

# **KARL A. SCHAACK, P.E.**

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**PRESIDENT**  
Price Consulting, Inc.

**EDUCATION:** Bachelor of Science Civil Engineering  
Clemson University  
Clemson, South Carolina; 1983

**PROFESSIONAL  
REGISTRATION:** Professional Engineer in South Carolina, #12001  
Professional Engineer in North Carolina, #15291  
Professional Engineer in Texas, #70234  
RCI Registered Roof Consultant #197

**ASSOCIATION  
MEMBERSHIP:** Roof Consultants Institute (RCI)  
National Roofing Contractors Association (NRCA)  
Roofing Contractors Association of Texas (RCAT)  
American Society of Testing and Materials (ASTM)  
Committee D08 Roofing, Waterproofing & Bituminous Materials  
Gulf Coast Roof Management Institute (GCRMI)  
Construction Specifications Institute (CSI)

**SPECIALIZED  
TRAINING:** Certified Roofing Torch Welding Applicator Instructor  
by MRCA

Better Understanding of Roofing Systems Institute (BURSI)

Operator of Nuclear Moisture Gauge

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### **PUBLICATIONS:**

"Staying on Top of Roof Maintenance"; Cleaning and Maintenance Management, May 1996.

"Mantengase al Tanto del Mantenimiento de Techos": Cleaning and Maintenance Management, Special Spanish Edition 1997.

"Roof Moisture Surveys: An Effective Tool for New Construction and Maintenance Programs"; Roofer Magazine, March 1996.

"Granulated Cap Sheets", Architectural Specifier, Jan/Feb 1997.

"Guidelines for Achieving Long-performing Seams for Granule Surfaced Roofing Materials" RCI Interface, April 1997.

"Roof Moisture Surveys: An Effective Tool for the Industry", RCI Interface, March 1997.

"A Roofing Alternative: Lightweight Insulating Concrete", Texas Architect, Sept./Oct. 1997

"Testing of Lightweight Insulating Concrete", The Roofing Specifier, November 1997.

"Rx For Roofs", Civil Engineering, December 1997.

"Don't Tread on Me: Guidelines & Helpful Hints for Walking on Roofs", RCI Interface, April 1998.

"Walkways", RCI Interface, June 1998.

"Minimizing Odors & Fumes", Contractors Guide, August 1998.

### **CAREER SUMMARY**

Since 1983, Karl Schaack has maintained employment in the engineering consulting field where he has provided professional consulting services related primarily to roofing and waterproofing projects. Mr. Schaack joined Price Consulting, Inc. (PCI) in May 1992. Mr. Schaack's role in the Houston office of PCI is to provide leadership in the technical, management, and business development area regarding roofing, waterproofing, and exterior restoration related services.

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## **ROOFING AND WATERPROOFING EXPERIENCE**

Mr. Schaack has conducted numerous moisture and condition surveys for a variety of roof systems including built-up, modified bitumen, single-ply, metal, spray-applied polyurethane, tile, and shingles. Mr. Schaack has also performed condition surveys on a variety of waterproofing systems including, but not limited to, EIFS, stucco, stone/masonry, window wall systems, plaza decks and sealants. These evaluations typically include repair/replacement recommendations and associated opinions of construction costs for each type of system. He has also performed life cycle cost analyses to assist in determining reroof or repair options. Mr. Schaack has prepared plans and specifications and provided contract administration for a variety of roof and waterproofing repair/replacement projects. He has performed roof failure studies and roofing material testing and analyses. He has also performed and supervised construction monitoring during new and renovation activities. Mr. Schaack has performed peer review on roofing and waterproofing specifications as prepared by others. Mr. Schaack has participated in seminars, technical/training schools and plant visits sponsored by industry entities and various material manufacturers.

