
Beneficial Designs

Working towards universal access through research, design and education

December 1998

Dear Friends & Supporters:

This past year was fast-paced and full of numerous projects, activities and opportunities for Beneficial Designs. We would like to share a small glimpse of our research and development efforts and accomplishments during 1998. All of us here at BD want to sincerely thank you for your continued support and interest in our activities. We collectively wish you a high-spirited and joyous 1999.

Happy Holidays!

Peter Axelson	<i>Director of R & D</i>
Joshua Billings	<i>Maintenance Assistant</i>
Denise Chesney	<i>Research Engineer</i>
Phil DiSalvo	<i>Seating Technician</i>
Dorothy Galvan	<i>Research Assistant</i>
Julie Kirschbaum	<i>Project Coordinator</i>
Camille Lyons	<i>Administrative Assistant</i>
Simone MacLeod	<i>Database Developer</i>
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Jeremy Smith	<i>Technician</i>
Julie Stein	<i>Administrative Assistant</i>
John Tipton	<i>Technician</i>
Michelle Weagle	<i>Office Manager/Bookkeeper</i>
Wayne Wright	<i>Facilities Manager</i>
Joe Ysselstein	<i>Research Assistant</i>

New Faces

Beneficial Designs welcomes new staff members Phil DiSalvo, Camille Lyons, Julie Stein and Michelle Weagle into the BD family.

Trails Project

The Trails Project was wrapped up this year. The Phase II final report was written and the *Universal Trail Assessment Process Training Guide* is complete.

Peter, Julie K., and consultant Patti Longmuir attended the First International Trails and Greenways Conference in San Diego in January of 1998 where they led a UTAP training workshop. In November, Peter and Julie K. traveled to Tucson, AZ for the 1998 National Trails Symposium to present the benefits of applying the Universal Trail Assessment Process (UTAP) to urban trails and shared use paths.

Peter, Wayne, Patti, and Julie K. were joined by consultants, Mike Passo of Wilderness Inquiry and Kathy Mispagel of the National Center on Accessibility to assist with the training at the workshops.

Wayne assisted Rod Sanders of the Bureau of Land Management with the development of the signage and Trail Access Information (TAI) strips using UTAP for the Platte River Resource Area in Cheyenne, Wyoming. The signs are in the final editing phase and are anticipated to be completed by Spring 1999.

Interactive Trails Kiosk Completed

The final version of the Trails Kiosk interactive program was completed in March of 1998. The Trails Kiosk allows Yosemite National Park visitors to search for trails with characteristics they select, such as a certain average grade or type of destination. Simone redesigned the screen layout and added voice output accessibility features for people with visual impairments. Local cartoonist Clay Butler created DotThing, a rotund creature wearing hiking boots and brandishing a walking

stick, to guide users through the kiosk's features. Additionally, the database information for Yosemite National Park was updated to reflect trail condition changes caused by flooding in early 1997. CDs were then developed for distribution and evaluation.

Website to Locate Trails

The U.S. Department of Education funded the Phase I development of a prototype Website that provides Trail Access Information for trails across North America. Phase I of the project was completed this year and Phase II is now underway. In Phase I, Ken, Simone and Dorothy developed a running prototype of the site that permits computer users with an Internet connection to obtain scenic, access, and visitor information on the World Wide Web. Similar to the Trails Kiosk being developed by BD for Yosemite National Park, the site consists of a user input interface, a search engine and a trails database. Users will be able to enter information about the type of trail they would like to hike, and the search engine will then locate and display all trails in the database that match the input characteristics. Users can search for trails with certain grades, cross slope, widths, destination types, trails that permit certain activities, such as bicycling, and trails within a specific park or state.

Phase II of the project is being set up with the tremendous help of Peter Shikli of BusinessWare, Inc. in San Clemente, CA. The software interface will be tested by Beneficial Designs staff, trails professionals, and others to improve usability and refine the content and features.

Sidewalk and Trail Design for Access

Beneficial Designs has continued to work for the Federal Highway Administration to create two documents related to designing sidewalks and trails for access. Peter, Patti, Julie and Dorothy were joined by intern Matt Boisseau, a landscape architect student, who is responsible for the illustrations. The first document, *A Review of Existing Guidelines and Practices*, will be published

in June of 1999 and the second document, *A Best Practices Guidebook*, is scheduled to be published in January of 2000.

In September, Peter and Julie traveled to Santa Barbara to present the guidebook at the ProBike/ProWalk Conference.

Surface Measurement Devices

Funded by the National Center for Medical Rehabilitation Research at the National Institutes of Health, Beneficial Designs is continuing to design and develop portable devices capable of objectively measuring surface firmness and stability. This year two new prototype devices have been developed, and Joe, Jeremy and Denise are testing and evaluating the devices on different types of trail and playground surfaces.

At the end of October, Peter, Denise, Allen, Jeremy, Joe and Stacy traveled to Empire, Colorado for the meeting of the Regulatory Negotiation Committee on Outdoor Developed Areas. There was much discussion on trail surfaces and a need was identified to gather experts in trail surfacing to allow for further discussion on issues raised at the meeting. A National Trails Surface Symposium is being planned, to be hosted by Beneficial Designs, for March of 1999.

Playground Surface Testing

Beneficial Designs was instrumental in developing ASTM PS 83, the provisional standard specification for determination of accessibility of surface systems under and around playground equipment. This provisional standard was elevated to a full consensus standard in December of 1998 and will receive a new designation soon. Playground surface manufacturers are currently sending their products to Beneficial Designs for PS 83 testing. The test procedure uses the wheelchair work measurement method to determine the amount of work required to cross a level playground surface and compares this to the work required to negotiate a 1:14 (7.1%) ramp.

