpose hall for community use. The Community Redevelopment Agency called for a more substantial building than the School District’s budget would provide. Concrete masonry was therefore chosen as a durable, affordable material to relate the school to its civic context, while distinguishing it from its residential neighbors. The burnished concrete masonry units provide a tough, yet finely-textured base that is appropriate to an elementary school.

The custom-colored concrete masonry units were chosen in neutral grey and warm ochre tones with carefully selected aggregates. Grouped in alternating rhythms, they provide richness and variety, while modulating the scale of the building elements. The academic wing uses both colors, in counterpoint to special pieces, such as the multipurpose room and stair tower, which are defined by one tone.

Within its grid of uniform dimensions, the field of concrete masonry units is punctuated with an array of openings, trellises, canopies, and balconies to give identity and highlight crucial elements. Large and small windows facilitate viewing by children, and are framed with bright colors that enhance the play of materials.

Concrete masonry becomes an important architectural and tactile learning tool for children. Standing next to the CMU, they can measure themselves, thus understanding how the structure is put together like Lego blocks.
Where a solid wall once formed a barrier to the street, the new entrance to Prospect Sierra School’s Avis Campus in El Cerrito, California, greets students and faculty with an engaging concrete masonry curvilinear elevation that serves as a new neighborhood landmark.

The architects chose for the signature entryway Trend Stone ground faced, large-scale masonry units (12” V x 16” H and 4” V x 16” H), because of its appearance as cut stone when laid in alternating courses of 4” and 12”. The offset, running-bond pattern joint was detailed with “raked” vertical joints and weathered horizontal joints to ensure the best water shedding, while still providing the “cut-stone” look. The curvature of the elevation posed special challenges as the wall moves along the street over large entry spans and window and deck cutouts.

Coordinating the colors of the masonry units with the existing school colors (orange-red) led the design and building team to seek out masonry units from aggregates more typically found in the Southwest. The manufacturer made special deliveries of eight different sample types in sufficient quantities from their yard in Arizona to allow the team to set up several large scale test assemblies, oriented as the façade would face the late afternoon sun.

The appearance of the details at the clear, anodized, aluminum-sheetmetal coping and window trim were carefully studied and considered by the team, which included the masonry subcontractor. As a finishing touch, the school’s art teacher provided the inspiration for the not-so-random layout of specialty cut concrete masonry units to receive over time a 4” x 4” fired clay tile from each graduating fifth grader as a symbol of their unique educational experience at Prospect Sierra School.
The Dawson School at Rainbow Mountain is located on 35 acres at the entrance to the Red Rock National Park. The campus setting clusters four buildings into a student friendly environment: the Lower School, the Middle School, the Shared Spaces Building and the Gymnasium.

Each building is inspired by natural forms and carefully scaled to nurture the students who will use the facilities. All the classrooms have soaring ceilings and large windows to the learning gardens, but each adjusted to the specific requirements to enrich the students as each one passes from Kindergarten through the eighth grade.

The landscape of the campus is used as outdoor educational areas. The site is divided into the four desert regions: the Great Basin region, the Chihuahuan region, the Mojave Desert region, and the Sonoran Desert region. Each area is planted to reflect the four main climatic regions of the Desert Southwest.

The use of masonry for Alexander Dawson was an easy, logical choice for both aesthetic and economic reasons.

One of the design requirements for the project was to marry the building to the surroundings. Mimicking the color stratifications of the surrounding mountain range was easily accomplished with the range of available split face and smooth face CMU’s in colors of Buckskin, Mandarin, Orange and Buff.

Another aesthetic benefit of using masonry is that unlike drywall, masonry is integrally colored and therefore more forgiving to chips, scratches and dings, minimizing wear and tear and maintenance.

The use of masonry also resulted in economic advantages. The durability of the masonry has a direct and positive affect on the ongoing maintenance and operations of the school. In addition, the materials were produced locally, encouraging the local job market and meeting LEED-qualifying requirements. The use of masonry is especially budget-friendly when compared to the rising costs of steel.

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Rinker Materials

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Alexander Dawson Foundation

Photography: Opulence Studios
Change

By Stephan Castellanos

Stephan Castellanos, FAIA, has been a practitioner in California for 30 years, and served as California State Architect from 2000-2005. In practice and in government he has focused on the role architects play as designers and as citizens. Most recently he has sought to alert the profession to the need to change their practices, and to work toward a more integrated process for project delivery that improves productivity, enhances outcomes, and creates more sustainable buildings and communities.