## **CONSTRUCTION MATERIAL TESTING EXPERIENCE**

Mr. Schaack has directed engineering, inspection, and testing activities for commercial and industrial projects during construction. Mr. Schaack's involvement has included technical analyses for soil, concrete, pavement, deep and shallow foundations, fireproofing, and roofing. Mr. Schaack's role consisted of performing the actual testing or supervising engineering technicians performing the testing.

## **REPRESENTATIVE PROJECTS**

### ***Roof Evaluations***

Henrico County Schools, Richmond, VA: Performed and managed roof moisture and visual conditions surveys for approximately 3 million square feet of existing roof systems at over sixty campuses with various roof systems. Prepared an engineering report prioritizing repairs and/or replacements for the subject school buildings.

Duke Power Company, Charlotte, N.C.: Developed and performed annual roof condition surveys of existing roof systems for nuclear (three), fossil (six), and hydro power generating facilities (thirty-five) encompassing over 2 million square feet located throughout North and South Carolina. Prepared engineering reports presenting the priority for performing repairs or replacement.

Metropolitan Transit Authority, Houston, TX: Performed a roof evaluation for thirty-three facilities with over 1 million square feet of roof, and prioritized roof maintenance and repair activities for five years. Prepared reroofing and repair specifications for several projects.

Anderson County Schools, Anderson, S.C.: Performed an engineering evaluation roof condition study and repair prioritization survey for six schools. Prepared project documents for roof replacement for three schools.

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Houston Independent School District, Houston, TX: Performed evaluations, moisture surveys, and prepared reroofing specifications for eleven school facilities. Performed evaluations and prepared roof survey report outlining ten year plan for 210 schools campuses.

Harris County, Houston, TX: Performed evaluations and testing of building envelopes including roofs and exterior walls for over thirty facilities of various construction.

BellSouth, Various Locations: Performed evaluations, moisture survey and material testing and prepared five year plan for roofs on 180 facilities in Louisiana. Managed personnel in the collection of data/evaluation of over 500 facilities in four states.

Lafayette Parish Schools, Lafayette, La.: Performed an engineering evaluation roof condition study and repair prioritization survey for six schools. Managed Quality Assurance Field Inspection for 12 roof renovation projects.

### ***Asphalt Built-up Roofing***

San Rafael Apartments, Santa Fe, NM: Performed a condition survey, test cuts, and evaluation of existing built-up roofs with cap sheet surfacing on ten apartment buildings that had experienced premature roof failure and extensive leaking.

Ivey's Department Store, Charlotte, N.C.: Performed roof condition survey, prepared plans and specifications for installation of recovery roof systems, and monitored new roof installation for two facilities.

Crosstimbers One Warehouse, Houston, TX: Prepared specifications for roof replacement for 4-ply asphaltic gravel surfaced built-up roof over lightweight insulating concrete deck assembly encompassing 200,000 square feet.

Point West Office Building, Houston, TX: Prepared specification for roof replacement for a 4-ply asphaltic gravel surfaced built-up for over a Loadmaster Deck assembly encompassing 40,000 square feet.

### ***Coal-tar Built-up Roofing***

Southwestern Bell Telephone, Capitol Central Office, Houston, TX: Prepared specifications and drawings for roof replacement for 25,000 square foot high-rise building. New roof system consisted of aggregate surfaced coal-tar built-up roof assembly and rigid insulation and concrete deck.

Parker Elementary School, Houston, TX: Prepared specifications and drawings for roof replacement on approximately 65,000 square feet. New roof system consisted of aggregate surfaced coal-tar built-up roof assembly, tapered insulation, and concrete deck.

West University Elementary School, Houston, TX: Prepared specifications and drawings for roof replacement for 20,000 square feet. New roof system consisted of aggregate surfaced coal-tar built-up roof assembly and concrete deck.

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Delphi Harrison Thermal System, Tuscaloosa, AL: Prepared specifications and drawings for roof replacement for 120,000 square foot manufacturing facility. New roof system consisted of four-ply aggregate surfaced coal-tar built-up roof, insulation, and steel deck.

