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CLARK CONSTRUCTION

Superstructure

Construction Begins on the National Museum of African American History and Culture

With more than 20,000 artifacts in its collection, the National Museum of African American History and Culture will be a place where all Americans can learn about the richness and diversity of the African-American experience. The museum will open to the public in 2015. Currently, an NMAAHC exhibition can be seen on the second floor of the National Museum of American History.

National Museum of African American History and Culture, Washington, D.C. (Rendering courtesy of Freelon Adjaye Bond/Smith Group)

A LOOK INSIDE

WASHINGTON, D.C.– Following a February groundbreaking ceremony attended by President Barack Obama, former First Lady Laura Bush, and notable political and civil rights leaders, **Clark Construction Group, LLC,** began construction on the Smithsonian Institution's National Museum of African American History and Culture (NMAAHC). Clark was awarded a $290 million construction contract for the museum as part of a joint venture with Smoot Construction, the largest minority-owned general contractor in Washington, D.C., and Atlanta's H.J. Russell & Company, one of the largest minority-owned construction firms in the nation.

Located on one of the last remaining prominent sites on the National Mall, the NMAAHC will sit between the National Museum of American History and the Washington Monument. The museum's look, however, will be unlike any of the neighboring structures. The 380,000 square-foot structure will be defined by the Corona, a bronze and glass-panel façade that reflects traditional African architecture. The Corona will hang from the top of the museum with no intermediate support. The museum's five above-grade levels will be supported by four concrete towers, linked at the top by steel trusses. The NMAAHC also will have three below-grade cast-in-place concrete floors: a concourse level, a mezzanine level, and a mechanical level.

Designed to achieve LEED® Gold certification, the museum is the first certified structure on the National Mall. Sustainable elements will include solar hot water panels on the roof and a geothermal ground water system.

The Clark-led joint venture is committed to exceeding the project's goals for small and minority-owned business participation, with a particular focus on creating opportunities for small, disadvantaged businesses.

With more than 20,000 artifacts in its collection, the National Museum of African American History and Culture will be a place where all Americans can learn about the richness and diversity of the African-American experience. The museum will open to the public in 2015. Currently, an NMAAHC exhibition can be seen on the second floor of the National Museum of American History.

The NMAAHC project continues the longstanding relationship between Clark and the Smithsonian Institution, which dates back to the early 20th century. Since 1983, Clark has built more than 11 projects totaling more than 1.3 million square feet.

The project architect-engineer is Freelon Adjaye Bond/SmithGroup. The Freelon Group, architect of record, is based in Durham, N.C. Adjaye Associates of London and New York, and the Washington, D.C. offices of Davis Brody Bond and SmithGroup round out the team.

The IC3 joint venture team successfully completed the ICC, Contract C (pictured left) in November 2011 and recently has begun work on Contract D/E - the final portion of the 18.8-mile roadway project.

ICC Constructors Awarded Final Phase of Maryland's Intercounty Connector

BELTSVILLE, Md. – The Maryland Department of Transportation's State Highway Administration (SHA) has awarded ICC Constructors (IC3) an $89 million contract to design and build the final segment of the Intercounty Connector (ICC/MD 200). **Shirley Contracting Company** leads IC3, which also includes **Clark Construction** Group, as well as Facchina Construction Company, and Trumbull Corporation. Dewberry and Davis is IC3's design lead.

Contract D/E - the final segment between I-95 and US 1 in Prince George's County - will complete the ICC project. The full scope of work includes designing and building 0.9 miles of four-lane, tolled roadway with a partial interchange and crossing bridge at Virginia Manor Road, as well as a continuous-flow intersection at US 1 near the Muirkirk MARC commuter rail station. Additional work includes 0.7 miles of improvements to US 1, 2.4 miles of resurfacing on I-95, and construction of 2.4 miles of collector-distributor roads adjacent to the north- and south-bound lanes of I-95.

The IC3 joint venture previously delivered the ICC Contract C in November 2011. The design-build team was responsible for a 3.8-mile segment of the road between US 29 and I-95, including 1.9 miles of auxiliary lanes and collector-distributor lanes, 1.3 miles of road improvements to US 29, 20 new bridges, and three new interchanges. The $513 million project opened to traffic on schedule.

Engineering design work currently is underway, with construction starting this spring. The project is scheduled for completion in late 2013 /early 2014.

Mixed-Use Development To Increase Housing, Parking in Downtown Bethesda

Three Clark Companies are set to begin work on Lot 31/31A

BETHESDA, Md. – Construction has begun on Lot 31/31A, a $200 million development in downtown Bethesda that will increase the area's housing, retail, and public parking options. Lot 31 Development Statutory Trust, a joint venture between Bethesda's StonebridgeCarras, PN Hoffman, of Washington, D.C., and Northwestern Mutual, of Milwaukee, awarded **Clark Construction Group, LLC** a $120 million contract for the project's construction.

Lot 31/31A includes construction of two residential buildings: the Flats, a five-story, 162-unit apartment building with a brick and metal façade; and the Darcy, a nine-story, brick- and metal-clad structure with curtain wall projections that will feature 88 luxury condominium units. The project also will include 42,000 square feet of retail space and a four-level, below-grade, public/private parking garage.

The project site, formerly two public surface parking lots, was acquired through a land transfer with Montgomery County. The new underground garage will have approximately 950 public parking spaces, three times more than what was previously available. The garage phase is funded through a public-private partnership with Montgomery County, Md.

Lot 31/31A is designed to achieve LEED® Silver certification. A green roof is one of the project's numerous sustainable amenities.

Construction on Lot 31/31A began in May. Metro Earthworks and Clark Foundations are performing the project's excavation and support of excavation, respectively. The parking garage will open to the public in late 2014. The project's residential and retail components will be complete in 2015.

SK&I Architectural Design Group, Bethesda, is the project architect. Additional project partners include Rodgers Consulting, Germantown, Md., civil engineer; GHT Limited, Arlington, Va., MEP engineer; Cagley & Associates, Rockville, Md., structural engineer; Lee & Associates, Washington, D.C., landscape architect; and Forrest Perkins, Washington, D.C., interior architect.

