

ALVARO CABAL LACHMAN (AL), BArch, AAIA

Address: 1352 Creekside Drive, Apt. 304, Walnut Creek, CA 94565

Email: aacaball@gmail.com Cellular Phone: 949-310-7726

Education

Bachelor of Architecture, Louisiana State University, 1999

Distinguishing Qualifications

- 20 years of experience in sales, design, construction and development in the Americas
- Expertise in Building Information Modeling (BIM)
- Expertise in Solar Energy Sales, Consulting, Design and Development
- Actively involved with Product Development, Energy Research, Technology and Sustainability
- Notably determined, innovative, flexible, adaptive, effective and creative approach to Sales, Projects and Businesses

Relevant Experience

Al has experience with Architecture, Design, Business Consulting, Product Development, Technology, Sales, Renewable Energy and Real Estate Development since 1993. Worked for major influential companies such as CABLE & WIRELESS, CH2MHill, and BENTLEY SYSTEMS. In 2002 became involved in Nanotechnology with emphasis on Energy Production and Material Science. Since 2010 has been developing several products and services to address specific market niches in Construction and Sustainability. In 2013, founded SIAZ to develop a Business Ecosystem engineered to promote and facilitate business world-wide, with emphasis on Self-sufficiency, Automation and Sustainability. In 2014, founded Transenergy, which provides Renewable Energy Solutions, with direct involvement in over 56MW DC of Solar PV projects, including Studies, Engineering, Procurement, Construction and Interconnection. In 2015, as part of SDL Solar Panama, partnered with PCEG to obtain 45MW of solar generator licenses. Out of the 56MW of partaken projects, 24.3MW are now in operation and 12MW in construction.

In 2016 with the objective of expanding his services, Al provided Solar Consulting with Sungevity, specializing in Residential Solar System Inside Sales, which included Cash and Financed purchases, Leases and Power Purchase Agreements (PPA), accomplishing over 70 systems sold, most of them in the states of California, New Jersey and Massachusetts, with over 300kW installed. In June 2017, joined Sunrun as a Retail Solar Advisor (RSA), with the objective of becoming a Field Sales Consultant (FSC). As RSA obtained high volume of leads and in November 2017, became an FSC, rapidly obtaining many orders. Since then, Al has sold over 300 systems, with over 1.2MW installed, mostly in the San Francisco Bay Area in California.

In parallel, the Renewable Energy Solutions offered in Panama and the US has evolved. What was SIAZ became SIAZ Energia Renovable in Panama, which specializes not only in standard Solar Grid-Tied systems but also Autonomous and Semi-Autonomous Solar Systems, Hybrid Wind-Solar Energy Systems and Building Integrated Systems for which Al currently offers expert Advice, Consulting, Design and Management Services. In the US he put together a team of electricians and installers to provide a Do it Yourself with Help solar

installation service (DIYWH). AI still advises Solar Developers and is currently developing with a team, Automation, Tracking, Integration and Structural systems for Photovoltaic products that will be offered World-Wide, while expanding his Residential Solar Business with Sunrun in California and Illinois.

In 2019 had the deep realization of the positive impact of making almost 40MW of solar systems operational, and the utter importance of making this positive impact global and huge. Since then, pivoting from the Business Ecosystem he founded in 2014, has been developing a Platform to provide Sustainability solutions to the masses. In 2020, founded Ecoterium for this purpose. With the mission of elevating humanity with incentivizing sustainable and self-improvement practices, Ecoterium is in a pre-launch stage. The goal is to have it ready by the end of 2021.

Professional Experience Summary

2017 - Present	Field Sales Consultant	Sunrun, Inc. San Francisco, California
2012 - Present	Renewable Energy Business Consultant	Panama and U.S.A.
2017 - 2017	Retail Solar Advisor	Sunrun, Inc. San Francisco, California
2016 - 2017	Solar Sales Consultant	Sungevity, Inc. Oakland, California
2015 - 2016	Project and Business Development Director	Panama Clean Energy Group (PCEG) U.S.A. and Panama
2014 - 2016	Business Development Director	SDL Solar Panama Panama, Panama
2013 - 2016	Managing Director Designer	Transfenergy Panama Inc, Panama, Panama
2009 - 2012	Real Estate and Investment Business Consultant	Newport Beach, California
1999 - Present	Project Development & Investment Consultant	U.S.A. and Panama
2008 - 2009	Independent Contractor & BIM Consultant	Bentley Systems, North America
2008	Consultant &	Optimum Synergy Enterprises, Los

	Loan Officer	Angeles, California
2006 – 2008	BIM Manager & Architectural Designer	Tetra Design, Los Angeles, California
2003 – 2006	Architectural Designer	CH2M Hill, West Palm Beach, Florida
2002 – 2003	Architectural Designer	Sylla Inc., Tampa, Florida
1999-2001	Architectural Designer	Cable & Wireless, Panama, Panama

