



CX TECHS INC - A COMPANY OVERVIEW AND QUALIFICATIONS

Cx Techs Inc through its principals has been involved in commissioning of buildings for over 20 years. We have provided commissioning of new and existing buildings of all types. Commissioning is now considered essential in helping to control initial project costs and ongoing operational costs and Cx Techs Inc has vast experience in providing independent third party commissioning services.

Our commissioning standard is based on AHRAE guideline 0-2005, PECEI commissioning guide, AABC commissioning procedures, Building Commissioning Association, and adherence to National Fire Protection Association (NFPA) standards. Currently its principals are members of NFPA and BCA and have been certified by ACG as CxA personnel.

Cx Techs Inc. provides its' clients with a total of over 30 years of experience in independent third party commissioning. We have provided services as commissioning agents (CxA) and also as owner's technical representatives for a variety of building types and systems.

Our building technical quality experience covers over 3 decades from Canada's CN Tower, Philadelphia's Liberty Place, Reno's Silver Legacy Casino/Hotel up to more recent casino/hotels (Luxor, New York New York, MGM chiller plant) in Las Vegas. In the last 10 years we have also provided commissioning and testing for biotechnical research facilities in both Sacramento and Thousand Oaks California.

Our experience with different types of systems functional testing for major facilities is also extensive and includes HVAC, Fire Alarm & Life Safety, and Electrical systems, including CCTV and security systems. Our personnel recently completed a 2 year project testing the centralized fire alarm systems interface to life safety equipment in 22 buildings for Amgen at their thousand Oaks campus. This included sophisticated control systems for life safety in Laboratories for both ventilation systems and verification of employee egress during an emergency condition.

Cx Techs Inc. has also provided project management and MEP support for controls systems contractors and third party functional testing for both Mechanical and Electrical Contractors. As project managers we have developed CPM scheduling that integrated commissioning and HVAC installation into the GC's overall project schedule. These technical services can include oversight, or "feet on the ground" installation and testing personnel.

Cx Techs is committed to the effective, efficient and economic commissioning process.

Think Green

Be Green



PRINCIPAL COMPANY PERSONNEL

Anthony Harrison, President

Education: Derby University, United Kingdom,
HNC in Electrical Engineering w/ Post Graduate work in Electronics
Seneca College, Toronto, Canada, ASHRAE courses in HVAC Design

Summary of Qualifications:

- PLANNING AND MANAGING large building construction & maintenance operations since 1973
- NATIONAL OPERATIONS MANAGER for 20 years at Honeywell. Responsible for all:
 - controls installation and programming
 - startup and commissioning within Canada
- PROJECT MANAGER since 1984
 - Effective management of all phases of the commissioning process on multiple projects of varying construction and budget sizes
 - Ensures compliance with government regulations and customer specifications
 - Oversees commissioning time, costs, & develops CPM schedules
 - Operations manager Honeywell Controls systems
 - Builds strong Commissioning teams with owners, GC's, subcontractors, & O&M staff
- PRINCIPAL Owners Advisory Group responsible for automation control systems design overview and procurement for major new Hotels in Las Vegas. 1989 - 1993
 - Luxor
 - Circus Circus
 - New York New York
- GENERAL MANAGER Panasonic Systems Company 1993 - 1999
 - Application, design, and installation of all systems for Panasonic equipment.
 - NYNY CCTV installation of 1300 camera security/surveillance digital switch.
- COMMISSIONING AUTHORITY on New & Existing Buildings in the U.S. since 2000
 - Provides oversight & performs as Lead Commissioning Agent, on 75 California Projects
 - Specialize in Hospitality Hotels (4) major Hotels, Medical Industry (10), Academic (30), & Government (15) projects including BART light rail system expansion at San Francisco Airport.
 - Expertise in electrical and mechanical systems trouble-shooting
 - Proficient in Control System troubleshooting
 - Skilled at developing commissioning specifications, plans, and CPM schedules
 - Knowledgeable and experienced in creating pre-functional checklists & functional tests
 - Committed to thorough verification, testing & documentation
 - Coordinates effectively with Owner, Architect, and other consultants, as well as the Owner's Representative, Construction Manager, General Contractor, and subcontractors.
 - Conducts field work for Retro Commissioning, "as-built" documentation, problem solving, controls engineering, and remodel projects.
 - Adept at writing clear, concise, and thorough final commissioning reports
 - Effective communicator & team leader/member
- PRINCIPAL & OPERATIONS MANAGER for TMCx Solutions.
 - Manages manpower
 - Oversees all commissioning projects for TMCX and staff time
 - Reviews all commissioning project scope of work, budgets, & OPR's



