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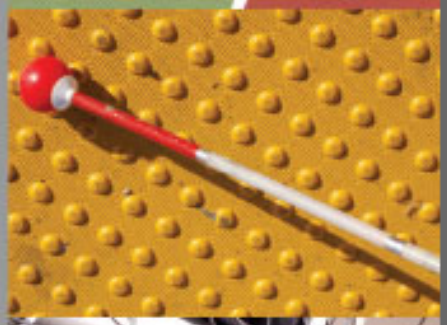

CAMPUS PEDESTRIAN FACILITIES
ADA ASSESSMENT & SURVEY

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May 7, 2012

Mr. Michael Blair
Facilities Services
Oregon State University (OSU)
130 Oak Creek
Corvallis, OR 97331-2001

Re: OSU Campus Accessibility Survey and Assessment – Pedestrian Facilities

Dear Mike,

We are pleased to submit this facility report for the campus pedestrian facility. This report is part of our project to provide a Campus Accessibility Survey and Assessment for Oregon State University. It is our hope that this report is part of the first step in assisting OSU in improving access to people with disabilities to campus facilities.

This report is part of an overall process intended to evaluate campus buildings using federal and state statutes and regulations, as well as universal design principles that are culminated in performance standards. Our findings represent a combination of these elements, with recommendations for remediation according to our proprietary barrier severity rating system (BSRS).

We look forward to discussing our findings with your team.

Regards,

Syroun Z. Sanossian, Principal
SZS Consulting Group

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1. INTRODUCTION

SZS Consulting Group is pleased to provide this Campus Accessibility Survey and Assessment of the OSU Campus in Corvallis, Oregon. The purpose of the assessment is to review and analyze existing pedestrian facilities and campus buildings so that a comprehensive built environment accessibility improvement plan can be developed. While assessment is the beginning point of this process, the end point will be the application of best practice standards and universal design principles within OSU campus facilities with the goal of improving access for people with disabilities within a barrier-free environment.

This report focuses on the pedestrian facilities throughout campus which are interspersed throughout over 540 acres of land. The entire pedestrian access route (PAR) was measured at 116.2 one-way miles in length and includes physical elements such as exterior signage, door landings, walkways, sidewalks, pedestrian elements at signalized intersections, bicycle paths, on-campus parking, bus and shuttle stops including local transit district services, stairways and public seating (benches and bleachers) identified within pedestrian paths that all interconnect to provide a complex pedestrian network that serves the entire campus.

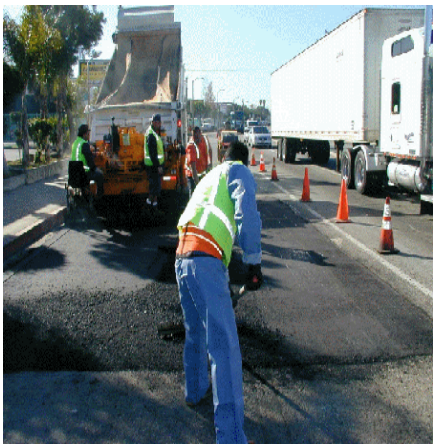
Pedestrian access routes function as essential points of arrival that serve each campus building. Most of those points originate within the public rights-of-way (PROW), which is defined as "public land or property, usually in interconnected corridors, that is acquired for or dedicated to transportation purposes"[1].

The pedestrian facility is a complex system serving multiple users and functions at OSU. The sidewalk, walkway and street crossing network is the basic unit of pedestrian mobility and its surfaces support all of us—from children to students to elders—in both pleasant and inclement weather. Private, transit, and commercial vehicles vie with pedestrians for space to navigate within the right-of-way. All modes of travel, including private motor vehicles, bus or shuttle service, and foot traffic share time and space at intersections within the OSU campus.

Power companies maintain above-ground and below-ground transmission lines that may interfere with pedestrian traffic; OSU has a system of tunnels that present site constraints when altering long-standing pedestrian routes at those locations. The city of Corvallis owns and operates surface streets and sidewalks adjacent to OSU where they are responsible for providing access; regional transit also provides bus service to campus, utility companies and public agencies oversee below-grade sewers, water mains, gas mains, and data and telecommunication networks that also affect physical elements that may encroach into sidewalk clear space or reduce maneuvering clearance required at curb ramps.

[1] Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way, Section R105.5, published in the *Federal Register* on July 26. 2011 36 CFR Part 1190 Docket No. ATBCB 2011-04. http://www.access-board.gov/prowac/nprm.htm

The public right-of-way may also include both air rights and underground circulation routes used by pedestrians. Adjacent to the right-of-way, private property owners or municipalities construct, maintain, and operate buildings, entries, driveways, sidewalk vaults, basements, and other improvements. These same parties also expect to have access to usable pedestrian and vehicular connections to and from the walkways, sidewalks and streets on campus.



The extensive system of existing roadways in Oregon is constantly being improved. The vast majority of construction work in the public right-of-way environment involves the alteration associated with building construction, rather than the independent creation of new segments of the public rights of way. Often, the bulk of public works funds are used to maintain or make changes in those existing environments, rather than to create new facilities. Thus, it is essential to ensure that the public funds spent result in the creation of pedestrian environments that are accessible to and usable by people with disabilities. This process serves that purpose.

Over the last decade, roadway design principles have been expanded to include pedestrian travel accommodations that are increasingly being applied at university campuses in both suburban and urban development areas. Designs are now expected to reflect equity and context. It has been widely recognized that balancing pedestrian and vehicular use is a basic need within the public rights-of-way.

The average campus pedestrian is now understood not to be one individual but to include a range of users—students of all ages including children, elders, people pushing or pulling strollers, book bags and delivery carts, using a wheelchair, cane or scooter, or traveling with a long/white cane or with the assistance of a service animal—for all of whom the roadway and pedestrian environment must function effectively. Most pedestrians at OSU are independently mobile; they are best served by a network of pedestrian access routes that provide efficient and safe route choices for a wide range of trip types.

SZS has assessed the physical environment on campus as to consistency with the 2010 ADA standards, Oregon Structural Specialty Code (OSSC), and universal design principles developed by the University of North Carolina[2] which promote the idea that all new environments and products, to the greatest extent possible, should be usable by everyone regardless of their age, ability, or circumstance. This report provides recommendations for upgrades to OSU staff, including the University's Accessible University Initiative Task Force, the Office of Equity and Inclusion, and the Department of Facilities Services to work towards the goal of developing the most accessible university campus as possible through the development and application of high performance standards.

[2] http://www.ncsu.edu/project/design-projects/udi/center-for-universal-design/

2. INTENT

The purpose of this assessment is to start a pro-active process by OSU to address physical elements that could create physical barriers where they currently exist. As stated earlier, the purpose of the assessment is to develop a comprehensive built environment accessibility improvement plan that includes the development of OSU best practice standards while applying universal design principles and standards for existing and new campus facilities and buildings.

To engage in comprehensive planning OSU wants full knowledge of barriers that exist on campus, regardless of whether the barriers are legally compliant or a required part of the accessible route within campus. The inclusion of stairways in this assessment is an example of the extra effort put forth in this process that exceeds the review of the accessible route exclusively. OSU has taken a proactive approach by initiating this process to assess campus facilities against very high accessibility standards not necessarily required by law. For example, we sometimes analyzed older buildings against the current 2010 ADA Standards and regulations, even though the 1990 ADA Standards may have applied to many existing campus facilities. OSU has gone one step further in this process by mandating that best practices and universal design principles that exceed the 2010 ADA standards dictate the recommendations for improvements to campus facilities cited in this report. This approach far exceeds the requirements based on state and federal regulations and statutes that govern public facilities.

OSU plans to combine the results of this assessment with their internal knowledge of program access needs, thus well positioning the campus far ahead of its peer public universities to engage in comprehensive strategic planning and prioritization.

OSU has commissioned SZS as an independent consultant to perform an objective assessment of the campus. We provide a progressive stance on accessibility coupled with a high level of expertise not only the ADA Standards but in the application of universal design principles with the goal of achieving a barrier-free environment.

SZS has been therefore been asked to establish a physical barrier inventory based on far higher standards than code requirements. Many of the physical elements identified in this report have been given recommended solutions for barrier removal that are based on performance standards, rather than minimum requirements in state or federal code.

OSU has chosen to perform this assessment process with the goal of a barrier-free environment through the application of universal design principles because the campus aspires to the highest degree of accessibility that can reasonably be achieved.