Professional Experience Narrative

Sunrun, Inc; San Francisco, California; November 2017-Present

FIELD SALES CONSULTANT

- With consistent results, extensive experience and thorough consultation, Al has become one of the top 20% Field Sales Consultants for Sunrun nationwide and has received many positive reviews online by his Customers.
- Top East Bay consultant in October 2018 and December 2018 with 11 Customer Approved Plans, in February 2019 with 9.
- Highest Closing Ratio of the East Bay in August 2020 with 28%.
- Top East Bay consultant in June 2018 with 11 sales
- Top new East Bay consultant in March 2018 with 10 sales
- With almost 4 years working with Sunrun, has had over 1MW, or over 200 of residential solar systems installed.

Renewable Energy and Sustainability; U.S and Latin America; Jan. 2012-Present

BUSINESS CONSULTANT

- Currently taking the Sustainability focused Business Ecosystem Online Platform to the next level, with App development and as part of that working with Teams developing advanced technology products.
- Provides design and management services with a team of collaborators that install Solar Systems in Panama and the U.S.A.
- Developed a Business Plan to distribute renewable energy products and services in Panama and structured utility scale deals to attract more investors into the business ecosystems to develop projects in Panama and Latin America. This led to the partnership with SDL Solar Panama, which attracted \$600,000 in seed capital and with whom partnered with the Panama Clean Energy Group to develop 300MW of Projects. Currently working on the funding of a 12MW utility scale solar project in Panama.
- Prior to renewable energy consulting, had success in finding capital and investors for real estate projects. Then began a renewable energy market study and elaborated a detailed and complete investigation report. In 2013 successfully obtained \$100,000 seed capital for to develop a business ecosystem promoting business related to Sustainability and Renewable Energy.

Sunrun, Inc; San Francisco, California; June 2017-November 2017

RETAIL SOLAR ADVISOR

- Generated the highest number of leads nationwide stores on the months of June and July. All of these leads were generated by pitching Sunrun services at Costco stores.
- Top five Lead generator nationwide in the Month of August
- On the month of August, has converted over 70% of leads into Opportunities.
- On the month of July, from the Leads and Opportunities generated, 32 proposals were presented by the Consultants, out of which 6 orders were obtained.

Sungevity, Inc; Oakland, California; Jun. 2016-March 2017

SOLAR SALES CONSULTANT

- Provided great customer experience on every interaction by phone, with live personalized online presentations and in-person, by fully educating them on making the right choices regarding their solar needs.
- Educated and closed 75 sales of residential solar systems across the U.S. in less than 9 months, doubling required sales quota on 3 of the worked months with overall ranking in the top 30% of a very strong, skilled and well selected sales force of over 80 consultants.
- Developed and maintained good a strong referral network of satisfied customers that referred friends and family to also purchase residential solar systems.
- Updated and managed lead ratings, systems pre-design, pre-construction project management and customer interaction in highly customized Salesforce CRM
- Demonstrated high work ethic, always being in the top 5 most productive sales consultants with persistent, strong-willed strategic and efficient sales prospects pipeline building.

Panama Clean Energy Group (PCEG); Panama, Panama; Jun. 2015- August 2016

PROJECT AND BUSINESS DEVELOPMENT DIRECTOR

- Managed the licensing process of over 300MW of utility scale projects in Panama.
- Obtains land use rights and permits for utility scale solar parks and rooftop projects.
- Negotiates with principals the terms and solutions for power purchase agreement, leasing and EPC deals.
- Manages the engineering, operations and management selection and process with principals for all Projects developed by PCEG.

SDL Solar Panama; U.S and Latin America; Jan 2014-June 2016

BUSINESS DEVELOPMENT DIRECTOR

- Structured many Project deals with large energy off-takers in Panama creating the opportunity of more than 300MW of Power Purchase Agreements for utility scale Solar Photovoltaic solar parks currently in development.
- Elaborated proposals and evaluations for the Engineering, Procurement and Construction of over 30MW in rooftop solar photovoltaic projects currently in negotiation.
- Provided consulting services to promote utility scale solar photovoltaic products and projects to investors, developers, purchasers and installers in Panama and Latin America

Transfenergy Panama, Inc.; Panama, Panama; March 2013-June 2016

MANAGING DIRECTOR / DESIGNER

- Manages all aspects of over 56MW of Solar Photovoltaic projects in Panama, including sales, business consulting for the principals, technical evaluations, project

- design, optimization, financial analysis, engineering, licensing, permitting, procurement, construction management, O&M and development.
- As Designer focuses on the project layouts, production of construction documents, racking product design and development, and Building Integration Photovoltaics (BIPV) with the use of advance Building Information Modeling (BIM) tools.

