

UNIVERSAL PARK DESIGN SERIES

* TOOLS
  1. PROGRAMMING
  2. PARKING & ENTRY
  3. INTERIOR SPACES
  4. PLAYGROUNDS, TRAILS, & GREEN SPACES
  5. **BEACHES & WATER ACTIVITIES**

******

**Special Acknowledgement:**

Lauren Dunlay

OTD, OTR/L

**Compiled & Authored By:**

Courtney Brown

MS in Interior Design

Molly Wuebker

OTD, OTR/L

**Commissioned By:**

**Led By:**

**Disclaimer:** This toolkit is a joint effort between Polk County Conservation, Shive-Hattery, and Uncurbed

(“Parties”). This toolkit provides main summary and technical criteria of universal design considerations related to park design; however, the Parties do not warrant or guarantee the accuracy, completeness, adequacy, or currency of any information referenced or linked within this document. In no event, shall the Parties be liable for any direct, indirect, or incidental damages, injuries, losses, costs, or expenses, howsoever caused, arising out of, or resulting from access to, possession of, or use of this toolkit. The detailed guidance provided here does not represent the only possible solution. Clients or designers may develop additional solutions to meet a diversity of users. New materials and technologies that emerge may present further possibilities for accommodating the diversity of users. Each project should engage the services of a qualified and professional access consultant to ensure that project anomalies or other factors do not adversely affect the design intent.

**COVER PAGE**

**UNIVERSAL PARK DESIGN TOOL - BEACHES & WATER ACTIVITIES**

This tool is a compilation of academic, user, and practical research intended for use during the park design process to help list key universal design (UD) considerations needed to support design decision-making for the design of **beaches and water activities**. It is recommended that this tool be prioritized last, if necessary. This tool is not a one-size-fits-all. It is one component of the universally designed process used during the design of Athene’s Easter Lake North Shore Renovation Project. Each project should incorporate the practice of co-design, engaging active participation from diverse end-users and subject matter experts in universal design and/or other related fields and methodologies (i.e., human-centered design, design thinking, inclusive design, co-design, accessible design, occupational science, etc.) to ensure that project anomalies or other factors do not adversely affect the design intent. UD considerations are provided throughout the tool and while they provide a summary of main considerations and technical criteria, they should not be regarded as an exhaustive list. The detailed guidance provided here does not represent the only possible solution. Members of a co-design team may come up with other ways to meet a diversity of users. New materials and technologies that emerge may open up further possibilities for accommodating the diversity of the population.

Each tool is organized into **5** Categories for Universal Park Design, expanding on the original 7 Principles of Universal Design1 and 8 Goals of Universal Design10 to include an effort toward sustainability2 [**(see Figure 1)**](#figure)**.** These categories were selected based on project initiatives and themes collected from academic, user, and practical research. Variation exists in the categories of **beach and water activity** design due to differences in operations, organizational goals between different clients and designers, and user perspectives. The priorities you have set in place for your particular project, the UD categories, user input, and the key questions that you must ask yourself as clients and designers, are the foundation of this tool. Before using the tool, please first go to the [**Home Page**](#home)to learn more about the UD goals, categories, and how to communicate project priorities.

**Figure 1.** Crosswalk (between the 7 Principles of Universal Design1, 8 Goals of Universal Design10, and 5 Categories for Universal Park Design based on project initiatives and themes collected from academic, user, and practical research for Athene’s Easter Lake North Shore Renovation Project.

Chart, diagram

Description automatically generated

The [**Tool Page**](#tool) lists key questions relevant to the 5 specific UD categories for consideration. Below each question, a detailed design feature list is provided and serves as a menu item for clients to choose from and share with the design team at the onset of any park project based on the foundations of UD mentioned above. Designers can refer to the selected menu items throughout the design process and use the tool to validate their design choices. The design considerations and features are based on a review of research literature, best practices, and expert opinions. Clients and/or designers can add new design features based on their literature review, experiences, or user input. There may be instances of trade-offs between the UD categories, and there may be instances where you use some, but not all of the features, depending on the evaluation of value vs. cost by the client (see important notes).