- Mentors employees on TMCx commissioning process
- Evaluates progress and success of projects & employees

Technical Expertise:

- Building Automation System Controls
- Lighting Controls
- CCTV systems
- Fire Alarm and life safety systems
- MEP Systems Design and commissioning.
- Security Systems

Experience Highlights:

- CN Tower, Toronto, Canada 1985
- Luxor Hotel & Casino, Las Vegas, NV 1991
- Grand Slam Theme Park, Circus Circus, Las Vegas, 1993
- Universal Studios, Islands of Adventure, Orlando, FL 1994
- Silver Legacy Hotel Casino, Reno, NV 1996
- BART Light Rail System project SF 1997
- NYNY Hotel Las Vegas 1997
- LAPD police stations and jails 2005-2008
- UCLA - the CNSI Bldg and Life Science Building 2007
- LAUSD High Schools - 2008
- Grossmont College San Diego 2009
- Cal Tech Annenberg and Schlinger Laboratories – 2008
- Cedars Sinai Hospital in Los Angeles 2008
- Vandenberg AFB retro commissioning infrastructure. - 2010 2011
- Amgen Pharmaceuticals Inc.'s Buildings 14, 25, 29, 30 and 38, Thousand Oaks, CA buildings include laboratories, clean rooms, cold rooms, vivariums. - 2002 ongoing.
- LA County Energy Management Retro commissioning project - 2011

Professional Affiliations:

- American Society of Heating, Refrigerating, Air Conditioning Engineers (ASHRAE)
- United States Green Building Council (USGBC)
- Building Commissioning Association (BCA)
- Associated Air Balance Council (AABC) Associated Commissioning Group (ACG)

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December 2014

QUALIFICATIONS

Commissioning:

- Eight years commissioning experience
- Commissioning Authority (CxA) certified by the AABC Commissioning Group
- Experienced in all aspects of commissioning, including design review, OPR & BOD review, submittal review, CX plan preparation and presentation, writing and reviewing pre-functional test procedures, writing functional test procedures and field functional testing with contractors, preparing and presenting final commissioning reports, and 10-month warranty review.
- Field Commissioning HVAC equipment from single-zone ventilation to large central plant and multi-story AHU systems.
- Filed commissioning fire life safety systems
- Field commissioning lighting control systems
- Field commissioning card access security systems
- Field commissioning electrical panel-boards and switchgear
- Retro-commissioning in existing buildings

Building automation technician:

- Over twenty-five years experience with Honeywell, TAC, Barber-Colman, JCI systems
- Field engineer and systems technician with several companies, in Hawaii and California
- I am experienced in installation, service, design, and programming of building automation, including energy management, building controls, fire life safety, lighting controls, and security systems.

Strengths:

- Diagnosing problems and finding solutions
- Customer service
- Communication
- Persistence, dedication and high quality work

WORK HISTORY

Commissioning:

TMCx SOLUTIONS, LLC, Las Vegas Nevada

Dec 2006 to July 2014

- I worked out of the Los Angeles office doing Cx work in Los Angeles, San Bernardino, Orange, Riverside and San Diego Counties
- I also worked on assignment in Las Vegas NV for several months and in Tucson AZ

- In CA, I managed most of my projects from start to finish I worked projects from \$30,000.00 to \$250,000.00. About 95% of projects came in on time and under budget.