Real Estate and Investment Business Consultant; U.S and Latin America; May 2009-Present
BUSINESS CONSULTANT

- Prior to real estate and investment consulting, was introduced to the business of finding capital and investors for family projects. In 2007 successfully obtained \$250,000 seed capital for a Warehouse family project in Panama City, Panama
- Following the first family business success, in 2008 began structuring the deal for another family project, a high-end residential development 50 miles west from Panama City, Panama and began relationships with several investors and lenders from the U.S. The project received seed capital and is currently in the process of becoming one of the first certified Continuing Care Retirement Community in Latin America.
- Has strengthened relationships with lenders and investors with interest to fund Projects in Panama and surrounding regions. At the same time strengthened relationships with prominent developers assisting them with the development of more than 45 large scale projects. He has also structured, obtained capital for Developers in Southern California and has coordinated their Projects.
- Structures and build effective Executive Summaries for Real Estate and Energy Projects that attract the required capital from selective group of investors and lenders.

Bentley Systems; Newport Beach, California; March 2009-September 2010
INDEPENDENT CONTRACTOR / BIM CONSULTANT

- With the objective of bringing his Architectural / Engineering / Software expertise to the Real Estate Development world, Mr. Cabal obtained an independent contract with one of the major AEC software / automation companies of the world.
- As a Consultant / Coach / Trainer successfully implemented Building automation processes to several high-end AEC firms and the U.S. Army Core of Engineers with the use of Bentley Building Information Modeling vertical applications in the Architectural, Structural and Mechanical disciplines.

Optimum Synergy Enterprises; Los Angeles, California; February 2008-September 2008
PROJECT CONSULTANT/LOAN OFFICER

- Brought the capital raising experience to a Mortgage company and arrived at the business right before the economic meltdown began.
- Despite the crisis, was able to successfully obtain qualified clients and close stated home purchase mortgage loans in the \$750k to \$1.4MM range.
- During that time, refined the knowledge to obtain financing for Energy and Real Estate Developments needing \$10MM and above to be operational and built relationships with Banks, Owners, Developers and Investors in the U.S.

Tetra Design; Los Angeles, California; May 2006-January 2008
BUILDING INFORMATION MANAGER / ARCHITECTURAL DESIGNER / PROJECT COORDINATOR

- Successfully developed and implemented the BIM system for this Architectural firm in order to deliver government projects.
- Among them, the Pilot Plant for the Metropolitan Water District of Southern California was a BIM award nominee for 2008. Provided full capability BIM (Building Information Modeling) while designing all architectural components to detail and coordinating all disciplines.

CH2MHill; West Palm Beach, Florida; May 2003-May 2006

BIM SPECIALIST / ARCHITECTURAL DESIGNER

- As designer and BIM specialist, successfully implemented the BIM system in the company and delivered several award-winning projects, including cruise terminals, military, water treatment plants and institutional buildings. Project involvement was focused, but not limited to detailed design of complex envelope systems, and BIM use from concept to construction.
- Was also part of executive sales teams which contributed to obtaining contracts for mega-project planning and management.
- From these contributions, CH2MHill successfully obtained the contract to manage the construction of the Panama Canal Expansion with a budget of \$5.8 Billion.
- Also contributed to program teams and executive meetings regarding NASA contracts, Nuclear and Hydro electric Energy Plant projects.

PROJECT DEVELOPMENT CONSULTANT, Panama, Florida and California; January 2004-

Present PROJECT CONSULTANT

- BIM and Project consultant for Real Estate Development Projects in the Americas that have empowered developers to save cost and to utilize the most advanced technology for presentation and productivity purposes.
- Financial analysis for project developments and author of several business plans for Real Estate Developments that have been used to arrange financing, partnerships and acquisitions.

Representative Projects as Consultant and with Saiaz Energia Renovable

Project Consultant and Designer; Bethania #1, 5.4kW Grid-Tied Building Integrated Photovoltaics Solar System; Panama, Panama; March 2017 to September 2018

Provided Solar Expertise, Quality Control and Design for the “key-in-hand” 5.4kW DC building integrated photovoltaic system in a city house rooftop and balcony. Provided the seamless design integration to the existing architecture providing watertight solar roofing, and elevated racking system on two different parts of the house, both with optimal orientation of the solar panels for maximum performance, and as consultant, remotely provided quality control of the electrical installations and the interconnection. Also, as consultant, assisted project manager remotely overseeing all aspects of the construction using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site.

Project Consultant and Designer; Albroom #1, 9.2kW Grid-Tied Building Integrated Photovoltaics Solar System; Panama, Panama; March 2017 to February 2018

Provided Solar Expertise, Quality Control and Design for the “key-in-hand” 9.2kW DC building integrated photovoltaic system in a suburban house terrace and backyard.

