RIVERVIEW PARK
SUSTAINABLE TRAIL PLAN

PREPARED BY:

Acknowledgements

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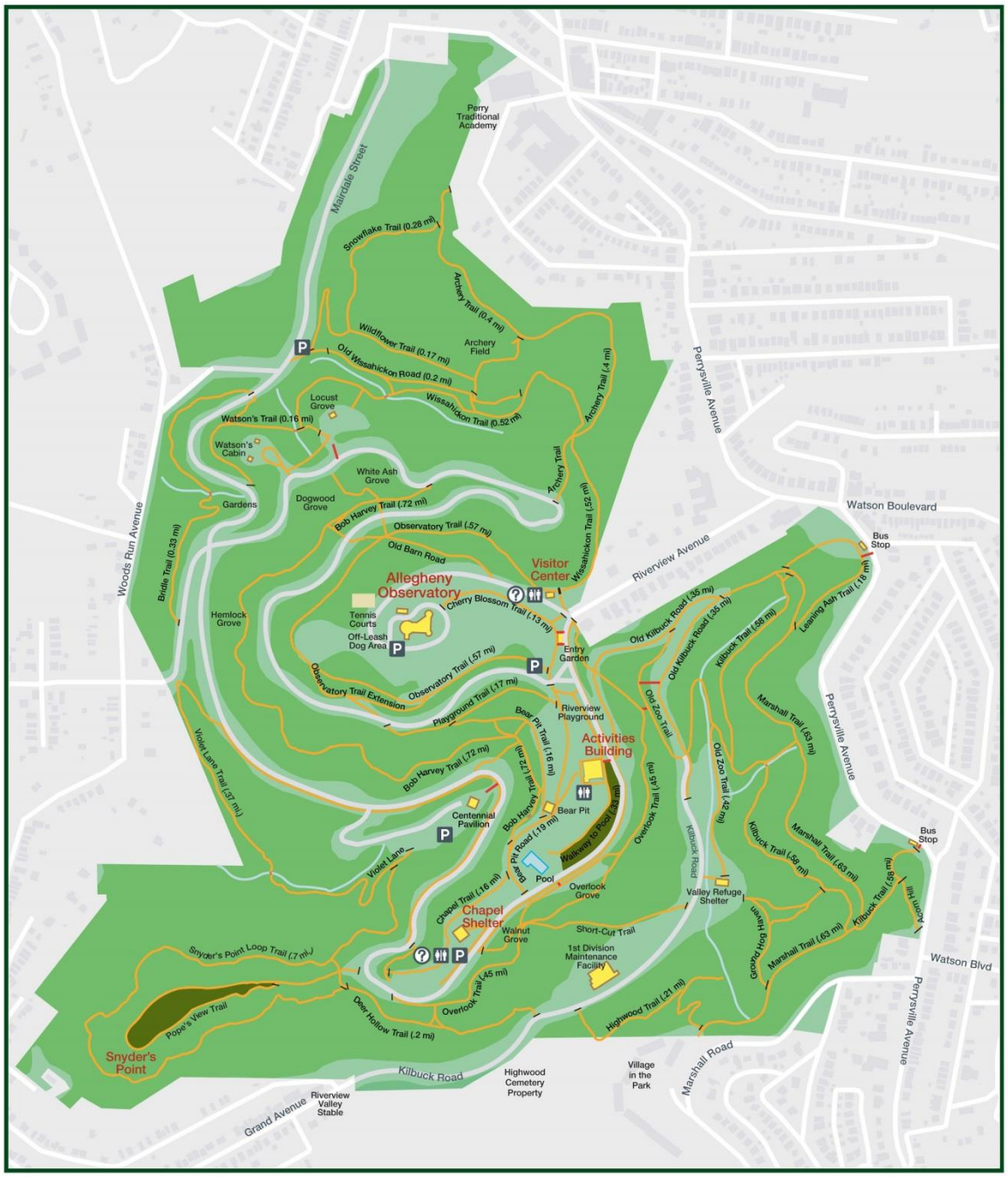
Contents

