INTRODUCTION
COMPANY PROFILE

Founded: 1972

Locations:  
Northern California  
1340 Bollinger Canyon Rd.  
Moraga, CA 94556  
T 925.376.0881  
C 925.997.0282

Southern California  
3867 Cornell Drive  
Oceanside, CA 92056  
T 760.994.8369  
F 760.757.4451

Professionals: 8  
Advisory Panel: 8  
Affiliated Partners: 6

Building Products:  
Non-Combustible Exterior Insulated Sheathing  
Non-Combustible Post & Beam Wall Assemblies  
OSB Structural Insulated Panels | Continuous Insulated Panels  
Exterior Flat & Tapered EPS Roofing Insulation  
Exterior EPS Continuous Insulation  
OSB ‘STC’ Structural Insulated Panels Wall Assemblies

Services:  
Distribution of Premanufactured Building Assemblies  
Cost Comparison Analyses of Construction Methods  
Technical Product Assistance | Support  
‘Total’ Shell Framing Packages  
Building Product-Related Structural Design & Engineering  
Drawing Conversions to Pre-Engineered Building Systems  
Shop Drawings for Pre-Engineered Building Systems  
Product Manufacturing & Fabrication (In Plant)  
Installation and Training | On-Site Field Supervision  
Feasibility Studies | Implementation Plans for Advanced Manufacturing Technologies  
Installation and Operations for Advanced Manufactured Technologies  
Educational Presentations

Professional Affiliations:  
Build It Green  
U.S. Green Building Council (USGBC)  
Structural Insulated Panel Association (SIPA)  
Energy Star

Project Focus:  
Multi-Family For-Rent & For-Sale | Student Housing  
Commercial Office & Retail | Industrial | Wineries  
Resort Residential | Hospitality Accommodations | Restaurants  
Education | Learning Centers | Day Care  
Health Care | Medical Clinics & Offices | Health Clubs  
Institutional | Government | Public Works  
Recreational Centers | Community Clubhouses  
Custom & Spec Residential | Single-Family Homes | Condo Mapped SFD
Committed to advancing the sustainability of new and renovated projects, SHELL Building Systems has been at the forefront of the green movement since 1972. With over 40 years vested in sustainable construction solutions, SHELL has vast expertise in the beneficial properties and specification values of many green building products, particularly pre-engineered, high-performance structural framing systems.

Our approach is to inform developers/owners, design and construction teams about sustainable building solutions that optimally exceed CalGreen building codes and Title 24 regulations, and significantly contribute to ‘Net Zero Energy’ consumption. Our objective is to identify and provide sustainable solutions inherent in each building structure and reduce the ‘total’ cost of construction. Building smart the return on investment, decreasing life cycle costs, increasing profitability, attracting investors, and strengthening market and exit strategy advantages.

A recognized leader in the consultation, distribution and implementation of structural green products and pre-engineered building technologies, SHELL provides energy-conscious design reviews, cost comparison analyses, product design/engineering, shop drawings, technical support, on-site supervision, installation, training, and turn-key services. The SHELL team has completed thousands of projects using both conventionally-framed methods and pre-engineered framing systems including over 30,000,000 square feet of structural insulated panels for educational, commercial, government, and attached and detached residential developments.
SHELL Building Systems (SBS) is a comprehensive building resource company that specializes in the best sustainable product and service solutions the industry has to offer. With decades of industry experience and a proven record of achievements, SBS offers product design, engineering, fabrication, distribution, training and installation for high-performance building technologies needed to erect and close-in structures. Of particular importance is our plus 40 years of extensive knowledge with framing technologies, particularly all forms of insulated structural panels and sheathing.

Founded in 1972, with offices in Northern and Southern, California, SBS has worked with developers, public agencies, architects, structural and MEP engineers, and general contractors, both domestically and in other countries, to educate them about state-of-the-art building technologies, help solve their unique project needs and provide them access to world-class products. As an OEM distributor, advisor and installer of building systems, we have served markets worldwide including the set-up of manufacturing facilities to bring advanced building technologies and skills to other regions.