Provided the seamless design integration to the existing architecture providing watertight solar roofing to the terrace and solar canopy to access the backyard, with semi-optimal orientation of the solar panels for maximum performance while respecting the existing aesthetics and neighborhood architecture, and as consultant, remotely provided quality control of the electrical installations and the interconnection. Also, as consultant, assisted project manager remotely overseeing all aspects of the construction using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site.

Representative Projects with PCEG

Consultant and Developer; Aguadulce #1, 12MW Solar Generator; El Roble, Panama; March 2016

As Consultant, successfully integrated an engineering company to work with the developers in assuring the government and regulatory requirements to meet tough deadlines; in a very tight schedule, under high pressure and in competition with other developers, obtaining the extension of a Solar Generator License and Final Interconnection Agreement with the utility to assure the value of the project for a beneficial and winning acquisition or partnership. Also, as Consultant, with the developing team, EPC providers and bonding insurance providers, rapidly effectuated thorough financial analysis and due diligence with top legal counsel to provide assurance to the principals on time for acquisition negotiations. As Developer, with effective and thorough communication and relationship building, facilitated negotiation between principals of the contract terms and successfully closed an equity option for a transaction of just \$900,000 for up to 100% ownership of the Project.

Consultant and Developer; Aguadulce #2, #3 and #4, 31MW of Solar Generators; Aguadulce, Panama; March 2015 to July 2016

As Consultant, successfully integrated an engineering company to work with the developers in assuring the government and regulatory requirements obtaining 3 Solar Generator Provisional Licenses for the developers on 3 adjacent properties, ready for the Final Engineering for Definitive License and Interconnection agreements with the Utilities. This process was successfully executed in a challenging dynamic pioneering early stage of the industry where local rules were recently created and frequently changing. Also, as Consultant, with the developing team, EPC providers, bonding insurance providers, regulators and legal counsel effectuated thorough financial analysis and due diligence to assure a mid to long term financial value of the Projects. As Developer, with effective and thorough communication and relationship building, negotiated successful long-term land leases at only \$600 per acre annually with terms starting at Construction, in an area highly disputed by Solar developers because of the high irradiation and multiple interconnectivity options.

Representative Projects with Transenergy Panama, Inc.

Project Manager; Aguadulce #1, 12MW Solar Generator; El Roble, Panama; March 2016

As manager, successfully lead a team to provide Engineering for the Developer to obtain the Final Interconnection Agreement with the local Utility Transmission Company in a very tight deadline schedule under pressure from government officials, grid operators and developers due to limited capacity on the grid location. Also, as manager, lead the team to deliver in a very tight schedule complex packages that included detailed technical documentation assuring accuracy to meet government authority requirements in order to

extend the Definitive License to sell energy on the grid while other developers were competing to obtain the limited number of Generator Licenses available.

Project Manager and Designer; Milla 8 #1, 200kW Solar Installation; Panama, Panama; June 2015 to November 2015

As manager provided Engineering, Permitting, Procurement and Construction for the structural racking of the 200kW DC solar photovoltaic system in a 21,500 SF insulated metal rooftop providing structural engineering calculations and guaranteed seal tight water proofing. Also, as manager oversaw all aspects of the construction on-site. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build. As part of the electrical preliminary design, provided the solar panel layout and string diagram that was used to create the Construction Documents used for permits, to build and to obtain energy credits from the grid.

Project Manager and Designer; Saboga #1, 5kW Connected Solar System; Saboga, Panama; June 2015 to February 2016

As manager provided Engineering, Permitting, Procurement and Construction for the “key-in-hand” 5kW DC solar photovoltaic system in a beach house rooftop located in an island only accessible by boat or airplane. Provided the electrical and structural engineering calculations and design, guaranteed seal tight water proofing, optimal orientation of the solar panels for maximum performance, electrical installations and the interconnection. Also, as manager oversaw all aspects of the construction using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site. As part of the electrical preliminary design, provided the solar panel layout and string diagram that was used to create the Construction Documents used for permits, to build and to obtain energy credits from the grid.

Project Manager and Designer; Punta Paitilla #1, 5kW Connected Solar System; Panama, Panama; May 2015 to February 2016

As manager provided Engineering, Permitting, Procurement and Construction for the “key-in-hand” 5kW DC solar photovoltaic system in a penthouse terrace. Provided the structural and electrical engineering calculations and design, guaranteed seal tight water proofing, optimal orientation of the solar panels for maximum performance, electrical installations and the interconnection. Also, as manager oversaw all aspects of the construction on-site, and remotely using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site. As part of the electrical preliminary design, provided the solar panel layout and string diagram that was used to create the Construction Documents used for permits, to build and to obtain energy credits from the grid. Also developed the design of the 2nd phase of the project which is a 10kW Building Integrated Photovoltaic (BIPV) system combined with a wind turbine resulting in a unique 17kW hybrid building integrated renewable energy project.