**Notes:**

**Each tool is not meant to be an exhaustive list of minimal standards already covered in available design guidelines. Rather, it provides a structured way for clients and designers to consciously focus on key evidence-based design considerations to optimize design decision-making resulting in the best value for the investment.**

**Gathering user input is one important step in decision-making. This is referred to as co-design. As a design tool, this is not meant to be a one-size-fits-all prescription for design. In many cases, no prescriptive numbers (e.g., space size or length of headwall) are provided because the optimized numbers depend on a thorough understanding of the needs of those affected by the project and the constraints of the project (e.g., operations and costs). Clients and designers should use the key design considerations and design features included in the tool as a basis to determine what are “adequate” or “sufficient” numbers or sizes. Likewise, the client and future users should be consulted regarding subjective aspects (e.g., attractive design). Environmental simulation (e.g., mock-ups, and renderings) may be used in gathering input on these issues.**

**Disclaimer: The tool is based on currently available research evidence and expert opinions therefore may not exhaustively cover all design aspects impacting outcomes. The results produced by using the tool may vary depending on conditions/users.**

**HOME PAGE**

**UNIVERSAL PARK DESIGN TOOL - BEACHES & WATER ACTIVITIES**

**To begin, please complete the following information:**

**Client Name:**

**Project Name:**

**Client Contact Person:**

**Lead Designer:**

**Tool Completion Date:**

On the next page is a list of each universal design goal and category, in addition to the category of sustainability. Some goals and categories may be more important for a particular park project. If you are the client, please confirm or change priority ratings based on their relevance to **beach and water activity** design by selecting a rating (High, Medium, or Low) from the dropdown list in each cell of Column C. It is recommended to limit the 'High' priority rating to 4 UD goals and categories.

|  |  |  |
| --- | --- | --- |
| 8 Universal Design Goals1 | 5 Universal Park Design Categories1, 2, 10 | Priorities  (Insert High, Medium, Low) |
| 1. Body Fit | 1.1. Physiological & Motor Capabilities |  |
| 1. Comfort | 1.2. Physiological & Motor Capabilities |  |
| 1. Awareness | 2.1. Processing Skills |  |
| 1. Understanding | 2.2. Processing Skills |  |
| 1. Health & Wellness | 3. Health & Safety |  |
| 1. Social Integration | 4.1. Contextual Factors |  |
| 1. Personalization | 4.1. Contextual Factors |  |
| 1. Cultural Appropriation | 4.1. Contextual Factors |  |
|  | 1. Sustainability |  |

**TOOL PAGE**

**UNIVERSAL PARK DESIGN TOOL - BEACHES & WATER ACTIVITIES**

The below tool is more than a tick box. It is a menu list and communication tool for potential UD considerations relevant to **beach and water activity** design for clients and designers. Marked boxes should be reviewed by both clients and designers to determine whether a UD consideration is applicable, relevant, and achievable for your park project.

**Complete the following steps at the onset of a project:**

If you are the client:

1. Place an **X** in the Client column to indicate which design features should be considered for the project. Items selected should be consistent with project goals, user and expert input, and prioritized based on budget. The Notes column can be used to elaborate on each UD consideration as needed. Please include the date when inserting a note. It is recommended that clients engage in user and professional input when determining a UD consideration.
2. If a UD consideration is not relevant to the project, clients should leave the UD consideration in the Client column unmarked.
3. Share the completed tool with the Lead Designer by the agreed-upon completion date.

If you are a designer:

1. Discuss each marked UD consideration with the client and add to the Notes column to further elaborate on specifications (please include the date).

In general:

1. If you are the client or a designer and wish to add additional design features to the tool, you can add them in the cell beginning with “other:” under each UD category. Please enter only UD considerations supported by academic (newly published or existing unpublished research conducted by design firms, and others), user, and practical research.

