

David Bryan, AIA, LEED AP

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## **EDUCATION**

Master of Architecture, Massachusetts Institute of Technology, 1977  
Goddard College Design/Build Masters Program, 1973  
Harvard University, Graduate School of Design, 1970-1972  
A.B. Chemistry, Princeton University, 1967

## **PROFESSIONAL ASSOCIATIONS**

Member of American Institute of Architects - Saint Paul Chapter  
Registered Architect - Minnesota, 1984  
LEED Accredited Professional since 2005  
Minnesota Building Enclosure Council Board Member  
Minnesota Commercial Building 2012 Energy Code Development Committee

## **HONORS**

New Village Apartments: Fanny Mae Maxwell Award for excellence in rental housing, 1994  
Swinford Apartments: Minnesota American Institute of Architects Honor Award, 1992  
Wild Rumpus Bookstore: Minnesota American Institute of Architects Honor Award, 1992  
Burke School: Illumination Engineering Society of America Lighting Design Award, 1980  
Massachusetts Institute of Technology Tucker-Voss Award for excellence in building construction, 1977

## **CURRENT EMPLOYMENT**

President of Third Level Design.

The mission of this firm is to provide energy conservation services, building enclosure design and climate change analysis. Specific services include:

Design and detailing of building enclosure assemblies based on WUFI and thirty years of building design and construction observation experience. WUFI is a revolutionary tool for developing and optimizing building materials and components. It has been verified by extensive (and on-going) field and laboratory testing in Germany & U.S. and allows realistic calculation of the moisture behavior of building assemblies. I have attended basic and advanced workshops on using this program and have over 1000 hours of experience.

Building performance modeling using DesignBuilder, a graphic interface to Energy Plus. The intent is to reduce the cost and turnaround time of energy modeling so that architecture firms can receive continuous and cost-effective feedback on both the energy consumption and the appearance of their projects as the building progresses from design through construction drawings.

Climate change modeling to affect public policy by clarifying the interrelationship and impact of decisions in the building, industry, transportation and power production sectors. An energy and emissions model of the United States is under development.

General analysis services relating to energy conservation and building design, condensation analysis for high humidity spaces and active and passive solar heating.

## **PROFESSIONAL EXPERIENCE**

Vice President, AmerIndian Architecture; Saint Paul, Minnesota, 1992 to 2009  
AmerIndian Architecture specialized in serving American Indian Tribes nationwide, providing culturally appropriate building design and construction services for a wide range of building types, including tribal government buildings, community centers, schools, clinics, hotels, casinos, museums, offices, interpretive centers and housing. Projects may be viewed at [WWW.AmerIndian.com](http://WWW.AmerIndian.com).

Bowers, Bryan and Feidt Architects, Inc., Saint Paul, MN 1986-1992  
Founding principal in BB&F, a firm concentrating in the areas of multi-family housing, remodeling of inner-city buildings and historic preservation.

Val Michelson Associates Inc.; Saint Paul, Minnesota; Project Architect, 1982 to 1986

Black River Design & Construction Company; Albany, Vermont; 1973 to 1979  
Architect and general contractor in a design/build construction company.  
This firm designed and built some of the earliest solar heated homes in New England.

International Business Machines; Asbury Park, New Jersey; 1967 to 1970  
Systems engineer (computer software specialist)

## **ENERGY CONSERVATIVE BUILDINGS**

The Quigloo, Brighton, Utah; 2009  
A high performance ski cabin at Brighton Ski Area.  
The design of this cabin was fine-tuned with building performance modeling using Energy Plus. The target R-values from the energy model were achieved with assemblies designed using WUFI hygrothermal analysis.

Wakpa Sica; Pierre, South Dakota; 2004  
An interpretative center, offices and future Supreme Court for the South Dakota Sioux Tribes. This building uses a ground source heat pump to minimize energy consumption and employs a daylight-controlled shading system to minimize lighting power usage and control glare. The building envelope and HVAC system was optimized using an Equest energy analysis.

Tiospa Zina School; Sisseton, South Dakota; 2003; Sisseton Wahpeton Sioux Tribe

A 650 student K-12 school divided into four “Learning Lodges” according to Sioux tradition. The design incorporates daylighting in classrooms and open office areas to reduce electrical and air-conditioning loads. The daylighting strategy employs clerestory windows and sunshades to increase indoor light levels while controlling heat and glare.