Project Consultant and Design Manager; Chiriqui #1, 12MW Solar Generator; San Juan, Panama; March 2015 to November 2015

As consultant provided management and coordination services for the Engineering, Permitting, Procurement, Construction of the first Merchant Solar plant of Panama, a 12MW DC solar generator in a 60-acre property in western Panama. Coordinated between principals of the project such as: contractor and sub-contractors; owner and contractor; contractor and regulator; and owner and regulator. As manager assured the permits packages were complete and obtained permits from all required government authorities, prepared and submitted all required documentation and obtained rights for the owner to sell energy on the grid. Also oversaw procurement aspects of the sub-contractors. Additionally, conducted and coordinated several commissioning tasks required for Commercial Operation Date (COD). As design manager, directed and delivered the design of the 34.5kV, 2-mile-long interconnection line and developed the Construction Documents that were used to obtain the permits and build.

Project Manager and Designer; Carrasquilla #1, 3kW Connected Solar System; Panama, Panama; June 2015 to October 2015

As manager provided Engineering, Permitting, Procurement and Construction for the “key-in-hand” 3kW DC solar photovoltaic system in an office rooftop. Provided the structural and electrical engineering calculations and design, guaranteed seal tight water proofing, optimal orientation of the solar panels for maximum performance in a location surrounded by tall buildings, electrical installations and the interconnection. Also, as manager oversaw all aspects of the construction on-site, and remotely using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site. As part of the electrical preliminary design, provided the solar panel layout and string diagram that was used to create the Construction Documents used for permits, to build and to obtain energy credits from the grid.

Project Manager and Designer; Ave. Nacional #1, 31kW Connected Solar System; Panama, Panama; January 2015 to February 2016

As manager provided Engineering, Permitting, Procurement and Construction for the “key-in-hand” 31kW DC solar photovoltaic system in a store rooftop. Provided the structural and electrical engineering calculations and design in a challenging building from the 30’s, guaranteed seal tight water proofing, optimal orientation of the solar panels for maximum performance, electrical installations and the interconnection. Also, as manager oversaw all aspects of the construction on-site, and remotely using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site. As part of the electrical preliminary design, provided the solar panel layout and string diagram that was used to create the Construction Documents used for permits, to build and to obtain energy credits from the grid.

Project Manager and Designer; Costa del Este #2, 10kW Connected Solar System; Panama, Panama; December 2014 to December 2015

As manager provided Engineering, Permitting, Procurement and Construction for the “key-in-hand” 10kW DC solar photovoltaic system in a residence. Provided the structural and electrical engineering calculations and design in a challenging clay tile rooftop, guaranteed

seal tight water proofing, semi-optimal orientation of the solar panels for maximum performance with minimum façade impact, electrical installations and the interconnection. Also, as manager oversaw all aspects of the construction on-site, and remotely using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site. As part of the electrical preliminary design, provided the solar panel layout and string diagram that was used to create the Construction Documents used for permits, to build and to obtain energy credits from the grid.

Project Manager and Designer; Costa del Este #1, 5kW Connected Building Integrated Photovoltaics; Panama, Panama; December 2014 to January 2016

As manager provided Engineering, Permitting, Procurement and Construction for the “key-in-hand” 5kW DC building integrated photovoltaic system in a residence. Provided the structural and electrical engineering calculations and design to integrate the solar system to the residence, with optimal orientation of the solar panels for maximum performance, electrical installations and the interconnection. Also, as manager oversaw all aspects of the construction on-site, and remotely using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site. As part of the electrical preliminary design, provided the solar panel layout and string diagram that was used to create the Construction Documents used for permits, to build and to obtain energy credits from the grid.

Project Manager; Aguadulce #2, #3 and #4, 31 MW of Solar Generators; Aguadulce, Panama; March 2015 – November 2015

As manager, successfully lead a team to provide Preliminary studies and Engineering for the Developer to obtain Interconnection Pre-Approvals from the local Utility Distribution and Grid operators company and the Generator Provisional Licenses from the government regulator in a dynamic and pioneering environment where rules were recently created and frequently changing. Also, as manager, lead communications and information exchange with photovoltaic equipment fabricators and EPC providers to determine most viable, productive and efficient system designs according to location.

Project Manager and Designer; Rincon de Chame #1, 1kW Autonomous Solar System; Bejuco, Panama; November 2014 to December 2014

As manager provided Engineering, Permitting, Procurement and Construction for the “key-in-hand” 1kW DC solar photovoltaic system in a cattle farm. Provided the structural and electrical engineering calculations and design as a sample, flush orientation of the solar panel, electrical installations and connection with battery bank. Also, as manager oversaw all aspects of the construction on-site, and remotely using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site.