3. EXPERTISE

SZS is not the typical A/E firm – we provide an array of services from improving access in one building, to create code performance standards that affect broader systems of higher learning. We are not only well versed in design and construction for university settings, but we also have the expertise to pinpoint the steps where crucial changes are necessary to change the existing process of design and construction so that in the future, facilities are designed and constructed more efficiently, managed more cost-effectively and made usable for all members of the community. That know-how is essential when a comprehensive plan to improve accessibility in the built environment is required.

Our team has focused on performing accessibility assessments and implementing the principles of universal design since 1994. SZS brings a wealth of professional experience and expertise as disability compliance officers, chief building officials, plan reviewers, building inspectors, architects, landscape architects, ergonomic designers, civil engineers and GIS analysts. SZS has provided services to create more than 50 ADA Transition Plans and Self-Evaluations for cities, counties and school districts.

We excel at assisting colleges and universities to improve access in complex environments through a variety of services including ADA Assessments and Accessibility Master Plans (AMP) for 12 California State University (CSU) campuses including Chico State, Fresno State, Humboldt State, CSU East Bay, Cal Poly Pomona, CSU Monterey Bay, CSU San Marcos, CSU Los Angeles, CSU Stanislaus, San Francisco State University, Cal Poly San Luis Obispo, Cal State Long Beach thus far.

We are highly successful with clients who see the value of implementing universal design principles and performance standards to improve accessibility, even beyond legal requirements.. We believe that the two concepts are complementary; universal design principles intend to make environments more usable for all without having to resort to any adaptation or specialized design while performance standards are *tangible technical tools* put in place to assist design professionals, engineers and contractors in ensuring that the built environment is usable by and accessible to people with disabilities well into the future. The relationship between the two is that of principles and tools – ideas turned into actions. Our overriding goal is to affect social change.

SZS provides solutions when the traditional system of design and construction falls short.

4. HISTORICAL CONTEXT AND COMMON CHALLENGES

People are living longer today. The average lifespan has increased to 76, largely due to healthier living, better medicine, and vaccines and sanitation that have virtually eliminated many killer infectious diseases. Nearly 80% of the population now lives past the age of 65. Projections based on U.S. Census Bureau estimates indicate that the number of persons ages 65 and over will grow to almost 40 million by the year 2010[3].

In addition, more people are now living with disability. World war I & II created a huge population of veterans with disabilities in the last century and the on-going wars in Iraq and Afghanistan have increased that population exponentially. Many of these returning soldiers will want to seek an education at centers of higher learning like OSU and also make use of the programs, services and activities that take place on campus. These demographic changes result in a population that is more disabled than ever before and these trends will only continue. The limitations imposed by products and environments designed and built without regard to the needs and rights of all American citizens are significant but often unrecognized.

Early on, advocates of barrier-free design and architectural accessibility recognized the legal, economic, and social power of a concept that addressed the common needs of people with and without disabilities. As architects began to wrestle with the implementation of standards, it became apparent that segregated accessible features were “special,” more expensive, and often unsightly.

It also became apparent that many of the environmental changes needed to accommodate people with disabilities actually benefited everyone. Recognition that many such features could be made commonly available and thus less expensive, more attractive, and even marketable created a foundation for the universal design movement. The report illustrates areas of challenge, but this process is enormously important in developing a strategic and comprehensive plan to improve accessibility based on universal design principles.

[3] Jones and Sanford, 1996

5. HISTORY AND PHASED PLAN FOR SZS ASSESSMENT

The project was intended to review and evaluate existing paths of travel (including streets, sidewalks, parking lots, transportation systems, shuttle and shelter systems) building entries, restroom facilities, classroom facilities, and interior and exterior building signage, and provide a report and recommendations for needed upgrades to OSU staff, including the University's Accessible University Initiative Task Force, the Office of Equity and Inclusion, and the Department of Facilities Services.

The process has begun to review and evaluate existing paths of travel (including streets, sidewalks, parking lots, transportation systems, shuttle and shelter systems), building entries, restroom facilities, classroom facilities, and interior and exterior building signage, and this report has been provided with recommendations for phase 1 work to identify recommended upgrades to OSU staff, including the University's Accessible University Initiative Task Force, the Office of Equity and Inclusion, and the Department of Facilities Services.

The project is planned as a phased project which will take place over a number of years as funding becomes available, and will include these elements as a minimum:

- An assessment of the existing transportation system that includes an internal shuttle system (including shuttle stops and shelters), bicycle paths, on-campus parking and local transit district services
- An assessment of the pedestrian circulation system to include accessible paths-of-travel
- An assessment of campus buildings for access to persons with disabilities
- Interior and external signage;
- The development of criteria to implement improvements that preserve the heritage of the buildings included in the University Historic District and the mandate to develop an accessible university campus
- And potentially assessments of the accessibility of campus auxiliaries such as student housing, Memorial Union/Student Activities, and athletic and entertainment facilities

The first phase of the project has been completed and included a review, analysis and cost estimation for these four aspects: exterior paths of travel, ramps, stairways and signage.

6. METHODOLOGY

SZS assists clients in setting goals to create a barrier-free environment. We recommend the application of best practices and performance standards to provide a standardized approach to barrier remediation projects that create more usable built environment. The implementation of performance standards can provide consistency that may be lacking in the existing design, construction and maintenance of campus facilities.

A. STANDARDS UTILIZED

This project has applied the following standards with the goal of creating a barrier-free environment:

- The 7 Principles of Universal Design developed by the University of North Carolina and accepted as standard practice
- The Federal Highway Administration's *Manual on Uniform Traffic Control Devices* (MUTCD) to govern signalization and other elements within the public rights-of-way
- The federal Access Board's Public Rights-of-Way Guidelines (PROWAG) that are the gold standard for compliance in the public rights-of-way assessment and design
    - We recommend that all clients become familiar with the federal Access Board's *Special Report: Accessible Public Rights-of-Way Planning and Design for Alterations*[4]
- The *Americans with Disabilities Act/Architectural Barriers Act* (2010 ADAS) Accessibility Guidelines which contain standards that will replace the ADAAG as of March 15, 2011
- The federal Access Board's *Recreation Area Guidelines* and *Outdoor Developed Area Guidelines* that apply to recreation areas, parks and trails and other developed areas exist
- ADA/ABA standards for *Transportation Facilities* (transit stops, train stations, bus and shuttle stops, etc.) adopted by the US Department of Transportation

While these principles and standards are vital to this project, our actual experience with clients is evidence that we not only know the concepts but apply the principles and

[4] http://www.access-board.gov/prowac/alterations/guide.htm

standards on a daily basis. One case in point is the performance standard we advocate for the design of ramps and sloped walkways. Federal and state code allows ramps to be designed at with a maximum longitudinal (running) slope of 8.3% and sloped walkways are allowed to be sloped at no more than 5.0%. The two elements within a pedestrian route are inextricably bound.

Universal design principals dictate that ramps and sloped walkways should be designed with the least possible slope possible, but site constraints and budgetary restrictions place limitations on how far that concept can be taken. At the other end of the spectrum, when ramps are designed at the maximum allowable slope we refer to the situation as *designing for failure*. In doing so, the architect or engineer is not allowing for construction tolerances, erroneous topographical references, construction errors or other issues that commonly cause ramps to result in slopes that exceed the maximum allowable slope when complete.

SZS performance standards limit the upper end of running slope to 7.5% for ramps and 4.5% for sloped walkways, where extreme site constraints do not exist. The result has been a reduction in inspection efforts, complaints and litigation because the ramps constructed have been more than fully compliant.

In sloped walkways, performance standards are even more crucial; a sloped walkway that exceeds 5.0% changes by definition from a walkway to a ramp, which triggers a set of requirements for handrails, level landings, clear width, etc. that do not exist for walkways.

When performance standards are not instituted for sloped walkways, it can be highly problematic for access even though the pathways were designed to be legally compliant. When designers just meet the bare minimum requirements in code, the result can be non-compliant construction because they leave no leeway in the construction process for imperfections that are a typical part of the process.

When the traditional way of *doing business as usual* is the rule, new construction projects may be required to be demolished and reconstructed over and over again. For example, even the addition of handrails and wheel guides on a sloped walkway after the fact can reduce the required clear width to a non-compliant level. Past that, the landings required at the top and bottom of a ramp are seldom level for sloped walkways. Intermediate landings are also required when the rise or run of the ramp exceeds applicable limitations (30 inches or 30 feet) ,yet the provision of an intermediate landing within a constructed walkway means extensive demolition and may not achieve accessibility without replacing the entire route of travel.

