# Executive Summary

The Phinney Neighborhood Association (PNA) is committed to improving and expanding the Hillside playground, a cherished community asset. Over the years, the Hillside playground has been a source of joy and play for generations of children and their families. However, the aging infrastructure and outdated features have limited the playground's accessibility and enjoyment.

In response to the community's needs and to ensure a safe and inclusive environment, PNA convened a new Hillside Committee in 2017. This committee, composed of diverse perspectives and expertise, was tasked with evaluating the playground’s condition and planning for its future.

# Project History and Process

The project took shape through a collaborative process involving community engagement, stakeholder input, and technical expertise. Key milestones include:

- **2017:** Formation of the Hillside Committee
- **2018:** Finalization of the Master Plan Update and Hillside Schematic Plan

# Master Plan Update/Hillside Schematic Plan

The Master Plan Update/Hillside Schematic Plan aims to:

- **Expand the playground area**
- **Improve safety and accessibility**
- **Enhance play features**

# Appendices

- **Civil Engineering Report**
- **Playground Safety Guidelines for Slides**

# Acknowledgements

The success of this project is attributable to the support and contributions of:

- **Executive Director:** Lee Harper
- **Facilities Director:** Eric Jusino
- **Hillside Committee Members:** Barry Stoner, Bill Fenimore, David Traylor, Evan Bourguard, Judith Wood, Kas Kinkead, Mark Brands, Rhoda Lawrence

Consultants: Johnson Southerland

April 13, 2018
In 2017, the Phinney Neighborhood Association began a process to update their 2008 Master Plan, focusing on development of the steep slope that divides the PNA campus. The goals of the project were to:

- create a more unified sense of campus with a stronger connection between the Blue Building (upper campus) and the Brick Building (lower campus),
- provide barrier-free pedestrian access meeting the Americans with Disabilities Act standards between the upper and lower campus,
- design a hillside environment that will be easier to maintain than the existing slope, and
- create programmatic opportunities, making better use of the hillside and extra space in the lower parking area, for use and enjoyment by PNA members and community.

PNA engaged Johnson+Southerland, architects, landscape architects and planners, to develop the new plan. J+S worked closely with PNA’s site committee and administration and carried out a series of public engagement events for further refinement of project goals and parameters. J+S also worked with civil and geotechnical engineering sub consultants to aid in developing a plan that is feasible as well as capturing the intent and vision of the community.

The new master plan’s primary element is a vision of the hillside as a beautiful, accessible and activated zone that binds the PNA campus together in an environment that feels like it is part of nature. In brief, the main elements of the plan are:

- Main Staircase / Grand Promenade. A new staircase (replacing the existing) paired with amphitheater seating is located for a more direct connection between the new entry courtyards at the Blue and Brick Buildings.
- Hillside Ramp. An accessible pedestrian ramp zig-zags down the north half of the hillside and includes a number of resting and gathering spaces.
- Slide Mountain. The existing slides are replaced by a more comprehensive and attractive play environment that includes exciting new slides on a rocky promontory that offers naturalistic climbing, scrambling and exploring opportunities.
- Natural Environment and Controlled Slopes. A series of low walls and rockeries turn the steep hillside into gently sloping terraces. The planting design theme is “controlled natural”, meaning use of the most durable and lowest maintenance native or adapted plants, mimicking our local natural environment but modified for comfortable, open sightlines.
- Brick Building Parklet. Excess asphalt is replaced by seating among trees, planters and a large raingarden.

Elements that remain the same include the general parking layout (there are some very small adjustments), the existing enclosed play areas and the existing system of planters and gates across the lower parking area.

The intent of the master plan is to document a preferred vision that has been tested feasibility and to estimate implantation budgets. Each phase will require design, to further refine and detail the project, engineering and permitting.
PNA’s 2008 Master Plan (by Site Workshop) captures many of the ideas that have continued into the current Master Plan: the main staircase/promenade, accessible ramp, expanded play opportunities. However, a number of changes took place on the PNA campus in the ensuing decade. Both the Blue and Brick Buildings had extensive remodels including accessibility improvements and new entry courtyards. The parking layout was reconfigured. The farmer’s market, which used to take place in the lower parking lot, was moved to the upper parking lot. A new plan was needed to reflect physical and operational changes, to delve deeper into feasibility issues and get updated community input.