Hope Children’s Village Center; Minneapolis, MN; 2003; Hope Community

This is a four story community building which contains a parking garage, offices, community lounge, dining area, a commercial kitchen and 30 apartments. The building design was analyzed using Equest to fine tune the building envelope design and to model the potential annual energy costs for a variety of heating systems (gas boiler and chiller; water to air heat pump and ground source heat pump). Post occupancy performance was benchmarked with gas and electricity consumption data and checked against the Equest. design model. Actual energy consumption was within 7% of the predicted consumption over a three year period.

Macy School; Macy, Nebraska; 2002; Ho-Chunk Tribe of Nebrasksa

An expansion of a grade school to include middle and high school levels. The design incorporates daylighting in classrooms and open office areas to reduce electrical and air-conditioning loads. The daylighting strategy employs clerestory windows and sunshades to increase indoor light levels while controlling heat and glare.

Bartz Residence; Ripon, Wisconsin; 1988; Bernice and Jim Bartz

An airy single level home using electric cables in a sand heat storage bed beneath a concrete slab floor to heat the home with off-peak electricity.

Macdonald Residence; Bayfield, Wisconsin.; 1981; Cathy and Frank Macdonald

An earth-bermed passive solar home overlooking Lake Superior. This home also incorporated a site built active solar water heater which provided hot water to a radiant floor system.

Stafford Residence; Lakeville, Ma.; 1976; Dick Stafford

A joint venture with a large contracting firm to produce an economical passive solar home.

Hood House; Montpelier, Vt.; 1975; Mary and Peter Hood

Design and construction of one of New England's earliest actively-heated solar homes.

## **COLD CLIMATE BUILDING ENERGY RESEARCH AND CONSULTING PROJECTS**

Design of Moisture-tolerant Highly Insulated Building Enclosures in Cold Climates

A 2010 presentation based on results of WUFI computer simulations, delivered to architects as part of the AIA professional development program

An Analysis of the Relative Impact of Individual Energy Conservation Measures on Multi-Family Building Natural Gas Consumption

This paper was presented at the 1995 International Energy Program Evaluation Conference; it studied the effects of energy conservation improvements on 86 Twin Cities multi-family housing buildings. The study used the PRISM computer program to estimate weather normalized changes in gas consumption resulting from energy conservation improvements in the buildings. A

multiple regression analysis was used to develop a mathematical model for predicting gas savings associated with various energy conservation measures for this building type in cold climates.

Moisture Control Project; 1986; St. Paul Public Housing Agency; St. Paul, Mn.

Joint venture with a mechanical engineering firm to analyze condensation problems threatening 1200 units of housing. Alternative solutions were computer modeled and evaluated in terms of cost and moisture control effectiveness.

Minnesota Energy Efficient Housing Demonstration Project; 1984; State of Mn.

Member of the project review committee and consultant to David Robinson, the principal investigator, for evaluation of the accuracy of several micro-computer energy modeling programs in simulating the observed energy consumption of test houses.

Richfield Development Guidelines; 1983; City of Richfield, Mn.

Author of multi-family development guideline sections on energy standards, interior air quality and aircraft noise control.

Consultant to Solarium Systems Inc.; 1981-1983; Mound, Mn.

Consultant to a greenhouse manufacturer for design and development of sunspaces, technical and presentation drawings, construction manuals, and computer modeling of sunspace thermal performance.

Master of Architecture Thesis, "Performance Studies of a Working Solar Home"; 1977; M.I.T.

This thesis presented the results and conclusions of monitoring the performance of an active solar home which my company designed and built in Vermont in 1974.

Inverted Solar Hot Water Heater; M.I.T.; 1975

Design, construction and testing of a passive solar water heater for cold climates.

"Space Conditioning with Variable Membranes"; 1975; M.I.T. Solar Lab under NSF grant #GI-41306.

Researcher and contributing author in a study of solar heat collection via multi-layered membranes of "transparent insulation."

## **END-USE EVALUATION STUDIES OF ENERGY CONSERVATION PROGRAMS FOR MINNESOTA GAS AND ELECTRIC UTILITIES**

This work involved studying the effects of utility-sponsored home energy weatherization work on actual energy consumption. Over the period 1987 to 1994, fourteen studies were completed for a variety of clients including Xcel Energy, Ottertail Power Company and Centerpoint Energy. Pre and post weatherization energy consumption for over 2000 homes was compared using a proprietary method of analyzing meter data and Princeton University's PRISM computer program for separating baseline energy use from heating energy use. Statistical analysis was used to determine how strongly the observed changes in consumption could be associated with the weatherization programs.