As a leader in the industry, our clients and their consultants work directly with SBS experts, who possess firsthand knowledge of framing, construction, project and construction management, development and structural engineering. This expertise is further supported by a team of specification experts, technical product advisors, and other as-needed resources. Collectively, SBS can undertake projects from design through installation, as well as manage the critical path timelines and issues of projects. Uniquely, our capabilities may be customized to address our clients’ specific project needs as well as the needs of their project team.

SBS focuses on state-of-the-art sustainable building products and systems that are ‘tested’ and ‘proven’. Today, the efficiency and predictability of construction, the close-in time to build, the savings of reduced labor and extra steps, and the ability to offer our clients energy-efficient and ‘sustainable’ building systems are not only smart, but a necessary part of reducing the total cost of construction and lifecycle operational costs, and increasing profits.

With licensed general contractors, our staff experience spans both the conventional and pre-engineered structural methods of construction, making it an easy professional assessment that high-performance, pre-engineered structural framing systems are simpler, stronger, and more superior and cost-effective. Focused on client success, SBS continues to identify other building product solutions that respond to ever-increasing building code standards and energy regulations, while providing our clients with measurable, value-added results and cost-saving advantages.
From a family of homebuilders, Deborah has over 30 years of business management and development, marketing and real estate experience. She has held leadership positions with large-scale, multi-disciplinary architectural firms including Media Five Limited Honolulu and California - specializing in resort hotels, vertical mixed-use and government projects throughout the Pacific Rim; and William Hezmalhalch Architects, JZMK Partners and Danielian Associates - specializing in urban and master planned communities worldwide. Deborah has conducted research and development, strategic planning, marketing analyses, economic feasibility studies, product programming, project management and community outreach campaigns to advocate project approvals. When on team assignment with MTDB in San Diego, she helped prepare the EIR required to federally fund the East Line Trolley Extension.

Deborah is responsible for business development, educating on sustainable building systems, specifications, ascertaining profitable building alternatives, cost analyses and client satisfaction. Deborah attended several educational institutions resulting from spousal military relocations, later earning a Business Management Certificate from UCLA.

Greg has plus 40 years of extensive construction, development and construction management experience. As a company owner and consultant, he has managed, constructed and/or supervised over $850M in major building projects including large-scale apartments, mixed-use, high-rise and single-family homes using both conventional and pre-engineered building methods. Greg was selected by World Bank for the ‘Syoy Dom – Own House’ Humanitarian Program to install manufacturing facilities and establish businesses in the wood products and component housing industries to provide structural insulated panels (SIPs) for the construction of 5,000 attached and detached affordable housing units in Far East Russia. After transferring these advanced technologies to the region, he set-up two more SIP manufacturing plants in the Ukraine and Slovakia.

Greg is responsible for the day-to-day operations, new building product lines, cost estimates and analyses, technical support, specifications, prototype construction, product quality assurance and installation quality control. In addition to earning a Bachelor of Science in Biology and minor in Business from the University of Berkeley, Greg has earned several Management Degrees in Construction. He is also a Board Member for a number of building product manufacturers.

THE SBS TEAM & AFFILIATED PARTNERS:

**Structural Engineers:**
- Humberto Hassey, P.E.
- Brian Von Allworden, P.E.
- Joe Pasma, P.E.

**Technical Product Advisors:**
- Timothy Faust, MagBoard
- Bob Bach, Insulfoam
- Phil Ligon, Premier SIPs
- Stan Field, Architect

**Development & Production:**
- Gordon Ritchie, MagBoard
- Raymond Montgomery
- Don Fisher, Yadam Technology
- Phil Newbry, Consultant

**Construction & Technical:**
- David Barbosa, GC
- Steve Childers
- Tom Geiger, Consultant
- Plant Construction
- Michael McCarthy, Consultant
Going Green isn’t just about saving the planet or hopping on the newest trend. It’s about saving the environment for future generations. To achieve this end, each project requires informed decisions and collaboration. Not only is Green then possible, so is improving the Bottom Line.

“My fascination with sustainable building products stems from my collegiate studies in biology, and an underlying concern that our world’s eco system should be protected. Although biology and my chosen field of construction are adverse practices, it is the foundation of my initial interest and involvement with high-performance, pre-engineered systems 28 years ago. This simple, sustainable and sophisticated means of construction has prov its value to my Clients around the world. It is understandable why structural insulated panels are becoming the framing method of choice.