RIVERVIEW PARK

www.pittsburghparks.org/riverview



Symbol Key

Information	ⓘ	Pedestrian Route		Rail Line		Lake/Pond	
Restrooms	🚻	Trail Start		Monument	◆	Wooded Parkland	
Food	🍴	Trail Bridge		Structure		Open Parkland	
Admission Fee	$	Park Road		Stream		Meadow	
Parking Lot	P	City Bridge		Steps		Recreation Field	

0 500' 1000' 2000'

Introduction

Background

The Friends of Riverview Park has identified the need to improve the park trail system as a key priority for improvement. The park's beautiful, mature woodlands are noted in the *Regional Parks Master Plan* as a "natural park landscape with woodland and stream ecosystem at its core." However, the trails suffer from extreme erosion and landslides in multiple locations, creating a highly negative impact on the visitor's experience, while also degrading the park's ecology and wildlife habitat. These conditions are worsened by a trail system whose layout includes unsustainable pitches that are much too steep, as well as in-sloped trails that trap stormwater runoff to the further detriment of the park trails and ecology.

In 2019, the Friends of Riverview Park (FORP) and the Pittsburgh Parks Conservancy (PPC) contracted Hollow Oak Land Trust to complete a comprehensive inventory and assessment of the current trail system of Riverview Park, as well as recommendations for trail improvements, which may include re-routing, closures, and construction of new trails where necessary.

The *Regional Parks Master Plan 2012 Update* includes recommendations for trail and drainage improvements, which also were included in the 2017 Park Master Plan Update Recommendations. The recommendations also identified the need for trail project identification and prioritization, as part of Woodland Management and Restoration:

> *Develop a trail plan that eliminates hard to maintain (erosive) trails, reduces erosion on existing trails, provides important connections to park facilities and areas, specifies clear uses permitted by trail (walking, biking equestrian use, etc.), and recommends signage for direction, interpretation and information to enhance trail experiences.*

Figure 2. Current trail map of Riverview Park

Scope of Work

The following items were identified as essential elements of the Riverview Park Trail Plan:

- Inventory of all park trails, including both named and unnamed trails
- Comprehensive assessment and evaluation of existing trails
- Coordination with stakeholder organizations to establish a Trails Advisory Committee (TAC) for input and review of the Trail Plan, e.g. Friends of Riverview Park, Pittsburgh Department of Public Works (DPW), Pittsburgh Department City Planning, Pittsburgh Dept. Public Safety/Park Rangers, Pittsburgh Parks Conservancy, Northside Trail Pittsburgh, Youth Mountain Bike Club, Student Conservation Association (SCA), LandForce, Walk/Ride Northside Committee, and Venture Outdoors.
- Recommendations for future trail maintenance & construction projects:
    - Trail improvements for better drainage and usability
    - Trail segment re-routes needed to address sustainability and usability issues
    - Trails to be closed/eliminated due to redundancy or sustainability issues
    - Trails to be constructed to improve use of park terrain
- Trail design for realignment of problem areas, including field markings for 2019 projects
- Recommendations for trail consolidation, naming, signage, wayfinding, enhanced entrances
- Recommendations for potential community connections through expansion of trail system
- Training for City of Pittsburgh DPW staff on sustainable trail construction and maintenance