B. ACCESS DEFINITIONS

The following definitions apply for the purposes of interpreting the information contained in this report, and may not be legally recognized or required definitions of the same terms.

ACCESSIBLE ROUTE is a continuous and unobstructed path connecting all accessible elements and spaces within a building or within a site that can be negotiated by a person with a disability using a wheelchair, and that is also safe for and usable by persons with other disabilities. Exterior accessible routes may include parking access aisles, curb ramps, crosswalks at vehicular ways, walks, ramps, and lifts. In comparison, the Pedestrian Access Route (PAR) is an accessible route within the public rights-of-way.

ACCESSIBLE ELEMENT is a physical element specified by OSSC chapter 11A (i.e., telephones, controls, drinking fountains, dispensers, card readers, etc.).

ACCESSIBLE EXIT is an exit, as defined in OSSC Section 1002 does not contain stairs, steps or escalators.

ARCHITECTURAL BARRIERS are physical design features that restrict the full use of affected buildings and their related facilities by persons with disabilities.

AUTOMATIC DOOR is a door equipped with a power-operated mechanism and controls that open and close the door automatically upon receipt of a momentary actuating signal. The switch that begins the automatic cycle may be a photoelectric device, floor mat or manual switch.

BLENDED TRANSITION: A continuation of a curb in a pedestrian way that provides a flush transition into the roadway for the purpose of providing a pedestrian access route. Running slope within a blended transition shall not to exceed 5.0%. Other curb ramp requirements apply (detectable warnings, etc.)

BUILDING ENTRANCE ON AN ACCESSIBLE ROUTE is an accessible entrance to a building that is connected by an accessible route to public transportation stops, to parking or passenger loading zones, or to public streets or sidewalks, if available.

CROSS SLOPE is the slope that is perpendicular to the direction of travel.

CURB CUT is an interruption of a curb at a pedestrian way, which separates surfaces that are substantially at the same elevation for the purpose of providing an accessible route across an otherwise non-accessible curb.

CURB RAMP is a sloping pedestrian way intended for pedestrian traffic, which provides access between a walk or sidewalk and a surface located above or below an adjacent curb face.

DETECTABLE WARNING is a standardized surface or feature built into or applied to walking surfaces or other elements to warn visually impaired persons of hazards in the path of travel.

EQUIVALENT FACILITATION is an alternate means of complying with the literal requirements of these standards and specifications that provides access consistent with the purpose of these standards and specifications.

INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) is that symbol adopted by Rehabilitation International's 11th World Congress for the purpose of indicating that buildings and facilities are accessible to persons with disabilities.

LANDING is a level area (except as otherwise provided), within or at the terminus of a doorway, stair or ramp.

LEVEL AREA is a specified surface that does not have a slope in any direction exceeding ¼
inch (6.4 mm) in 1 foot (305 mm) from the horizontal (2.083-percent gradient).

MARKED CROSSING is a crosswalk or other identified marked path intended for pedestrian use in crossing a vehicular way. Best practices dictate that the marked crossing surface material shall have a minimum 70% contrast against the adjacent roadway surface.

MAXIMUM EXTENT FEASIBLE applies to the occasional case where the nature of an existing facility makes it virtually impossible to fully comply with applicable accessibility standards through a planned alteration. In these circumstances, alterations to improve accessibility are recommended to be performed to provide the maximum physical accessibility feasible. Any altered features of the facility that can be made accessible are recommended to be made accessible. If providing accessibility in conformance with the ADA Standards or OSSC for individuals with certain disabilities (e.g., those who use wheelchairs) would not be feasible, the facility is recommended to be made accessible to persons with other types of disabilities (e.g., those who use crutches, those who have impaired vision or hearing, or those who have other impairments).

NOSE, NOSING is that portion of a stair or stairway tread projecting beyond the face of the riser immediately below.

OPEN RISER is the airspace between a stair or stairway tread projecting beyond the face of the riser immediately below.

PEDESTRIAN is an individual who moves within walking areas with or without the use of walking-assistive devices such as crutches, leg braces, wheelchairs, etc.

PEDESTRIAN RAMP is a sloped accessible route intended for pedestrian traffic and is differentiated from a curb ramp.

PEDESTRIAN WAY is a route by which a pedestrian may travel. The difference between an accessible route and a pedestrian way is the level of compliance. The pedestrian backbone designated in the accessibility master plan is a pedestrian way, rather than an accessible route due to existing barriers to access documented for removal in future new construction and alterations projects.

RAMP: See pedestrian ramp.

RUNNING SLOPE is the slope that is parallel to the direction of travel.

SIDEWALK: A pedestrian walkway adjacent to a roadway. Running slope in sidewalks is not regulated by code, but may be ameliorated through building construction and the use of elevators and building entries at various levels.

SIGNAGE is displayed verbal, symbolic, tactile or pictorial information. A directional sign is a publicly displayed notice which indicates by use of words or symbols a recommended direction or route of travel.

SITE is a parcel of land bounded by a property line or a designated portion of a public right-of-way.

SITE IMPROVEMENT is the landscaping, paving for pedestrian and vehicular ways, outdoor lighting, recreational facilities, etc., added to a site.

SLIP RESISTANCE is the frictional force necessary to keep a shoe heel or crutch tip from slipping on a walking surface under conditions likely to be found on the surface at the time of approval. Slip resistance is the specified static coefficient of friction of the surface under design conditions.

TACTILE is defined as an object that can be perceived using the sense of touch.

TECHNICALLY INFEASIBLE is defined as an alteration that has little likelihood of being accomplished because existing structural conditions would require removing or altering a load-bearing member that is an essential part of the structural frame, or because site constraints prohibit modification or addition of elements, spaces or features that are in full and strict compliance with the minimum requirements for new construction and are necessary to provide accessibility.

VEHICULAR OR PEDESTRIAN ARRIVAL POINTS are public or resident parking areas, public transportation stops passenger loading zones, and public streets or

sidewalks. The accessible route begins, by definition, at these points of arrival and ends at the building entrances.

VEHICULAR WAY is a route intended for vehicular traffic such as a driveway or parking lot.

WALK (WALKWAY) is a surfaced pedestrian way not located contiguous to a street used by the public sloped not to exceed 5.0%. Campuses generally have far more walkways than sidewalks.

C. BARRIER PRIORITIZATION FOR REMEDIATION

The physical barriers to access that are identified in this report include both those defined as code deviations and other barriers that hinder or prevent people with disabilities from enjoying full use of the pedestrian facilities provided by OSU, again regardless of whether the barriers comply with federal and state law. Each element identified as a barrier to access in this report has also been classified in terms of how severely the barrier affects people with disabilities when they use the facility. After barriers are categorized with a barrier severity rating, the entire group of barriers must be prioritized for barrier removal in a reasonable manner. SZS has opted to follow guidance for this prioritization process as found in certain statutes and regulations.

For example, SZS looked to the OSSC 's guidance on how to prioritize barrier removal in alterations projects intended within buildings, although it does not specifically address pedestrian facilities. Please note the information below as it does not contain the terms sidewalk, walkway, curb ramp, etc.:

ORS 447.241 Standards for renovation, alteration or modification of certain buildings; barrier removal improvement plan.

(1) Every project for renovation, alteration or modification to affected buildings and related facilities that affects or could affect the usability of or access to an area containing a primary function shall be made to insure that, to the maximum extent feasible, the paths of travel to the altered area and the rest rooms, telephones and drinking fountains serving the altered area are readily accessible to and usable by individuals with disabilities, unless such alterations are disproportionate to the overall alterations in terms of cost and scope.

(2) Alterations made to the path of travel to an altered area may be deemed disproportionate to the overall alteration when the cost exceeds 25 percent of the alteration to the primary function area.

(3) If the cost of alterations to make the paths of travel to the altered area fully accessible is disproportionate to the cost of the overall alteration, the paths of travel shall be made accessible to the extent that it can be made accessible without incurring disproportionate costs.

(4) In choosing which accessible elements to provide under this section, priority shall be given to those elements that will provide the greatest access. Elements shall be provided in the following order:

(a) Parking;
(b) An accessible entrance;
(c) An accessible route to the altered area;
(d) At least one accessible restroom for each sex or a single unisex restroom;
(e) Accessible telephones;
(f) Accessible drinking fountains; and
(g) When possible, additional accessible elements such as storage and alarms.