I am excited about the future of sustainable design and construction. When methodically implemented as early as project inception, the greatest benefits will be realized.”

Gregory Koepf, CEO / President
SHELL Building Systems
PRE-ENGINEERED FRAMING SYSTEMS
Structural Insulated Panels (Type V & Type 1)
Hybrid Post and Beam (Type 1)
Continuous Insulated Panels
Insulated Concrete Forms

HIGH-PERFORMANCE ROOFING PRODUCTS
EPDM, TPO, PVC and Roof Garden Systems
Steep-Slope Underlayments
Roof Insulation Panels and Roof Insulation
Reflective and Emissive Metal Building Roofs and Panels

FOUNDATIONS / FLOORING
Thermal Barrier Foundation Systems
Below-Grade Insulfoam Foundation Insulation
Environmentally Healthy Concrete Foundation Systems

GLAZING AND DOORS
Low-E Glazing and Sliding Doors
Open Wall Folding Door Systems

OTHER ENERGY-EFFICIENT PRODUCTS
Low-Sloped Roof Photovoltaic Systems
Radiant Barrier Sheathing
Insulfoam Wall Insulation
Engineered MEP Fixture Hangers/Clips

TRANSPORTATION / EARTHWORKS
Premium GeoFoam Products
East Forest Production Company (EFPC), a Russian-American joint venture, was formed to install manufacturing facilities and establish businesses in the wood products and component housing industries in the Russian Far East. EFPC’s purpose was to transfer advanced manufacturing technologies to the region, upgrade worker skills, conduct profitable new businesses designed to realize maximum economic value from the region’s timber resources, and fulfill necessary housing programs. EFPC’s emphasis on “value added” (processed and/or manufactured) wood products represented a marked departure from the traditional practice of exporting whole logs.

After completion of a Russian-contracted Feasibility Study, EFPC received widespread support and was selected by the government to supply and build houses in Far East Russia for “Dom dlya vashey semiy / i.e. House for Your Family” and “Syoy Dom – Own House.” Humanitarian Funding was received to establish manufacturing facilities and operations to accomplish a 5,000-unit attached and detached housing program, build and remodel schools to upgrade educational programs, implement forest resource management and reforestation programs, and increase direct and indirect jobs. Upon Program completion, the American interest in EFPC was transferred to Russia.
SUSTAINABLE INVESTMENTS

Advancing Project Sustainability

SHELL BUILDING SYSTEMS

Logo

Images of sustainable projects
STRUCTURAL INSULATED PANELS (SIPS)
An Advanced & Pre-Engineered, Type V Framing System

SIP-Built Single-Family Residences

- Aalfs Residence; 8,767 sf
- Cox Residence at Ft. Bragg; 8,854 sf
- Danielson Home; 14,456 sf
- Dedlow Residence; 8,676 sf
- Dottle Residence; 9,787 sf
- Ellermeyer Custom; 9,787 sf
- Enclave at Cypress Grove; Clarum Homes
- Freestone Ranch Custom; 6,700 sf
- Gunter Residence; 14,650 sf
- Hansen Lane Zero Energy, Clarum Homes
- Koo Residence; 3,382 sf (UC)
- Lehmkuhl Residence; 6,798 sf
- Massey Residence; 2,200 sf
- Menlo Park Passive House; Clarum Homes
- Noland Residence; 7,357 sf
- Northwest Timberframe Net Zero House
- Pacifica Custom; 4,500 sf
- Palmilla La Quinta; RTJ Homes
- Rosia Custom; 18,500 sf
- Sun Savvy Net Zero Energy Homes
- The Sungazing House; 3,720 sf

