

**CHRIS LEWIS, P.E.  
PRINCIPAL**

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Chris has over twenty years of design experience that includes new design and seismic retrofit of civic, educational and governmental structures including community colleges, bridges, office buildings, healthcare facilities, libraries, police facilities and various other structures. His area of expertise is in the implementation of new technology into seismic design and rehabilitation of structures so as to promote higher performance capabilities while creatively working towards the overall design vision within the constraints imposed by constructability and cost. He also keeps abreast of code changes and is knowledgeable of the design requirements of various codes ASCE-31, ACI 440.2 Design of Externally Bonded FRP Systems for Strengthening Concrete Structures and AC125: Acceptance Criteria for Concrete and Reinforced and Unreinforced Masonry Strengthening using Fiber Reinforced Composite Systems.

Chris has strived to promote the use of new technology towards mitigation of extreme loading conditions such as seismic and blast and is well versed in buckling restrained braces, composite fiber reinforced polymers etc. For the past 10 years he has worked performing design, detailing, technical support & construction administration for a wide variety of Fiber Reinforced Polymer Projects. These projects include multi-storied concrete frames, bridges, pre-stressed and post-tensioned concrete, pipelines, tanks, concrete infrastructure & masonry walls. Chris is the founding Principal at KL Structures Group, LLP.

**REGISTRATION** California P.E., LEED AP

**NOTABLE  
PROJECTS**

- **Bethel Tower: Structural strengthening of 18 story concrete residential building, Costa Mesa, Martinez, California:** Provided structural engineering design, technical and construction support for seismic upgrade that includes increasing the shear and flexural capacity of the concrete shear walls, header beams and increased confinement of the exterior columns utilizing CFRP. The strengthening is being performed as a voluntary seismic upgrade of the structure.
- **Tesoro Golden Eagle Refinery: Structural strengthening of LHP-ISOM structure, Martinez, California:** Provided structural engineering design, technical and construction support for the CFRP strengthening of the two story open concrete frame supporting six steel cylindrical pressure vessels. The strengthening is being performed due to apparent deterioration of the existing concrete structure.
- **Pacific Ethanol Silos #2 & 6 Repair 150' concrete silo, Madera, CA**  
Provided structural engineering design and technical support for the repair of two existing 44 foot diameter concrete corn storage silos to address the sudden failure of a 20' x 30' tall wall section into the interstice area. The failure of the wall appears to be due to the walls having less reinforcing than specified on the original design documents, inadequate splicing of some of the wall horizontal bars and removal of some external wall pressure provided

by storage of corn within the interstice space. The repair of these 44 foot diameter, 150 foot tall silos included 3D modeling of an individual silo using SAP2000 and internal CFRP wrapping of the silo walls to provide additional reinforcing to make the difference between the existing provided reinforcement in the silo walls and that intended in the original design of the silos.

- **AEPCO - CFRP Strengthening of the Apache Power Station #2, #3 96" Pre-stressed Concrete Cylinder Pipe, Cochise, Arizona:** Provided structural engineering design, technical expertise in the evaluation and repair of 84 inch diameter main water Pre-stressed Concrete Cylinder Pipe circulation pipes for the Apache Power Station #2 & #3. Researched the latest PCCP inspection technologies and evaluation of the short and long term inspection program for the maintenance of the PCCP. Developed several alternate CFRP repair methodologies of the PCCP based upon interpretation of inspection results. The repair is being performed due to apparent deterioration in the existing pipe's prestressing strands.

## OTHER PROJECTS

### Specialty Engineering With Fiber Reinforced Polymers:

- Numerous building & bridge projects involving strengthening of steel, concrete and masonry structures using composite fiber reinforced polymers:
  - UCLA Schoenburg Hall, Los Angeles, CA
  - Whittier Towers, Whittier, CA
  - University of Oregon, Allan Price Science Commons & Research Library, Eugene, OR
  - 12 story Northgate Terrace Tower, Oakland, CA
  - Biltmore Hotel, Los Angeles, CA
  - George Washington Bridge, NYC, NY
  - International Monetary Fund building, 19<sup>th</sup> & G Street, Square 120, NW Washington D.C.
  - Lincoln Square Hotel, Bellevue, WA
  - Oakland Airport, Oakland, CA
  - Stanford Linear Accelerator Center, Menlo Park, CA
  - BART West Oakland, Hayward, San Leandro Stations Piers, CA
  - Evergreen State College, Clocktower and Residence Hall A, Olympia, WA
  - North Twin Bridge, Des Moines, WA
  - ODOT 426 Bridges, Oregon
  - Sutro Reservoir, San Francisco, CA
  - UCLA Parking Garage No. 2, 3 & 9, Los Angeles, CA
  - 25-story Watermark building, façade rehabilitation, Philadelphia, PA.
  - Repair of concrete basins, Blytheville, AR.
  - Rehabilitation of large diameter steel tanks for corrosion loss of steel.
  - Several Highway bridges for corrosion related deterioration.
  - Industrial facilities with corrosion related damage.

- EMPLOYMENT HISTORY**
- May 2012 – Present KL Structures Group, LLP
  - January 2003 – April 2012 CL Structures, Seguin, TX
  - October 1990 – June 2002 Crosby Group Engineers, Redwood City, CA

- EDUCATION**
- B.S. Architectural Engineering, August 1987 – August 1990, California Polytechnic University, San Luis Obispo, CA

- MEMBERSHIPS**
- American Concrete Institute, Associate Member of ACI 440 Committee
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