Lot 31/31A, Bethesda, Md. (Rendering courtesy of Stonebridge Associates)

Committed to Building Quality Healthcare

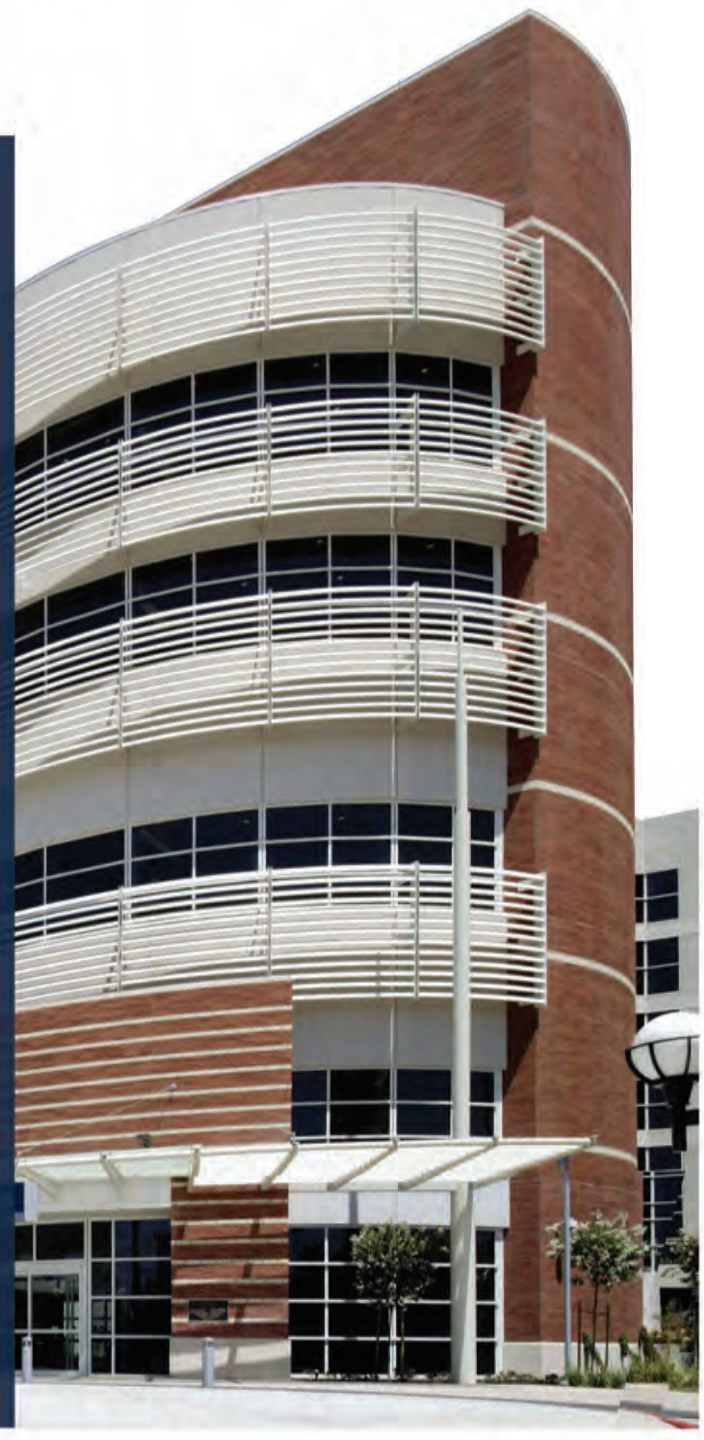
An in-depth look at Clark's healthcare services

As one of the country's leading providers of construction services, Clark Construction Group has developed a reputation for delivering high-quality projects built to exacting standards. Nowhere is this more evident than in our company's healthcare portfolio. Across the country, working with private and public clients on projects of all sizes and scope, Clark has built many of the industry's leading hospitals, research facilities, and medical centers.

Clark's healthcare experience dates back to the 1930s, when the company added a new treatment building to the St. Elizabeths Hospital campus in Washington, D.C. Today, we perform more than one billion dollars of healthcare construction each year and have been on top of Modern Healthcare's Construction & Design Survey for two straight years. More than 80 years of experience allows the company to successfully deliver a wide variety of healthcare projects for our clients.

Our greatest asset is our employees; we have more than 400 with significant healthcare experience on projects across the country. Through the diligent work of our skilled project managers and field supervisors, we have amassed a healthcare portfolio that includes:

- **$8 billion** in healthcare projects
- **26.5 million** square feet of construction
- **9,625** hospital beds



By Barbara Wagner, Senior Vice President

Outstanding Service

the Key to Lifetime Healthcare Clients

Over the past century, Clark has earned a reputation for providing outstanding service to our clients. Our business is built on relationships as much as it is on our ability to perform on complex projects

At Clark, we believe that a solid contractor/client relationship is built on a foundation of trust, transparency, and respect. On our projects, relationships develop at all levels to enhance communication, increase collaboration, and provide an integrated effort in which the success of the project is the primary objective.

Over the past few decades, we have formed lasting partnerships with many public- and private-sector healthcare clients across the country. The benefits of an ongoing contractor/client relationship are many; through shared experiences, both on and off-site, we can better understand client needs, issues, and concerns. The stronger the relationship, the better the outcome of a project, and that is why we focus on creating "lifetime clients."

In 1976, we built the Children's National Medical Center in Washington, D.C. Since then, Clark has provided preconstruction and construction services on more than 50 renovation and expansion projects on their campus. In Baltimore, we have completed more than 4 million square feet and $1.2 billion of healthcare projects with Johns Hopkins Medicine, including their recently-opened Patient Care Building.

When Clark expanded to the West Coast, establishing relationships with healthcare clients was an early priority. Our first healthcare project was a replacement clinical bed tower for the Department of Veterans Affairs (VA) in Palo Alto, Calif., in the mid-1990s. Since then, we have completed a seismic retrofit of the VA medical center in La Jolla, Calif., and recently delivered three phases of the new VA medical center in Las Vegas.