In the following article, Mr. Castellanos will discuss the current state of practice and how we all, as partners in the design and construction industry, can profit from increased collaboration and this new process.

In the recent issue of the Daily Pacific Builder I read an article authored by the Los Angeles Unified School District Chief Facilities Executive, Guy Mehula, addressing the rampant and seemingly uncontrollable inflation in construction costs. He spoke about a shortage of contractors, and we all know that indeed, the shortage of experienced and qualified staff plagues the entire design and construction industry. Mr. Mehula goes on to say that the cost of materials, labor, and construction has increased over 300% in the last five years, while State funding has increased 10% in the same period. LAUSD is requesting, through legislation, that the State address the needs of school districts by ensuring that State matching funds actually reflect the cost of construction.

My question and challenge to all members of the design and construction industry is, do we simply accept this rampant inflation as something that we must live with, or can we look to ourselves, as partners in California’s largest industry, to seek real reform?

First, the issue of cost inflation in design and construction outstripping overall economic inflation has been with us for a very long time. Unlike other service industries, as well as manufacturing, construction has not benefited from the use of technology in a way that improves quality and reduces costs to consumers. In construction we have accepted the notion that external pressures beyond our control add to inflationary pressure. However, every sector of the economy has its own pressures and has learned to not only accommodate them, but to also use them in a way that changes process and adds to their bottom line. Certainly manufacturing an airplane, for example, is different than constructing a building, but there are similarities that we can learn from. The management of suppliers, vendors of all types, schedules and budgets, etc., can be enhanced in much the same way that Boeing reduced its delivery time from many hundreds of days to a few months.

Today major clients across the country are looking to change the design and construction process and are making demands on the industry to join them. The challenge to us is whether we can look beyond historical lines and define new relationships in an industry that has always been characterized by its division and fractiousness. The increased use of new technologies will be called for, but the needed technologies already exist and are being increasingly utilized. However the solutions rest far beyond new tools. What we as an industry are being called upon to do is to change relationships, to collaborate more and to bring more people, not fewer into this collaborative process. Many say that our legal system does not support or allow this, but we certainly should be able to change it together if we can prove the value of and necessity of the change. What is more difficult is change needed in how we relate to each other as partners. Material suppliers and subcontractors must be more integrated members of the team and this is beginning to take hold. Contractors, owners, and engineers, as well as end operators will benefit from a redefined, less contentious and more collaborative process. In the end this integrated process will allow for more accountability, better outcomes, and increased profitability, while controlling the rate of inflation of the products we design and construct.

One word about collaboration; it is not easy. Collaboration is the act of working jointly. In this case the act of working jointly must be defined by clear expectations, arrived at mutually, where risk and reward are shared equitably. We have years of experience to learn from, and then unlearn, as we adopt new methods. It is the will to do so, that we must share to accomplish great change. Many are joining in. The associations that represent every sector of our industry are participating, as are colleges and universities who are exploring what our future professionals will need to be effective and valued partners in a redefined industry. Manufacturers and suppliers are also joining in with smarter and more efficient methods, often supported through new technologies, to produce, deliver and install products and components of structures in more efficient and sustainable ways.

Mr. Mehula is addressing an important issue, and in the end, we the people will have to take up the challenge as citizens to continue to fund at higher and higher costs the infrastructure we need to remain competitive. The well is not bottomless however. The time has already arrived where those who look to our industry are demanding that we look to ourselves to fix this problem. The problems we face as a society are enormous and much of the success we hope for rests in how we will address the development of our communities and the infrastructure they depend on. We do possess great resources, and those same resources are being stretched as more is added. We need to address issues as critical as water supply, air quality, energy, transportation, housing and healthcare. Our industry contributes to these problems and to their solutions. Our challenge will be whether we can tear down the processes we have lived with for so long, learn from other industries about technology and improve relationships with all members of the design and construction team through enhanced collaboration. Personally, I am no longer satisfied with the belief that an uncontrollable increase in the costs of buildings is beyond any solution. I want to be part of an industry that produces efficient, high performing, high quality products that improve people’s lives. These are the values we produce and the values we should live by.

The educational facilities highlighted in this issue are examples of how a building material such as concrete masonry can be used to build sustainable, efficient, and beautiful buildings.
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- Technical information on concrete masonry for design professionals.
- Protect and advance the interests of the concrete masonry industry.
- Develop new and existing markets for concrete masonry products.
- Coordinate members’ efforts in solving common challenges within the masonry industry.

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