The SIP Advantage for Owners / Builders

- Stronger than conventional framing
- Less structural hardware
- May reduce foundation cost (concrete slab)
- Faster rough-in framing and electrical
- Panels are UL-approved and pre-chased
- Exceeds CalGreen Building Codes & T24
- Provides a continuous insulation barrier
- 60% more energy efficient than 2x6, R19 construction
- Tighter building envelope (15X)
- No blower-door test required
- Healthier indoor environment
- Reduces HVAC system size & efficiency
- Energy conservation savings up to 65%
- Energy Star approved product
- Straight walls provide faster finish work
- Precision of diaphragm openings allows for faster window/door/trim installation
- Reduces framing scrap & waste up to 70%
- Significant reduction of time & labor
- Fewer trades to coordinate
- Reduce ‘General Conditions’ up to 30%
- Faster construction lowers ‘debt service’, reduces risk of ‘late’ penalties
- Life cycle savings offers potential to negotiate better lending terms
- If solar, panel requirements are less
- Homeowner may occupy their home sooner
- 20-Year Product & Performance Warranty
Home Builder: Clarum Homes  
Project Type: SF Development  
Units (Phase 1): 10  
Square Ft: 2,775 - 5,000 SF  
Price: Start at $1,095,000  
Architect: Environmental Innovations  
Structural Engr: Max Cheng & Associates  
SIP Provider: Premier SIPs  
SIP Use: 6” Panel Walls, 8” Panel Roof  

Photo Courtesy: Premier SIPs

“The SIPs are so significant to airtight construction that EnergyStar® has waived the requirement for blower door tests for SIP construction across the U.S.”

-Energy Star for Homes  
U.S. Environmental Protection Agency

The Enclave is the first residential phase of Cypress Grove, a 400-acre planned, residential golf resort community on the Bayonet and Black Horse Golf Courses on the Monterey Peninsula. A private, gated community, the Enclave will be complete with 29 custom residences, 125 single-family homes featuring panoramic golf and Monterey Bay views, 170 condominium units and a 330-room luxury resort hotel.

These ‘Net Zero’ homes are designed with exquisite architectural detailing and gracious interior appointments. Residential neighborhoods built by Clarum Homes come standard with sustainable features that result in energy-efficiency, indoor air quality, water conservation, earth-friendly building materials and added convenience. Of particular note is Clarum Homes’ commitment to build with a tight-building envelope and high-performance insulation that reduces energy consumption by up to 65%. The use of SIPs reduces unsightly solar panel requirements and assures stable indoor temperatures for optimum comfort.
Situated in a pocket of classic oak woodlands, the Hillside House is an extensive residential expansion for a home owned by an energy consultant. The design embraces the site’s natural slope with rooms and stair corridors oriented toward views. Structural Insulated Panels (SIPs) not only provided the structural integrity and energy efficiency sought by the owner and architect, this pre-engineered framing system achieved clean and elegant building forms and lines, and allowed for exterior and interior finishes that are almost impossible to obtain in conventional framing. SIPs worked in concert with steel beams and structural supports, and provided embed cavities to hide specific conditions to gain certain design effects. The roof panels were tapered to provide a smooth slope to the roof barring any ‘stepped’ roof design or interior ceiling height changes. Rain gutters were channeled into the SIPs to remove their visibility. Extensive use of can lighting required special chase fabrication into the roof panels to accommodate fixtures. The expertise of SHELL Building Systems with SIP design, engineering and fabrication was the most comprehensive residential project done by any SIP manufacture to date.

**Architect:** fieldARCHITECTURE  
**Structural Engr:** Peter Boyce  
**SIP Provider:** Shell Building Systems  
**Tech Support:** Shell Building Systems  
**Installer:** MCH Construction  
**GC:** MCH Construction  
**Sq. Ftg:** 2,142  
**SIP Use:** Exterior & Interior Walls and Roof  
**# of SIPs:** 6,128  
**Photographer:** Bruce Damonte
At an altitude of 6,900 feet on the southern slope of the Wasatch Mountains, the Sungazing House experiences average annual temperatures of 35 degrees Fahrenheit and frequent sub-zero weather. Inspired from the ambitious energy standards of the Passive House, the owner challenged his architect to combine the highest level of energy efficiency with luxury and livability. The result was a 3,800 SF home that provides consistent indoor temperature comfort and generates more energy than it uses.