Through successful performance on VA facilities across the country, we have nurtured our reputation as a builder that exceeds our client's project goals. For our efforts on the VA La Jolla project, we earned the Partnership in Service Delivery Award. The honor acknowledges the VA's "deep appreciation to our partners who work hand in-hand with us to deliver outstanding projects." For the VA, this project was a quality effort, achieved at cost, and completed four months ahead of schedule.

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Hopkins' intraoperative MRI scanner is suspended from the operating suite ceiling and slides on rails between two rooms. This device is utilized by the hospital's neurosurgery and neuroradiology departments.

Photo by Sisson Studios

Two Projects In One: Planning and Installing Hopkins' Medical Equipment

By Mike Hartman, Senior Vice President

In 2007, our project team set out to construct a medical facility for Johns Hopkins Medicine that would usher in a new era of patient care and become the gateway to their Baltimore campus. Years of planning and more than eight million manhours of construction culminated in the Sheikh Zayed Tower and The Charlotte R. Bloomberg Children's Center's dedication ceremony on April 12. Johns Hopkins Medicine says the 1.6 million square-foot structure is the embodiment of their ideal for the future of healthcare. Its evidence-based, scientifically-advanced therapies are delivered in a safe and efficient setting and enhance the patient experience.

"Our new home represents our vision for healthcare. It has the space and technology to match our researchers' scientific knowledge, our faculty's medical acumen, and our staff's clinical skills, but it also adds the patient experience as the fourth critical dimension in this equilibrium."

– Edward Miller, M.D., Dean and CEO, Johns Hopkins Medicine

A component of Hopkins' state-of-the-art patient treatment is the cutting-edge technology installed throughout the hospital. From the impressive medical equipment in the surgical suites to the interactive television network offering internet, movies, games, and way-finding apps, the hospital's technology provides a more efficient workflow and a better patient care experience.

The hospital's imaging technology offers a level of detail that increases the precision and safety of procedures. A 3-D imaging system works as a surgical GPS, giving surgeons superior ability to navigate the brain during intricate neurosurgical procedures. New techniques in radiation-based imaging equipment, such as X-rays and CT scanners, dramatically reduce applied radiation. This is especially beneficial in pediatric care. Hopkins' doctors can now get an image in just seconds, as opposed to minutes – an eternity for a young child.

In the neurosurgery operating suite, an intraoperative MRI scanner is suspended from the ceiling on rails and easily slides between two rooms, providing instant feedback. A surgeon can scan a patient's brain immediately after removing a tumor to determine whether additional tissue needs to be taken. The list of operating room technologies also includes cordless, tank-free booms that eliminate clutter and an integrated audio-video system with flat-screen monitors for seamless interactivity between radiology and surgery.

Having the most modern medical equipment was a priority for Hopkins. From a builder's perspective, meeting this particular client need was challenging; the medical equipment was among the final items placed in the hospital, yet in order to delay installation to the latest possible date, our team had to start planning for it five years ago.

Final design of the operating rooms and imaging suites was pushed to the latest possible delivery date so our client could select the most state-of-the-art medical equipment. Though the design packages were finalized just 12 to 18 months before the hospital's substantial completion, the project team was prepared. We had developed a separate construction sequence for these areas and physically isolated them from the balance of the project. A team of project managers, field supervisors, and specialized subcontractors focused solely on these two areas, expediting their completion on the accelerated schedule.

But it took more than just a separate schedule and hard work to complete the imaging suites and operating rooms on time. Collaboration and innovation also were critical. After Hopkins purchased all of the medical equipment, we worked closely with the more than 20 vendors doing installation. Our team was responsible for all of the connections to the equipment, including MEP, IT, and structural supports. Expediting the construction of the imaging suites and operating rooms was a priority for every member of the project team and we developed an innovative process to maintain the pace.

Ceiling-mounted operating room booms support surgical equipment and house medical gas lines. With Hopkins still selecting its equipment late in the overall schedule, we looked for a solution to keep operating room construction moving forward that would not require re-work to accommodate unforeseen boom specifications. Our team suggested placing a generic boom support in each room. We worked with Hopkins to determine the maximum possible load for any single boom and used that as a baseline, then installed a steel support for the boom in each operating room. This strategy allowed overhead MEP construction to continue without being delayed by the boom design. Once Hopkins selected its equipment and approved a final boom design, we modeled and fit-out each generic boom support with equipment-specific mounting steel and hardware.

Modern medical equipment and state-of-the-art technologies are two key components to the healing environment at The Johns Hopkins Hospital New Patient Building. Combined with public gardens, an impressive art collection, and light-filled patient rooms, this facility will show that a modern and welcoming environment can advance the healing process. Hopkins says this hospital ushers in a new era for them and, after five years, thousands of meetings, and hundreds of mock-ups and functionality walks, we are proud to have helped our client realize their vision.

Mike Hartman is a Senior Vice President and leads Clark's healthcare operations in the Mid-Atlantic Region. He was the officer in charge of construction for The Johns Hopkins Hospital New Patient Building.

A Full Range of Healthcare Construction Services

Clark's healthcare construction services include more than just general contracting and begin far before groundbreaking. Our project teams work collaboratively with clients and designers to ensure every healthcare facility exceeds expectations.

Comprehensive Preconstruction for World-Class Healthcare

The ideal way to approach any healthcare project is with open and collaborative preconstruction and design planning. During these early project phases, Clark's preconstruction professionals, working in conjunction with designers, engineers, end users, and subcontractors, start realizing an owner's vision of a functional, innovative, and efficient healthcare facility.

In Stanford, Calif., Clark is part of Stanford University Medical Center's Renewal Project, a multi-billion dollar initiative to modernize and rebuild its community healthcare services. Acting as part of a joint venture with McCarthy Building Companies, Clark is performing preconstruction on the New Stanford Hospital. This 812,000 square-foot facility will accommodate new medical technologies, increased capacity needs, and seismic safety standards. The hospital will feature 368 new private patient rooms, 28 flexible surgical and interventional operating rooms, a 40,000 square-foot imaging department and a 39,000 square-foot emergency department.