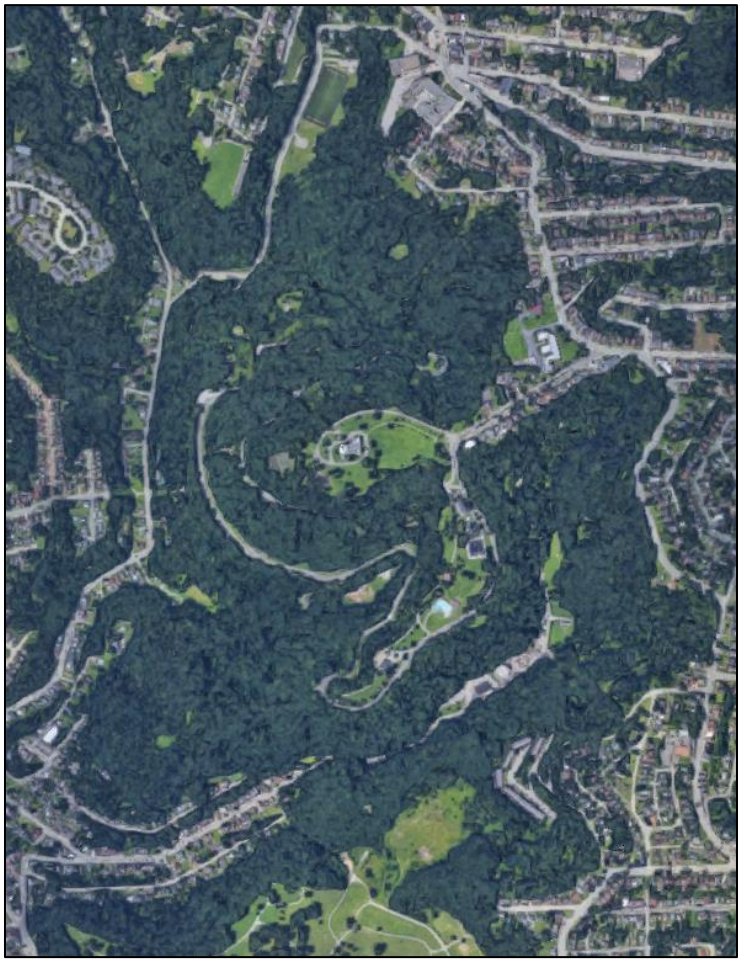


Figure 3. Satellite image of the Riverview Park forest

Project Partners

TRAILS ADVISORY COMMITTEE
The Trails Advisory Committee (TAC) was recruited for the purpose of providing input for the Trail Plan. The TAC met monthly throughout the Trail Plan process and comprised members from the following organizations that are involved with the trails of Riverview Park.

FRIENDS OF RIVERVIEW PARK GROUP
The Friends of Riverview Park (FORP) is a volunteer group that works to advocate on behalf of the park. FORP is a project of the Northside Leadership Conference in partnership with the Pittsburgh Parks Conservancy.

PITTSBURGH PARKS CONSERVANCY
The Pittsburgh Parks Conservancy was founded in December 1996 by a group of citizens concerned with the deteriorating conditions of Pittsburgh's historic city parks. A nonprofit organization, the Parks Conservancy has worked closely with the City of Pittsburgh since 1998 under an official private interest partnership agreement to restore the city's parks.

HOLLOW OAK LAND TRUST
Hollow Oak Land Trust is a non-profit conservation organization with over 25 years' experience in protecting and connecting greenspace. Hollow Oak specializes in the planning and development of sustainable, woodland trails that provide access to the region's formidable terrain.

CITY OF PITTSBURGH
Department of Public Works · Department of Planning · Department of Public Safety (Park Rangers)
The City of Pittsburgh Department of Parks and Recreation is known as Citiparks. Our mission is to enrich the lives of all city residents and visitors through our wide array of programming.

STUDENT CONSERVATION ASSOCIATION (SCA)
SCA fielded its first community conservation program in Pittsburgh in 2000, partnering with the Pittsburgh Parks Conservancy and the Western Pennsylvania Conservancy. Thanks to the City of Pittsburgh, environmental organizations, schools, youth development organizations, and numerous community groups, SCA continues to provide conservation opportunities to Pittsburgh's young people each year.

LANDFORCE
Landforce helps restore and maintain land and green assets by providing professionally skilled crews who assist in environmental management. Crews include people who have faced a variety of barriers entering the workforce.