**Complete the following steps throughout the project as needed:**

If you are a designer:

1. Place an **X** in the Designer column to indicate whether a UD consideration is included in the current design.
2. If during the design process, a UD consideration is no longer achievable due to unknown or unforeseeable circumstances, designers can flag a UD consideration by placing an **R** in the Designer column to indicate that the UD consideration requires further review with the client.
3. If a UD consideration can only be partially met, place a **P** in the Designer column, and explain in the Note column (please include the date). This explanation may include an alternative option.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **UNIVERSAL PARK DESIGN TOOL - BEACHES & WATER ACTIVITIES** | | | | | |
| **Client** | **Designer** | | **LEGEND**  **X in the Client column indicates that a UD consideration has been requested**  **X in the Designer column indicates that a UD consideration has been met**  **R in the Designer column indicates that a UD consideration requires review**  **P in the Designer column indicates that a UD consideration was partially met**  **Reminder: UD considerations left unmarked indicate that they are not**  **relevant to the project** | | |
| **BEACHES** | | | | | **NOTES** |
| **1.1. How should or does the beach accommodate for a variety of body types and abilities?** | | | | | |
|  | |  | | Beach mats provided for traversing over a sandy surface. |  |
|  | |  | | Access to beach environments provided by a hard-surfaced walkway that is a minimum of 6' in width.9 |  |
|  | |  | | Parking areas located as close as possible to the beach areas with accessible stalls and drop-offs.9 |  |
|  | |  | | Boardwalks or other hard surfacing provide access along the waterfront or access to a beach or other elements.4 |  |
|  | |  | | A wheelchair parking area available near the water’s edge. |  |
|  | |  | | A transfer system available near the water’s edge for wheelchair users. |  |
|  | |  | | Zero entry access from the beach to the water provided with handrails. At bottom (water end) of the ramp, the top handrail ends at water level, extending 12" parallel to the water surface. The handrail does not end abruptly but returns to a wall surface, post, or ground, or is rounded.9 |  |
|  | |  | | An accessible beach playground component or structure provided (i.e., raised sandbox, sandbox digger with access from accessible route). |  |
|  | |  | | Variety of seating types available (i.e., shade covering, seating with and without arms and back support, seating with electrical outlets for powered mobility equipment, respirators, and phones). |  |
|  | |  | | Accessible ground surfacing included around seated areas for wheelchairs. |  |
|  | |  | | Ground level beach activities include a raised alternative (i.e., raised sandboxes, splashpad, cool mist). |  |
|  | |  | | Beach play activities placed at the proper accessible height and positioned for children to comfortably approach, reach, and engage in beach play (i.e., sand digger along accessible route, raised sandboxes, transfer systems into the water).11 |  |
|  | |  | | Other: |  |
| **2.1. How should or does the beach area integrate clear multi-sensory cues to promote awareness?** | | | | | |
|  | |  | | The beach area, particularly the shoreline, pathways, and transition areas organized with consistent multi-sensory cues, such as contrasting colors and textures, to support orientation and navigation.11 |  |
|  | |  | | Acceptable and appropriate behaviors and skills for beach areas clearly displayed and/or implied. |  |
|  | |  | | Flags or markers to provide visual warnings or highlight access points. |  |
|  | |  | | Audio systems provided to allow for audible warning signals or announcements when needed. |  |
|  | |  | | Other: |  |
| **2.2. How should or does the beach include design features, activities, or equipment that are simple and intuitive?** | | | | | |
|  | |  | | Storage and rental facilities for accessible beach equipment strategically and conveniently placed near the beach. |  |
|  | |  | | Other: |  |
| **3. What sanitization measures should be or are available near the beach?** | | | | | |
|  | |  | | A sanitization station with an automatic sanitizer dispenser provided by the beach. The number of sanitization stations depend on the size of the beach and beach occupancy. |  |
|  | |  | | Desirable beach activities spaced out to promote social distancing when recommended. |  |
|  | |  | | A family restroom or single, non-binary restroom within close proximity and eyesight to the beach. |  |
|  | |  | | Accessible washrooms and changing facilities provided close to water with changing facilities at least 6' 10"x 6' 10" in size. |  |
|  | |  | | Routine management plan for the beach (i.e., cleaning sand, replacing sand, etc.). |  |
|  | |  | | Other: |  |