Building Automation & Fire Life Safety Technician

- YAMAS CONTROLS SOUTHERN CALIFORNIA, Anaheim California Nov 2003 to Nov 2006
Yamas bought the Invensys southern California branch in 2003; so this is a continuation of my work at Invensys.
Systems Field Engineer
- INVENSYS BUILDING SYSTEMS, Anaheim California Sept 1999 to Nov 2003
Invensys was previously Siebe Environmental Controls, Robertshaw, and Barber-Colman
Field Supervisor
Senior Controls Specialist
- NALAR INDUSTRIES INC, Santa Ana California 1991 to Nov 1999
Field Engineer
- HONEYWELL INC, Honolulu Hawaii and Los Angeles California 1983 to 1991
Lead Systems Specialist
System Specialist
Sales Engineer
Service Supervisor

During the years 1983 to 2006 I worked various positions at several companies in the building automation industry, in both construction and service departments. I am experienced in installation, service, design, programming and sales of automation equipment, including EMS, building controls, fire life safety, and security. I worked with many different customers including school districts, universities, office buildings, hospitals, retail stores, and military bases. I worked primarily on project jobsites checking out hardware and software, writing control programs, making necessary corrections and improvements. I coordinated work with my customers and subcontractors, provided training, wrote and performed test procedures, assisted sales and generally did whatever was necessary to complete a project. Most of these years were in construction departments, however I also did a considerable amount of service work.

EDUCATION AND CERTIFICATION

Honorable Discharge, United states Air Force

Associate of Arts, Leeward Community College, Pearl City HI

Electronics Technology, Cleveland Institute of Technology, Cleveland OH

HVAC Systems Certificate Program, CSU Long Beach, Long Beach CA

ASHRAE Selection of AC Equipment & Accessories Seminar, Honolulu HI

Trane Air Conditioning Clinic, Honolulu HI

Carrier Air Conditioning Training, Honolulu HI

Engineering of Fire Detection & Alarm Systems Workshop, Society of Fire Protection Engineers, Honolulu HI

Completed various other seminars, training classes and workshops over the years. Subjects include computers, HVAC, EMS, Fire Alarm, Commissioning, management and sales techniques.

Certified Commissioning Authority by the AABC Commissioning Group

PROJECT SAMPLES

Building Automation Technician:

Grosvenor Center, Twin office towers Honolulu HI. Fire Alarm, Building Automation and Security

Queens Medical Center, Largest civilian hospital in Honolulu HI. Fire Alarm

Tripler Army Medical Center, Army medical center in the Pacific, Honolulu HI. Building Automation

Maui Community College, Wailuku HI. Building Automation

Peter Pitchess Detention Center, Los Angeles County CA. Central Plant Automation

Ronald Reagan State Building, Los Angeles CA. Building Automation

University of Southern California Bovard Hall, Los Angeles CA. Building Automation

Hoag Hospital, Orange County CA. Building Automation

Edwards Air Force Base, Los Angeles County CA. Building Automation

Deluxe Check Printers, Lancaster CA. Building Automation

San Diego State University, Los Angeles County CA. Building Automation

CSU San Bernardino, San Bernardino CA. Building Automation

Tustin Unified School District, Tustin CA. Building Automation

Newhall School District, Santa Clarita CA. Building Automation

Commissioning Authority:

