



MARK LIEBMAN
SENIOR CONSULTANT

Mark's knowledge of historic and contemporary construction practices and materials is extensive. His technical capabilities for evaluating buildings and infrastructure includes working knowledge of state-of-the-art non-destructive investigation techniques such as infrared thermography, ground penetrating radar, ultrasonics, and drill resistance. In his role as forensic investigator, historic preservation consultant, and material scientist, he has worked with architects, engineers and owners and their representatives on a diverse variety of structures around the country.

AREAS OF EXPERTISE

Historic and Contemporary Building and Civil Structure Condition Assessments
/Forensic Investigation using State of the Art Non-destructive Technology /Laboratory
Material Analysis /Repair Specifications /Quality Assurance & Quality Control

EDUCATION AND TRAINING

Hofstra University, Hempstead, NY	Applied Physics
New York University, NYC, NY	School of the Arts
Seattle Central Community College, Seattle, WA	Construction Technology
Humboldt Training Seminars, Chicago, IL	Soil Mechanics
Institute of Railroad Engineering, Wilmington DE	Roadbed and Railway Design
US Heritage Group, Chicago, IL	Historic Masonry
Laborers-AGC (LIUNA), Tucson, AZ	Tunnel and Shaft, Skills and Safety
OSMOS Structural Monitoring Systems, Paris/Cologne	Fiber Optic Monitoring
Capital Planning Solutions Inc, Toronto, CA	TCPS Asset Management System
STONEL System, Kangasniemi, Finland	STONEL Curtain Wall System
SINT Technologies, Florence, Italy	DRMS Stone Evaluation Technology

RECENT PROFESSIONAL ACTIVITIES

Presenter: "Moisture Problems in Historic Masonry"
Kansas State Preservation Conference, Newton, KS

Presenter: "New Technology and Cultural Heritage"
Federal Preservation Institute, Washington, DC

President: NW Chapter
Association for Preservation Technology (APT)

Author: "The Lime Chronicles"
Stonex Magazine

Member: Editorial Review Board:
Traditional Masonry Magazine

Instructor: Traditional Masonry Techniques
Pittsburgh Seminar for the Church of the Ascension

Member: ASTM C12.03.03 Subcommittee
Standard Specification for Repair Mortars for Historic Masonry

Presenter: "Testing and Monitoring of Hemp and Lime Structures"
AIA Workshop, Montgomery, TX

Presenter: "Non-destructive Investigation Techniques"
APT workshop, Seattle, WA

U.S. Working Group #2 Captain: NSF sponsored workshop
New Technologies and Cultural Heritage (Historic Construction Materials)
Venice, Italy

REPRESENTATIVE PROJECT EXPERIENCE: HISTORIC PRESERVATION


Washington State Capitol Campus, Olympia, WA

As a consultant for the Washington State Department of General Administration Mark has provided services on virtually all the buildings at the capitol campus including;

- **Legislative Bldg** - insitu and laboratory masonry deformation and stress measurements, roof and envelope water infiltration studies and remediation strategies
- **Governor's Mansion** - mortar analysis and repointing specification
- **Temple of Justice** - material deterioration and structural assessment study
- **Old Capitol Bldg** - masonry condition assessments and emergency scaling of friable sandstone due to life/safety concerns
- **Old Thurston County Courthouse** - seismic stabilization of the cladding stone, water infiltration study, mortar analysis, repointing specification
- **O'Brien & Cherberg Bldgs** - stone and mortar condition survey
- **Newhouse Bldg** - water infiltration survey, remediation specification, CM and QA during implementation
- **Tivoli Fountain** - subgrade assessment, remediation strategy
- **Winged Victory WWI Memorial Statue** - sculpture and pedestal condition survey, remediation plan including removal of gold coating and repatination of the statue, PM and QA during the project
- **Insurance Bldg** - geotechnical investigation, sandstone, granite and mortar survey, parapet and cornice assessment, plaster evaluation, remediation strategies
- **Pritchard Bldg** - cladding stone material assessment, structural study of the cladding system
- **Vietnam War Memorial** - assessment of the granite
- **Dolliver Bldg** - subgrade investigation, stone and mortar survey, structural evaluation, paint removal and remediation plan