| **3. How should or does the design of the beach promote safety?** | | | | | |
|  | |  | | Comfortable spaces provided as observation and supervision points accompanying the beach area.11 |  |
|  | |  | | Natural and rentable shade available on the beach and along an accessible route. |  |
|  | |  | | Playground components or structures provided for children who do not want to get into the water or who need a break from the water. |  |
|  | |  | | Multiple signs regarding beach safety rules with large print and a QR code provided to view in a different language. Universal safety symbols included. |  |
|  | |  | | Other: |  |
| **3. What specialized service areas should be or are provided on the beach that promote safety?** | | | | | |
|  | |  | | Lifeguards stands provided at regular intervals with clear sight lines. |  |
|  | |  | | Rental facility located close by to supply specialized equipment (i.e., beach wheelchairs, beach mats). |  |
|  | |  | | Other: |  |
| **4.1. How should or does the design of the beach promote social integration?** | | | | | |
|  | |  | | Multiple covered bench seating with arms and back support provided for caregivers. |  |
|  | |  | | Accessible ground surfacing around seated areas for wheelchairs. |  |
|  | |  | | Fun activities provided that encourage children to play side-by-side (i.e., raised sandboxes, splashpad, cool mist) and cooperate, rather than compete, in order to participate.11 |  |
|  | |  | | Usable beach environment for individuals with diverse abilities regardless of age, ability, gender, ethnicity, culture, and socio-economic status.11 |  |
|  | |  | | People of all abilities can be included in physical and social beach play.11 |  |
|  | |  | | Variety of social play opportunities throughout the beach. |  |
|  | |  | | Beach play activities placed at the proper accessible height and positioned for children to comfortably approach, reach, engage in beach play and sustain activity with peers (i.e., sand digger along accessible route, raised sandboxes, transfer systems into the water).11 |  |
|  | |  | | Other: |  |
| **4.2. How should or does the beach provide opportunities for personal choice?** | | | | | |
|  | |  | | Beach playground components or structures provided for children who do not want to get into the water or who need a break from the water. |  |
|  | |  | | Other: |  |
| **4.3. What cultural factors should be or are considered within the beach?** | | | | | |
|  | |  | | Usable beach or beach components for individuals with diverse abilities regardless of age, ability, gender, ethnicity, culture, and socio-economic status12. For example, adaptive beach equipment is available for use. |  |
|  | |  | | Multiple signs regarding beach safety rules with large print and a QR code provided to view in a different language. Universal safety symbols included. |  |
|  | |  | | Other: |  |
| **5.1. How should or does the beach require little to no maintenance?** | | | | | |
|  | |  | | Maintaining walkways and zero entry access free from sand and erosion built into design and specified materials. |  |
|  | |  | | Water efficient equipment is installed. |  |
|  | |  | | Other: |  |
| **FISHING** | | | | | |
| **1.1. How should or does the fishing spaces include design features that accommodate for a variety of body types, abilities, and supports?** | | | | | |
|  | |  | | Accessible fishing facilities interspersed within the existing pattern of fishing spots so that desirable fishing locations are available to all anglers.9 |  |
|  | |  | | Accessible route provided from accessible parking and accessible washrooms to fishing dock. |  |
|  | |  | | A minimum of 5' per angler or 12' for 2 anglers provided.7, 9 |  |
|  | |  | | Tactile warning strips and directional tactile strips judiciously placed between the surface of the fishing station and the surface of the adjacent accessible route to assist a person with visual impairments to access the station.9 |  |
|  | |  | | Seating does not intrude upon the required clearances for the fishing station or accessible routes.9 |  |
|  | |  | | Tackle box stand next to one bench end (not both) leaving one end clear for sitting side by side with someone in a wheelchair.3 |  |
|  | |  | | Other: |  |
| **3. What safety measures should be or are put in place?** | | | | | |
|  | |  | | Firm and stable fishing station (not on a floating dock), slip-resistant surface, and a maximum slope for positive drainage of 2% in any direction.9 |  |
|  | |  | | 8' to 12' of clear space provided behind anglers to allow for the angling throw and to allow for pedestrian circulation behind the anglers.9 |  |
|  | |  | | Safety rails provided at the water’s edge where fishing as a recreational activity is occurring.9 |  |
|  | |  | | Flat, table top boulders and logs provided as an alternate to safety rails and drop-off curbs. Please note: Safety rails and barriers for drop-offs are not practical nor sustainable in natural settings and would destroy the rustic nature of the fishing experience.9 |  |