SZS also looked to 28 CFR 35.151 for guidance on setting priorities for barrier removal:

Priority 1
Path of travel - a continuous, unobstructed way of pedestrian passage by means of which the altered area may be approached, entered, and exited, and which connects the altered area with an exterior approach (including sidewalks, streets, and parking areas), an entrance to the facility, and other parts of the facility.

Priority 2
Restrooms

Priority 3
Telephones

Priority 4
Drinking fountains

Barrier removal within an Accessibility Assessment and Survey process utilized here is not necessarily the same as a building alterations project. For instance, the pedestrian facilities that were investigated in Phase 1 of this project do not include the elements listed in the ADA priorities 2 and 4 above (one drinking fountain barrier was identified in the pedestrian facilities) and if that protocol were followed, every barrier would be categorized as a priority 1 barrier with no variation. That result would not serve the needs of this process well.

SZS has experience in assessing more pedestrian facilities at campuses throughout the US and recommends a more detailed system of prioritization detailed below. We have analyzed each type of barrier identified as a subset of the comprehensive group of barriers identified in order to create the barrier priority rating for remediation we recommend below:

Priority 1 – Parking, bus stops and new construction areas
Priority 2 – Sidewalks, signalized intersections and public phones or emergency phones
Priority 3 – Walkways, assembly areas
Priority 4 – Stairways and other elements not part of the pedestrian path (benches, picnic tables & drinking fountains, etc.)

Some exceptions exist. For instance, we believe that the contrasting color at stairway treads recommended by the 2010 ADA is an important element and we have rated that a priority 2. Specific exceptions to the priorities listed above are found below. SZS also conducted an inventory of all bus and shuttle stops, and two bus stops included in the database were found to have no barriers listed. Since GIS mapping of those bus stops was necessary as part of the transportation facilities assessment, those two bus stops are listed in the database with GPS coordinates and locations, but no barriers.

Also, a discussion must be conducted regarding the removal of barriers of lower severities that are categorized in priorities 1 and 2. SZS believes that this in a crucial

decision making process as the effect that a barrier has on people with disabilities should play a significant role within the barrier removal process. The following exceptions to the SZS prioritization exist in this report:

Priority 1 – Specific Areas

All New Construction Areas

- Cross Slope - New Construction
- Door/Gate Landing - New Construction
- Driveway - New Construction
- Curb Ramp Flares - New Construction
- Door Landings - New Construction
- Curb Ramp elements
- Curb Ramp Running Slope - New Construction
- Stairway Riser Height - New Construction
- Walkway Running Slope - New Construction
- Ramp Running Slope (New Construction)
- Sidewalk Running Slope (New Construction)
- Stall Dimensions - New Construction
- Bus Stop Cross Slope - New Construction
- Curb Ramp Transition into Roadway - New Construction
- Door Landing issues (other than new construction)

Other Barriers

- Abrupt Changes in Level (at ramps, door landings, sidewalks and walkways)
- Protruding Objects (potential hazards)
- Grate Openings
- Accessible Route - Marked Crossing in Vehicular Areas
- Railroad Crossing issues
- Clear Width - ADA Existing (30” to 32”)
- Clear Width - ADA Existing (less than 30”)
- Curb Ramp Lips
- Drinking Fountains
- Elevators

Priority 2

- Directional Signage
- Lack of Vertical access – no ramp or lift at stairway to building entrance

Priority 3

- End of Walkway - No Barricade
- Fare Vending Machines and ATM machines
- Assembly Seating
- Contrasting color at stairway treads (all other stairway barriers are listed at Priority 4)
  - Possible in-house remediation

Priority 4

- Construction Site - No Access (should have been remediated when construction was completed)
- Detectable Warnings - Incorrect Application (installed in areas where they are not required)
- Exit Stairways
- Elevators
- Stairway Handrails
- Stairway Riser Height
- Stairway Open Risers
- Stairway Abrupt Changes in Level
- Door Landing issues (other than new construction)
- Picnic Tables
- Sidewalks (long stretches of sidewalk where a pedestrian route exists on the opposite side of the roadway)

Each of these assigned priorities should be reviewed thoroughly with designated OSU staff. This report is in draft form and input is necessary to ensure that it meets the needs of the campus.

D. BARRIER METHODOLOGY

Assessing the public rights-of-way is unique in terms of accessibility; SZS has developed expertise by collaborating with civil engineers and landscape architects that specialize in the public rights-of-way. We perform plan review and construction monitoring for civil engineering projects and our skills in analyzing and interpreting code requirements for the public rights-of-way is unparalleled. SZS has developed a proprietary database using the Microsoft Access® platform that we have provided to OSU as part of this project.

The ERSI ArcGIS® software used is also proven as off-the-shelf technology and the SZS database is designed to seamlessly integrate data into the ArcGIS® geodatabase. Our field investigators institute standard operating procedures for taking measurements and collecting data providing consistent results that our clients can depend on.

SZS follows the Department of Justice method[5] of measurement using a 2-foot long digital level (inclinometer) to measure slope to within 0.2% accuracy using the following methods.

First, the field investigators observe the general slope of the pedestrian surface and place the digital level on the pavement at the steepest point parallel to the direction of the slope in the center of the pedestrian route. Measurements for cross slope are made perpendicular to the path of travel with measurements of running (longitudinal) slope being made parallel to the path of travel. Measurements are taken in 4-foot increments by placing the digital level in 5-point locations within the element.

When an area is identified with a slope that is not within standards, we placed a red marker 3” x 5” in size at the location to be seen within the frame of the digital photo taken of the location to provide visual confirmation of the exact location at which the actual measurement was taken.

These markers are especially helpful when a physical barrier is measured in linear footage; the exact location where each element identified can clearly be seen in the

[5] Survey Tools and Techniques - ADA Checklist for New Lodging Facilities at http://www.ada.gov/ckstools.htm

printed reports and database. No guesswork is necessary to interpret our measurements or findings. We also provide GIS mapping of campus which shows the location and type of each barrier identified in relation to all other barriers with their relationship to the accessible route.

Data entry takes place in the office using the SZS database that is configured with pull-down menus and auto-populating fields that reduce human error and provide efficient yet consistent data collection. We have also developed standardized operating procedures for the measuring tools we use to evaluate facilities. The tools we use are identical for each team of field investigators as follows:

- Proprietary field investigation forms (FIF) and checklists for signalized intersections, restrooms, etc. that allow written data collection for each barrier, per client request or during rainy season
    - Each barrier to access is identified by digital geolinked photographs that are included in our reports and imbedded in our proprietary MS Access® database to ensure that there is no linkage error when transferring files
    - Proprietary barrier severity rating system is contained within our database to instantly rate each barrier for severity
    - Database also tags each entry with date/time to enable easy correlation with photos and GPS data
- Stabila® 2-foot digital level to ensure the highest level of accuracy
- Trimble GPS equipment consisted of the Trimble® GPS GeoXH handheld (3.5G edition, with floodlight), Zephyr® Model 2 external antenna, LTI Tru-pulse® 360B (yellow) laser, and a 2-meter long GPS grizzly pole with mounting brackets on which the other devices were attached. Integrated digital camera to ensure exacting photo-documentation
    - Floodlight© technology allows the capture of GPS data points even in thick tree cover within sub-meter location accuracy (39.37 inches)
    - Internal 5 mega-pixel camera integrated into Trimble device geolinks photos to barriers automatically
- HMR® calibrated pressure gauges to measure operating push/pull force of mechanisms such as door closers, drinking fountains, etc.
- Rola-tapes® for the measurement of long distances and hand-held metal measuring tapes for measurements under 12 feet

SZS has also developed barrier identification systems to standardize our process and ensure consistency. Our proprietary barrier severity rating system (BSRS) has been developed through many years of research and experience, and it allows our firm to assign a rating to each barrier that defines how severely each barrier affects a person's ability to use the element. This systematic approach to categorizing barrier severity allow provides our clients with essential information to assist them in making determinations for barrier removal.

We know from experience that without a systematic approach to barrier severity rating, differentiation between barriers can be reduced to guesswork. A copy of the BSRS is provided in the appendix of this report.