NORTHSIDE YOUTH MOUNTAIN BIKE CLUB
The Northside Youth Mountain Bike Club gives kids--and parents--the chance to ride bikes in a safe and fun environment in Riverview Park. Members learn together, ride together, and volunteer together by working to improve the trails. Everyone is welcome, especially women and girls, people of color, low-income families, and people who are new to mountain biking.

TRAIL PITTSBURGH
Trail Pittsburgh strives to provide the residents of Southwestern Pennsylvania with sustainable multi-use trail experiences with minimal environmental impact through advocacy, education, stewardship, and strategic partnerships with land managers.

VENTURE OUTDOORS
Venture Outdoors provides outdoor recreation programs to make it easy to get outside in greater Pittsburgh.

Desired Outcomes

The primary goals identified by the Pittsburgh Parks Conservancy and Friends of Riverview Park included a comprehensive assessment of the current trail system and recommendations for park and trail improvements.

Trail Projects
Improvements to the trail system include recommendations for re-routes, closures, and new trails to improve connectivity among the park's assets. A set of desired specifications was developed to meet these goals on the existing natural surface trails.

Trail Infrastructure
Infrastructure, such as steps and bridges, currently range widely in their condition. Recommendations include repairs, improvements, removal, and some new construction. Signage recommendations are also included to improve navigation.

Trail Amenities
The terrain of Riverview Park is anything but flat. Even the easiest trails require navigating uneven surfaces. To accommodate the wide range of park visitors, recommendations are included for park benches as resting areas.

Methods and Process

The full trail system of Riverview Park was walked with notebook in hand and GPS applications installed on an iPhone. Useful apps included MotionX-GPS (for GIS data) and OnX Hunt (for parcel boundaries). Using the current park map for reference, each trail was broken into segments based on uniformity of condition. Trail segments were further broken down based on changes in trail condition. Where condition of the trail changed, e.g. from Good to Fair to Poor to Very Poor, a new trail segment was begun, with emphasis placed on whether different types of maintenance would be required for the different segments. Approximate yardage was recorded based on number of strides taken in that segment. Trail segments were assigned numerical labels on the trail map, along with descriptions for reference (*Table 4. Riverview Park Trail Segments & Project* Recommendations).

The trail inventory and assessment data were measured against trail specifications (*Table 1. Trail Conditions Criteria*) to create recommendations for improving the trail system specific to each trail, as provided in *Table 4. Riverview Park Trail Segments & Project Recommendations*. The *Sustainable Trail Plan* recommendations include a Recommended Project List (Table 5) and a Top 10 Priority projects list (Table 6), which would have the greatest impact on increasing overall sustainability of the Riverview Park trail system. Projects are identified by Trail Name and by Trail Segment. Many trails have both good and bad segments.

The *Trail Plan* includes additional resources intended for use by the Pittsburgh Parks Conservancy and Department

of Public Works staff to manage Riverview Park's natural surface trails effectively and sustainably. Projects may be undertaken by other organizations and volunteers as well.

Leadership in developing the Riverview Park Trail Plan was provided by the staff of Hollow Oak Land Trust. The process included compiling an inventory of the trails, along with the assessment of over 70 trail segments. The trail inventory included formal trails denoted on the current park map and additional trails that are heavily used in the park, but which have not previously been documented by the City. Data was collected by using a mobile GIS application to inventory the existing trails (MotionX-GPS).

Sustainable Trail Specifications (Table 1) were defined to identify ideal conditions for trails and trail features used primarily by hikers and mountain bikers as the primary user groups of Pittsburgh City Parks. These specifications were used to identify priority projects and recommendations for improving the Riverview Park trail system.

