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# PROJECT PORTFOLIO AEROSPACE



**NISHKIAN DEAN**

CONSULTING AND STRUCTURAL ENGINEERS SINCE 1919



# NISHKIAN DEAN

## Structural Engineering with a Difference

### EXPERTISE

- ▶ Project Management
- ▶ Structure Engineering
- ▶ Seismic Analysis/Retrofit
- ▶ Construction Engineering
- ▶ Structural Investigations
- ▶ Structural Rehabilitation
- ▶ Forensic Analysis
- ▶ Peer Review
- ▶ Parametric Modeling (BIM)

### PRIMARY MARKETS

- ▶ Educational/Institutional
- ▶ Commercial/Retail/Office
- ▶ Multi-Family Housing
- ▶ Mixed-Use
- ▶ Hotels and Resorts
- ▶ Parking Structures
- ▶ Aerospace Ground Support Facilities

### Big Firm Talent, Small Firm Attention

We bring over 75 people—including 60 engineers and technical experts—to your challenges. Our four offices—Portland, Bozeman, Los Angeles and San Francisco—bring outstanding technical capabilities, coupled with the personal touch and responsiveness that is usually typical of smaller firms. Your projects will always be the highest priority for our principals and project managers, who will draw upon an ample, talented staff to get them done on time and get them done right.

### Local Understanding + National Reach

We understand the conditions, technical standards and requirements for structural design in the West. We also understand our culture, and how that affects both design and the process of designing. Yet, our adaptability to other regions and conditions is demonstrated by our award winning work nationally, as well as throughout the West.

### Collaboration = Creativity

We relish the creativity that comes from a synergistic relationship with the whole project team. In all of our projects, we closely collaborate with the designers and users to develop the most cost-effective structural system that fully expresses the intent and design of their project while being easily constructible. Our designs are informed by experience with everything from one-story wood frame structures to complex retrofits for rocket launchers, and almost everything in between, but are always precisely tailored to the needs of each project and the people who are creating it.

### The *RIGHT* Technology

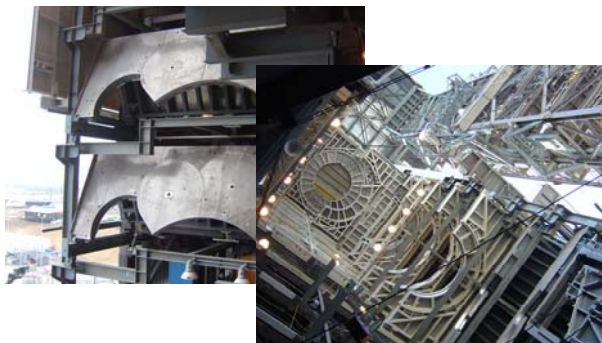
We strive to use not just the best technology, but the right technology. Our engineers keep a close eye on evolving technology, which allows them to make informed decisions on how new design, communications and collaboration approaches can best serve each of their clients.

Most importantly, we always fit the technology to the project. We certainly use the latest software such as 3-dimensional solid modeling and finite element analysis since they allow our engineers to analyze, design and detail complex engineering challenges with enhanced efficiency; yet, we also use less advanced approaches when they are more appropriate for a particular project.





## AEROSPACE



### **SLC-3E Atlas V Launch Facility Rebuild** Vandenberg, CA

#### **Owner**

Lockheed Martin

#### **Contractor**

Hensel Phelps

Retrofitting a launch facility that was originally designed and constructed in the mid-20th century, and modified in the 1990s to become a state-of-the-art facility capable of supporting cutting-edge rocket technology posed many challenges for Nishkian Dean. Increased strength for weight, wind, seismic activity, and plume impingement from the launch vehicle were paramount.

The Atlas V Launch Facility Rebuild required Nishkian Dean and design-build team to adapt this existing Atlas IIAS rocket launch facility to accommodate a new, larger Atlas V launch vehicle for Lockheed Martin Astronautics, Space Launch Complex 3E, Vandenberg Air Force Base, California.

Modifications included extensive changes to the operable platform systems and the massive environmental doors.