Project Manager and Designer; Obarrio #1, 500W Connected Solar System; Panama, Panama; August 2014 to December 2014

As manager provided Engineering, Permitting, Procurement and Construction for the “key-in-hand” 500W DC solar photovoltaic system in a parking lot. Provided the structural and

electrical engineering calculations and design as a sample, guaranteed seal tight water proofing, flush orientation of the solar panel, electrical installations and the interconnection. Also, as manager oversaw all aspects of the construction on-site, and remotely using advanced visualization and communication tools. As designer elaborated the BIM (Building Information Modeling) of the structures and 3d panel layout that was used to build on-site.

Representative Projects with Bentley Systems

BIM Consultant; Fort Bliss Tactical Equipment Maintenance Facilities; U.S. Army Core of Engineers; Fort Bliss, Texas; May 2009 to July 2009

Provided Consulting to the design/build team of Sundt and RNL for new Tactical Equipment Maintenance Facilities (TEMFs). The first facilities designed by the team include a total of twelve TEMFs. These facilities include approximately 160,000 sf of space for vehicle maintenance shops, over 4 million sf of hardstand areas, and 48 stand-alone support buildings. The architecture and materials goals developed by the team reflect the contemporary, progressive and flexible nature of today's Army. The TEMFs are designed to a LEED Silver level and may achieve LEED Gold once completed.

Representative Projects with Tetra Design

BIM Manager & Architectural Designer; Weymouth Pilot Plant; Metropolitan Water District; La Verne, California; June 2006 to June 2007

Potential BE award nominee for 2008. The Pilot Plant is a testing facility used to evaluate and optimize water treatment performance. The building will also be used as an exhibit to the public. This facility will be an integral component of the Weymouth Water Treatment Plant. This plant is rated at 520 million gallons per day, providing critical treatment capacity for Metropolitan Los Angeles. Provided full capability BIM for the project.

Architectural Designer; Middle School # 2; Los Angeles Unified School District; Bell, California; June 2006 to August 2007

Project involved the design of two new campus buildings, totaling 133,000-square-feet on three stories. This bold design project will accommodate 1,404 students on a 4.5-acre site. Project involvement included Construction Document production and Building Envelope Design with the use of accurate 3d modeling and visualization.

Representative Projects with CH2M HILL

Maritime Facility Projects

Architectural Designer; Bayport Cruise Terminal Complex; Port of Houston Authority; Bayport, Texas; January 2005 to June 2005

Award winning project involves a Master Plan for the three-berth, full build-out cruise terminal complex. Architectural Design Team Member for Phase 1, which involved a 94,000-square-foot terminal building. Also produced photo - realistic 3d model for design development and architectural construction documents.

Architectural Designer; Warehouse 11; Manatee County Port Authority; Palmetto, Florida; April 2005 to December 2005

Project involved the design of a 175,000-square-foot dry goods warehouse building at the Port of Manatee. Part of the team that produced the architectural construction documents.

Architectural Designer; Port Arthur Command Center; Port of Port Arthur; Port Arthur, Texas; September 2004 to October 2004

Project involved implementing facility security plan and security integration. Architectural Design Team Member for a 2,500-square-foot Command Center for the Port of Port Arthur. Served as Production Leader for architectural drawings. Project was produced under budget and with high-quality construction documents on an aggressive 3-week design-build timeframe.

Architectural Designer; Erato Street Cruise Terminal and Parking Garage; Port of New Orleans; New Orleans, Louisiana; May 2003 to June 2004

Project involved a new \$29-million, 90,000-square-foot cruise terminal and integrated parking garage to capture the parking revenue of the drive-to cruise passengers, and to accommodate the 3,800 passengers and 1,100 vehicles. Provided planning, design, and construction management services. Served as Production Leader for construction documents and assisted with the architectural design.

Architectural Designer; Bolivar-Galveston Ferry Terminal; Texas Department of Transportation, Houston District; Galveston, Texas; August 2003 to December 2003

Project involved planning, design, and permitting of two new ferry landings on the Galveston- Bolivar Ferry route in Galveston. Served as Design Team Member for a generator and restroom building, and renovation of existing structures. Also produced construction documents.

Architectural Designer; Cape Liberty Cruise Terminal; Bayonne, New Jersey; March 2004

This \$3-million design-build project involved converting an existing warehouse to a cruise terminal. Part of the team that produced the construction documents.

Institutional Facilities Projects:

Architectural Designer; Fire-Rescue Station #7; City of West Palm Beach; West Palm Beach, Florida; October 2005 to December 2005

Project involved a fire-rescue station. Part of the designing team and produced the construction documents.