|  | |  | | Natural buffers located at curves and guardrails located on docks. |  |
|  | |  | | Curbs at drop-offs on docks provided to notify people of the edge of the dock and to act as wheel stops and 4" high at the platform edge. These curbs are not like the curbs used to protect users from the edges of ramps and usually allow for spacing under to pull a rope through for mooring a canoe or kayak.9 |  |
|  | |  | | Other: |  |
| **4.1. How should or does the fishing areas promote social integration?** | | | | | |
|  | |  | | Sitting benches provided (all with backs and arm rests) for anglers.3 |  |
|  | |  | | Fishing stations in natural settings located to take advantage of natural shade and shelter.9 |  |
|  | |  | | Shade and shelter are often hard to provide at fishing stations. Constructing a shade structure interferes with angling. If there is natural shade and shelter, this is an added attraction. Vegetation or structures for shade should not reduce the vertical clearance to less than 12' above the fishing station (required for casting) or less than 6' 7" above an accessible route to the fishing station.7, 9 |  |
|  | |  | | Seating located on or adjacent to the fishing station. |  |
|  | |  | | Other: |  |
| **4.2. What opportunities should there be or are there for personalization or personal choice?** | | | | | |
|  | |  | | Space provided for tackle box shelves and fishing rod holders (hands-free fishing).9 |  |
|  | |  | | Over-water fishing, shore fishing, in water fishing, etc. provided.3 |  |
|  | |  | | Seating arrangements provide flexibility. Space clearances for casting will have to be determined by the users of the space.9 |  |
|  | |  | | Other: |  |
| **BOATING; KAYAKING, PADDLE BOARDING, AND ROWING** | | | | | |
| **1.1. How should or does access routes and docks accommodate for different body types and abilities?** | | | | | |
|  | |  | | Accessible route provided from accessible parking and accessible washrooms to boating dock. |  |
|  | |  | | Slope of gangways not exceeding 1:12. In some cases, a series of gangways with switchbacks is required.9 |  |
|  | |  | | Dock platforms and dock boardwalks with slip resistant surfaces and kick rails or edge curbs created by a raised barrier or rail with its lower edge not more than 3" from the dock surface. The height of the curb is 4".9 |  |
|  | |  | | A graspable raised rail is an advantage for individuals moving from the dock surface into a kayak or canoe. The rail also services to attach the painters to secure the kayak or canoe.9 |  |
|  | |  | | For kayaking and canoeing activities, there are unique and site-specific solutions available to modify dock facilities to accommodate everyone. Designs include skid piers where the position of the boarding deck is manually changed with the water level or floating docks (the most common) attached to a fixed pier or abutment on the shore. The floating dock is particularly bothersome with balance and visual impairments.9 |  |
|  | |  | | The first purpose of a boat launch is to launch boats and a minimum slope of 12 to 15% is required for this function. Although this exceeds the maximum slope for an accessible route, it is acceptable. Boaters with disabilities will find that coping briefly with a steeper slope less of a bother than attempting to launch and retrieve a boat from a ramp with a lesser grade.9 |  |
|  | |  | | Overhead bars for transfer assistance in and out of boats provided. |  |
|  | |  | | Wench system available to help pull boat out of water back into the rack to exit/transfer out.3 |  |
|  | |  | | Wider route created so someone can hand wheel boat on dolly to launch pulling boat next to them if they are in a wheelchair.3 |  |
|  | |  | | Other: |  |
| **2.1. What visual and tactile cues should there be or are there on the access ramps?** | | | | | |
|  | |  | | Tactile warning strips required at the edges of boating docks.9 |  |
|  | |  | | Buffers or guardrails located at curves or on docks. |  |
|  | |  | | Other: |  |
| **4.2. What opportunities should there be or are there for personalization or personal choice?** | | | | | |
|  | |  | | Design storage facilities to hold aquatic equipment such as kayaks and rowing boats. |  |
|  | |  | | A variety of water activities available and range in complexity, including the use of adaptive equipment if needed. |  |
|  | |  | | A “rack” is used to stabilize boat at a transferable height, with a mechanism/roller system to move, while seated in the boat, into the water.3 |  |
|  | |  | | Other: |  |
| **3. What safety measures should be or are put in place?** | | | | | |
|  | |  | | Railings included with varying heights or no rails at all with only an edge treatment to prevent roll off from dock or pier.3 |  |
|  | |  | | Other: |  |
| **SWIMMING** | | | | | |
| **1.1. How should or can routes to the water be accessed?** | | | | | |