EXAMPLES OF PERFORMANCE STANDARDS

Detectable Warnings

An important concept in this process is importance of performance standards in improving access in new construction and alterations projects at OSU. The premise is this: code requirements are intended only as minimum standards, not broad governing principles that ensure access. Building code is essential in creating scoping and technical requirements that not only require that an element is accessible but by defining from a technical standpoint, what "accessible" means. For instance, a curb ramp is required by OSSC to have a detectable warning as described below:

> **1103.2.3 Detectable warnings.**
> **1103.2.3.1 Curb ramps.** Curb ramps shall have detectable warnings that shall extend the full width and depth of the curb ramp, including the flairs, complying with Section 1109.16 [see below].
>
> **1109.16 Detectable warnings.** Detectable warnings on walking surfaces shall consist of approved texture, including, but not limited to, raised **truncated domes** having a diameter of 0.9 inch (23 mm) nominal, a height of 0.2 inch (5 mm) nominal and a center-to-center spacing of 2.35 inches (60 mm) nominal, **a diamond pattern created with an expanded metal grate**, or be 1/8-inch to 1/4-inch (3.2mmto 6.4 mm) cut grooves 2 inches (51 mm) apart arranged so they will drain, or any other method that provides equivalent detectability and shall contrast visually with adjoining surfaces, either light on dark or dark on light.

Note that the options code allows for types of detectable warnings vary widely in OSSC. Two specific types of surfaces are named and a broad statement is also made allowing the use of "any other method". This quotation from OSSC demonstrates how grey code language can become. Without performance standards, how can any client know what to use?

The photo to the right shows the OSSC option allowing a diamond pattern created with an expanded metal grate. This option does not provide a visual contrast that people with vision impairments can make use of either when using a white cane by non-sighted individuals or through visual identification by those with low vision. The bright yellow-colored truncated domes shown in the photo to the left provide a detectable warning that has both an approved

texture for white cane users and a visually significant color that the vast majority of people with vision impairments (who have low vision) can detect as a warning. The difference in these two options is stark but SZS performance standards can provide clear guidance necessary to make this determination.

SZS recommends a best practice of using only one type of detectable warning throughout campus to provide a consistent cue that people with vision impairments can depend on. If OSU were to rely on OSSC as most property owners do in the state, OSU staff would be in the position of making their case with each architect and each contractor for each project as to which of the type of detectable warnings to install. The campus pedestrian access route not provide consistent cues to help the visually impaired navigate campus and funds would be expended without improving access – in fact, access could hindered by providing ambiguous cues to the visually impaired.

Moreover, the code text above in blue states that any other method of detectable warning that provides equivalent detectability would be code compliant. Consider that scenario: if every curb ramp has a different detectable warning, people with low vision would have little chance of discerning where the transition into the roadway exists throughout campus. This could result in potential injury.

SZS recommendations for implementing performance standards for detectable warnings are based on research performed by the federal Access Board[6] as well as our experience in performing assessments, interacting with people with visual impairments including staff members and clients, and experience inspecting and reviewing products and installation locations worldwide.

[6] Federal Access Board; Visual Detection of Detectable Warning Materials by Pedestrians with Visual Impairments at http://www.access-board.gov/research/dw-fhwa/report.htm and Special Report: Accessible Public Rights-of-Way Planning and Design for Alterations 2007 http://www.access-board.gov/prowac/alterations/guide.htm

7. EXECUTIVE SUMMARY OF FINDINGS

Changing the Status Quo

By commissioning this study, OSU has shown that it is committed to culture change in addressing these issues. Many stakeholders play a part in the goal of creating a barrier-free environment on campus. OSU is not atypical; the issues with accessibility on campus are actually an endemic problem that most public entities face and the process of design and construction is fundamental. At OSU, the city of Corvallis serves as the jurisdictional authority responsible to oversee planning, plan review and inspection of design and construction projects on campus. Through this responsibility, the city plays a significant role in affecting the level of access that exists on campus. The city's actions affectively mark the starting point for design and construction on campus because their approval must be obtained to proceed with any design or construction project. In fact, city construction specifications and details are currently used for constructing curb ramps on campus.

Other stakeholders include licensed professionals (architects, landscape architects or engineers) hired by OSU through competitive bid to design facilities on campus. They are responsible to design to the current standards for all disciplines including accessibility. Contractors are hired to build the facilities designed according to the plans that the city approves and the design professionals create. An inspection process during construction should take place, but it also is generally a process that inspects according to the information in the construction documents, whether it was accurate or not.

In the end, the campus is the primary stake holder when they take possession of facilities. Accessibility is only one of hundreds of concerns that these stakeholders focus on, so it should not be surprising that not all buildings are perfectly accessible. OSU has the ability to affect change within many steps within this process, but other stakeholders also must be willing to make changes.

In our experience performing plan review and construction monitoring across the country for numerous agencies and clients, we have found that the vast majority of physical barriers to access are created by licensed professionals within their construction documents. Building contractors are required to follow the construction documents exactly when building, or to submit requests for information to the design professionals when errors are detected in plans, but they are not required to ask the design professionals to redesign the facility when minimum code standards are met, yet do not create accessible facilities.

OSU, acts in a reasonable manner when they place trust in their licensed professionals but we have found that lack of full accessibility is the rule rather than the exception. We believe that the current way of doing business in the design and construction industry must change to improve access significantly. SZS advocates the institution of performance standards to

affect that change. Our role with OSU is to assist the campus in making the cultural changes that they seek, whether or not legally required.

Pedestrian Facilities Analyzed

This report provides information on campus pedestrian facilities. Many physical elements are part of the comprehensive whole that creates a pedestrian facility. The fundamental elements evaluated as to whether they provide accessible pedestrian facilities include the following:

- Sidewalks
- Walkways
- Ramps
- Curb Ramps
- Blended Transitions
- Signalized Intersections
- Stairways (for use by 94% of people with disabilities that do not have mobility impairments)
- Benches and other Seating Elements
- Picnic Facilities

The descriptions provided for physical elements in this report are intended to clearly describe the differences between these physical elements, such as when a pedestrian route is a sidewalk rather than a walkway and to explain how the elements interact to form a cohesive pedestrian facility. Other more specific information described within this section intends to provide guidance on determinations made in this report.

The key to providing accessible pedestrian facilities is in recognizing that different people with disabilities have different needs. Setting policies that speak to the entire group is essential, rather than focusing one particular subset of the overall group. Universal design principles govern here – physical elements should be usable to everyone that visits campus without having to resort to any adaptation or specialized design.

Differences exist in the way that people use accessible elements. Detectable warnings are a good example of the conflict that can arise between groups of people with disabilities. The intended function of these elements is to serve people with vision impairments, but they affect every pedestrian. For instance, people who have incomplete spinal cord injuries may find that bumping over some detectable warnings may cause discomfort. On the other hand, detectable warnings are crucial to those with vision impairments.

People with low vision and the general public identify bright colors in the pedestrian facility as a warning sign, such as orange cones or the bright yellow color used (*Federal Color No.*

33538) when manufacturing truncated domes specified by the ADA Standards. People that are non-sighted rely more on textures that can be detected by white or long canes used to navigate the build environment. For that group of people with disabilities, the difference in sound-on-cane acoustic quality they find when tapping on concrete sidewalks and truncated domes of a different material give tell them that crossing the detectable warning could bring them into a hazardous location such as the roadway or into body contact with a protruding object that their long cane cannot detect.

Caution must be taken not to create cues in the built environment that confuse or mislead the visually impaired. This can not only be a frustration to them, but it can present a hazard. A safe middle ground that serves all groups of people with disabilities must be found.

Pedestrian surfaces can be designed and constructed with many materials. Paver stones used as detectable warnings were identified at signalized intersections and curb ramps on campus, as well as in standard pedestrian surfaces leading to door landings. These elements can also be problematic because paver stones tend to move over time, which can create abrupt changes in level that hinder or prevent travel for those with mobility assist devices; they are also tripping hazards for the general public.

Detectable Warnings

Detectable warnings (truncated domes) required at intersection corners where the pedestrian route crosses into the roadway were identified within sidewalks on each side of recently constructed driveways or alleyways on campus, although they are not required at these locations per the federal Access Board unless the driveway or alleyway is signalized[7]. We recommend removing those truncated domes because they provide further ambiguous cues to people with vision impairments and can be confusing. Detectable warnings must be applied in a systematic manner to achieve the intended goal.