Lead Architectural Designer; Fire-Rescue Station #4; City of Boynton Beach; Boynton Beach, Florida; October 2003 to March 2004

Project involves a \$2.3-million, 8,000-square-foot fire-rescue station. As Lead Architectural Designer, produced construction documents from a 3-D CAD model.

Architectural Designer; Fire-Rescue Station #2; City of Boynton Beach; Boynton Beach, Florida; June 2004 to October 2004

Project involved a \$3.5-million, 20,000-square-foot fire-rescue station. Part of the team that produced the construction documents.

Military Facility Projects

Architectural Designer; Keesler Air Force Base; U.S. Air Force; Biloxi, Mississippi; January 2006

Architectural Design for this \$4.8-million design-build project, which involved repairing damage at the Base as a result of Hurricane Katrina. Successfully produced documents for this fast-track design-build schedule.

Architectural Designer; Willow Grove Air Reserve Station; Pennsylvania Air National Guard; Willow Grove, Pennsylvania; March 2004 to February 2005

This \$8.8-million renovation project involved several facilities totaling 118,500 square feet. The facilities included: Command, material support, vehicle maintenance, repair communication/ electronics, repair fuel cell and corrosion control, and training buildings. Lead the construction document production team.

Water Treatment Facility Projects

Architectural Designer; Water Treatment Plant (WTP); City of Albuquerque; Albuquerque, New Mexico; November 2003 to January 2004

Project involved planning a new 92-million gallons per day (mgd) surface WTP. This WTP will be the first for the City and only one of five in the entire state of New Mexico. Project includes rapid mix facility, settled water pump station, floc/sedimentation facility, ozone building, ozone contactors, filtration facility, chemical facility, gravity thickeners, backwash waste utilization facility, and finished water pump station.

Part of a four-person Architectural Design and Production Team that designed and developed 3d CAD models of the entire plant from which construction documents were generated.

Lead Architectural Designer; Pump Station; Florida Keys Aqueduct Authority; Florida City, Florida; September 2003 to October 2003

This \$2-million upgrade to high-service pump station project involved increased transfer pumping capacity, increased high-service pumping capacity, and electrical and control system upgrades. Part of the Design Team for the pump station facility that produced construction documents and specifications.

Architectural Designer; Reeves Pump Station; Clayton County Water Authority; Clayton County, Georgia. Project involved a wastewater facility for the Clayton County Water Authority. Assisted in the design and produced constructions documents from a 3-D model.

Other Facilities

Architectural Designer; Intracoastal Park Pavilion; City of Boynton Beach; Boynton Beach, Florida. October 2005 to December 2005. This \$2.1-million project includes a 12,800-square-foot waterfront community center for the City of Boynton Beach. Served as an essential team member for the design and production of constructions documents.

Lead Architectural Designer; Constitution Park Concession Building; Village of Tequesta; Tequesta, Florida; December 2004 to January 2005

Project involves an 866-square-foot concession, restroom, and assembly building for Constitution Park. Led the design and coordinated all disciplines, which resulted in very fast production time and appraised building product. Also lead the Architectural Construction Administration during construction.

Experience Prior to CH2M HILL

International Projects

Architectural Designer; U.S. Diplomatic Compound; U.S. Department of State; Dili, West Timor; March 2003 to May 2004

Architectural Designer for a \$6-million, 5,500-square-foot U.S. Embassy building compound in Southeast Asia for the U.S. Department of State, utilizing a design-build delivery. The compound includes office and security buildings. The design was subject to a high degree of security requirements. Served as Design Development Team Member and CAD Manager.

Architectural Designer; U.S. Diplomatic Compound; U.S. Department of State; Conakry, Guinea; June 2002 to August 2002

Architectural Designer for a \$50-million, 62,120-square-foot U.S. Embassy building compound in West Africa for the U.S. Department of State, which utilized a design-build delivery. The design was subject to Federal Acquisition Regulations and involved a high degree of security requirements. Provided site plan design and BIM with Triforma.

Experience in Panama prior to CH2M Hill

Industrial Projects

Architectural Consultant; World Commerce Zone; Proexport S.A.; Tocumen, Panama;
Developed conceptual design and presentation for a 135-acre industrial park.

Lead Architectural Designer; Warehouse; Hortalizas de Panama S.A.; Panama City, Panama; Designed a warehouse for frozen farm products.

Architectural Consultant; Greenhouses; Productos Hidroponicos S.A.; Boquete, Panama;
Designed and developed prototype greenhouses.

Architectural Designer; Chilibre Water Treatment Plant; COPESA; Chilibre, Panama;
Developed prospectus and presentation.

Architectural Designer; Various Buildings; Cable & Wireless Panama; Panama City, Panama

For a telecommunications company, renovated, designed, developed working documents for several buildings, including high-tech offices, telecommunications spaces, clinic, telephone central, and several smaller projects. Promoted and organized the modernization of the firm's civil works division. Also participated on the site selection and analysis for the new corporate headquarters.