After integrating site orientation and plan design, key design features consisted of an airtight building envelope using 12” structural insulated panel (SIP) walls, and a 12” SIP roof with 4” of added EPS. After controlling the interior environment and reducing the HVAC equipment by using SIPs, other features included passive solar heating, custom-tuned and insulated Series (Series 925) windows strategically placed for optimal solar collection, glazing overhangs, a Heat Recovery Ventilator (HRV), an array of rooftop solar to generate electricity and heat water, and Energy Star rated appliances. Due to the speed of SIP construction that reduced time, labor and waste, the cost savings were allocated toward these green features.
Located on a downhill, one-way street in the Mission District of San Francisco, this four-story modern-style row home is wedged into an infill lot with architecture abutting the sidewalk and its neighbor to the west. Structural insulated panels (SIPs) made it easier to apply exterior finish materials before standing the wall panels on the blind side versus conventional methods that would have been more difficult, and framed sections heavier to lift and set. The narrow site and street prohibited a staging area for materials, yet SIPs allowed for immediate construction as panels were offloaded and remaining panels were easily stacked in order of construction on the building footprint versus huge quantities of lumber requiring cuts. A street encroachment permit was needed for only less than half a day. Building with SIPs significantly increased the speed of construction to two weeks versus months. Contrary to conventional building methods, using prefabricated SIPs reduced noise and decreased the duration of construction activity.

“Structural Insulated Panels provide the optimum solution for city revitalization projects, requiring no staging area. Approved for Type V construction and Seismic Zones A - F.”
STRUCTURAL INSULATED PANELS (SIPS)
An Advanced & Pre-Engineered, Type V Framing System

SIP-Built Multi-Family Projects

- Flagstaff Senior Meadows
- Lofts at McKinley
- Grandfamilies Place of Phoenix
- View Point Senior Apartments
- Smith Williams Affordable Senior Apartments
- Senator Richard Bryan Senior Apartments
- Sarann Knight Affordable Apartments
- Wind River Hall Student Housing
- Magnolia Court Live/Work
- Filbert Court Lofts
- Ft. Lewis Military Barracks
- Ft. Wainwright Military Housing
- U.S. Army Alaska
- Medical Staff Quarters
- Puyallup Tribe Housing
- Northwood Condominiums

The SIP Advantage

- Stronger than Conventional Framing
- Significant reduction of Time & Labor
- Reduces Framing Scrap & Waste up to 70%
- Can reduce ‘General Conditions’ by 30%
- Faster Construction lowers ‘Debt Service’ reduces risk of ‘late’ financing penalties
- Exceeds CalGreen Building Codes & T24
- Surpasses Energy Star efficiencies
- Energy Star and HUD Approved
- Tight building envelope
- Healthier indoor environment
- Reduces HVAC sizes; increases efficiencies
- Energy conservation savings up to 65% (*)
- If solar, panel requirements are less
- Less structural maintenance costs
- Lease earlier with faster construction
- Life cycle costs are significantly reduced
- 20-Year Product & Performance Warranty

Photo Courtesy: Premier SIPS & Tofel Construction
With the sharp rise in housing prices in 2006, the City Council of Las Vegas made it a priority to focus on new options of affordable housing in their community. One of several projects developed was the Senator Richard Bryan Senior Apartments. To address rent control and provide indoor living comfort for its senior residents, the developer made a conscious decision to use structural insulated panels (SIPs) for the project's exterior walls. The project was delivered in advance of its projected completion date, built under budget, and its operational costs are 30% less than anticipated.

The project is owned by the Senator Richard Bryan Limited Partnership, consisting of the Affordable Housing Program, Inc., a subsidiary of the Housing Authority of Las Vegas, and SunAmerica Housing Fund 1316, a Nevada limited partnership.
The Smith Williams Senior Apartment complex is comprised of three 3-story buildings with 80 one- and two-bedroom units that provide affordable living for low-income senior renters. A separate one-story structure provides a clubhouse, swimming pool and spa, weight room, movie room and library. Financed through a public-private partnership, the project is the Nevada Housing Division’s first faith-based supportive housing tax credit project, however, any eligible person can rent an apartment regardless of beliefs.

Reverend Sam Roberson, pastor of Henderson Community Baptist, was inspired to have his congregation sponsor the complex after a visit to Atlanta’s historic Wheat Street Baptist Church. Relying on tax credits, this +$20M senior living complex was financed largely through private lenders with participation from the city, county and the state/federal monies dedicated to low-income housing.