Accessibility of Exterior Surfaces

Beneficial Designs is being funded by the Access Board (U.S. Architectural and Transportation Barriers Compliance Board) to develop a recommendation for a standard for the firmness and stability of outdoor surfaces. Managed by Peter and Denise, the Phase I Research Report was completed in November of 1997, and the Technical Article was finished at the beginning of 1998.

In the heat of the summer, John, Wayne and Jeremy built and installed test courses containing a variety of surfaces that people can walk across. The Phase II human subject testing is now underway. Patti, Joe and Stacy began conducting the tests in June, having people ambulate or wheel across these surfaces while their oxygen consumption and heart rates are monitored. Dorothy has been working diligently on data entry. These physiological measurements will be compared with objective measurements of surface firmness and stability obtained with the portable devices, and the work required to cross each surface.

Hip Grip Pelvic Stabilization Device

Beneficial Designs obtained funding from the National Center for Medical Rehabilitation Research and has designed, developed and evaluated a new pelvic support system (the Hip Grip) for wheelchair users. Peter, Denise, Jamie, Jeremy, and John completed Phase I this year which involved concept and prototype development as well as a series of subject evaluations. The team anticipates a continuation of the research and development of the product in 1999 if funding for Phase II is approved.

FlexRim Wheelchair Pushrim

Mark, Peter, Denise, Jeremy, and intern Linda van Roosmalen have been hard at work on a research project to develop and evaluate a new wheelchair pushrim that's designed to reduce the risk of repetitive stress injuries to the upper extremities. Last spring, three different pushrim designs were developed and evaluated. Evaluation was performed in collaboration with Dr. Rory Cooper of the University of Pittsburgh Human Engineering Research Laboratory (HERL). The design has evolved extensively in accordance with the results of the evaluation.

Manual Wheelchair Training Guide

Final reviews and revisions have been completed and *The Manual Wheelchair Training Guide* is in the process of being published. This version will be available the first week of January 1999. The Paralyzed Veterans of America and the American Paralysis Society have purchased 500 copies and *The Manual Wheelchair Training Guide* is required reading for one of Professor Anita Perr's courses at New York University. The Powered Wheelchair Training Guide is scheduled to be available from PAX Press Publishing by Spring 1999.

ANSI/RESNA Wheelchair Standards

With support from the Paralyzed Veterans of America, Julie K., in collaboration with Michael Heckrotte of Curtis PMC have revised and reorganized the content and format of the ANSI/RESNA Wheelchair Standards. Two volumes have been published: one containing test procedures for both powered and manual wheelchairs, and the other containing additional tests for powered wheelchairs. American National Standards for Wheelchairs Volume I: Requirements and Test Methods for Wheelchairs (including Scooters); and Volume II: Additional Requirements for Wheelchairs (including Scooters)

with Electrical Systems were approved by the ANSI Executive Board in April of 1998 and are now available through the RESNA office.

In June, Peter was reelected as Chair and Denise was reelected Secretariat of the ANSI/RESNA Standards Subcommittee on Wheelchairs at the annual meeting. The ANSI/RESNA Standards Subcommittee on Wheelchair Seating and Positioning Devices was formed and Allen was elected as that committee's Vice Chair.

At the International Standards Organization (ISO) meeting in Vienna in October, Peter was elected Chair of Working Group 1: Test Methods of the ISO Wheelchair Standards Committee.

Winter Sports Access

With support from the Paralyzed Veterans of America, Peter has participated in the revision of the ANSI B-77 Aerial Tramway Standards which will soon provide greater access to skiers using adaptive equipment. Programmatic guidelines for access have been developed for ski areas operating on USDA Forest Service land. These guidelines include the requirements for lessons and rental equipment for adaptive skiers.

Peter has also been asked to assist with ski area accessibility issues for the 2002 Olympics in Salt Lake City, Utah.

Design Work

We have continued to provide testing and design services on a consulting basis for the seating and mobility industry. This year, Peter and Allen have had an opportunity to assist Disney Imagineering with the design of rides to accommodate wheelchairs and rides with improved wheelchair transfer access.

Beneficial Designs thanks the following organizations for providing funding:

- **Access Board** (U.S. ATBCB) for *Accessible Exterior Surfaces*.
- **National Center for Medical Rehabilitation Research** in the National Institute of Child Health and Human Development at the National Institutes of Health (NIH) for the *Trails Project, HipGrip Pelvic Stabilization Device, Surface Measurement Devices and FlexRim*.
- **Paralyzed Veterans of America** for *ANSI/RESNA Wheelchair Standards and Winter Sports Access*.
- **Paralyzed Veterans of America Education & Training Foundation** for *The Manual Wheelchair Training Guide*.
- **U.S. Department of Education** for the *Interactive Trail Kiosk and Website to Locate Trails*.
- **U.S. Department of Transportation** (DOT) Federal Highway Administration for *Sidewalk and Trail Design for Access*.

Farewells

Good-byes are never easy... everyone at Beneficial Designs would like to take this opportunity to bid Tamra Martin and Simone MacLeod farewell and good luck in their new endeavors and adventures. Tamra will be traveling to India, Thailand and Indonesia (wow!) and Simone will be working as a Quality Assurance Engineer at 3Dog Multimedia here in Santa Cruz. They will both be missed immensely!