Port Townsend National Historic Landmark District, WA

In Port Townsend, Mark's consulting work was for a variety of clients including the City, County and private building owners including;

- **Historic Port Townsend City Hall** - mortar and plaster assessment and material analysis, QA
- **Jefferson County Courthouse** - evaluation of the brick, mortar, stone and timber components, repointing specification, consulting on embedded iron exhibiting oxide jacking, vibration monitoring during center coring of clocktower turrets, QA
- **Lewis Bldg** - masonry facade and structural stability assessment, remediation strategy, pointing specification, QA
- **N.D. Hill Bldg** - evaluation of the painted brick and paint removal recommendation
- **Maestrale Bldg** - structural assessment of embedded iron components
- **Eisenbeis/Olympic Hardware Bldg** - material and structural assessment, mortar specification, QA
- **Port Townsend Leader Bldg** - plaster and stone assessments, plaster removal and replacement plans and specifications, stone remediation strategy
- **Kuhn & Terry Bldgs** - brick masonry evaluation
- **Cotton Bldg** - masonry consulting, QA during remediation



REPRESENTATIVE PROJECT EXPERIENCE: HISTORIC PRESERVATION



Church of the Ascension, Pittsburgh, PA

- Survey and analysis of stone and mortar using SINT drill resistance technology, evaluation of the timber components using IML drill resistance, structural analysis using Ground penetrating radar, project scoping, plans, specifications and bid documents, mason training in historic masonry techniques

Massachusetts Institute of Technology, Cambridge, MA

- Historic masonry investigation and consulting, long term monitoring of remediation

Saint James Cathedral, Seattle, WA

- Nondestructive investigation utilizing ground penetrating radar and electromagnetic pulse technologies to identify location of embedded time capsule for 100 year anniversary

St. Jude Church, Miami, FL

- Investigation of staining on limestone cladding to identify source of iron oxide and determine structural implications and repair and removal methodologies

Tolias Bldg, Seattle, WA

- Unreinforced masonry structural survey and mitigation plan prior to stabilization of structure due to nearby demolition and construction, mortar mix design for repointing, drill resistance to assess timber for use as structural diaphragm, vibration monitoring during associated demo and construction

Krape Park Story Pole, Freeport, IL

- Condition assessment of story (totem) pole gifted to the Park District in the 1920's, remediation plans and specifications for restoration and stabilization

Metropole Bldg, Seattle, WA

- Damage analysis of effects of fire on timber and masonry components, analysis of water damage on foundation and subgrade, insitu deformation and shear determinations for renovation plan

South Cle Elum Substation, Cle Elum, WA

- Masonry and concrete structural assessment and remediation recommendations

Cowan Barn, Sekiu, WA

- Structural and material assessment of timber barn

3rd Street Fire Station, New York, NY

- Brick and mortar survey, paint removal recommendations

Pacific Ford McKay Bldg, Seattle, WA

- Settlement and structural study, terra cotta survey

Guasti Winery, Ontario, CA

- Material and structural survey of historic stone winery as a precursor to conversion to a mixed use commercial development

Quincy Mine Hoist House #2, Hancock, MI

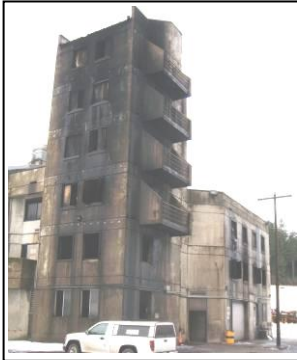
- Condition assessment and preparation of an Architectural Planning Grant proposal for the Getty Conservation Institute

King Street Station, Seattle, WA

- Structural and material survey prior to nearby construction, vibration monitoring during construction activities



REPRESENTATIVE PROJECT EXPERIENCE: CONTEMPORARY CONSTRUCTION



Whatcom County Courthouse, Bellingham, WA

- Water infiltration and roof and building envelope integrity study utilizing spray frames, Rilem tubes, infrared thermography and GPR, indoor air quality monitoring, remediation options