**About SIPs:**
A high-performance, framing system, Premier SIPs have been rigorously tested to exceed building code standards, and validate load charts and seismic design data. An ideal product for energy efficiency, extensive testing validates that SIPs create a tighter building envelope, exceptional IAQ and a healthier environment.

**CDPDN’s 4th affordable project!**
Installation = 37 Days (Closed In)!!
65% More Energy Efficient
Waste Reduction
Less Time & Labor
Reduced ‘Total’ Construction Cost
Significant Operational Savings
Initially proposed for family apartments, WESCAP Investments changed its project direction based upon market demographics and the overwhelming success of SunGate Villas, its 118-unit senior complex on an adjacent parcel west of the Viewpoint property. Located between Long Look Drive and Civic Circle, this five acre site is also near the Civic Center.

To be built in two phases, Viewpoint Senior Apartments caters to low- to moderate-income seniors and disabled persons. The first 50 units of this 102-unit LIHTC complex are complete and fully leased. The second phase of 52 units is awaiting release of tax credits. In addition to LIHTCs, Federal Community Development Block Grant monies were granted to the City of Phoenix and applied toward street extensions and additional access to the community.

While awaiting Building Department final approval, the developer made a late decision to build with pre-engineered structural insulated panels (SIPs). Structural design and conventional framing conversions were completed during excavation, and shop drawings were finished during the foundation phase. To address the schedule, blank panels were shipped to an adjacent site for fabrication. Using S-splines, wall spans were assembled in lengths up to 41’ at the gables and raised into place for fast construction. Interior wall fabrication was also performed on-site.
To meet steadily growing student housing demand, Western Wyoming College selected BKV Group to design an apartment-style residential life facility with contemporary amenities to meet student expectations. Configured in four-bedroom clusters with living room, kitchen, multiple station baths and storage, the project was designed to accommodate 150 beds and student service facilities.

Design elements, selection of building materials and installation procedures were considered early in the process to address the high level of abuse found in student markets, resulting in a building that is both practical and affordable. After a number of options were evaluated to reduce energy consumption and facilitate competitive pricing, it was decided to construct the building envelop and interior walls with structural insulated panels (SIPs). Using SIPs throughout the structure lowered repair costs from property abuse. The properties inherent in SIPs also decreased the cost of construction, reduced the construction schedule, allowed mechanical systems to be down-sized, and reduced energy consumption and associated lifecycle operation costs.

<table>
<thead>
<tr>
<th>Project Type:</th>
<th>Student Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Size:</td>
<td>48 Units; 28,000 SF</td>
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<tr>
<td>Client:</td>
<td>Western Wyoming College</td>
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<td>SIP Mfr:</td>
<td>Premier SIPs</td>
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<tr>
<td>Architect:</td>
<td>BKV Group of Minnesota</td>
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<tr>
<td>GC:</td>
<td>Kamerman Construction</td>
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<tr>
<td>Building Type:</td>
<td>Type V; 4-Stories Over Podium</td>
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<td>Beds:</td>
<td>150</td>
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<tr>
<td>SIP Applications:</td>
<td>6” Panels - Exterior Walls</td>
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<tr>
<td></td>
<td>4” Panels - Interior Walls</td>
</tr>
<tr>
<td></td>
<td>10” Panels - Roof</td>
</tr>
</tbody>
</table>

Photo Courtesy: Premier SIPs
Challenges: After CCSD awarded the project in 2005, the construction cost estimates soared by approximately 1.5% per month. During the programming and preliminary design stages, the architect determined that materials customarily used by the District – primarily CMU’s and tilt-up concrete panels – was not financially feasible given the approved budget. CCSD sought a building solution that would reduce construction costs and heating and cooling demands, and mitigate jet aircraft noise transmission and attenuation from nearby Nellis AFB. There was concern that SIP unfamiliarity by the GC, and framing and MEP union trades, could affect the bids. Adding complexity to these challenges, CCSD needed the replacement school finished as quickly as was feasible to minimize disruptions to faculty and students still using the existing, adjacent school. Uniquely, the architect’s building design offered its own