The entire project was completed in only 16 months, resulting in considerable schedule and cost savings to the client. Improvements to the facility now enable Lockheed Martin to launch Atlas Vs from both the east and west coasts.





Photo: Pat Corkery/Lockheed Martin  
SLC-41 VIF Door Emergency Replacement



## LC-41 VIF Door Emergency Replacement

Cape Canaveral Air Force Station, FL

### Client

Lockheed Martin

### Contractor

Ivey's Construction

On October 24, 2005 Hurricane Wilma blew through the LC-41 pad and precipitated the catastrophic failure of a major portion of the 40' wide by 280' tall folding fabric door (Megadoor) on the vertical integration facility (VIF), which houses the launch vehicle that was inside.

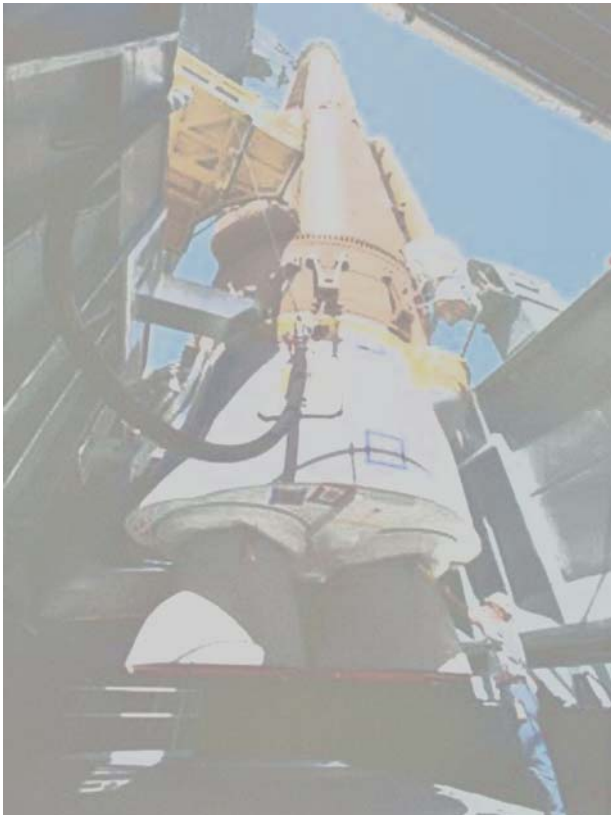
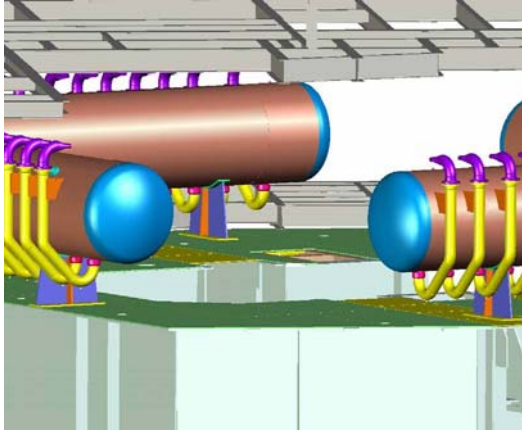
Nishkian Dean was on-site the following day to assist with the damage assessment and develop concepts to provide an operable door enclosure that would not endanger the January launch of the Pluto New Horizons mission.

The schedule was critical with a small launch window, any delays would result 3 year postponement. Working around the clock, in collaboration with LMA and contractors Ivey's Construction and Sauer, a replacement door assembly was designed, fabricated, installed, tested and operating within six weeks time.

A permanent door system is currently being constructed. The new system will be operable with the push of a button.



## AEROSPACE



### **SLC-3E Atlas V Exhaust Duct Exit Acoustic Suppression Water System** Vandenberg Air Force Base, CA

#### **Client**

Lockheed Martin

#### **Contractor**

Sauer Construction

AJ Diani

This system provides a water sheet overlay on the launch exhaust plume providing a synthetic extension of the exhaust duct and resultant reduction in acoustical intensity at the spacecraft. The system consists of 67 water nozzles arranged around the launch duct opening, mounted to a 36" pipe manifold and fed by a 45,000 gallon pressurized water storage tank, set to discharge the vessel contents in 8 seconds during the initial launch sequences.