Stairways

Stairways were identified in many areas where no vertical access was provided into building entrances. The intent of the draft report is to identify barriers to access and recommend solutions. Directional signage can be used at these stairways to provide information that leads people to an alternate entrance that is accessible but in some instances, no accessible entrance existed at buildings. SZS analyzed the findings to determine where a ramp, lift or directional sign is recommended but due to the fact that we have not conducted building assessments, SZS could not determine with 100% accuracy which entry was intended or necessary to be made accessible. It is our understanding that part of the review process for this draft report will entail a focused analysis by OSU designated staff and AUAC

[7] **Special Report: Accessible Public Rights-of-Way Planning and Design for Alterations** August 2007 **http://www.access-board.gov/prowac/alterations/guide.htm**

members to assist SZS in determining where directional signage would best be located. These signs are essential for visitors and new students on campus but we must be cautious not to install more than are necessary.

Other barriers were included in the database and report for stairways including issues with handrails and a lack of contrasting color at the stairway treads. As stairways are not considered part of the accessible route because they do not serve all populations of people with disabilities, they serve most of the general public. For many people with stamina issues, stairways are the shortest route into a building and for people with vision impairments, they are straightforward to navigate but people with severe mobility impairments cannot use stairways. The removal of barriers identified in existing stairways with handrails may not improve access significantly but we strongly recommend the provision of contrasting color at stairway treads as a measure from which the general public will benefit.

Exterior Signage

Directional signage is also necessary in locations were junctions exist in the pedestrian route that are not all accessible or where walkways or sidewalks end abruptly, which may cause people with disabilities to travel long distances over problematic surfaces only to find that they have to turn around and retrace their steps to find a way into a building. As described above, these locations and barriers are an area in which we need assistance. Not all pedestrian routes on campus must be accessible, especially in locations where limited pedestrian traffic exists or where a roadway lacks a pedestrian route on one or both sides. It is not necessarily helpful to post numerous signs if a smaller number of signs would still do the same job. The orientation of pedestrian approach and building function must be taken into consideration in this process.

Hilton Garden Inn

Barriers identified at the Hilton Garden Inn (51) are provided in a separate report.

Door Landings

Door landing barriers were identified but are also not part of this draft report, as they will be part of the review and remediation effort for the building assessment portion of this process. One significant issue identified at door landings with automatic door opening devices was the lack of consistency. Many different types of actuating devices were identified: push plates or motion sensors of various types. Rather than advocating a costly effort to standardize all existing actuating devices, which is recommended in new construction projects and alterations, SZS recommends that standardized signage be posted at each existing actuator as a performance standard. The sign is recommended to have the International Symbol of Accessibility (ISA).

On-Street Accessible Parking

On-street accessible parking was identified in several locations on campus. Although the 2010 ADA Standards, the 1990 ADA Standards and OSSC do not address on-street accessible parking, the PROWAG does. Those technical requirements from PROWAG were applied to the existing on-street parking stalls identified in the assessment process and are found in the report below. The significant requirement applies when the on-street parking stalls are provided adjacent to a sidewalk that is wider than 14 feet. In those locations, the stalls are required to be indented to provide an access aisle. It is also essential that the people using the on-street parking stall have a way to travel across the vertical curb that exists between the stall and sidewalk. The following technical requirements were applied:

> **Advisory R309.4 Curb Ramps or Blended Transitions.** At parallel parking spaces, curb ramps and blended transitions should be located so that a van side-lift or ramp can be deployed to the sidewalk and the vehicle occupant can transfer to a wheelchair or scooter. Parking spaces at the end of the block face can be served by curb ramps or blended transitions at the pedestrian street crossing. Detectable warning surfaces are not required on curb ramps and blended transitions that connect the access aisle to the sidewalk, including where the sidewalk is at the same level as the parking spaces, unless the curb ramps and blended transitions also serve pedestrian street crossings (see R208).

Grates in the Pedestrian Route

Many drainage inlet grates were identified in the pedestrian route throughout campus. The grates appeared to be similar in design resulting in openings that were wider than ½" that trap wheelchair wheels. Although the grates were not necessarily in the center of paths of travel, campus pedestrian travel makes use of wide segments of walkways making these grates a potential hazard in many locations. In this draft report, we recommend replacing these grates.

Pedestrian Route - Age and Condition as Factors

Much of the pedestrian route on campus is existing and more than a few decades old. Some intersection corner locations were identified with no actual curb ramp or blended transition to allow travel across the curb. This barrier is identified in this draft report as *No Curb Ramp - Existing Depressed Sidewalk.* This designation is used as a barrier where no actual curb ramp is identified but the sidewalk is depressed to a vertical curb of reduced height. In these cases, the depressed sidewalk generally lacks all code specifications for curb ramps or blended transitions. The cost estimate associated with these barriers is the same as in instances where an entire existing curb ramp must be replaced although each barrier that

exists at these locations is not detailed (lack of detectable warnings, slope, cross slope, abrupt changes in level, etc.).

Staff-Only Areas

Some locations may be designated as staff only areas on campus. We also need assistance in identifying those areas in this draft report. Policy must be determined for efforts to carry out barrier remediation in non-public areas within the pedestrian facility on campus.

Benches

Benches are quite common on university campuses. It is important to note that we do not believe that outdoor areas exist on campus, as we understand that term to be defined by the Access Board. Actual outdoor areas are defined as camping areas, trails, etc. and the average exterior area is not necessarily an outdoor area under that definition. The areas that do exist on campus are exterior and interior spaces. We believe that this distinction may not have been clearly made for benches.

Many locations on campus were identified with benches. Part of the analysis of this report by OSU staff and AUAC members will be to determine which benches should be made accessible. There are valid concerns about the dimensions of benches that are accessible being usable for the general population – the seat height is higher than found in typical benches which may be problematic for children or those of short stature. Armrests are also required for benches under the 2010 ADA Standards, which will prevent transfer onto a bench from a wheelchair, although that does not occur in daily use.

It is our recommendation that 5% of all benches overall should be accessible and one accessible bench should be provided in each location where a number of benches are located. If only one bench is provided, making it an accessible bench may not be a good solution. This is a point of discussion that we would like guidance on. In general, wheelchair users do not transfer onto benches -they sit at the side with companions who use the benches. Space at the side of each bench is specified by the 2010 ADA Standards and the report reflects that specification but an accessible bench also must be on an accessible route. This resulted in barriers listed in the report that were costly because they required the construction of lengthy segments of accessible route. Relocation of such benches is recommended in the report.

Picnic Benches

Picnic benches are provided on campus in a number of locations which could be either public or staff. A determination of staff or public use is important to this review process. These elements are similar to benches as at least one is required to be accessible, or a total

of 5% overall where more than 2 are provided. The picnic benches also must be located on an accessible route connecting them to the existing pedestrian facilities. Knee and toe clearance are specified at these elements under the 2010 ADA Standards that allow wheelchair users to pull under the table top similar to others who use those elements. Those barriers are also included in the following draft barrier data records.

8. GENERAL RECOMMENDATIONS

Performance standards are a result of research, observation and best practices. Our team at SZS has a combined experience of more than 40 years of practice as architects, landscape architects, building officials and civil engineers that we bring to bear on this process. We also perform constant research on case law and best practices that are developed throughout the country and internationally to improve access for people with disabilities while streamlining the process for our clients. It is a "Win-Win" situation.

SZS performance standards are based on a theoretical framework that translates into practical methodology. Our goals are to:

- Encourage actions to streamline design and construction
- Reduce time and expense
- Provide a higher degree of usability

The theory that we base our standards on is drawn from the Universal Design Principles formulated by the University of North Carolina in 1997.Those standards state that design must involve more than consideration for usability because our environment is not affected by aesthetics and usability alone. Many other aspects of our society must be involved in design such as economic, engineering, cultural, gender, and environmental concerns. Universal design principles provide designers guidance to better integrate features that meet the needs of as many users as possible rather than focusing on a specific group. The principles are fundamental to any design process, whether it be for a building or a toaster, but how can designers bring them into their day-to-day practice?

Practical methods are the tools that we provide to our clients that apply universal design principles to their projects in ways that are:

- Specific
- Practical
- Observable
- Result in barrier-free facilities

We know that our clients need specific information that they can easily understand and apply. That information has to be practical, meaning that it cannot expect them to make changes that are not feasible now or in the long term. The standards also must be tangible in that they make changes that can be seen by all and the result must be that they serve the goal of creating a barrier-free environment.

After reviewing and analyzing the entire pedestrian facility at OSU, we have developed the following performance standards that we recommend for implementation. These standards should be implemented not only for the short term, but to meet the long term goal of creating a barrier-free environment.