SHELL Difference: Several local energy auditing firms revealed that SIPs would substantially reduce energy costs, and the size of HVAC systems and usage. The SHELL management team worked closely with project consultants to maximize the many inherent advantages of SIPs, review Preliminary Design Drawings, assess structural solutions and establish preliminary SIP building costs to compare with the CCSD’s typical building practices. It was determined that using SIPs for all exterior curtain walls and roofs would exceed the program criteria and save materials, waste, labor and time to considerably reduce the ‘total’ construction cost. SHELL worked closely with the GC to educate the trades and coordinate scheduling to take advantage of this pre-engineered structural system. With SHELL’s installation team on-site, the building envelope was completed in 47 days versus the scheduled 212 days, and the ‘total’ construction cost savings was almost $2M. Today, CCSD reports that Jacob E. Manch Elementary School operates between 65 - 70% more efficiently than its other educational facilities.

| Project Size: 68,000 SF (900 Students) |
| Budget: $20 Million |
| Construction: Bearing Walls - SIPs |
| Non-Bearing Walls - Light Gauge Steel Studs |
| Client: Clark County School District |
| Architect: Small Studio Architects - LV |
| Structural Engr: Calder - Richards |
| SIP Consultant: Shell Building Systems |
| Tech Support: Shell Building Systems |
| GC: Martin Harris - LV |
| SIP Mfrg: Premier SIPs |
| SIP Application: Exterior & Interior Walls; and Roof |
| # of SIPs: 2,250; 118,000 SF |
| Awards: 2010 SIPA Awards |
| ‘Best Green U.S. School Building Excellence Award |
| Completion: Spring 2010 |
ADVANTAGES OF SIP CONSTRUCTION FOR SUSTAINABLE SCHOOLS

- **Energy Efficient & Cost Effective**: Reduce heating and cooling costs up to 85% for significant operational savings, which can be directed back to the school’s operational budget for other needs.

- **Healthy**: Better indoor air quality due to an airtight building envelope that contributes to a better learning environment and attendance rate.

- **Comfortable**: Warmer in winter, cooler in summer, ideal controlled indoor environments for students and teachers.

- **Easy to Operate**: Tight building envelope reduces HVAC mechanical equipment sizes and improves efficiency to reduce heating and cooling costs.

- **Stable R-Values**: No thermal drift! Unlike other SIPs insulation, the R-Value of PBS’ EPS insulating core will remain stable over the entire product service life, so a school’s energy savings will be consistent year after year.

- **Environmentally Responsible**: SIPs produce 30% less job-site waste than traditional construction, and substantially reduce heating and cooling costs over a school’s life cycle (can amount to millions).

- **‘Total’ Construction Costs**: SIPs play a large role in managing capital construction costs. Schools built with SIPs provide a more efficient and systematic approach to building, significantly reducing the ‘total’ construction cost by way of time, labor, waste, general conditions, debt service and other direct costs.

- **Construction Use**: Of Struc Grade One OSB, SIPs are used for structural shearwalls, roofs, curtain walls, and bearing and non-bearing interior walls.

SCHOOLS ACROSS THE NATION SAVE TOTAL CONSTRUCTION COSTS AND SIGNIFICANT OPERATIONAL EXPENSES WHEN GOING GREEN WITH STRUCTURAL INSULATED PANELS!

The nation’s largest green school district chose SHELL Building Systems for the Jacob E. Manch Elementary School. Using SHELL, their choice manufacturer of SIPs, SHELL successfully framed the school in record time (47 days) and under budget. Choosing SHELL Building Systems and their SIP manufacturer of choice made for a responsible green structure that carries a 20-year product and performance warranty, is better for the health of staff and students for many years to come.

*Photo Courtesy: SHELL Building Systems*
ADVANTAGES OF SIP CONSTRUCTION FOR SUSTAINABLE SCHOOLS

STRUCTURAL INSULATED PANELS - THE MOST PRACTICAL PRE-ENGINEEREED FRAMING METHOD FOR HEALTH, ENDURANCE, OPERATIONAL SAVINGS AND MORE

- **Stronger:** Exceptional proven product strength, much stronger than traditional framing methods. No need for a truss system.

- **Straighter:** A Product with predictable, engineered strength. Why settle for the imperfections of dimensional lumber?