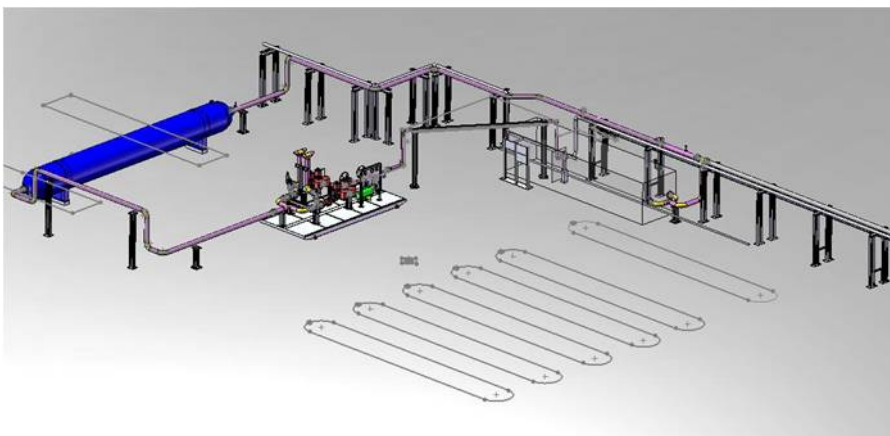
## AEROSPACE



**LC-37 Site Layout**



**LC-37 Pressure Vessel Installation**



**SLC-6 System Model**

### **LC-37 and SLC-6 Delta IV, ECS GN2 Regulator System**

Cape Canaveral Air Station, FL  
Vandenberg Air Force Base, CA

**Client**

United Launch Alliance

**Contractor**

Sauer Construction (LC-37)

This system regulates gas flow from 6000 psig provided by the base supply down to 105 psig used by the environmental control systems used support the launch vehicle and space craft.

Existing system failures and the impending launch of NROL-26 off of LC-37 at Cape Canaveral Air Station drove the need for a rapid implementation of a new more robust and reliable pressure regulation system for this mission critical system.

Nishkian Dean worked to rapidly design and implement this new system based on proven technology at LC-41. The success of the LC-37 led to the decision to implement the same system at SLC-6 in Vandenberg Air Force Base.



## AEROSPACE



*“Ivey’s experience with Nishkian Dean on several complex aerospace projects has proven beyond question that Nishkian Dean stands head and shoulders above the engineering crowd. It is rare in this environment to see their level of commitment to real time problem solving and dedication to the team concept. I cannot think of a project where I wouldn’t want Nishkian Dean in our corner.”*

Rocky Johnson  
Vice President

### LC - 39B Lightning Tower Installation Kennedy Space Center, FL

#### Owner

NASA

#### Designer

RS & H

#### Contractor

Ivey’s Construction

Provide construction engineering support for installation of three 600-foot tall lightning towers and associated cable arrays at the Constellation space craft launch pad, the replacement vehicle for the space shuttle.

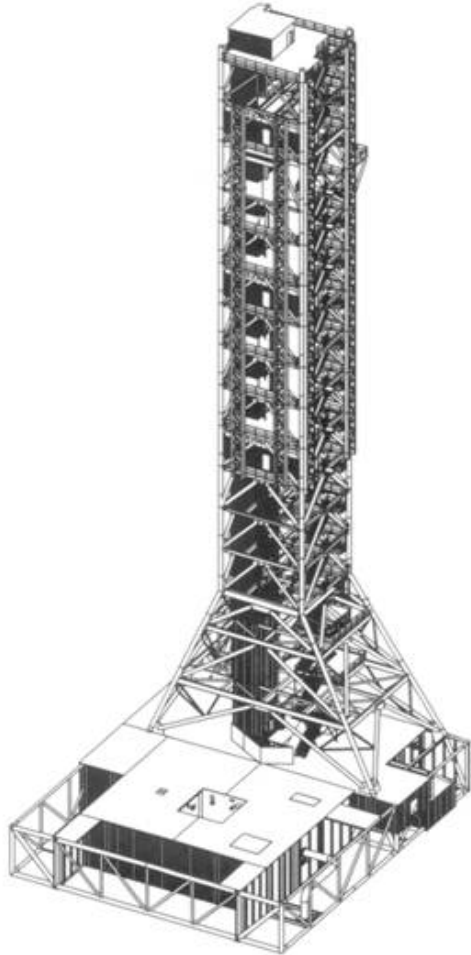
Engineering services included custom rigging design for lifting the tower tiers and 100-foot long lightning mast, tower splice connection design, monitor tower and connection design stresses during erection and potential hurricane prior to tower completion, and provide detailed cable stressing procedures for installation of complex cable array system.