Los Angeles Unified School District, Los Angeles CA. Building Automation

Adelanto Detention Center, Adelanto CA. Fire Life Safety

Poway Unified School District, Poway CA. Building Automation

Scripps Mercy Hospital, San Diego CA. Central Plant Automation

Cedars-Sinai Hospital, Los Angeles CA. Building Automation

Amgen, Thousand Oaks CA. Fire Life Safety

Regional Justice Center, Las Vegas NV. Building Automation retrocommissioning

San Marco High School, San Marcos CA. Building Automation

San Bernardino County Youth Center, San Bernardino CA. Building Automation

UC Irvine, Irvine CA. Building Automation

The Cromwell, Las Vegas NV. Building Automation

VA Medical Center, North Las Vegas NV. Building Automation

James Hinde

Facility and Maintenance Supervisor

February 2013-present

Implant Direct, Thousand Oaks, Ca- In charge of the maintenance in 3 facilities in Las Vegas, Valencia and ~~Thousand Oaks~~. Duties include the management of the maintenance and preventive maintenance encompassing the HVAC systems, machine tools, compressors, all manufacturing equipment, facility and grounds. Management of all waste products hazardous and non hazardous. Purchasing and sourcing of parts and equipment. Work closely with the EH&S department to ensure a safe and comfortable work environment. Interface with government and local authorities to get permits and inspections and ensure compliance. Part of a 4 person team to manage the companies move from Calabasas to Thousand Oaks, worked closely with the contractors and architect on the tenant improvements, this included the HVAC system, lighting controls, electrical layout and the design and construction of the cleanroom.

Project Manager/Commissioning Technician

December 2009 to January 2013

Testmarc Inc, Santa Fe Springs, Ca - Duties include the writing, performing and documenting functional tests for various building components including but not limited to HVAC units, refrigeration equipment, generators, UPSs, gas monitoring equipment, laboratory equipment, lighting and building automation systems. Trouble shooting the above equipment with the factory/mechanical contractors. Verifying repairs and functionality of mechanical equipment after correction. This requires an in depth knowledge of how these items work and what is expected from them by the owner, together with a good understanding of test and measurement equipment and procedures. Creation of State and city documentation including Basis Of Designs (BODs) from Owners Project Requirements (OPRs) to meet CALGreen and local codes. Projects commissioned include schools, colleges, universities, hospitals, pharmaceutical companies, and various manufacturing companies. Projects include Cedars Sinai AHSP a \$400,000,000 380,000SF project, 5 LAUSD school projects, 2 Caltech laboratories, JPL data center along with 2 power distribution upgrade projects, various laboratory upgrades with FLS testing at Amgen in Thousand Oaks , Malibu City Hall and Library, 3 aerospace manufacturing facility additions and 1 UCLA mental health facility.

Facilities Manager

December 2001 to December 2009 (less 1 year)

Johanson Technology, Camarillo, Ca - Duties included but not limited to maintaining the integrity of the building including lighting, plumbing, HVAC, electrical, gas, water supplies, compressed air and vacuum system. Supervising the janitorial and grounds keeping staff. Managed the chemical storage area, air pollution reduction equipment, and waste disposal, ensuring all State, Federal and Local regulations were met. Oversaw HAZMAT, chemical spill, and emergency evacuation teams. Created and maintained facility and equipment drawings including schematics. Managed the preventive maintenance for the facility, production equipment and machines. Supervised and participated in the installation of new equipment and services. Designed and coordinated the fabrication of automated machinery using electrical and pneumatic components. Was in charge of the cost reduction team, tasked with reducing utilities, waste and raw material costs. Skills include the operation of lathes, milling machines, grinders and the use of precision measuring equipment. Safe use of hand tools. Basic welding, soldering and brazing skills. Electrical and mechanical trouble shooting, the use of meters and oscilloscopes. Programming of PLCs and HMIs. Fork lift truck licensed. Proficient in Autocad, Solidworks and Microsoft Office. Interpretation of schematics and blueprints.

US Navy

January 2007 to January 2008

Iraq.
In support of Operation Enduring Freedom.

Supervisor

June 1998 to December 2001

Ameritec Machine Tools, Oxnard, Ca. - Main duties included the design, installation, programming and servicing of the company's line of CNC machine tools. Managed the machine shop, interfaced with vendors and suppliers of components used in the manufacture of machine tools. Created drawings for company products.

Machine Tool Engineer

December 1995 to June 1998

Industrial Tools Inc, Oxnard, Ca - Designed and engineered slicing and dicing machines for the ceramic wafer cutting industries. Using Autocad and Solidworks created part prints, electrical and pneumatic schematics and customer tooling drawings. Developed processes, tooling and CNC programs for

customer projects. Installed, calibrated and serviced machines. Performed operator training and machine prove out and buy off.

Tool Designer

May 1986 to April 1987

Abex Aerospace, Oxnard, Ca. - Designed tools, fixtures and test equipment for the manufacture of hydraulic pumps and valve for the aerospace industry.