- **Greener:** Manufactured from a fast-growing species produced for OSB, non-VOCs, indoor air quality, less waste and more!

- **Fast Close In:** Schools are framed in weeks, not months.

- **Top Code Reports:** The best building code reports in the industry; between SHELL Building Systems and its manufacturer, the best technical and design support is provided.

- **LEED Points:** Up to 23 valuable environmental design points through the standard in green certification, LEED for Schools.

- **Proven Performance:** Using SHELL’s manufacturer of choice, their 25 years of SIP manufacturing provides confidence in product performance.

- **Warranty:** Peace of mind with a product warranty.

**SCHOOL PROJECTS BUILT WITH SIPS:**

- Thatcher School - Ojai, California
- Jacob E. Manch Elementary School - Las Vegas, Nevada
- American Heritage Academy - Arizona
- Zuni Christian Mission School - New Mexico
- Ojo Encino School - New Mexico
- Central Oregon Community College - Oregon
- Valhalla Elementary - Auburn, Washington
- Finn Hill Jr. High - Washington
- Lakeview Hope Academy - Washington
- South Kitsap School #13, - Washington
- Bertschi Elementary School - Seattle, Washington
- Wind River Hall at Western Wyoming College - Wyoming
- George Morgan High School - Alaska
Funded by the American Recovery & Reinvestment Act, this SIP-built, environmentally-friendly, state-of-the-art facility is the first Less Than Zero Energy design within the U.S. Fish and Wildlife Service system. The building’s close proximity to a substantial fault-line and a wetlands area with a high water table required an 18-inch thick, steel-reinforced ‘raft slab’ for the foundation system to allow the structure to ‘float’ in the event of a major earthquake. Approved for Seismic Zones A-F, SHELL’s structural insulated panels have proven their structural integrity during severe earthquakes, including the magnitude 7.2 quake in Kobe, Japan. Carefully integrated passive solar and mechanical systems manage the indoor environment for occupant health and comfort. Seven roof monitors provide natural daylight and ventilations, as well as an optimally oriented support structure for the bulk of the Visitor Center’s 55kW photovoltaic array. Some ecologically-conscious features of the facility include the use of recycled regional low-emitting materials, water-conserving fixtures, LED lighting, natural daylighting, passive heating and cooling, high albedo roofing, and alternative energy transportation.
“With over 35 years of extensive knowledge using high-performance framing technologies, particularly all forms of structural insulated panels, MagBoard building products for construction surpasses any structural material I have encountered. Using MagBoard for construction offers optimal uses and has exceeded my expectations. As a licensed contractor, I haven’t come across any other building material with so many construction applications, plus a Sound Transmission Coefficient rating over 50 and non-combustible properties for use in Type I, II and V construction. Its structural strength for shear walls and reduction of labor steps for exterior insulation finish systems and interior finishes are revolutionary. Our resource partner, MagWall Building Systems, has mastered a homerun.”

– Gregory L. Koepf, President, SBS

MgO Projects:
- Attached and Detached Residential (low-income to high-end-projects)
- Schools, Commercial, Industrial, Institutional
- Hospitality Residences and Dining
- Renovation for All of the Above

SEVEN KEY ADVANTAGES:
1. Fast, Simplified Construction
2. Durable and Structurally Superior
3. Excellent Fire Performance
4. Well Insulated / Lower Energy Consumption / Lower Energy Costs
5. Full Range of ASTM Testing
6. Green Building Technology
7. Installed competitively - faster Construction cycle, lower labor costs, consistent quality, lower

MgO Products:
- Structural Panels - Shear Walls, Roofs, Floors
- Structural Boards - Exterior / Interior Sheathing
- Structural Boards - Foundations, Basements, Walls, Roofs, Fences and More
- MgO Exterior Finishes

ADVANTAGES OF MAGBOARD SHEATHING
- Non-combustible
- Water resistant
- Mold resistant
- Bug resistant
- Impact resistant
- Inert no off-gassing
- Silicate free
- Hyper allergenic hospital grade material
- Green building material
- Exceptionally strong
- Easy to build with
- Significant structural and assembly testing
- A ‘smart’ investment