In addition to an initial public meeting in July 2017 to discuss community aspirations, concerns and priorities, J+S interviewed stakeholders including grounds maintenance staff and an after-school care provider and took a display about the project and talked with about 40 community members at the farmer’s market. Probably the most dominant theme emerging from the input was affection for the existing slides. We also heard a wide variety of attitudes about safety and children’s access to the hillside, ranging from “free-range” (desire for kids to be able to climb trees, dig in dirt, not very concerned about safety) to “health and safety” (concern about unsafe conditions for kids and desire to protect hillside from trampling and erosion). Hillside safety issues raised included tree climbing, steepness of slope, sight lines, campers and needles. The need for better access by people with strollers or with mobility issues was emphasized, and a general desire for a greener environment. People had a variety of preferences on programmatic use of the hillside, with some preferring a more naturalistic, low maintenance approach and others preferring community or demonstration gardens. Our interview with grounds maintenance staff emphasized the extreme difficulty and outsized drain on resources needed for hillside maintenance, primarily trimming vegetation.

J+S returned to the farmer’s market in August 2017 with three preliminary plan schemes showing a variety of approaches to the project goals. For example, Scheme A shows a pedestrian ramp that take up less of the hillside, but is a bit steeper with handrails, while Scheme B shows a longer, gentler ramp without handrails, and Scheme C gains the needed length of ramp by crossing the main stair. Other themes explored included landscape and programming (from more naturalistic and unprogrammed to more program-oriented demonstration gardens), slides (from keeping the existing to replacing them with different types of slides), the main promenade (from creating a direct route between buildings at the expense of impacting the upper playground to a more indirect route) and the Brick Building frontage (from creating a more active parkour-themed area to a more passive seating area).

We talked with about 60 people at the August farmer’s market event. While the comments represent a wide scatter of preferences, the dominant remark we heard was general support for the project, regardless of which approach is chosen. We heard support for all three of the schemes, with the more naturalistic approach of Scheme C getting the most votes. The comments also reveal the tension between some individuals’ strong opinions that children should have unrestricted access and physical experience of the hillside and others who want to protect vegetation and soil from trampling and erosion.
The August farmer’s market visit was followed by a public meeting. A number of teachers from the various preschools on the PNA campus were in attendance at this meeting and the design team learned more about their concerns and how these programs use the site.

During the fall of 2017, PNA’s executive team took the schematic plans and a detailed questionnaire to a variety of targeted groups and stakeholders for their input. The outcome of the additional input as well as guidance from the PNA site committee was additional objectives and parameters to guide development of the final plan. These included directives to minimize impacts and changes to the upper play area, keep a buffer between the hillside ramp and 67th Street, keep the ramp north of the main stair, use natural materials as a surfacing in the slide area, replace the existing with steel slides, include direct access from the upper play area into the hillside play area, aim for a naturalistic planting approach on the hillside rather than program-oriented planting beds and to go with passive seating and planting for the Brick Building frontage. Additionally, the design team received input from the site committee that the hillside play area should be a big, unique gesture that is fun and not overly-tamed by safety concerns.
Hillside

**General landscape approach**

The stairs, ramps and activities feel as if they were placed on a north-west native hillside. However, this landscape of native and adapted plants is managed to feel much more open than we find in nature. The primary palette is trees and groundcovers carefully choreographed for view corridors from upper to lower campus and to the city and mountains beyond. Mid-height shrubs are mostly eliminated for open views through the landscape. The master plan process settled on this landscape approach as most appropriate for the hillside environment for a healthy, thriving soil and plant environment with less maintenance than other approaches. A series of walls help by creating flatter terraces that will be easier to maintain. The primary wall type is a rockery that will fit in with the naturalistic aesthetic and be more affordable than some alternatives.

**Relationship to Blue Building and upper parking area**

The new pedestrian route starts at the Blue Building courtyard, ramping gently down to a “welcome mat” landing at the top of the grand promenade. This location is a good opportunity for an entry arch or other artwork and signage.

The east edge of the upper parking lot is slightly reconfigured. A new fence separates parking from the hillside. Addition of wheel stops allow a narrow planting strip along the fence. Vegetation is planned and managed for view corridors from upper parking to the hillside and to the lower campus.

**Main Stair and Amphitheater Steps**

The stair descends the 22’ vertical feet from upper to lower campus in two flights with a generous mid-point landing and gathering area. The upper flight pairs a standard stair with broad amphitheater steps which will provide ample seating for farmer’s market days and for small performances on the landing. The lower flight is a standard stair that descends to a smaller landing with a bench.