Toolmaker/Manufacturing Engineer

January 1982 to May 1989

Everest

And Jennings, Camarillo, Ca - Manufacture and repair of tools, fixtures and jigs for the building of medical equipment and wheelchairs. Promoted to manufacturing engineering tasked with manufacturability, cost saving and product streamlining.

Machinery Repairman

September 1987-present

United States Navy Reserve, Coronado, Ca - 1st Class Petty Officer in charge of a repair department, based in Coronado. Duties consisting of the supervision of the manufacture and installation of spare parts for various types of equipment. Over seeing security, equipment maintenance, and supply department.

Education and Training

Tool & Die maker

National Can Company, Norwich, England. Served a 6 year Tool and Die making apprenticeship.

B.S., Engineering

Norwich City College, Norwich, England. Studied production engineering.

UCLA Extension

Certificate in manufacturing engineering (production engineering).

Ventura College District

Classes include

Advanced PLC, basic PLC

Digital electronics

Various computer languages

HVAC certificate

Statistics

Art

History

Chemistry

Political Science

Advanced certificate in Solidworks (computer aided design)

Licenses and Certification

- Universal EPA refrigeration certificate
- Certificate in HVAC
- Class A driving licence, Doubles & triples, Hazardous materials.
- ACG Commissioning Technician certification.



NOTABLE DEMONSTRATED EXPERIENCE

Ducit 2 Constance Hotel - Pasadena , CA - Phase I Completion Oct. 2013 - Phase II& III 2016

Project Scope

Construction consisted of exterior shell and interior renovation of a turn of the century 7 Story 134 room Hotel building located at Lake and Colorado Boulevard in Pasadena.

Exterior shell renovation included restoration of historical elements, including removal, repair and reinstallation of guestroom double hung windows and original storefront windows; removal, repair and restoration of clay tile roofs, patch and repair of exterior finishes and fabrication of historic features including guestroom window awnings, flagpoles, identification signage and street level cast iron window decoration(s).

Interior renovation consisted of complete remodeling of Lobby and public spaces and guestrooms. Complete utility infrastructure upgrade, new mechanical, plumbing and electrical systems. Construction and installation of new fire rated exit stairs, elevator and back of house partitions and equipment shall also be completed.

The project is expected to be complete by 2015, in 3 consecutive construction phases. Phase I is the Hotel phases II & III include parking garage, Pool Bar and retail areas.

Cx Techs Inc was responsible for Mechanical Electrical and plumbing commissioning to Cal Green environmental code.

Initial Cx Budget \$85,000.

Chatsworth Superior Courthouse - Energy Management Retro Commissioning - August 2012.

The Chatsworth Courthouse is located at 9425 Penfield Avenue, Chatsworth, in LA County and is approximately 300,000 square feet designated as predominantly office space constructed in 2000.

The County of Los Angeles contracted to provide a retro-commissioning investigation, energy analysis study, and energy efficiency measure implementation. This project provided evaluation of the building performance, quantified energy savings for proposed Energy Efficiency Measures EEM's and outlined the methods to implement the approved changes for this project which is funded by the American Recovery and Reinvestment Act (ARRA) and the project implementation was managed by Cx Techs Inc.

Planning Phase: In this phase of work identified the documents and data required to accurately assess the current conditions and functionality of the building's energy efficiency.

Investigations Phase: The investigations phase of the work provided details, confirmed existing data and gathered all data for the preliminary engineering required to develop energy efficiency measures (EEM's). Visual observation.

A primary outcome expectation from this investigation was a list of deficiencies and energy efficiency measures.

REQUEST Modeling Phase: using the information gathered during the investigation phase, develop a building energy utilization baseline using the "state of the art" Department of Energy developed "eQUEST" building energy usage modeling software.

Implementation Phase. In this phase Cx Techs Inc laid out the detailed Critical Path Scheduling (CPM) project schedule and all detailed requirements to implement the list of approved energy efficiency measures EEM's.



Final Report and Training Plan:

The project as implemented is currently expected to save almost \$200,000 per year in energy savings. Cx Techs is a certified EEPMA Energy Efficiency Project Services provided with a master agreement with LA County.