Multi-Family Residential

Assistant Manager; Villa Lucre; CUSA; Panama City, Panama; for a construction company, created and administered a cost analysis system for the construction of 300 units for this residential project, Villa Lucre. Also provided inspection services for this project, as well as a commercial center.

Project Inspector; High-Rise Residential Projects; CDI; Panama City, Panama; for a consulting, design, and inspection firm, inspected several high-rise residential projects, including Coco Bay and Panamar. Also assisted with the construction management and inspection of a 40-story condominium.

Project Inspector/Architectural Designer; Various Residential Projects; Ventura & Associates; Panama City, Panama; For an architecture firm, assisted with the construction management and inspection of a medium-sized, 30-unit apartment building. Also developed several design concepts for various multi- and single-family projects.

Commercial Projects

Lead Architectural Designer, commercial projects:

- Renovation, Optica Lopez Bella Vista
- Conceptual Prospectus, Oriani (Jewelry Store)
- Conceptual Prospectus, The Bay Colon 2000 Club

Single-Family Residential Projects

Lead Architectural Designer/Builder; Sun Residence; Panama City, Panama

Lead Architectural Designer and Builder for the Sun residence, which involved providing renovation, design, and construction services.

Lead Architectural Designer; Various Residence Projects; Various Clients; Panama.

Lead Architectural Designer for the Lizarzaburu residence, Lachman -Filos vacation residence, and Ortiz vacation residence.

Other Experience

Architectural Designer; Elementary School "B;" School Board of Hillsborough County; Tampa, Florida; May 2003 to December 2002: Project involved a \$5-million, 55,000-square-foot elementary school. Responsible for 3-D model CAD with Triforma, which was used for production of construction documents and colored renderings. Development of a Schematic Design Brochure and Design Development brochure.

Architectural Designer; Workforce Board; Hillsborough County; Hillsborough County, Florida; March 2002 to May 2002: Responsible for space planning and construction documents to renovate this 83,685-square-foot building. Also responsible for design development and colored renderings.

Architectural Designer; I-10 Rest Area; Florida Department of Transportation District 2; Duval County, Florida; April 2002: Project involved a building for the rest area on I-10 in Duval County, Florida. Responsible for development of architectural and structural construction documents.

Engineering Technician; SR 678 (Bearss Avenue) from Florida Avenue to Nebraska Avenue; FDOT; Tampa, Florida; February 2002 to March 2002: Responsible for construction document production for this FDOT project.

Architectural Designer, HARTline Southern Transportation Station and Plaza; Hillsborough Area Regional Transit Authority (HART); Tampa, Florida; March 2002 to August 2002: Part of the design team for a new trolley station, platform, and transit plaza. Developed a detailed 3-D CAD model using Microstation Triforma, which was used for realistic presentation renderings and construction documents.

Research Projects

Building Science

Efficient Building Envelopes: Secure Glass and Aluminum Envelope Systems, Acrylic envelopes for buildings, Photo-voltaic systems, Membrane envelopes.

Vertical Farms: Self-sustainable housing, farming buildings, nanotechnology applications to buildings.

Modular Structures: For Electric Machinery Enterprises (E.M.E.) an electric and construction company from Tampa, Florida, conducted research on modular structures, as well as developed and organized a plan for the use of modular design on low-cost housing.

Energy:

Solar Tracking: Developing a Tilted Single Axis Tracking prototype

Production and Storage: Participated on various Foresight Institute Conferences to discuss and propose nanotechnology applications to energy production and storage.

Software Development:

Building Information Modeling with Bentley.

Product Development Projects

Efficient Solar System Structures:

Developed efficient light and economic racking systems made of Aluminum integrated with grounding systems.

Network:

Business Ecosystem to promote businesses related to Renewable Energy and Sustainability

Professional Organizations/Affiliations

Associate Member of American Institute of Architects (AIA)

Member of the Standard Registry of Diamondoid Nanomechanical Parts and Processes
©2007 Nanofactory Collaboration.

Specialized Software Skills

Expert: MicroStation XM & V8i, Triforma XM & V8i, Bentley Architecture XM & V8i, Bentley Structural XM & V8i, Bentley Mechanical Systems XM & V8i

High: Parametric Cell Studio, Project Wise Navigator, Excel, Photoshop, NDM.

Normal: PVSYST, Html, Bentley Electrical Systems, AutoCAD, SketchUp, Rhino, Visual Basic, Adobe Acrobat, Power Point

Low: Generative Components, AutoCAD, PowerPoint, Corel Draw

Other Skills

Low: Web and App Development, E-Commerce

Languages

Fluent Spanish and English