For more than two years, the joint venture preconstruction team has worked closely with the owner, master architect, Rafael Viñoly Architects, and medical planner Lee Burkhart Liu, to provide estimates for the schematic design, design, and construction documents. To aid in constructability reviews and to avoid deferred approvals for systems including the exterior façade, MEP seismic anchorage, pneumatic tubes, fire stopping, and elevators, the team brought on 12 design-assist subcontractors, of which five are operating under design-build contracts.

Throughout preconstruction, the project team is co-locating in the architect's San Francisco office with Stanford's Planning, Design, and Construction staff; the engineers' offices are just blocks away. This proximity is an asset; meetings are frequent, and the easy exchange of information will ultimately benefit all phases of the hospital's construction. The construction and design teams are collaborating on the site logistics plan, including type and delivery of cranes, to ensure a fluid steel erection process and skin/façade installation. They also are discussing trucking routes in order to remove soil from the site with minimal impact to the community. Looking toward the final phases of the project, Clark/McCarthy, the owner, and the medical equipment and IT planner/designer are developing an equipment validation schedule. This plan will allow Stanford to purchase and install the most state-of-the-art medical equipment by identifying when equipment selections can be made to ensure just-in-time delivery without delaying the overall construction schedule.

With an eye toward breaking ground next spring, the team will concentrate on modeling all project elements under the 12 design-assist subcontractors, including structural steel, MEP, interior walls, exterior façade, elevators, pneumatic tubes, fire protection, and fire alarms. A specialty ceiling subcontractor soon will join the team

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New Stanford Hospital, Palo Alto, Calif.
Rendering courtesy of Rafael Viñoly

Part of S2N's $16 million scope of work at The Johns Hopkins Hospital New Patient Building included planning the conduits and pathways for 27,000 data and voice connections.

Photo by Maxwell MacKenzie

and add to the BIM efforts. The team is committed to eliminating conflicts and clashes in the current design prior to groundbreaking and working toward the owner's goal of having Stanford Hospital 3-D modeled for future engineering and maintenance.

Putting the Brains Inside the Building

One of the more underappreciated, and sometimes overlooked, aspects of preconstruction planning involves low-voltage technologies. Pathways for these systems, both general (telecommunications, audio/video, overhead paging) and healthcare-specific (infant protection, nurse call, code blue, fire stopping requirements, personnel and equipment tracking), need to be established early in a project to ensure there is proper space. One early miscalculation could lead to a conflict that goes undiscovered until field work begins. S2N Technology Group, a Clark subsidiary, specializes in the design, implementation, and support of IT and low-voltage systems. Their expertise has been critical to the technologies and systems behind the walls and between the floors of several Clark healthcare projects.

The Johns Hopkins Hospital New Patient Building
Photo by Maxwell MacKenzie

S2N performed a $16 million contract at The Johns Hopkins Hospital New Patient Building for the project's telecommunications, security, overhead paging, GPS clocks, and infant protection systems. Awarded the job in early 2007, S2N began collaborating with the design and engineering teams to plan the conduits and pathways for more than six million miles of cable, 27,000 voice and data connections, 400 security doors, and 150 GPS clocks. Five years later, S2N remains on site, helping the hospital's networking staff acclimate to their new environment.

Using lessons learned on a project with Children's National Medical Center in Washington, D.C., S2N worked closely with project designers to plan a functional space for Hopkins' patients and staff. Technology in each type of patient room is laid out the exact same way so that primary caregivers develop muscle memory for where different connections and conduits are located, including biomedical jacks and nurse call devices. S2N's influence extends to the hallways, where porters and nurses can access security card readers to open a door without leaving a patient gurney, and to the ceilings, where enough space is reserved to accommodate future moves, additions, or changes.

S2N's portfolio includes over $20 million of work for prestigious healthcare clients, including Children's National Medical Center and Johns Hopkins Medicine.

Targeted Small Business and Community Outreach

In New Orleans, Clark is leading the construction of the Southeast Louisiana Veterans Health Care System Replacement Medical Center. Project Legacy, as it is known, will transform 12 city blocks into a state-of-the-art medical campus including buildings for inpatient, diagnostic and treatment, outpatient, transitional living and rehabilitation, and administrative services. The 1.6 million square-foot project also includes a central energy plant and an 800,000 square-foot parking structure.

Both the location and nature of the project demand a comprehensive community and local business outreach effort. In addition to the contractual goals for small business participation (with particular emphasis on veteran-owned and service-disabled veteran-owned businesses), the Project Legacy team took it upon themselves to begin a grass roots effort to become part of their community and recruit and train local businesses to win work on the hospital. Though there is no contractual requirement for local participation, the team is committed is to using as many New Orleans-area subcontractors and businesses as possible.

Clark/McCarthy Healthcare Partners held multiple outreach events before the Department of Veterans Affairs (VA) awarded the team a contract in 2009. In the years since, the Project Legacy team has participated in or supported more

The Project Legacy team has joined in or supported more than 70 community, educational, and outreach events.

New Orleans residents attend a CMU Building Blocks session.

Members of the Highland Hospital team help local contractors develop their business and construction skills.

than 70 community, educational, and outreach events, working closely with the U.S. Small Business Administration, City of New Orleans, New Orleans Black Chamber of Commerce, Dillard University, and Delgado Community College, as well as several local trade associations to specifically target local and veteran workers. The team also has aligned with New Orleans' JOB1 workforce development program and the VA's Compensated Work Therapy Program.

Recruiting a local workforce is critical to the successful delivery of this healthcare project, as is finding subcontractors capable of handling the project's size and scope. To prepare subcontractors to pursue work on the project and increase their overall capabilities, the project team began the CMU Building Blocks program. This free, multi-session program provides core construction management and business training to small companies. In addition to general courses on submittals, billing, and scheduling, the program's Electronic Mediums session focuses on industry-specific software and technology systems. Two dozen individuals from 19 local companies completed the first CMU Building Blocks program earlier this year. A second program is currently underway.

Project Legacy is still in its infancy. The Mid-City site will be mostly dirt until later this summer when construction begins in earnest. Already, however, the project team is exceeding its participation goals and will soon erect a billboard to keep the community apprised of their efforts.