***Note**: A Glossary of Terms is provided in the Appendices for reference.*

Volunteer Trail Projects and Process

City Parkland is owned and managed by the City of Pittsburgh. In order to work on city land, you must contact the landowner. The primary point of contact for park land is the Parks Maintenance Manager in the Department of Public Works (DPW). Contact information: Northern Division, 300 Kilbuck Road, (412) 323-7209, Nick Fiumara, Parks Maintenance Manager

Working on City of Pittsburgh land requires approval from the Parks Maintenance Manager and possibly others on the City of Pittsburgh staff. As a close partner in park restoration, it is valuable to contact the Pittsburgh Parks Conservancy (PPC) as well.
Contact: Erin Copeland, Senior Restoration Ecologist, ecopeland@pittsburghparks.org, (412) 682-7275

This step is necessary because the landowner requires that all work follows best practices; this leads to well planned, sustainable, and safe trails. Other groups may be working collaboratively with DPW and PPC, such as Trail Pittsburgh. Include them in planning conversations.

Before undertaking trail projects in Pittsburgh City Parks contact the Parks Maintenance Manager and PPC staff. After those early meetings, develop an annual plan to be approved by DPW and PPC staff. Before work begins, have a field walk with staff from DPW, such as the Parks Maintenance Manager or Landscape Architect, and the Parks Conservancy Ecologist. DPW and PPC staff will consider if it is helpful to include someone in the Department of City Planning. During this walk all work will be laid out and discussed. If approved, proceed with trail improvements. Many trail projects employ volunteer labor. All volunteer projects require a volunteer request form to be turned in at a minimum of two weeks ahead of time.

The Volunteer Request Form can be found here:
https://pittsburghpa.gov/dpw/volunteer-apps/volunteer-form/index.html

The forms can list multiple volunteer days; it is easier for planning if you plan at least a season in advance. After submitting the forms, communicate plans to DPW, PPC, and Friends of Riverview Park (Erin Tobin, Community Coordinator, etobin@pittsburghparks.org, (412) 682-7275). During the workday, avoid all plants and sensitive ecological sites; do not cause soil erosion. After work has been completed and if necessary, update park map with any significant changes.

Please note, herbicides are not permitted in City parks and if any tree work is needed the Forester would need to review and approve the plans.

Volunteer Process Summary

1. Contact DPW Parks Maintenance Manager and PPC on the same email.
2. Schedule field walk with DPW & PPC.
3. Submit Volunteer Request Form and cc DPW, PPC, and FORP.
4. Schedule the work day.
5. If possible, update the park map. If not, submit changes (in whatever ways works best) to DPW and PPC.
6. If the trail project is larger in scope DPW will provide guidance on additional documentation.

Additional Links:

https://pittsburghpa.gov/dpw/park-maintenance

https://pittsburghpa.gov/dpw/volunteer-apps/volunteer-form/index.html

Trails Inventory and Assessment

The trail system of Riverview Park includes 10 miles of trails ranging from easy to advanced, in terms of technical difficulty for park visitors. Conditions range from Good to Very Poor (Table 1). The landscape itself poses challenges for maintaining the trail system and several environmental factors further complicate the task. In particular, the naturally steep terrain has been ravaged by many years of erosion from stormwater and ruptures of water and sewer lines. Pittsburgh's soils are naturally prone to slide, a condition made worse by road development and failing water infrastructure. Recently, major landslides have become prevalent in the park likely due to increased annual rainfall and amplified by the park's steep terrain.