### ***Modified Bitumen Roofing***

Walgreen's Distribution Center, Houston, TX: Prepared specifications for roof replacement utilizing 2-ply modified bitumen roof assembly and two layer of insulation over pre-cast concrete deck on approximately 150,000 square foot distribution facility. Work was phased over several years.

River Oaks Bank Building, Houston, TX: Prepared specifications for roof replacement utilizing 2-ply modified bitumen roof assembly and two layer of insulation over concrete deck on high-rise office building.

Miami Data Center, Miami, FL: Prepared specifications and drawings for replacement system consisting of two-ply SBS modified bitumen roof membrane over new lightweight insulating concrete fill substrate for 48,000 square feet.

Memorial Middle School, Houston, TX: Prepared specifications and drawings for replacement system consisting of two-ply SBS modified bitumen roof membrane over new lightweight insulating concrete fill substrate for 130,000 square feet.

Huntsville Memorial Hospital, Huntsville, TX: Prepared specifications and drawings for replacement system consisting of torch applied and cold process applied two-ply SBS modified bitumen roof system.

### ***IRMA***

515 Post Oak Office Building, Houston, TX: Performed visual condition evaluation and prepared repair specifications for existing IRMA built-up roof assembly.

BellSouth, Various Facilities, FL: Performed evaluations and prepared specifications for replacement of IRMA built-up roof assembly.

### ***EPDM Roofing***

Circuit City Stores, Inc., Various Locations in Texas: Performed design review, pre-roofing meeting, construction monitoring, and punch list surveys for several new facilities in which roof systems included EPDM single-ply roofing (mechanically attached or ballasted).

Clear Creek High School, Clear Lake, TX: Performed visual and infrared roof moisture survey on existing 260,000 square foot facility with both built-up roofing and mechanically attached EPDM roof assemblies.

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### ***Miscellaneous Single-ply Roofing***

Tom Bass Arts Pavilion, Houston, TX: Performed visual condition survey and moisture survey utilizing capacitance meter on existing mechanically attached Hypalon single-ply.

Bellaire Hospital, Houston, TX: Performed moisture survey and evaluation of existing CPE single-ply membrane roof systems.

Patrick Media Group, Houston, TX: Prepared project documents for installation of new PVC single-ply membrane over an existing built-up roof in a recovery application.

TCB/Phelan, Beaumont, TX: Prepared specifications for application of new mechanically attached PVC single-ply over existing corrugated metal panel roofing on approximately 12,000 square foot commercial building.

### ***Spray-applied Polyurethane Foam Roofing***

Greensboro Coliseum Exhibition Hall, Greensboro, N.C.: Performed an infrared thermographic roof moisture survey on an existing sprayed-on urethane foam roof system encompassing approximately 70,000 square feet.

J&W Properties Warehouse, Houston, TX: Performed visual condition survey and core sampling for coating thickness measurements of existing spray-applied polyurethane foam roof covering.

Parker Elementary School, Houston, TX: Performed visual condition survey of existing spray-applied polyurethane foam roof on approximately 60,000 square feet.

### ***Metal Roofing***

Harris County, Wade Road Facility, Houston, TX: Performed visual condition survey of existing pre-fabricated metal panel roofing.

City of Sugar Land, City Hall, Sugar Land, TX: Prepared project documents for both repairs and replacement of existing metal panel roof system.

University of Texas Health Science Center, OCB Facility, Houston, TX: Prepared project documents for application of liquid-applied coating over an existing metal panel roof system.

USR Realty, Warehouse Facility, Baytown, TX: Performed field investigation to document conditions and identify possible causes to "blow-off" of standing seam metal panel roof system.

Lighthouse of Houston, Houston, TX: Provided consultation and specifications and drawings during preparation of roof renovation documents of existing standing seam/batten metal panel roof system.