In California, another Clark healthcare project is realizing the benefits of its community outreach efforts, and so are several local companies. The Highland Hospital Acute Care Tower Replacement project is a $668 million design-build effort that will replace Alameda County's existing medical facilities with a three-story Specialty Care Center for outpatient services and a nine-story, 169-bed Acute Care Tower with a full range of inpatient, maternal and child, and support services. The medical campus' construction will benefit more than just county residents; the project also will have a lasting impact on local and small construction companies.

Most capital construction projects in Alameda County must comply with the county's Enhanced Construction Outreach Program (ECOP), which stipulates participation levels for local, small, minority, and woman-owned businesses. When Clark was awarded the Highland Hospital project, the team set higher participation goals and began an outreach and education campaign that included presentations, working with local colleges and industry groups, and a project-specific Strategic Partnership Program.

Two years into the project schedule, the Specialty Care Center building is nearly dried in, foundation work for the Acute Care Tower is beginning, and local businesses are seeing the dividends of partnering with Clark.

California healthcare projects are regulated by the Office of Statewide Healthcare Planning & Development (OSHPD). OSHPD's inspection and approval procedures can be a challenge for even the most skilled contractors if they aren't experienced in the process. The County of Alameda would like more local contractors to be able to manage the OSHPD process and perform smaller healthcare projects in the area.

Through an informal mentor/protégé relationship with local, small, minority-owned firm Turner Group Construction, Clark is helping the county meet its goal. Clark bundled a package of work to create a mini-general contracting package for Turner. The $5 million package included self-perform concrete and seismic work on the Specialty Care Center, but a majority of the scope will be subcontracted out and managed by Turner Group. As work on site progresses and moves toward OSHPD inspection, a Turner employee will join Clark's quality control team. Through their experience on this project as Clark's protégé, the company will be well-positioned to provide ongoing healthcare construction services to the County of Alameda and other clients.

Using Modeling to Stay Ahead of Schedule

Three dimensional modeling is now the standard for successful healthcare projects. Collaborative virtual building is critical to delivering the Replacement Hospital at Camp Pendleton ahead of schedule. The U.S. Navy's standard schedule to design and build a 500,000 square-foot military hospital like the one at Camp Pendleton is five to seven years. The Clark/McCarthy joint venture team proposed a 40-month design-build schedule to NAVFAC and, thanks to the team's use of 3-D technology, they anticipate delivery in just 38 months.

From the project's inception, the team worked entirely in three dimensions to design and coordinate the hospital, including its civil infrastructure, building superstructure, envelope, all interior spaces (including imaging, patient and exam rooms, administrative spaces, public spaces, and corridors), and all building systems (HVAC, plumbing, piping, electrical, fire protection, medical equipment, furniture, and millwork). The early BIM model was used throughout design development and was essential to accurately determining the budget and constructability. The model was linked to the project's cost-loaded CPM schedule to produce a graphic, multi-dimensional construction timeline. This "5-D" (3-D geometry + time + cost) tool automatically adjusts when changes are made to one of the dimensions and helps in the research and development of logistics plans.

With the architect, engineer, and steel fabricator all working from the same model, the team placed the mill order with designs just 35 percent complete. A few months

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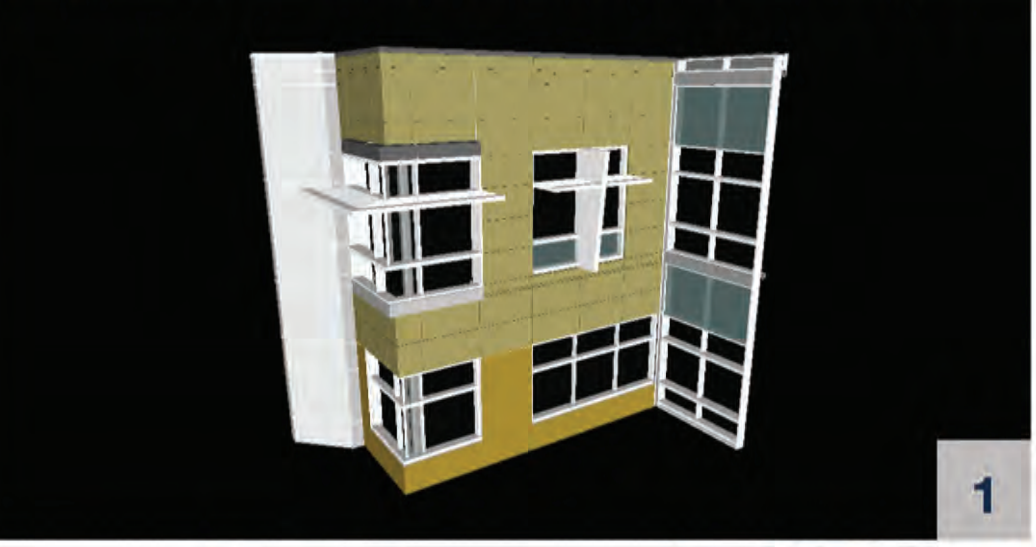

"The team is on track to successfully complete the project ahead of schedule and on budget. The overall success of the project is largely captured in its unprecedented schedule…I see a cutting-edge facility emerging that exhibits collaborative quality at a varsity level…the integration of Building Information Modeling during design and construction has been implemented at an unprecedented level which will carry through to a robust maintenance program after the dust is finally settled."

Commander Whit Robinson
Civil Engineer Corps, U.S. Navy
Resident OICC, Replacement Naval Hospital Camp Pendleton

later, with designs 65 percent complete, 4,000 tons of steel arrived on site. In November, the team celebrated the project's top out one month ahead of schedule. The accuracy of the three-dimensional model allowed the project to realize the dividends of this collaborative process. The structural steel was correctly ordered and placed earlier than anticipated while maintaining a strict budget.

As the project moves forward, 3-D modeling will continue to be a critical asset to the ongoing field work. The model's accuracy has allowed the project team to prefabricate numerous building components, including mechanical systems, window and exterior framing assemblies, duct work, piping, casework, the pneumatic tube system, and the electrical distribution system.