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## AEROSPACE



### Mobile Launch Tower Construction Kennedy Space Center, FL

**Owner**

NASA

**Designer**

RS & H

**Contractors**

Hensel Phelps

Ivey's Construction

Sauer

The mobile launch tower is a 350-foot tall, 9,000,000 pound structure that will support the next generation Constellation space craft from assembly to lift off.

Construction engineering services include the design of temporary erection fixtures and foundations so all tiers can be ground constructed with the fixture connection matching the tier splice interface, assistance with tier site layout to assure crane capacity and mobility with layouts, and custom rigging design for lifting the tiers.



*"I have never worked with a more professional team of engineers! Your experience in the construction industry makes my job like a walk in the park. When I can just make a phone call and discuss any of many complicated issues with anyone on your team and get answers, sketches usually in just one day, its just amazing how the team understands the small amount of information supplied , and turns it into drawings that can be used to solve real time field problems!!" "I always look forward to calling and working with your team!"*

Roy Rafferty  
Ivey's Construction, Inc.  
General Superintendent



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## PROJECT LIST

### COMMERCIAL / OFFICE / RETAIL

**Jacob's Crossing** - Bozeman, MT  
**Hollywood Station** - Portland, OR - *Dorn Platz and Company*  
**Asian American Retail Center** - Portland, OR - *Asian American Plaza*  
**Bay Meadows Mixed-Use Center** - San Mateo, CA - *Franklin Resources Center, Inc.*  
**Barbur Shops** - Portland, OR - *Southeast Company*  
**Network Appliance Buildings 6, 7, and 8** - Sunnyvale, CA - *Network Appliance*  
**Adobe Headquarters** - San Jose, CA - *Adobe Systems, Inc.*  
**Bernal Corporate Park** - Pleasanton, CA - *Parkway Properties*  
**Skyport Plaza, Phase I** - San Jose, CA - *Spieker Properties, Inc.*  
**Clubhouse and Gatehouse, Spanish Peaks** - Big Sky, MT - *Privately Owned*  
**Rosewood at Sand Hill Office Building** - Menlo Park, CA - *Stanford University*  
**Green Valley Office Building** - Fairfield, CA - *H.J.Shein*

### MULTI-UNIT HOUSING

**Cannery Loft Condominiums** - Astoria, OR - *Urban Pacific Builders*  
**Riverhouse Condominiums** - Tualatin, OR - *Regency South Incorporated*  
**Blazer Condominiums** - Lake Oswego, OR - *Blazer Development*  
**Bridgeview Towers, 400 Beale Street** - San Francisco, CA - *The Emerald Fund*  
**Mission Bay, Block N2, Parcel 3** - San Francisco, CA - *Avalon Bay Communities*  
**Brannan Square** - San Francisco, CA - *Reliance Development Group*  
**Orchards Village** - Vancouver, WA - *Farmington Centers*  
**Uptown Village** - Vancouver, WA - *Vernon L. Rifer Development*  
**Avalon Walnut Creek** - Walnut Creek, CA - *Avalon Bay Communities*  
**The Prescott** - Portland, OR

### SINGLE FAMILY HOUSING

**Ward Residence** - Jackson Hole, WY - *Privately Owned*  
**Lundgren Residence** - Bozeman, MT - *Privately Owned*  
**Olivo Residence** - Bozeman, MT - *Privately Owned*  
**Discovery Cabin and Pioneer Cabin at Spanish Peaks** - Big Sky, MT - *Hart Howerton*  
**Jones Homestead** - Big Sky, MT - *Privately Owned*