The stair creates a direct connection between the new entry courtyards at the Blue and Brick Buildings.

**Hillside Ramp**

A 5’ wide, barrier-free pedestrian ramp zig-zags down the north half of the hillside. The ramp includes 8% sections with handrails and landings as well as 5% sections without handrails. In addition to providing access from the top of the hillside to the bottom, the ramp provides access to the mid-level gathering area, access to the middle of slide mountain and to a couple of smaller resting and gathering spaces with bench and boulder seating.

**North 67th Street path**

A new path allows pedestrian access along 67th Street. The path is located entirely within PNA property, rather than in the right-of-way, and connects to the hillside ramp.

**Slide Mountain**

The existing slides (approximately 10’, 20’ and 28’ in length) are replaced by new slides intended to be a few degrees longer and more exciting (16’, 22’ and 40’ in length, small, medium and big) as well as meeting US Consumer Product Safety Commission guidelines for public playground safety. The slides will be set in an attractive and engaging landscape, a naturalistic rocky promontory that provides a variety of full-body engagement and navigation challenges. Choices for getting from the lower levels to the top range from straightforward stair access to informal stone steps to undesignated rock scrambling. The intent is for children and adults to self-select the level of challenge appropriate for them. The medium and big slides have barrier-free access at the top as well as at the bottom. The mid-level access path cuts through the rocky promontory and under the big slide, creating a fun tunnel effect.
Upper play access
A new gate allows direct access from the upper play area onto the upper promontory of Slide Mountain where there is a gathering area of boulders and logs as well as the top of the longest slide. A guard rail encloses this area where there are steep drop-offs.

Slide Landing Area
The slide landing area has been rebuilt and enlarged to allow a more generous runout area at the bottom of the slides and seating for spectators. A guard rail prevents people from running directly into the parking drive aisle. To ascend from parking lot to landing area, people can take the steps, climb a rock, use the accessible ramp or simply step up the 2’ wall.

South hillside trails and environment
The south hillside feels a little bit wilder than north of the main stairs, appropriate to the slide mountain play environment, with paths transitioning from concrete to crushed rock and mulch and more rock and seating than traditional benches. One goal of the south hillside is to provide a lush, green environment where plants can be touched and smelled but not trampled. Unobtrusive low fences throughout clearly delineate areas where feet can go and where plants can grow.

Rope climb
The rope climb, kind of a 3-rope bridge over rubber surfacing, provides another fun way to ascend the slope and takes advantage of space between the south property line and south stair. Groups of kids can use this feature simultaneously for climbing and bouncing.
SLIDE MOUNTAIN CONCEPT

SLIDE MOUNTAIN CONCEPT

SLIDE MOUNTAIN CONCEPT

SLIDE MOUNTAIN CONCEPT

SLIDE MOUNTAIN

SLIDE MOUNTAIN

SLIDE MOUNTAIN

ROCK CLIMB

ROCK CLIMB

ROCK CLIMB

CLIMBING WALL

CLIMBING WALL

CLIMBING WALL

PRECEDENT IMAGES

PRECEDENT IMAGES

PRECEDENT IMAGES

PRECEDENT IMAGES

TEAR DROP PARK, NYC

TEAR DROP PARK, NYC

TEAR DROP PARK, NYC

SCHURMAN ROCK, SEATTLE

SCHURMAN ROCK, SEATTLE

SCHURMAN ROCK, SEATTLE

SCHURMAN ROCK, SEATTLE
**South Stair**
The replacement stair is the same width and has the same alignment as the existing south stairs. Differences include 2 landings instead of one that accommodate the new nature trail and large steps at the bottom that form an informal outdoor classroom.

**North lower parking area**
The north half of the lower parking area remains primarily as is, with minimal changes to striping due to the shifted location of the main stair. Striped areas at the end of the middle bank of parking are turned into tree planters, bringing some green and shade into the asphalt expanse.

**South lower parking area**
The south half of the lower parking area, which accommodates required parking but is largely used as a play area for preschool programs, will remain enclosed by the existing system of concrete planters and gates. An additional gate controls the new gap at the base of the ramp to the slide landing. Colorful patterns painted onto the existing asphalt provide big-wheel tracks and other creative play opportunities. An additional standard and hoop expand basketball practice opportunities. Additional trees and planting are intended to eventually reduce maintenance on the slope at the south end of the parking area. A raised garden bed enhances accessibility of the existing preschool garden terraced into this south slope. The middle bank of parking is shifted slightly westward to accommodate the enlarged slide landing.
Brick Building Parklet
Trees, planters, boulders and a series of benches provide shade and respite along the brick building frontage. A large rain garden cleanses and detains water running off of the parking lot to mitigate for new and replaced paving in the master plan. A green wall screens views of the dumpsters from this area and a brick plaza highlights the north entry to the building as well as access to the stairs to Dayton Avenue N.
The challenge of Phase I is finding part of the master plan that is stand-alone and play-related that can be built for a total budget (construction costs and soft costs) of $250,000. The project also needs to provide great value to the PNA community and be a wonderful advertisement for the rest of the plan.