|  | |  | | Routes included over the beach, into the water, and above the water (observation platform). |  |
|  | |  | | Accessible areas available at the water’s edge large enough to park multiple chairs while the owners are in the water.3 |  |
|  | |  | | Transfer system included at the water’s edge so people can get down to the ground level and onto a flotation device or directly into the water.3 |  |
|  | |  | | Zero-entry into the water provided. |  |
|  | |  | | Other: |  |
| **2.2. How should or can signage be clear, and universally understood?** | | | | | |
|  | |  | | Signage provided with universal symbol for lifeguard presence. |  |
|  | |  | | Signage provided with clear symbols on water safety and hazards. |  |
|  | |  | | Other: |  |
| **3. What opportunities should there be or are there to sanitize before and after swimming?** | | | | | |
|  | |  | | Outdoor shower station included. |  |
|  | |  | | Other: |  |
| **3. What safety measures should be or are put in place?** | | | | | |
|  | |  | | Natural shade included. |  |
|  | |  | | Signage provided with clear symbols on water safety and swimming rules. |  |
|  | |  | | Other: |  |
| **5. What appropriate environmentally sustainable measures should be or have been taken?** | | | | | |
|  | |  | | Water features maintained, including shorelines and riparian areas to conserve water and other resources.5 |  |
|  | |  | | Water efficient, low maintenance landscaping provided.5 |  |
|  | |  | | Landscaping first utilizing native plants and then considering other appropriate drought resistant species provided.5 |  |
|  | |  | | Design to encourage and permit the collection of recyclables.5 |  |
|  | |  | | Minimize or eliminate conventional turf. |  |
|  | |  | | Rainwater harvesting system (roof collection or other) installed. |  |
|  | |  | | Trees and shrubs located to support passive heating and to complement cooling in outdoor spaces and buildings and to create seasonal heat-sinks and natural ventilation corridors.9 |  |
|  | |  | | Along roads, drives, and sidewalks, salt resistant species considered. |  |
|  | |  | | Durable products and building materials used which have a record of longer life and reduced maintenance costs.5 |  |
|  | |  | | Installation of bike racks to enhance access where needed, in context of the broader park. |  |
|  | |  | | Maximize lot permeability with landscaping, permeable pavement and other surfaces, directing impervious to infiltration areas.6 |  |
|  | |  | | High efficiency lights installed. |  |
|  | |  | | “No Smoking" signage into building and site signage packages where applicable. Restrict smoking to areas more than 25 ft from entries, outdoor air intakes and operable windows. |  |
|  | |  | | Exterior lighting focused down, adequate pedestrian lighting provided and light pollution prevented.6 |  |
|  | |  | | Where possible, purchase locally produced building materials. |  |
|  | |  | | Other: |  |
| **5. What appropriate socially sustainable measures should be or have been taken?** | | | | | |
|  | |  | | Design to encourage and permit the collection of recyclables.5 |  |
|  | |  | | Rainwater harvesting system (roof collection or other) installed. |  |
|  | |  | | Site designed to reconnect fragmented landscapes and establish contiguous networks with other natural systems both within the site and adjacent systems beyond its boundaries. |  |
|  | |  | | Trees and shrubs located to support passive heating and to complement cooling in outdoor spaces and buildings and to create seasonal heat-sinks and natural ventilation corridors.8 |  |
|  | |  | | Installation of bike racks to enhance access where needed, in context of the broader park. |  |
|  | |  | | Where possible, purchase locally produced building materials. |  |
|  | |  | | Other: |  |
| **5. What appropriate economically sustainable measures should be or have been taken?** | | | | | |
|  | |  | | Water efficient, low maintenance landscaping provided.5 |  |
|  | |  | | Landscaping designed first utilizing native plants and then considering other appropriate drought resistant species.5 |  |
|  | |  | | Rainwater harvesting system (roof collection or other) installed. |  |
|  | |  | | Trees and shrubs located to support passive heating and to complement cooling in outdoor spaces and buildings and to create seasonal heat-sinks and natural ventilation corridors.8 |  |
|  | |  | | Durable products and building materials used which have a record of longer life and reduced maintenance costs.5 |  |
|  | |  | | Installation of bike racks to enhance access where needed, in context of the broader park. |  |
|  | |  | | Maximize lot permeability with landscaping, permeable pavement and other surfaces, directing impervious to infiltration areas.6 |  |
|  | |  | | High efficiency lights installed. |  |
|  | |  | | Where possible, purchase locally produced building materials. |  |
|  | |  | | Other: |  |