The team also is producing virtual mock-ups for a half-dozen of the hospital's major medical spaces. Working ahead of, and at times in conjunction with, on-site physical mock-ups, the team relies on the digital layouts to help coordinate all in-wall and overhead MEP spaces, doors, and stud locations. These digital layouts also provide tools for early validation by the clinical staff, which will ultimately be responsible for healthcare delivery.

When the hospital is complete next year, the project team will hand over more than just the keys. The building model will be loaded with the hospital's product and equipment information and integrated with the Navy's facilities management system. At any point, the owner will be able to walk into any room in the facility and, using the model, quickly assess performance and maintenance information and product information.

Photo 1: Virtual mock-up of the Replacement Naval Hospital Camp Pendleton's exterior skin, including stone, glazing, and window shade systems. Photo 2: Practical mock-up of the exterior skin system built off-site. Photo 3: Virtual mock-up of a patient room (courtesy of HKS Architects).

Outstanding Service the Key to Lifetime Healthcare Clients *continued*

We established our first private California healthcare client - Community Medical Centers (CMC) - in the late 1990s. Following an initial contract for preconstruction services on their Fresno campus, we proceeded to deliver additional projects including a new design-build parking garage, a design-build central energy plant, and an acute care building with burn and trauma facilities. In all, more than $140 million of healthcare construction was put in place.

"Clark has an excellent track record on major construction projects... their staff is hard working and attentive to the needs of the client."

J. Philip Hinton, M.D.
Former Chief Executive Officer
Community Medical Centers

With the Fresno projects completed in 2004, we continued to stay in touch with CMC and in 2008, negotiated a $200 million expansion at their Clovis campus. Completion of the 350,000 square-foot project is scheduled for late next year.

Based on our reputation with CMC, we qualified for Dignity Health's (formerly Catholic Heathcare West) preferred provider network in 2002. Our first few Dignity Health projects were small but extremely complex, such as a $27 million seismic upgrade of the Northridge Hospital's Diagnostic and Treatment Building, which was damaged in a 1994 earthquake. The project was high-risk, tedious, and required over 23 phases and 106 discrete work areas in an operating facility. Despite the inherent challenges of the job, we delivered the project on schedule and under budget.

The lessons learned and relationships formed on the Northridge Hospital project were invaluable to our future Dignity Health endeavors. In 2010, we were awarded a $250 million design-build contract for seismic renovations to approximately 400,000 square feet of Dignity Health facilities on 10 campuses. The design phase will complete on schedule this summer and we will start construction on three campuses later this year, including the Northridge Hospital. The remaining seven projects will break ground over the next two years.

"The efforts the Clark team undertook to accommodate the needs of the physicians and patients within the hospital was extraordinary. We appreciate the hard work and long hours that Clark dedicated to delivering a safe, quality project on time and within budget."

Ron Rozanski
Senior Vice President, Operations
Northridge Hospital

The benefits of a lasting contractor/client relationship are invaluable: our teams gain a better understanding of client issues and concerns; our ability to innovate, anticipate client needs, provide transparency, communicate openly, and be proactive increases. We pride ourselves on taking the opportunity to turn a one-time client into a lifetime client and become our healthcare partner's "go-to builder."

This philosophy is essential to our business. Success is all about providing outstanding client service.

Barbara Wagner is a Senior Vice President and leads Clark's healthcare efforts in the Western Region. She is the officer in charge of the Dignity Health seismic retrofit projects.

Design-Build Delivers for Walter Reed

When the Walter Reed National Military Medical Center (WRNMMC) opened last year, it was heralded as a new standard for military healthcare. The hospital provides state-of-the-art medical services for wounded warriors, military families, and retirees, with specializations in the treatment and care of traumatic brain injuries and limb loss. A product of the Base Realignment and Closure (BRAC) Act of 2005, Clark's WRNMMC team faced a Congressionally-mandated deadline to design and build 725,000 square feet of new construction, 450,000 square feet of renovations, two new parking garages, gate improvements and new utility infrastructure construction within 40 months.

Photo by Sisson Studios

Design-build delivery proved vital to meeting the requirements for WRNMMC's completion. To plan one of the nation's flagship military hospitals, stakeholders from the White House and Congress joined more than 40 design review entities to oversee the project's design development. All program requirements needed to be met within the project's strict schedule and budget. Design-build provided Naval Engineering Facilities Command (NAVFAC) with the schedule and budget certainty the project demanded. Early contractor involvement and expert team collaboration enhanced the overall quality and helped fulfill the military's expectations for continuous medical care, sustainability, functionality, and accreditation.

Design-build provided NAVFAC with the schedule and budget certainty this project demanded.

Leading the design-build team, Clark worked openly with joint venture partner Balfour Beatty Construction and designers HKS Inc., Wingler Sharp, Hartman-Cox Architects, Southland Industries, M.C. Dean, Dewberry and Davis, Cagley & Associates, and Koffel Associates throughout the pursuit and proposal phases. During this time, the team formed a strong working relationship while collaborating on the schedule, site logistics, identifying long-lead items, and developing an overall design and construction approach. When the design-build team was awarded the project and Notice to Proceed (NTP) was issued in March 2008, their integrated work style and thorough pre-planning allowed them to hit the ground running. NAVFAC and end-user representatives soon joined the team, participating in all meetings and providing design and functionality feedback.

In July 2008, just four months after the NTP, construction began on the 560,000 square-foot Ambulatory Care Center, while design documents were still being finalized. Under a traditional design-bid-build procurement, construction likely would not have started for an additional 12 months. By November 2008, the team was concurrently building the 165,000 square-foot Inpatient Pavilion and 947-space patient parking structure while beginning 450,000 square feet of renovations. The two buildings were completed six weeks early, and the patient parking structure was turned over five months ahead of schedule. The entire medical campus was complete prior to the BRAC deadline.

Beyond meeting the completion deadline, design-build methods contributed to the team fulfilling the owner's performance and program requirements. Early contractor involvement and team integration, and owner and end-user involvement were critical to getting WRNMMC mission ready.