The Phase I identified here meeting these goals is part of Slide Mountain. In Phase I, the existing tallest slide remains in place while the two smaller slides are replaced by the proposed small and medium slides. The slide landing area is enlarged with seating per the final plan and climbable rock surfacing, part of the future promontory, replaces the existing dirt and tire slope. Landings at the top of the new slides tie into the existing mid-level path on the hillside.
PERMITTING & ENGINEERING

Steep slope environmentally critical areas (ECAs), new and replaced impervious surfaces and structures (in this case, walls exceeding 4’ height) in the master plan are all factors triggering permitting by City of Seattle.

The City does not regulate playgrounds, however the master plan proposes following industry standards and federal standards for the Slide Mountain area and any other play elements. (Note: licensed daycares and preschools do need to meet Department of Early Learning guidelines, however the hillside play area is outside of the licensed preschool areas).

Phase I
Phase I is small enough that it does not trigger grading and drainage or building permits. However, because of the steep slope ECA, it does need to go through environmental review. The purpose of Seattle’s ECA regulations are “to promote safe, stable, and compatible development that avoids and mitigates adverse environmental impacts and potential harm on the parcel and to adjacent property, the surrounding neighborhood, and the related drainage basin”. Because the land use code generally does not allow any development on steep slopes or their setbacks except for environmental restoration, PNA needs to obtain an ECA Exemption and Relief from Prohibition on Steep Slope Erosion Hazard Area Development. Preliminary steps for the Exemption and Relief include:

- survey of the steep slope ECA (ECA boundaries were not included in the most recent site survey)
- geotechnical report which includes test pits on the hillside.

According to our geotechnical consultant, all of the development envisioned in the Master Plan will likely be approved by City of Seattle as long as the design demonstrates that it conforms to the development standards for ECAs in Seattle Municipal Code chapter 25.09 and the recommendations of the geotechnical report.

Phase II
The geotechnical report and additional survey work from Phase I should be useable for Phase II as well. However, Phase II will probably need its own ECA Exemption and Relief from Prohibition on Steep Slope Erosion Hazard Area Development.

The project will need a grading permit with drainage and stormwater review, which are triggered by exceeding thresholds for land disturbance and new or replaced impervious surfaces. Phase II will trigger On Site Stormwater Control, which generally includes mitigation measures such as pervious paving systems and bioretention planters (rain gardens). Because of the soils and drainage basin conditions at PNA, a non-infiltrating rain garden is envisioned to mitigate for new and replaced impervious surfaces. Phase II is planned so that the impervious surfaces stay below 10,000 square feet to avoid triggering an additional requirement for flow control in the form of a large detention tank under the lower parking lot. See civil notes in appendix for more detail.

The project will need a building permit for structures. Retaining walls that exceed 4’ in height are the only structures envisioned in the master plan. These will need design and calculations by a structural engineer.

Miscellaneous requirements. The master plan maintains functionality of existing fire access and preserves the number and general configuration of parking places, with a few adjustments.
Phinney Neighborhood Association
Hillside Concept Design & Master Plan Update

PHASE I - BUDGET ESTIMATE

CONSTRUCTION COSTS

*April 13, 2018

PROJECT INFORMATION

Assumptions:
1. This opinion of probable construction cost is based on preliminary schematic design and should not be used for construction.
2. All costs are assumed to be contractor-installed, except as noted.
3. Costs are estimated in 2018 dollars and need to be escalated for future construction.

PHASE I - SLIDE MOUNTAIN (2 SLIDES)

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SUB TOTAL | | | | | $110,384 |

TOTAL CONSTRUCTION COSTS | | | | | $177,983 |

SOFT COSTS

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TOTAL SOFT COSTS** | $67,289 |

PHASE II TOTAL PROJECT COSTS** | $245,272 |

* Civil engineering services are likely not needed for Phase I, however this should be verified through the Land Use review pre-application process.