Cx and Project management Budget \$450,000

Amgen Buildings – Research and development Laboratories 2000 to present.

Amgen Pharmaceuticals Inc.'s Buildings in the Amgen Campus in Thousand Oaks, CA We have commissioned the HVAC systems and associated controls for cooling systems, heating systems, air handling and ventilation systems, terminal units, exhaust systems, domestic hot water systems and the lighting control systems. Responsibilities included reviewing design documents, preparing the commissioning testing documentation, attending scheduling and planning meetings, conducting commissioning meetings, verifying and testing the equipment and systems, worked hand-in-hand with the contractors on the project to resolve issues quickly. Buildings include laboratories, H rooms and cell bank storage facilities, clean rooms, cold rooms, animal research labs including the following projects:

Bldg 80/81 Retro Commissioning

Two 100,000 sq ft buildings for administrative and general office use. Commissioned systems included: water source heat pumps, DX split systems, DX roof top package units, cooling towers, heating hot water boilers, electrical system, Carrier/Andover building automation systems and domestic hot water systems.

Cx Budget: \$ 83,700.00 Gross Sqft: 200,000 Stories: One Completion Date: Feb/2006

Bldg B6 Freezer Farm Project

Building 6 was the original manufacturing facility for Epogen. The manufacturing plant was shut down in 1999, during this period the emergency generator was disconnected from building 6 and reconnected to building 7. Building 6 began renovation in May of 2006 to accommodate for the new freezer farm, which consisted of seventy -80°C freezers, an LN2 back-up recovery system for each freezer, an indoor climate of 70°F, back-up emergency power generation for all freezers and monitoring system.

Commissioned systems included: specialized walk-in freezers, freezer farm of 64 low temperature freezers (-30 °C) with back up liquid nitrogen and emergency power systems, oxygen monitoring system, face/bypass air handlers, PLC building automation system and back-up chilled water system.

Cx Budget: \$ 74,750.00 Gross Sqft: 200,000 Stories: Two Date March/2006 – April/2007

Campus Site Wide (H-Room) Hazardous Material Rooms Upgrade Project

The intent of the project was to address the high door opening force required to egress the H rooms in a fire condition throughout the campus (8 bldgs total). Rooms operations were reconfigured to reduce egress force and still maintain Environmental Health & Safety's air changes required in space. Commissioned systems included: supply/exhaust air valves, relief air valves, space D.P. control, fire/life safety system, Andover building automation system, firemen's override panel, Lower Explosion Limit (LEL) monitoring system, and electrical shunt, down flow booths, strophic exhaust fans and door force.

Cx Budget: \$ 91,500.00 Total Rooms: 30 Project Date: Nov/2007 – Jan/2007

Contractor: Turner Construction Co.

Bldg 29 Peptide Chemistry Laboratories Project

Labs renovated to meet client's new requirements and to create an intrinsically safe environment (Hazardous Material). Commissioned systems included: process supply air and exhaust valves for bench top/walk-in fume hoods and space D.P. control, Lower Explosion Limit (LEL) monitoring system, fire alarm system, fire/life safety egress, electrical shunt, electrical systems, Andover building automation system and specialty process piping.

Cx Budget: \$ 31,700.00 Gross Sqft: 3,545 Stories: Two

Site Wide (RO/DI) De-ionized Water Distribution System Upgrade Project/8 Bldgs

Throughout the campus (8 bldgs total) the existing Reverse Osmosis/De-ionized (RO/DI) water distribution piping and equipment was replaced. Commissioned systems included: centrifugal pumps, tanks, tank level transmitters, PVDF piping, pump performance, system pressure/flow, and water quality monitoring system, UV light interlock and Andover building automation system.