All of the hospital's renovation work occurred immediately above, below, or adjacent to ongoing hospital activities. Each of the 48 renovated medical departments required a unique Logistical Phasing Schedule to coordinate construction activities occurring near active patient treatment areas. Early contractor involvement allowed the team to perform a complete investigation of existing building conditions and coordinate design development documents. The design-build team partnered with NAVFAC and hospital staff to jointly develop the requisite phasing schedules and plans to thoroughly prepare and communicate the work. All renovation work was completed without significant disruption to the hospital's day-to-day operations. In addition, there were fewer than 100 items on the team's punch list for the renovations.

NAVFAC required the new construction components of WRNMMC to earn LEED® Silver certification, an ambitious goal for a 24-hour medical facility. Early collaboration spawned innovative ideas, including using enthalpy heat recovery wheels as part of the air distribution system for the Ambulatory Care and Inpatient Pavilion. The Clark team worked closely with the design-build mechanical subcontractor and enthalpy wheel vendors to design and integrate 11 wheels into WRNMMC's HVAC system. This innovation helped the project exceed its sustainability goals and earn LEED Gold certification while contributing to an energy cost savings in excess of $600,000 per year.

The integrated work style formed through design-build proved valuable when planning the hospital's interior areas. Collaborating with the owner and end-users, the project team developed welcoming and functional spaces through evidence-based design. These efforts produced decentralized nursing stations, standardized patient room types, enhanced wayfinding and increased natural daylighting.

The hospital went through two Joint Commission inspections while the team was on site. In both instances, the team held meetings with hospital staff, prepared a plan for working with the Joint Commission around any active construction areas, and even facilitated mock inspections. WRNMMC was found to meet full accreditation after both inspections.

Through design-build, the WRNMMC project brought together an expert team of veteran healthcare builders, designers, and medical professionals. Though the project was conceived as design-build specifically to accommodate the BRAC deadline, the delivery method offers benefits to all types of government and military healthcare projects. With an emphasis on quickly getting new healthcare facilities on line and mission ready, design-build offers the valuable advantages of a compressed schedule, increased quality control, and contractor/designer/client collaboration.

A LOOK INSIDE:

The Johns Hopkins Hospital New Patient Building

The Johns Hopkins Hospital New Patient Building opened its door in April, capping five years of construction and eight million man hours of work. Clark/Banks, A Joint Venture, constructed the 1.6 million square-foot facility on Johns Hopkins Medicine's downtown Baltimore campus. The $750 million building features two connected 12-story towers: the Sheikh Zayed Tower and the Charlotte R. Bloomberg Children's Center. Together, the buildings have 560 private patient rooms (355 adult and 205 pediatric), and house new emergency departments for adults and pediatric patients, 33 operating rooms, 42 radiology suites, 13 non-invasive treatment areas, and 16 gastrointestinal and pulmonary diagnostic and treatment areas. The facility also is home to the Johns Hopkins Heart and Vascular Institute. The building features some of the most advanced technology medicine currently has to offer.

Photo 1: Siemens Flash CT Imaging Suite; Photo 2: Neuro Operating Room; Photo 3: Level B1 Core Lab; 4: Typical Patient Room with ICU Door-Adult Tower Photo 5: Children's Tower Main Loop Lobby; Photo 6: Charlotte R. Bloomberg Children's Center

Photos by Maxwell MacKenzie

community connection

Giving back to the communities in which we live and work has long been a part of Clark's corporate culture. For the past 15 years, we published Community Connection to chronicle the many ways our company and our employees gave back, both in dollar and in deed. Starting with this edition, we are proud to incorporate our community service news as a regular feature of Superstructure.

Boulder Crest Retreat To Provide Respite to Wounded Warriors

Boulder Crest Retreat is a 37-acre campus nestled in the foothills of the Blue Ridge Mountains near Bluemont, Va., that will soon offer a rural recovery setting for wounded warriors and their families. Clark Construction Group and the Clark Charitable Foundation recently teamed up to pledge $500,000 to the retreat.

Designed as an escape from the clinical environment of local military hospitals, Boulder Crest will offer accommodations and recreational services aimed at expediting the physical and emotional recovery of injured service men and women. Wounded warriors will be able to visit the facility for periods of two to seven days with no out-of-pocket costs.

"Supporting our veterans is a top priority for our community-focused, charitable endeavors. We believe that Boulder Crest will go a long way toward helping our troops reconnect with their families, repair their lives, and re-enter the civilian environment in ways that go far beyond traditional medicine and therapy."

Susan Ross
Executive Vice President & Chief Administrative Officer

Boulder Crest Retreat will feature ADA-compliant cabins and an ADA-compliant barn/meeting house that will serve organic farm-to-table meals. Planned on-site amenities and activities include a bird sanctuary, fishing pond, and archery.

Richard Heim Honored by Boy Scouts of America

On April 18, Clark's Western Region CEO & President Richard Heim was honored for his commitment to community service during the 2012 Orange County Council, Boy Scouts of America's 13th Annual Men of Character Dinner. Mr. Heim was one of eight honorees who were chosen for being role models to today's youth and exhibiting the qualities of the Scout Law.

Field Development Group's Leadership Benefits Community

Clark's Field Development Group (FDG) is a Mid-Atlantic Region initiative that identifies and trains the next generation of superintendents. Participants are nominated by supervisors to enroll in a 36-month training program that enhances construction and leadership skills. For their final assignment, the 25 members of the 2012 FDG graduating class were charged with organizing an event, project, or program that would have a positive impact on the community and see the effort through to completion.

FDG members researched and met with local community groups and nonprofits to evaluate their needs and find ways to help. In all, FDG members planned and performed 14 individual service projects, working with organizations including the Northern Virginia Training Center, Montgomery County Health Clinics, Autism Speaks, the Wounded Warrior Amputee Softball Team, and Project Mozambique at the Shepard's Spring Outdoor Ministry Center.

Project Engineer Helps Re-Design School Half a World Away

Earlier this year, Clark project engineer Daniel Blaise travelled 6,000 miles from home to help re-design a school in the Middle East. Lighthouse Elementary was established in 2004 in Gaza City, Palestine, to provide needy families with a quality and caring private school education. Though the school collects tuition, all students receive some form of subsidy to cover the cost of their education. Lighthouse Elementary – so named because it provides a beacon to families living amid great turmoil – was preparing an expansion to serve more children when one of its two academic buildings collapsed.