A. Provide an accessible route into every building within a campus-wide accessible pedestrian route.

B. Provide wayfinding signage as directional signage at non-accessible pedestrian routes so that people with mobility impairments are not forced to retrace their steps.

C. Set campus standards to install consistent materials as detectable warnings .We recommend using truncated domes specified by the ADA Standards (*Federal Color No.* 33538).

D. Set campus standards to require that ramps be designed at 7.5% (1:13) unless extreme site constraints exist that prevent construction of a longer ramp.

    a. Ramps shall not be longer than 32 feet without a level landing provided as a rest area. Benches or other seating elements may be provided at the landing(s).

E. Set campus standards to require that sloped walkways be designed at 4.5% (1:22) unless extreme site constraints exist that prevent construction of a longer walkway.

    a. Sloped walkways designed at 4.5% shall not be longer than 50 feet without a level landing provided as a rest area. Benches or other seating elements may be provided at the landing(s).

F. Ensure that accessible parking stalls are connected to an accessible route.

G. Standardize on-street accessible parking to follow specifications found in the federal Access Board's Public Rights of Way Accessibility Guidelines (PROWAG).

H. Institute a practice of regular maintenance to grind or otherwise repair abrupt changes in level (trip hazards) that appear over time.

I. Institute a practice of regular maintenance to trim foliage on campus to minimize encroachment into the clear width of pedestrian paths which affect the visually impaired and those with severe mobility impairments.

J. Set campus standards to prohibit the use of paver stones in any accessible route at curb ramps or pedestrian surfaces, door landings etc.

K. Set campus standards to provide contrasting color at all stairway across the entire tread width

L. Set campus standards to replace all drainage inlet grates within the pedestrian route with a mesh or other type of cover that does not have openings of ½ inch or more in any direction.

M. Standardize ISA signage at all automatic door opening devices. In new construction and alterations, standardize a type of actuating device for the entire campus (motion sensor, push plate, etc.).

N. Standardize the location of all controls or mechanisms so that a wheelchair space of 30” x 48” can be centered on the device in a level position (slope of max. 2.0% in all directions). These controls include emergency phones, card readers, automatic door opening devices, street furniture such as trash bins, vending machines, etc.

O. Set campus standards to require that 5% of all benches overall are accessible. Ensure that the accessible benches are served by an accessible route and provide a level space for a wheelchair user at the side of each accessible bench.

P. Set campus standards to require that 5% of all picnic tables overall are accessible. Ensure that the accessible picnic benches are served by an accessible route.

Q. Set campus signage standards to ensure that tactile information is usable for the visually impaired.

R. Create a construction inspection process for new construction and alterations to ensure compliance with regulations.

BARRIER SEVERITY RATING SYSTEM

Barrier Severity Rating System

BARRIER SEVERITY	STALL CROSS OR RUNNING SLOPE	CURB RAMP RUNNING SLOPE	CURB RAMP CROSS SLOPE	CURB RAMP FLARE SLOPE	CURB RAMP TRANSITON SLOPE	CURB RAMP GUTTER SLOPE	CURB RAMP 12' GROOVE SLOPE	CURB RAMP LANDING SLOPE (parallel or perpendicular)
Severity 1 (Necessary)	>5.0%	>9.5%	>5.0%	>11.1%	>8.33%	>8.33%	>5.0%	>5.0%
Severity 2 (Recommended)	4.1% to 4.9%	9.0% - 9.4%	4.1% to 4.9%	10.8% to 11%	6.6% - 8.2%	6.6% - 8.2%	4.1% to 4.9%	4.1% to 4.9%
Severity 3 (Hindrance)	3.1% to 4.0%	8.6% - 8.9%	3.1% to 4.0%	10.4% to 10.7%	5.9% - 6.5%	5.9% - 6.5%	3.1% to 4.0%	3.1% to 4.0%
Severity 4 (Low Severity)	2.1% to 3.0%	8.34% - 8.5%	2.1% to 3.0%	10.1% to 10.3%	5.1% - 5.8%	5.1% - 5.8%	2.1% to 3.0%	2.1% to 3.0%
Severity 5 (Technically Infeasible)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OSSC & ADA/ABA Code Requirements	<2.0%	≤8.33%	<2.0%	≤10.0%	≤5.0%	≤5.0%	<2.0%	<2.0% or min. 48"

BARRIER SEVERITY	RAMP RUNNING SLOPE	RAMP CROSS SLOPE	RAMP LANDING SLOPE	SIDEWALK CLEAR WIDTH	SIDEWALK RUNNING SLOPE	WALKWAY RUNNING SLOPE	SIDEWALK CROSS OR DRIVEWAY SLOPE	PED BUTTON* LANDING SLOPE	DOOR LANDING SLOPE OR WIDTH
Severity 1 (Necessary)	>9.5%	>5.0%	>5.0%	≤31”	N/A	>7.6%	>5.0%	>5.0%	>5.0%
Severity 2 (Recommended)	9.0% - 9.4%	4.1% to 4.9%	4.1% to 4.9%	32” to 35”	N/A	6.7% - 7.5%	4.1% to 4.9%	4.1% to 4.9%	4.1% to 4.9%
Severity 3 (Hindrance)	8.6% - 8.9%	3.1% to 4.0%	3.1% to 4.0%	36” to 43”	N/A	6.0% - 5.6%	3.1% to 4.0%	3.1% to 4.0%	3.1% to 4.0%
Severity 4 (Low Severity)	8.34% - 8.5%	2.1% to 3.0%	2.1% to 3.0%	44” to 48”	N/A	5.0% - 5.5%	2.1% to 3.0%	2.1% to 3.0%	2.1% to 3.0%
Severity 5 (Technically Infeasible)	N/A	N/A	N/A	N/A	<8.33%	<8.33%	N/A	N/A	N/A
OSSC & ADA/ABA Code Requirements	≤8.33%	<2.0%	<2.0%	min. 48” wide	N/A	N/A	<2.0%	<2.0%	<2.0% or min. 60”

* Landing slope at pedestrian buttons apply to landing slopes at other control/mechanism locations

THE FOLLOWING RATINGS ALSO APPLY:

Severity 1

- No sidewalk or walkway to connect pedestrian routes
- No curb cut at vertical or rounded curb
- Any lip >1/2” (abrupt change in level) in sidewalk, walkway or bottom of curb ramp
- Uneven or broken sidewalk/walkway/ramp surfaces
- Any protruding hazard
- Multiple slope issues in driveways
- No level landing provided at pedestrian button
- Stall not connected to accessible route
- Stall not located on closest route to bldg
- No marked crossing provided where route crosses roadway
- Ratio of accessible stalls to total stalls not compliant
- No van accessible stall provided
- Loading zone lacks curb ramp
- Bus stop or shuttle barriers

Severity 2:

- Signage lacking
- Truncated domes lacking
- Van stall aisle not min 8' wide
- Standard stall aisle not 5’ wide
- Door/Gate lacks min. 60" perpendicular to door swing
- All barriers at parking pass machines or vending machines
- All bus stop barriers (benches included)
- Drinking fountain barriers
- No audible signals or pedestrian buttons provided at signalized intersection

Severity 3

- All ramp handrail barriers
- Contrasting color at stair treads
- All signage (parking, directional)
- Parking stall dimensions not 9' x 18'
- Water accumulation on curb ramp
- All bench barriers
- All drinking fountains except protruding hazards
- No 12” grooves at curb ramps
- 12” not present at standard ramps
- On-street parking stalls
- No countdown signals provided at signalized intersection

Severity 4

- Sidewalk slope >8.33% where slope matches adjacent roadway (generally considered technically infeasible to remediate)