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### ***Tile Roofing***

University of Houston, Science Building, Houston, TX: Performed visual roof evaluation of existing clay barrel tile roofing originally installed in 1926. Provided review and commentary for specifications for reroofing and provided quality assurance inspection during reroofing.

Apartment Complex, Las Vegas, NV: Performed final inspection of newly installed concrete mission tile roofing on over thirty buildings.

Meridian Townhomes, Houston, TX: Performed visual survey to document inherent problems and substandard conditions of "newly" installed clay barrel tile. Prepared specifications and drawings for renovation of the tile roof on three residential-type buildings.

### ***Shingle Roofing***

Memorial Baptist Church, Baytown, TX: Prepared project documents (specifications and drawings) for repairs and replacement for an existing dimensional strip shingle roof and copper flashings.

USAA Property and Casualty, Various Projects, Houston, TX: Performed field inspections of over forty residential dwellings to document possible storm related damage of existing three-tab (organic and fiberglass reinforced), dimensional laminated strip shingles, wood shingles, and metal shingles.

Stevenson Elementary School, Houston, TX: Performed evaluation, prepared specifications for roof replacement, and managed quality assurance inspection for new laminated strip shingle roof.

Lighthouse Living Center I and II, Houston, TX: Performed evaluation and prepared specifications/details for replacement of shingle roof at two residential complexes.

### ***Miscellaneous Testing***

Bleyl Junior High School, Houston, TX: Performed test cut analysis of existing built-up roof membrane with fiberglass felts and coal-tar pitch interply bitumen.

Silbernagel Elementary School, Dickenson, TX: Performed test cut analysis of existing built-up roof membrane with fiberglass felts and coal-tar pitch interply bitumen.

Alliance and Mickey Leland Federal Buildings, Houston, TX: Managed and performed quality assurance inspection, field sealant adhesion testing, polymer mortar cube testing and field water spray testing of glass/stone curtainwall high-rise renovation projects.

Ivey's Department Store Warehouse, Charlotte, N.C.: Performed field wind uplift testing of existing built-up roof assembly utilizing plastic "bubble" chamber.

Bear Creek Library, Houston, TX: Performed pull-out resistance testing of base sheet fasteners in existing lightweight concrete substrate.

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Phillip Morris Manufacturing Facility, Richmond, VA: Performed nuclear moisture gauge survey on over 275,000 square feet of gravel surfaced built-up roof assembly.

### ***Construction Material Testing***

Charlotte Memorial Hospital Office and Parking Garage, Charlotte, N.C.: Managed and performed testing and inspection of pressure injected footing foundations, soil preparation and placement, concrete properties, structural steel properties, fireproofing, and roofing.

Methodist Home for the Aged, Charlotte, N.C.: Managed and performed testing and inspection of precast concrete pile foundations, concrete and soil placement, and properties and roofing.

### ***Waterproofing***

Marriott Courtyard, Ft. Meyers, FL: Performed visual evaluation and thermal/vapor flow analysis of existing EIFS exterior wall system.

Ivey's Department Store, Charlotte, N.C.: Performed field investigation and prepared guideline repair specifications for repairing below-grade waterproofing on vertical walls.

Galleria I, Houston, TX: Performed site investigations and prepared guideline repair specifications for a fluid-applied parking deck membrane.

Dominion Motor Cars, Houston, TX: Performed evaluation and prepared renovation specifications for waterproofing of elevated parking structure.

San Jacinto Methodist Hospital, Baytown, TX: Performed evaluation and renovation documents (specifications and drawings) for repairs to through-wall flashings, copings, and sealants of existing masonry exterior walls.

Barbara Jordan High School, Houston, TX: Performed evaluation and prepared project documents for renovation/repairs of existing sloped and vertical aluminum framed window wall system.

River Oaks Bank Building, Houston, TX: Prepared Bid Documents and provided quality assurance inspection for installation/renovation of self adhered sheet membrane in planters.