** The owner needs to verify if they need to budget for any other owner costs such as administration, publicity etc.
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<td>GCP concrete south stairs (incl base, trimwork, brn wn)</td>
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<td><strong>$249,460</strong></td>
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**CONSTRUCTION COSTS**

**PHASE II TOTAL PROJECT COSTS**

$1,943,665

**SOFT COSTS**

$375,170

**CONSTRUCTION COSTS WITH SALE TAX**

$1,579,696

**TOTAL CONSTRUCTION COSTS**

$1,189,141

**PHASE II TOTAL COSTS:**

$1,189,141

**SOFT COSTS:**

$375,170

**TOTAL PHASE II COSTS:**

$1,564,311

**SOFT COSTS:**

$375,170
APPENDICES
Phinney Hill Park
Summary of Drainage Review
September 19, 2017

From the DSO GIS Records: Existing Sewers – Gold Lines indicate "Combined Sewers" are serving the site.

From the SDCI GIS Records: The pink areas represent where "Infiltration Evaluation is NOT required. Based on other areas of steep slopes that extend to the north ½ of the site and the proximity to the existing building to the east, I would argue that Infiltration is not feasible anywhere on the site and testing is not required.
Phinney Hill Park
Summary of Drainage Review
September 19, 2017

Summary of Areas:

- Total Site: 110,448 SF
- Work Area Contained in 63,000 SF Portion of Site
- Area of Work: 21,900 SF
- New and Replaced Hardscape: 10,000 SF
- New and Replaced Pervious: 11,900 SF

**Figure 4.2A – Parcel Based Project, Minimum Requirements**

Summary:

We are assuming that infiltration is not feasible on the site. If there is more than 10,000 sf of new and replaced hardscape, flow control is required. If there is less than 10,000 sf, only on-site storm water management is needed. We are assuming that there are no downstream capacity constraints that would also require flow control if the new and replaced impervious exceeds 2,000 sf. A PAR or review with SDCI is needed to confirm this.

On-site stormwater management would likely be provided by non-infiltrating bioretention cells and the use of porous pavement. The use of porous pavement could be limited by the same concerns about infiltration impacts to the existing brick building at the east edge of the site. The approximate base area of the non-infiltrating bioretention facilities for the proposed hardscape is 0.06 x 10,000 sf = 600 sf. These facilities would be distributed around the site to provide stormwater management for the various areas of hardscape that would drain to them. There is no requirement for WQ treatment since the site drains to a combined sewer.
BIORETENTION PLANTER (NON-INFILTRATING)

NOTES:
1. BIORETENTION PLANTER AREA DIMENSIONS MUST BE SHOWN ON DRAINAGE CONTROL PLAN.
2. AGGREGATE RESERVOIR SHALL BE TYPE 25 MINERAL AGGREGATE (WASHED SANDY GRAVEL / FILTER MATERIAL).
3. PLANTER SHALL BE A MINIMUM INSIDE WIDTH OF 2 FEET.
4. SLOTTED DRAIN PIPE SHALL RUN THE LENGTH OF THE PLANTER.
5. MINIMUM FREEBOARD SHALL BE 2 INCHES FOR CONTRIBUTING DRAINAGE AREAS LESS THAN 3,000 SF, 4 INCHES FOR AREAS 3,000 SF TO 5,000 SF AND 6 INCHES FOR AREAS GREATER THAN 5,000 SF. FREEBOARD SHALL BE NOTED ON THE DRAINAGE CONTROL PLAN.
6. SEE THE SEATTLE STORMWATER MANUAL VOL. 3, SECTION 5.6.2, FOR ADDITIONAL REQUIREMENTS.
5.3.6.3.1 Embankment slides
- The slide chute of an embankment slide should have a maximum height of 12 inches above the underlying ground surface. This design basically eliminates the hazard of falls from elevated heights.
- Embankment slides should follow all of the recommendations given for straight slides where applicable (e.g., slide height, slope, use zone at exit, etc.).
- There should be some means provided at the slide chute entrance to minimize the use of embankment slides by children on skates, skateboards, or bicycles.