Washington State Patrol Fire Training Academy, North Bend, WA

- Structural and material assessment of damage to concrete and reinforcement, analysis of refractory shotcrete, remediation plans, specifications and bid documents utilizing state of the art temperature resistant FRP reinforcement and concrete repair techniques for the structure, and calcium silicate board and high temperature resistant tiles as the new temperature barrier to allow the building to be brought back into service, CM/QA during construction



Kaiser Permanente Ambulatory Surgery Unit, Folsom, CA

- Water infiltration study, stucco and EIFS assessment, repair recommendations, QA during remediation

Stonel Veneer Panel System, Kangasniemi, Finland

- Laboratory analysis of new exterior cladding panel system, development of ICC acceptance criteria for the system

TC Williams High School, Alexandria, VA

- Development of a capital planning/asset management database for the school



Tropical Rainforest Exhibit, Woodland Park Zoo, Seattle, WA

- Water infiltration study, structural and material damage assessment, remediation strategy, one of dozens of projects at the zoo

Bellevue Aquatic Center, Bellevue, WA

- Material and structural degradation study of damage caused by high humidity and chemical treatments associated with a pool environment, remediation recommendations, one of many such studies of pools, ice rinks and other unique building environments



Hemcrete, Houston, TX

- Consulting and participation in the construction of the first Hemcrete (lime and hemp) structure in the US, this is a carbon negative building material

University of Washington South Parking Garage, Seattle, WA

- Water infiltration, material degradation and structural assessment of concrete parking structure, one of many such projects

Speedway Corporate Park, Las Vegas, NV

- Forensic assessment of ~250,000 sq. ft of structural slabs using GPR

Crystal Mountain Bridge, Mt. Rainier, WA

- Structural assessment of the timber stringers and decking and steel beams, repair recommendations

Nut Tree Shopping Center, Vacaville, CA

- Forensic study of collapsed roof awning

Petersburg Sedimentation Basin, Petersburg, AK

- Forensic study of failed waterproofing membrane



REPRESENTATIVE PROJECT EXPERIENCE: CONTEMPORARY CONSTRUCTION



Kwa Tuk Nuk Resort, Poulson, MT

- Water infiltration and structural study of parking structure, repair recommendations

Office Depot, Palm Springs, CA

- Thermal study of cracked building envelope

STC & Sirti Bldg, Spokane, WA

- Vibration and noise study of laboratory environment



Monroe Correctional Facility, Monroe, WA

- Reinforcement mapping for upcoming renovation and addition

Kettle Falls Bridge, Kettle Falls, WA

- Forensic investigation of frost damaged precast bridge girder

Annie Wright School, Tacoma, WA

- Condensation study in gymnasium and remediation plans and specifications

Wal-Mart Stores, Hawaii, Colorado & Wyoming

- Roof uplift bracing investigation, remediation strategy, QA during construction for all the stores in these states



Microsoft Facility, Quincy, WA

- Forensic investigation of failed concrete and coating for cooling tower sumps

Georgia Fire Training Academy, Atlanta, GA

- Assessment of damage to live fire training facility, remediation plans and specifications

Central Market, Poulsbo, WA

- Water infiltration survey, repair specifications

Mercer Island Country Club, Mercer Island, WA

- Condensation study and remediation strategy



Eagle Harbor Church, Bainbridge, WA

- Structural and material analysis of timber steeple

AGC Building, Seattle, WA

- Assessment of parking structure and piers and piling



Henderson Tunnel, Seattle, WA

- Design for a thixotropic grout to fill the annular space around the tunnel liner segments to prevent subgrade subsidence and avoid cementing the tunnel boring machine in place, QA during construction

Queens Childrens Psychiatric Center, Bellerose, NY

- Investigation of water infiltration issues, remediation specifications.

West Elk Mine, Somerset, CO

- Subgrade assessment for surface infrastructure retrofit, QA during remediation