## PROJECT LIST

### INVESTIGATIONS & REHABILITATIONS

**Pearl Loft Residence** - Portland, OR - *Privately Owned*

**Smith's Block** - Portland, OR - *RV Kuhns*

**140 NW 14th Redevelopment** - Portland, OR - *Harsh Investments*

### SCHOOLS AND INSTITUTIONS

**University of Oregon Lighting Towers** - Eugene, OR - *University of Oregon*

**Oregon State University** - Corvallis, OR - *Oregon State University*

**Scouter's Mountain Elementary School** - Happy Valley, OR - *North Clackamas School District*

**Canby High School Renovation** - Canby, OR - *Canby School District*

**Sunrise Junior High School** - Clackamas, OR - *North Clackamas School District*

**Joan Austin Elementary School** - Newberg, OR - *Newberg School District*

**Baker Prairie Middle School** - Canby, OR - *Canby School District*

**The Dalles Middle School** - The Dalles, OR - *The Dalles School District*

**Metzger Elementary School** - Tigard, OR - *Tigard-Tualatin School District*

**C.F. Tigard Elementary School** - Tigard, OR - *Tigard-Tualatin School District*

**Clackamas River Elementary** - Estacada, OR - *Estacada School District*

**Estacada Junior High** - Estacada, OR - *Estacada School District*

### HOTELS AND RESORTS

**Hyatt Grand Champions Resort** - Indian Wells, CA - *Hyatt Hotels*

**Fairmont Hotel Expansion** - San Jose, CA - *Wolff-DiNapoli, LLC*

**Summit Hotel** - Big Sky, MT - *Boyne, USA*

**Amangani Hotel** - Jackson Hole, WY - *Jackson Hole Holdings, Ltd. / Silverlink Holdings, Ltd.*

**Mountain Inn at Big Sky** - Big Sky, MT - *Stewart, Eddington & Coyle*

**Four Seasons Resort** - Jackson Hole, WY - *LDW Resort and Hotel Development*

**Deer Park Chalet** - Bozeman, MT - *Bridger Bowl Ski Area*

### AEROSPACE

**SLC-3E Atlas V Launch Facility Rebuild** - Vandenberg AFB, CA - *Lockheed Martin*

**LC-41 VIF Door Emergency Replacement** - Cape Canaveral AFB, FL - *Lockheed Martin*

**SLC-3E Atlas V Exhaust Duct Exit ASWS** - Vandenberg AFB, CA - *Lockheed Martin*

**LC-39B Lightning Tower Installation** - Kennedy Space Center, FL - *NASA*

**Mobile Launch Tower Construction** - Kennedy Space Center, FL - *NASA*

**LC-37 and SLC-6 Delta IV, ECS GN2 Regulator System** - Cape Canaveral, FL / Vandenberg, CA - *United Launch Alliance*



## PROJECT LIST

### CONSTRUCTION ENGINEERING

**St. Vincent Hospital Tower Crane Expansion** - Portland, OR - *St. Vincent Hospital*

**Oregon State University Systems** - Corvallis, OR - *Oregon State University*

**Calbag Metals Truss Upgrade** - Portland, OR - *Calbag Metals*

**Smith's Block Renovation URM Wall Shoring** - Portland, OR - *RV Kuhns*

**SLC-3E Atlas V Launch Facility Rebuild** - Vandenberg, CA - *Lockheed Martin*

**LC-39B Lightning Tower Installation** - Kennedy Space Center, FL - *NASA*

**Mobile Launch Tower Construction** - Kennedy Space Center, FL - *NASA*

### PARAMETRIC MODELING

**Avalon Walnut Creek** - Walnut Creek, CA - *Avalon Bay Communities, Inc.*

**Station Landing Office** - Walnut Creek, CA - *Equity Office Properties / Harvest Properties*

**Riverhouse Condominiums** - Tualatin, OR - *Regency South, Inc.*

**Rosewood at Sand Hill Office Building** - Menlo Park, CA - *Stanford University*

**Green Valley Office Building** - Fairfield, CA - *H.J.Shein*

**Oregon State University Systems** - Corvallis, OR - *Oregon State University*

**Calbag Metals Truss Upgrade** - Portland, OR - *Calbag Metals*

**Gladstone Center for Children and Families** - Gladstone, OR - *Gladstone School District*

**LC-39B Lightning Tower Installation** - Kennedy Space Center, FL - *NASA*

**SLC-3E Atlas V Exhaust Duct Exit ASWS** - Vandenberg AFB, CA - *Lockheed Martin*

**Mobile Launch Tower Construction** - Kennedy Space Center, FL - *NASA*





## KEY PERSONNEL



Edwin T. Dean, P.E., S.E.  