5.3.6.3.4 Straight slides
- For toddlers:
  - The average incline of a slide chute should be no more than 24° (that is, the height to horizontal length ratio shown in Figure 20 does not exceed 0.445).
  - No section of the slide chute should have a slope greater than 30°.
  - The slide chute should be between 8 and 12 inches wide.
- For preschool- and school-age children:
  - The slide chute of an embankment slide should have a maximum height of 12 inches above the underlying ground surface. This design basically eliminates the hazard of falls from elevated heights.
  - Embankment slides should follow all of the recommendations given for straight slides where applicable (e.g., slide height, slope, use zone at exit, etc.).
  - There should be some means provided at the slide chute entrance to minimize the use of embankment slides by children on skates, skateboards, or bicycles.

5.3.6.3.5 Tube slides
- Tube slides should meet all the applicable recommendations for other slides (e.g., slide height, slope, use zone at exit, etc.).
- Means, such as barriers or textured surfaces, should be provided to prevent sliding or climbing on the top (outside) of the tube.

5.3. Chute exit region
All slides should have an exit region to help children maintain their balance and facilitate a smooth transition from sitting to standing when exiting. The chute exit region should:
- Be between 0 and -4° as measured from a plane parallel to the ground.
For toddlers the chute exit region should:
- Be between 7 and 10 inches long if any portion of the chute exceeds a 24° slope.
- Be no more than 6 inches above the protective surfacing.
- For preschool- and school-age the chute exit region should:
  - Be at least 11 inches long.
  - Be no more than 11 inches above the protective surfacing if the slide is no greater than 4 feet high.
  - Be at least 7 inches but not more than 15 inches above the protective surfacing if the slide is over 4 feet high.

5.3.8.1 Slide access
Access to a stand-alone slide generally is by means of a ladder with rungs, steps, or a stairway with steps. Slides may also be part of a composite play structure, so children will gain access from other parts of the structure. Embankment slides use the ground for access.

5.3.8.2 Slide platform
All slides should be provided with a platform with sufficient length to facilitate the transition from standing to sitting at the top of the inclined sliding surface. Embankment slides are exempt from platform requirements because they are on ground level; however, they should not have any spaces or gaps as noted below.

5.3.3 Slide chutes
Children can be expected to descend slide chutes in many different positions, rather than always sitting and facing forward as they slide. These other positions should be discouraged at all times to minimize injuries.

Slides may provide a straight, wavy, or spiral descent either by means of a tube or an open slide chute. They may be either free-standing (Figure 17), part of a composite structure, or built on the grade of a natural or man-made slope (embankment slide). Regardless of the type of slide, avoid using bare metals on the platforms, chutes, and steps. When exposed to direct sunlight the bare metal may reach temperatures high enough to cause serious contact burn injuries in a matter of seconds. Provide shade for bare metal slides or use other materials that may reduce the surface temperature such as, but not limited to, plastic or coated metal.

5.3.6.3.1 Embankment slides
- The slide chute of an embankment slide should have a maximum height of 12 inches above the underlying ground surface. This design basically eliminates the hazard of falls from elevated heights.
- Embankment slides should follow all of the recommendations given for straight slides where applicable (e.g., slide height, slope, use zone at exit, etc.).
- There should be some means provided at the slide chute entrance to minimize the use of embankment slides by children on skates, skateboards, or bicycles.

5.3.6.3.4 Straight slides
- For toddlers:
  - The average incline of a slide chute should be no more than 24° (that is, the height to horizontal length ratio shown in Figure 20 does not exceed 0.445).
  - No section of the slide chute should have a slope greater than 30°.
  - The slide chute should be between 8 and 12 inches wide.
- For preschool- and school-age children:
  - The average incline of a slide chute should be no more than 30° (that is, the height to horizontal length ratio shown in Figure 20 does not exceed 0.577).
  - No section of the slide chute should have a slope greater than 50°.

5.3.6.3.5 Tube slides
- Tube slides should meet all the applicable recommendations for other slides (e.g., slide height, slope, use zone at exit, etc.).
- Means, such as barriers or textured surfaces, should be provided to prevent sliding or climbing on the top (outside) of the tube.

5.3. Chute exit region
All slides should have an exit region to help children maintain their balance and facilitate a smooth transition from sitting to standing when exiting. The chute exit region should:
- Be between 0 and -4° as measured from a plane parallel to the ground.
For toddlers the chute exit region should:
- Be between 7 and 10 inches long if any portion of the chute exceeds a 24° slope.
- Be no more than 6 inches above the protective surfacing.
- For preschool- and school-age the chute exit region should:
  - Be at least 11 inches long.
  - Be no more than 11 inches above the protective surfacing if the slide is no greater than 4 feet high.
  - Be at least 7 inches but not more than 15 inches above the protective surfacing if the slide is over 4 feet high.