JAMES B. BUSHMAN, P.E.
President
Bushman & Associates, Inc.

Education and Registration:

Case Institute of Technology, Cleveland, Ohio
General Motors Institute of Technology, Flint, Michigan
Major - Industrial Engineering
Registered Professional Corrosion Engineer
NACE International Certified Cathodic Protection Specialist

Applicable Professional Experience:

As Principal Corrosion Engineer, Bushman interfaces with numerous clients with respect to investigation and remediation as well as research and development of new concepts and technology that may be applicable for detection and evaluation of corrosion and corrosion control technologies. He is the principal corporate speaker on a diversity of technical subjects and conducts training seminars for both experienced and new corrosion engineers on a worldwide basis. During his 39 year career, he has held a number of different positions in several other large corrosion engineering and control organizations including member of the Boards of Directors, Senior Vice President, Manager of Research and Development. Manager of European Operations, Manager of Concrete Services Group, Northeast US Area Manager, Manager of Water and Waste Water Corrosion Control Operations and US & International Marketing Manager.

Mr. Bushman has provided both general corrosion engineering services as well as performed research and development studies in corrosion and corrosion control for a wide variety of structures including:

- Natural Gas Pipelines
- Heat Exchangers & Boilers
- Water & Wastewater Piping
- Pipe Type Power Cable
- Traveling Screens
- Elect. Power Gen. Plants
- Cable Stay Bridges
- Building Foundations
- Buried & On-Grade Fuel Storage Tanks
- Offshore Production & Drilling Platforms
- Steel Reinforced Concrete (SRC) Bridges
- Lead Sheathed Telephone Cable
- Nuclear Reactor Containment Shells
- Steel & Cast Iron Tunnel Liners
- Water & Wastewater Treatment Units
- Hot Water Storage Tanks
- P.O.L. Pipelines
- Ship Hulls & Submarines
- SRC Piers, Docks & Wharfs
- SRC Parking Garage Cooling Towers
- Sub-Sea Oil & Gas Pipelines
- Building Structural Steel

In addition to his fundamental corrosion control development work on many of the above structures, Mr. Bushman initiated basic research beginning in 1974 on corrosion and cathodic protection of steel reinforced concrete and structures working closely with F.H.W.A. researchers at their McLean, Virginia, Research Center. He began similar work on Underground Storage Tanks (UST's) in 1968 and has worked ever since with various state and federal agencies including the U.S. Environmental Protection Agency in developing new standards for and methods of achieving more effective corrosion control on highway bridges and underground fuel storage tanks.

Awards:

- One of only two persons to be recognized by the U.S. Secretary of Transportation as an Expert in Cathodic Protection.
- Recipient of the 1994 Colonel George C. Cox Award for Individual Public Contribution to the Science of Underground Corrosion and Control awarded at the 39th Annual Appalachian Underground Corrosion Short Course, West Virginia University.
- Recipient of the 1992 Charles W. Sonnenberg Award for Technical Contributions on Corrosion and Corrosion Control for Steel Underground Storage Tanks, Steel Tank Institute, Lake Zurich, IL.

- Recipient of numerous certificates of appreciation from U.S. Air Force, U.S. Army, NACE, AWWA, and the Steel Plate Fabricator's Association.
- Only Corrosion Engineer selected to serve on the Federal Highway Administration's Technical Work Group to implement the Transferring of Technology from their Strategic Highway Research Program to their operating Federal and State Highway Agencies.

Patents:

- Inventor or Co-Inventor, Seventeen (17) U.S. Patents with two (2) additional patents pending.

Professional Affiliations:

- NACE International – Numerous Technical Practices Committees;
  Chairman of 1994 "Corrosion and Corrosion Control of Steel Reinforced Concrete Structures" Symposium
- ASTM – Numerous Technical Committees
- AWWA – Committee Chairman

Publications:

- Author of more than 25 technical articles and six course textbooks

Partial list of recent significant corrosion engineering projects:

Underground Storage Tank (UST) Projects

Principal Instructor — UST Corrosion and Corrosion Control Training Courses, Region 7, Office of Underground Storage Tanks, U.S. Environmental Protection Agency, Kansas City, KN.

Principal Consultant — Obtain Structure Baseline Data and Prepare Detailed Design, Plans and Specifications for State-of-the-Art Environmentally Compatible Deep Anode Cathodic Protection for On-Grade Fuel Storage Tanks at Seymour Johnson AFB, Law Engineering, Inc., Raleigh, NC.

Steel Reinforced Concrete Projects

Principal Corrosion Consultant — Evaluation of Corrosion and Develop Remediation Plan for Corrosion on Metals in Chloride Contaminated Soil Cements, Construction Technology Laboratories, Inc., Skokie, IL.

Principal Consultant — Investigated Corrosion and Develop Corrosion Mitigation Program for Steel Soldier Beam "H" Piles in Chloride Contaminated Soil Cement supporting 55 Story Office Building, 1st Hawaiian Bank, Honolulu, HI.

Principal Corrosion Consultant — Federal Highway Administration Technical Work Group - Implementation of Strategic Highway Research Program (SHRP) developments for Concrete and Structures, Washington, DC.

Principal Engineer and Research Group Chairman — Development of Federal Highway Administration Manual "Cathodic Protection of Reinforced Concrete Bridge Elements", Contract C102D, Strategic Highway Research Program (SHRP), Washington, DC.

Principal Consultant — Stray DC Current Corrosion Investigations on Various Steel Reinforced Concrete Structures including the World Trade Center Building, numerous bridge structures and several subway tunnel systems for The Port Authority of New York and New Jersey.