Barrier Severity Rating System

BARRIER SEVERITY	STALL CROSS OR RUNNING SLOPE	CURB RAMP RUNNING SLOPE	CURB RAMP CROSS SLOPE	CURB RAMP FLARE SLOPE	CURB RAMP TRANSITON SLOPE	CURB RAMP GUTTER SLOPE	CURB RAMP 12' GROOVE SLOPE	CURB RAMP LANDING SLOPE (parallel or perpendicular)
Severity 1 (Necessary)	>5.0%	>9.5%	>5.0%	>11.1%	>8.33%	>8.33%	>5.0%	>5.0%
Severity 2 (Recommended)	4.1% to 4.9%	9.0% - 9.4%	4.1% to 4.9%	10.8% to 11%	6.6% - 8.2%	6.6% - 8.2%	4.1% to 4.9%	4.1% to 4.9%
Severity 3 (Hindrance)	3.1% to 4.0%	8.6% - 8.9%	3.1% to 4.0%	10.4% to 10.7%	5.9% - 6.5%	5.9% - 6.5%	3.1% to 4.0%	3.1% to 4.0%
Severity 4 (Low Severity)	2.1% to 3.0%	8.34% - 8.5%	2.1% to 3.0%	10.1% to 10.3%	5.1% - 5.8%	5.1% - 5.8%	2.1% to 3.0%	2.1% to 3.0%
Severity 5 (Technically Infeasible)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OSSC & ADA/ABA Code Requirements	<2.0%	≤8.33%	<2.0%	≤10.0%	≤5.0%	≤5.0%	<2.0%	<2.0% or min. 48"

BARRIER SEVERITY	RAMP RUNNING SLOPE	RAMP CROSS SLOPE	RAMP LANDING SLOPE	SIDEWALK CLEAR WIDTH	SIDEWALK RUNNING SLOPE	WALKWAY RUNNING SLOPE	SIDEWALK CROSS OR DRIVEWAY SLOPE	PED BUTTON* LANDING SLOPE	DOOR LANDING SLOPE OR WIDTH
Severity 1 (Necessary)	>9.5%	>5.0%	>5.0%	≤31”	N/A	>7.6%	>5.0%	>5.0%	>5.0%
Severity 2 (Recommended)	9.0% - 9.4%	4.1% to 4.9%	4.1% to 4.9%	32” to 35”	N/A	6.7% - 7.5%	4.1% to 4.9%	4.1% to 4.9%	4.1% to 4.9%
Severity 3 (Hindrance)	8.6% - 8.9%	3.1% to 4.0%	3.1% to 4.0%	36” to 43”	N/A	6.0% - 5.6%	3.1% to 4.0%	3.1% to 4.0%	3.1% to 4.0%
Severity 4 (Low Severity)	8.34% - 8.5%	2.1% to 3.0%	2.1% to 3.0%	44” to 48”	N/A	5.0% - 5.5%	2.1% to 3.0%	2.1% to 3.0%	2.1% to 3.0%
Severity 5 (Technically Infeasible)	N/A	N/A	N/A	N/A	<8.33%	<8.33%	N/A	N/A	N/A
OSSC & ADA/ABA Code Requirements	≤8.33%	<2.0%	<2.0%	min. 48” wide	N/A	N/A	<2.0%	<2.0%	<2.0% or min. 60”

* Landing slope at pedestrian buttons apply to landing slopes at other control/mechanism locations

THE FOLLOWING RATINGS ALSO APPLY:

Severity 1

- No sidewalk or walkway to connect pedestrian routes
- No curb cut at vertical or rounded curb
- Any lip >1/2” (abrupt change in level) in sidewalk, walkway or bottom of curb ramp
- Uneven or broken sidewalk/walkway/ramp surfaces
- Any protruding hazard
- Multiple slope issues in driveways
- No level landing provided at pedestrian button
- Stall not connected to accessible route
- Stall not located on closest route to bldg
- No marked crossing provided where route crosses roadway
- Ratio of accessible stalls to total stalls not compliant
- No van accessible stall provided
- Loading zone lacks curb ramp
- Bus stop or shuttle barriers

Severity 2:

- Signage lacking
- Truncated domes lacking
- Van stall aisle not min 8' wide
- Standard stall aisle not 5’ wide
- Door/Gate lacks min. 60" perpendicular to door swing
- All barriers at parking pass machines or vending machines
- All bus stop barriers (benches included)
- Drinking fountain barriers
- No audible signals or pedestrian buttons provided at signalized intersection

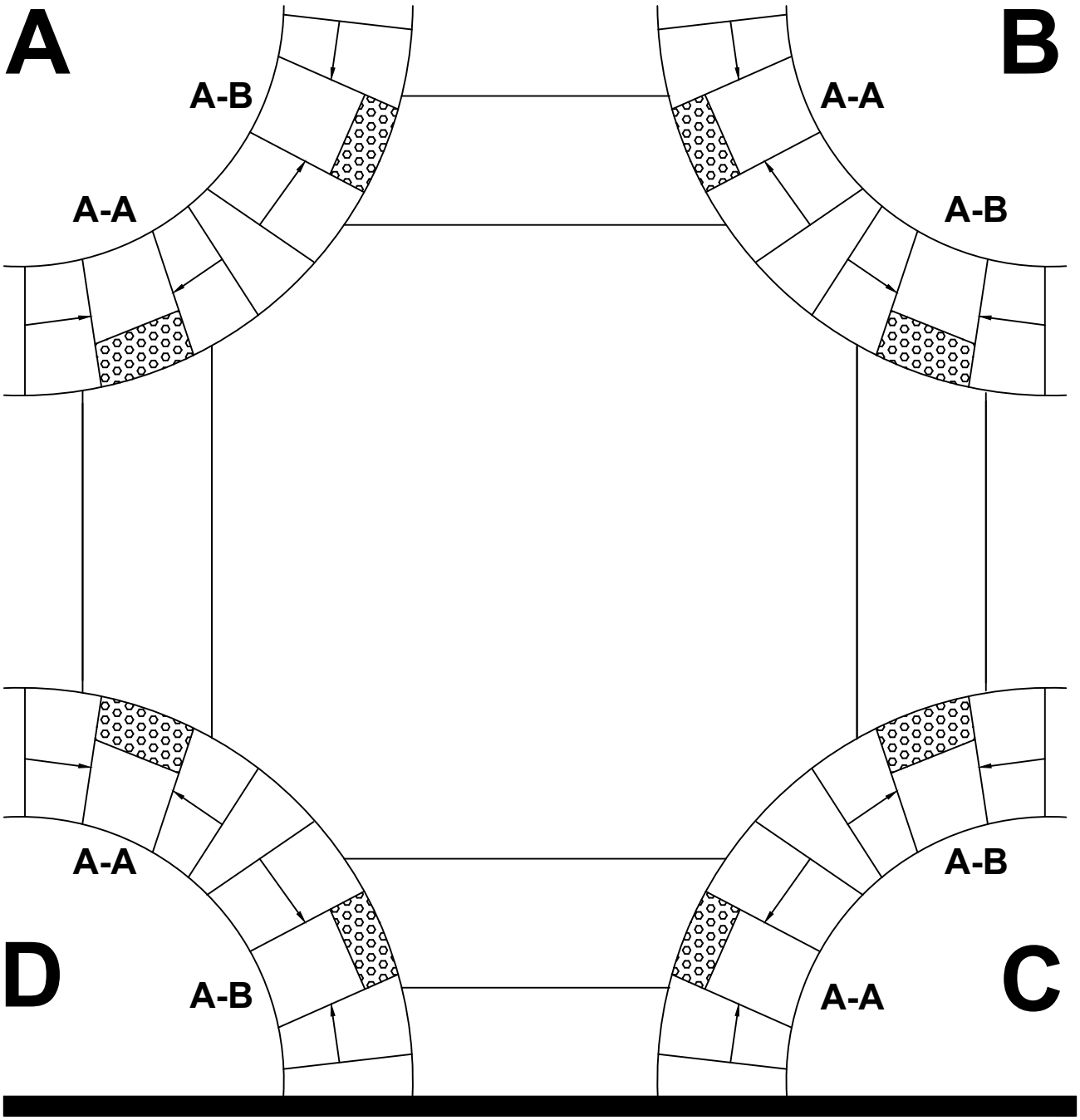
Severity 3

- All ramp handrail barriers
- Contrasting color at stair treads
- All signage (parking, directional)
- Parking stall dimensions not 9' x 18'
- Water accumulation on curb ramp
- All bench barriers
- All drinking fountains except protruding hazards
- No 12” grooves at curb ramps
- 12” not present at standard ramps
- On-street parking stalls
- No countdown signals provided at signalized intersection

Severity 4

- Sidewalk slope >8.33% where slope matches adjacent roadway (generally considered technically infeasible to remediate)

INTERSECTION CORNER DESIGNATION



When measuring curb ramps/blended transitions, the numbering system indicated above was used to identify each ramp run and pan (landing) as individual elements at each intersection.

Corners are designated as Corner A, etc. where one curb ramp or blended transition exists or Corner A A-A or A A-B for corners with more than one curb ramp or blended transition.