Principal

### EDUCATION

Bachelor of Science, Civil Engineering  
University of Washington, 1985

### PROFESSIONAL REGISTRATION

California • Florida • Montana • Oregon •  
Washington

### Professional Appointments

- Structural Engineers Association of Oregon,  
*Board of Directors*
- ACE / Portland, *Board of Directors*
- Building Seismic Safety Council, *Board of  
Directors*
- Applied Technology Council, *Board of  
Directors, President*
- Oregon Seismic Safety Policy Advisory  
Commission, *Vice Chair*



Gerald L. Gotchall, P.E., S.E.  
Principal

### EDUCATION

Bachelor of Science, Civil Engineering  
Oregon State University, 1967

### PROFESSIONAL REGISTRATION

Oregon • Washington

### Professional Affiliations

- *American Concrete Institute, Oregon*
- *American Institute of Timber Construction*
- *American Plywood Association*
- *Consulting Engineers Council of Oregon*
- *Light Gauge Steel Engineers Association*
- *Structural Engineers Association of Oregon*



Robert A. Aman, P.E., S.E.  
LEED® Accredited Professional  
Associate

### EDUCATION

Bachelor of Science, Civil Engineering  
Portland State University, 1995

### PROFESSIONAL REGISTRATION

California • Oregon

### Professional Affiliations

- *American Institute of Steel Construction*
- *Structural Engineers Association of Oregon*





## OFFICE LOCATIONS, AWARDS, AND REGISTRATIONS

### OFFICE LOCATIONS

**Nishkian Dean**  
425 SW Stark Street  
Second Floor  
**Portland, OR 97205**  
p 503/ 274-1843  
f 503/ 273-5696

**Nishkian Monks**  
7 East Beall, Suite C  
**Bozeman, MT 59715**  
p 406/ 582-9901  
f 406/ 582-9992

**Nishkian Menninger**  
1200 Folsom Street  
**San Francisco, CA 94103**  
p 415/ 541-9477  
f 415/ 543-5071

**Nishkian Chamberlain**  
5120 W. Goldleaf Circle, Suite 190  
**Los Angeles, CA 90056**  
p 323/ 596-2300  
f 323/ 596-2304  
<http://www.nishkian.com/>

### CURRENT REGISTRATIONS

Alaska	Louisiana
Arizona	Montana
California	New Mexico
Colorado	New York
Florida	Nevada
Hawaii	Oregon
Idaho	Washington
Illinois	Wyoming
Indiana	

### AWARDS



Ken Oliphant, Nathan Hoesly and Ed Dean of **Nishkian Dean** pose with project display panel and **2006 ACEC Oregon Excellence in Engineering Grand Award** for the Cape Canaveral AFS LC-41 VIF Emergency Door Replacement project.



Ed Dean, rt., **Nishkian Dean**, accepts the Design Build Institute of America (DBIA) **2005 Design-Build Excellence Award**, at the *Minds and Master Works Awards Program* for engineering the Atlas V Launch Facility Rebuild, alongside Len Phillips, It., Lockheed Martin Space Systems and John Saul, ct., Hensel Phelps Construction.



**AGC of America**  
*Building Your Quality of Life*

The 2006 Associated General Contractors of America Design-Build **Renovation Award** for the Atlas V Space Launch Complex-3 East Activation, Vandenberg Air Force Base, California was won by Hensel Phelps Construction Company and **Nishkian Dean** in partnership with Simon Wong Engineers and architect Reynolds Smith & Hills.



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