**References**

1. Center for Universal Design. 1997. *The Principles of Universal Design, Version 2.0.* Raleigh: North Carolina State University.
2. Dizdaroglu, D. (2021). Developing Design Criteria for Sustainable Urban Parks. *Journal of Contemporary Urban Affairs*, *1*, 69–81. https://doi.org/10.25034/ijcua.2022.v6n1-7
3. Michigan Department of Natural Resources (2022).Appendix C: Guidance on Designing Specific Types of Recreation and Support Facilities that Exceeds ADA for Universal Accessibility. Michigan Natural Resources Trust Fund 2022 Application Guidelines. https://www.michigan.gov/dnr/-/media/Project/Websites/dnr/

Documents/Grants/MNRTF/IC1905\_MNRTF\_Application\_Guide\_2018\_611967\_7.pdf?rev=58210d0a69f344e2a42988be6cc67975&hash=98856C8FC567AB00942DB0728D783A5E

1. National Disability Authority’s Centre for Excellence in Universal Design. (2020). *Building for Everyone: A Universal Design Approach*. *Building Types.* Centre for Excellence in Universal Design. https://universaldesign.ie/built-environment/building-for-everyone/
2. Oregon Parks and Recreation Department. (2013-2017). *Oregon Statewide Comprehensive Outdoor Recreation Plan.* https://www.recpro.org/assets/Library/SCORPs/or\_scorp\_2013.pdf
3. Pacific Beach Community Planning Group.(2015). *Residential Project Design Checklist for Pacific Beach Ecodistrict Compatibility.* <https://www.pbplanning.org/wp-content/uploads/20150910-CRMS-Minutes.pdf>
4. PLAE, Inc., (1993). *A Design Guide: Universal Access to Outdoor Recreation.* Berkeley, California, PLAE, Inc.
5. President’s Council for a Sustainable Future (2008). *Keene State College Sustainable Building Guidelines.* BuildingStandards Final. https://storage.googleapis.com/stars-static/secure/304/6/474/2700/Finished%20Building%20Standards%20March%2008.pdf

1. Rodman, Donna. (2009). *Universal Design Guidelines for Outdoor Spaces: Plan and Design for Choice.* https://www.researchgate.net/publication/280002247\_Universal\_Design\_Guidelines\_for\_Outdoor\_Spaces\_Plan\_and\_Design\_for\_Choice
2. Steinfeld, E., & Maisel, J. (2012). *Universal Design*. John Wiley & Sons.
3. The Playground, Shade, and Surfacing Depot. (n.d.). *Playground Checklist: Creating Inclusive, Universally Designed Play Environments.* http://playgroundshadeandsurfacing.com/files/9213/6371/2469/7\_Principles\_of\_Inclusive\_Design.pdf