Cx Budget: \$ 45,500.00 Various General Contractors No. of Buildings: 8

Amgen LRPM Fire Alarm Upgrade Project:

Throughout the campus (36 bldgs total) the building's main Fire Alarm Control Panel (FACP) and remote transponders were upgraded. Commissioned systems included: smoke detectors, heat detectors, return air smoke detectors, In-Duct smoke detectors, duct smoke detectors, heat probes, Pull stations, beam detectors, fire protection devices, elevator recall, elevator shunt trip, AHU shutdown, A/V shutdown, door holders, notification devices, fire phones, fire alarm remote signaling, roll down doors and secondary fire alarm graphic monitoring panel.

Cx Budget: \$ 460,500.00 Various General Contractors No. of Buildings: 36

Cottage Hospital Replacement Chiller Plant 2008

Developed written Test Procedures for pre-functional testing and startup, as well as functional testing. The new plant includes new 1350 ton electrical centrifugal chiller and a new 1350 ton steam turbine driven centrifugal chiller, along with new cooling towers and primary secondary chilled water piping system. The 3 boilers are 600HP Cleaver Brooks each with economizer heat recovery on the exhaust gas. Included is a new electrical system to support the power requirements including switchgear, a substation and automatic transfer switching for the 4 new emergency generators. The 337 bed Cottage Hospital is located in Santa Barbara just west of highway 101 near. Focusing meeting the new seismic requirements the hospital is being developed into a teaching, outpatient and conference center. The project includes a new replacement central plant expected completion mid 2008, and demolition of original central plant to make way for a new 450,000 sq ft hospital facility expansion.

Cx Budget \$75,000 30,000 sq ft. General Contractor: McCarthy Construction

UC Davis Education Center, Sacramento CA: 2006

Responsible for all aspects of the MEP commissioning effort. New construction lecture hall, cafeteria, library, office spaces and student study areas. Commissioned systems included: air handling units with hydronic heating/cooling, terminal units, exhaust/transfer fans, electrical systems, emergency power systems, lighting control systems, security systems, fire protection system, Johnson Controls building automation systems, chilled water systems, heating hot water systems and domestic hot water systems.

Cx Budget: \$ 89,000.00 Completion Date: March/2006

LAUSD High School #10 2006

Los Angeles Unified School District High School #10 project in Los Angeles, California. This project consisted of 8 buildings 3 stories with a Gross Sqft: 500,240 utilized as classrooms, a library, gymnasiums, locker rooms, and a kitchen / cafeteria. Commissioning for HVAC, Lighting, Electrical systems included developing and writing functional tests with LAUSD, testing and commissioning the following systems:

Cx Budget: \$ 98,100.00 Contractor: Clark Construction Completion Date: Nov/2006

Vandenberg Air Force Base (NASA)- Vandenberg, CA: 2008

Responsible for all aspects of the MEP commissioning effort. New chiller/boiler plant and shell space tenant improvements consisted of labs, server rooms and office spaces. Commissioned systems included: Air cooled chillers, heating hot water boilers, air handling units with hydronic heating/cooling, terminal units, Andover Controls building automation integration, chilled water systems and heating hot water systems. Total Construction Budget: \$ 5,000,000.00

Cx Budget: \$ 98,100.000 Gross Sqft: 60,000 2 storey October 2008



New York New York Hotel Las Vegas Nevada. 1998-2000

Responsible for the project management of the installation of a 1300 camera (Panasonic) CCTV security and surveillance system for 84,000 sq ft of gaming space.. The project including testing and commissioning that was required for the system to conform to the Nevada Gaming Commission's requirements. The system included integrated UPS and emergency power and lighting systems and large capacity for tape data storage. This camera control system was specifically designed for this facility and required coordination with the manufacturer for development and final testing procedures.

Luxor Hotel Las Vegas Nevada 1994/5

Directed the owners systems commissioning initiatives for the project which is a 30 storey pyramid shaped 4,400 room Hotel with 120,000 sq ft of gaming space and 20,000 sq ft of convention space. The facility also had tenant space for restaurants and attractions including an IMAX theater, Xenon Flood Lights at the top and water ride. Commissioned systems included: air handling units with hydronic heating/cooling, terminal units, exhaust/transfer fans, electrical systems, emergency power systems, lighting control systems, security systems, fire protection system, building automation systems, chilled water systems, heating hot water systems and domestic hot water systems.