

---

# Beneficial Design – Examples of... Designing Beyond the Norm to Meet the Needs of All People

Stanford University

19 February 2019

Peter W. Axelson, MSME, Beneficial Designs, Inc., Minden, Nevada  
www.beneficialdesigns.com

## Beneficial Design

### Designing Beyond the Norm to Meet the Needs of All People

Research  
Design  
Education

## Beneficial Designs' Mission Statement

Beneficial Designs works towards universal access through research, design, and education. We believe all individuals should have access to the physical, intellectual, and spiritual aspects of life.

## Beneficial Designs' Mission Statement

We seek to enhance the quality of life for people of all abilities, and work to achieve this aim by developing and marketing technology for daily living, vocational, and leisure activities.

## Employees and Consultants

### Machine Shop

### Wheelchair Testing

### Design of Consumer Products

Product Development  
Assessment of Products  
Universal Design of Products

### Product Development

Mainstream Products  
Opportunity for Universal Design  
Adaptive Products  
Personal Technologies  
Activity Specific Technologies

## Balance Dimension

Physical  
Intellectual  
Spiritual

## Variety of Recreational Opportunities

## Sociological Dimension

Dependence (example)  
Independence (example)  
Interdependence (example)

## Personal Technologies

Activity-Specific Technologies  
Environmental Technologies

## Activity-Specific Technologies

### Arroya Sit Ski

### Mono Ski

Available from several companies

### Bi Ski

### Dynamic Seating Spring Assist

### Cross Country Ski

### Pax Back

Available from BES Rehab Ltd

### Piano Pedal Pusher

Do it yourself design specifications

### Manual Vehicle Hand Controls

Available for purchase

### Dynamic Seating

### Hiking Chair

### Hand Bike

### Contoured Seating

### Seat Cushion Testing

ISO and RESNA standards

### SKELI

Used for Standards testing

### ASLI Prototype

### HipGrip

Available from Bodypoint

### FlexRim Ergonomic Pushrim

Available from Spinergy

### GripRim

### Adaptive Canoe Seating

Available from Chosen Valley Canoe  
Accessories

### Wave Ski

## **Environmental Technologies**

Things that do not move

### **Small Watercraft Launch Areas**

### **Water Trail Access Information**

### **Tools and Technology for Accessible Trails**

#### **Universal Trail Assessment Process**

**(UTAP)** – 1200 people trained

Key UTAP Information

Length, Grade, Width, Surface,  
Cross slope, Features & Facilities  
Training available from BD

#### **High Efficiency Trail Assessment Process (HETAP)**

USDA SBIR Phase II

Equipment available from BD

#### **Developed Outdoor Recreation**

#### **Assessment Process (DORAP)**

Under development at BD

Outdoor Constructed Features

Bench, Camp Shelter, Cooking  
Surface/Grill, Fire Ring, Wood  
Stove/Fireplace, Outdoor Rinsing  
Shower, Parking Area, Picnic Table,  
Pit Toilet, Tent Pad/Platform, Toilet  
Building, Trash/Recycling  
Receptacle, Utility/Sewage  
Connection, Viewing Area at  
Overlooks, Viewing Scope, Water  
Spout

#### **Trail Access Information**

Signage available from BD

[www.trailexplorer.org](http://www.trailexplorer.org)

### **Develop Standards for Trail and Sidewalk Design**

Architectural Barriers Act Outdoor  
Recreation Access Guidelines

#### **ADA Recreation Trail**

##### **Grade**

8.33% for 200 feet

10% for 30 feet

12.5% for 10 feet

##### **Cross Slope**

5% maximum

##### **Rest Areas**

60 inches length, 5% slope

##### **Surface**

firm and stable

##### **Width**

36 inches minimum

## **Surface Testing**

### **ASTM F 1951–99**

Standard specification for determination  
of accessibility of surface systems under  
and around playground equipment  
Testing available from BD

### **Rotational Penetrometer**

Objective surface measurement device  
Available from Beneficial Designs

### **Surface Stabilizers Gravelpave2**

### **Pedestrian Right of Way Assessment Process (PROWAP)**

Wireless Measurement Devices

Measuring Process

GIS Data

Mapping

Services available from BD

### **Universal Design of Fitness Equipment (UDFE) Standards**

Accessible “mainstream” fitness equipment

Low Step-up Height Design

Grip Bars

Weight Pin Color Contrast

Weight Pin Gripability

Control Panel Contrast

ASTM standard now published

### **Development of Uniform Standards for Cognitive Technologies**

Goal—Increase Access to Technology  
for People with Cognitive Impairments  
RESNA draft standard in process

### **Amusement Park Wheelchair Access**

Accommodates Wheelchair

Accommodates Transfer

Development of Transfer Devices

Design services available from BD

### **Aircraft Seating**

The Problems with Boarding Chairs

#### **Aircraft Aisle Chair**

#### **Aircraft seating issues**

PVA funded development project at BD

## **Beneficial Designs, Inc.**

Minden, Nevada

[www.beneficialdesigns.com](http://www.beneficialdesigns.com)

[peter@beneficialdesigns.com](mailto:peter@beneficialdesigns.com)

775.783.8822 voice