Mr. Blaise, as part of a three-person Engineering Ministries International (EMI) project team, journeyed to Palestine to help the school re-design its campus to address current and future needs. In just 11 days, the EMI team interviewed school staff, surveyed and documented the site, and developed a building design and "phase future" design for the school.

After returning from Palestine, the EMI project team finalized the design documents for the school so that construction could begin this summer.

Engineering Ministries International is a non-profit development organization of architects, engineers, and design professionals who donate their skills to help children and families around the world. The Lighthouse Elementary project was Mr. Blaise's second project through EMI. In 2010, he was part of a team that helped plan the reconstruction of *Universite Internationale de Haiti.*

Clark has been a proud supporter of Mr. Blaise over the past several years. Domestically, his design and engineering skills were part of the Walter Reed National Military Medical Center project. He currently is part of Clark Interiors.

Dave Trolian Promoted to Senior Vice President

Clark Construction Group, LLC, is pleased to announce that Dave Trolian has been promoted to Senior Vice President.

Mr. Trolian joined Clark in 1994 as a project engineer on the USPS General Mail Facility in Chicago. As a superintendent, he helped lead the company's efforts at the McCormick Place South Hall, McCormick Place Hyatt Regency, and Midway Airport Terminal & Concourse Renovation.

As project executive, Mr. Trolian was integral in the completion of Takeda Pharmaceuticals North American Headquarters, LAC+USC Medical Replacement Facility, and the tallest building Clark has constructed to date, the 60-story 300 N. LaSalle project.

In 2008, Mr. Trolian was promoted to Vice President and has led Clark's Northern Region in successfully completing the Camp Porter Barracks and Infrastructure project at the Recruit Training Command at Naval Station Great Lakes as well as the Lipinski Federal Building.

Currently, Mr. Trolian is responsible for Northern Region operations, which includes construction of the McNamara Federal Building in Detroit, Syracuse VA Medical Center Spinal Cord Injury/Disease Center Addition, Argonne National Laboratory's Energy Sciences Building, Nashville's Music City Center, and the Hyatt Regency McCormick Place Expansion in Chicago.

Mr. Trolian earned a bachelor's degree in civil/structural engineering from the University of Illinois at Chicago and has received continuing education through Northwestern University's Masters in Project Management Program. He serves as a member of the labor committee for the AGC Chicago's Builders Association.

Alison Wertzler Promoted to Vice President

Clark Construction Group, LLC, is pleased to announce that Alison Wertzler has been promoted to Vice President.

Mrs. Wertzler joined Clark in 1995 as an office engineer on the Darden School of Business project in Charlottesville, Va. She was promoted to project manager in 1999 and to senior project manager three years later while working on 901 New York Avenue, NW, a 785,000 square-foot, 11-story office building in Washington, D.C.

As a project executive, Mrs. Wertzler led Clark's teams constructing the International Monetary Fund Headquarters 2, 505 9th Street, NW, North Bethesda Market, and Two Constitution Square projects. In addition, she has been instrumental in the Mid-Atlantic Region's preconstruction efforts, helping the company secure new work, including three projects for which she is currently responsible – 1812 N. Moore in Arlington, Va., Jefferson 14W in Washington, D.C., and Lot 31/31A (The Flats and The Darcy) in Bethesda.

Mrs. Wertzler holds a bachelor's degree in civil engineering from the University of Virginia. During her tenure with the company she has served as a Clark Corporate University instructor, Team Clark Leader, Boot Camp mentor, BUiLD participant, and Chair of the PM Steering Committee. In addition, Mrs. Wertzler has represented Clark on the Board of Directors of the Arlington Chamber of Commerce.

Data Center Commissioning Complete, Looking Toward Gold Certification

MANASSAS, Va. – **Clark Construction Group LLC**'s Mission Critical division recently completed the construction and commissioning of two additional phases of work at Power Loft I @ Innovation, a Tier III+ data center that features 100,000 square feet of secure raised-floor space supported by densities that scale from 150 to 300 watts per square foot. Corporate Offices Properties Trust (COPT), Columbia, Md., is Power Loft I @ Innovation's owner.

In Phase IV, Clark completed the shell fit-out of the data center's two-story, 100,000 square-foot east pod. Clark previously erected the pod's steel structure and enclosed the building and, by intentionally not installing the under-slab utility infrastructure and concrete slab on grade, provided the owner with maximum future flexibility. This decision proved critical when they elected to deploy a static UPS topology for the east pod. The team worked closely with COPT and the EDG2/Gensler design team to incorporate the design concept within the existing building envelope and site infrastructure.

The Phase IV build-out of Power Loft's east pod included the installation of exterior and underslab ductbanks, slab on grade, core and shell fit-out and 20,000 square feet of new raised floor area for data center tenant use. Electrical systems include three critical power substations supporting three 1,500-kilowatt static UPS lineups (expandable to 2,250 kilowatts) with each lineup supported by a 2,500-kilowatt emergency generator.

All work was completed without disrupting the critical load serving tenants in the data center's west pod and required extensive coordination with COPT's facilities personnel. Construction and commissioning was completed three weeks ahead of schedule. Following commissioning of Phase IV systems, Clark also completed commissioning of equipment installed under Phase III.

Originally designed to earn LEED® Silver certification, Clark worked with the owner and design team to achieve Gold certification.

EDG2, Bethesda, Md., led the design team and served as MEP engineer. Additional project partners include Gensler, Washington, D.C., project architect; Cagley & Associates, Rockville, Md., structural engineer; and Ross, France & Ratliff, Ltd., Manassas, civil engineer.

Shuttle Flyby Witnessed at Clark Jobsites

Your eyes don't deceive you, that is a Space Shuttle flying past a Clark tower crane. Before touching down at Dulles International Airport and retiring to the Smithsonian's Steven F. Udvar-Hazy Center, Space Shuttle Discovery, riding piggyback on a NASA 747, circled the Washington, D.C., area, passing by several Clark project sites, including this one in Northern Vriginia.

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