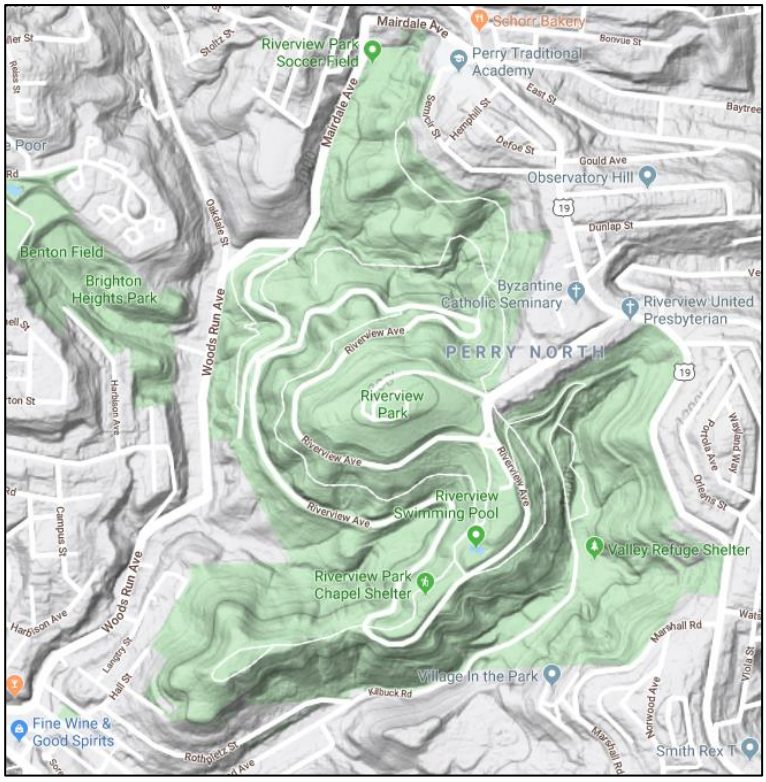


Figure 4. Terrain contours of Riverview Park

The park trail system includes 31 named trails, plus seven unnamed trails, and 10 shorter trail connectors. For the purpose of assessment, each trail was divided into segments based on their condition. Assessed trail segments ranged from 20 yards to several hundred yards, depending on how frequently the trail conditions changed.

Trail segments were assessed based on the Trail Conditions Criteria shown in Table 1 below. Trails in "Good" condition did not receive project assignments. Projects were designated for trails assessed as "Fair" or "Poor." Trails in "Very Poor" condition were recommended for closure, especially when they are redundant with better trails nearby.

Table 1. Riverview Park – Named Trails

1. Snowflake Trail
2. Archery Trail
3. Wildflower Trail
4. Wissahickon Trail
5. Old Wissahickon Road
6. Watson's Trail
7. Bob Harvey Trail
8. Observatory Trail
9. Observatory Trail Ext.
10. Old Barn Road
11. Cherry Blossom Trail
12. Bridle Trail
13. Playground Trail
14. Bear Pit Trail
15. Bear Pit Road
16. Chapel Trail
17. Snyder's Point Loop Trail
18. Pope's View Trail (aka Moses Carper Trail)
19. Violet Lane Trail
20. Deer Hollow Trail
21. Overlook Trail
22. Himmelstein Trail
23. Short-Cut Trail
24. Old Kilbuck Road
25. Kilbuck Trail
26. Leaning Ash Trail
27. Marshall Trail
28. Ground Hog Haven
29. Acorn Hill Trail
30. Highwood Trail
31. Old Zoo Trail
32. Rustic Woods Trail

Assessment Process

Every trail in Riverview Park was walked and assessed to identify areas needing improvement. Trail segments were identified and labeled on the map with numbers. The tables below provide the criteria used for trail assessment, codes for recommended trail projects, and a summary of the trails assessment.

Figure 5 illustrates the trail system with each trail segment corresponding to Table 5, which characterizes each trail segment in terms of length (approximate), condition, and project types.
***Note**: A Glossary of Terms is provided in the Appendices for reference.*

Table 1. Trail Conditions Criteria

		Trail Conditions Criteria
Good		A designated and constructed contour trail with an average grade less than 10%
		Grade reversals are designed into trail and constructed drains require only annual cleaning
		Vegetation is manageable with annual routine maintenance
Fair		A constructed trail in need of routine maintenance and/or small annual reconstruction projects
		Short segments (<100 ft.) of unsustainale trail exist and are managed with structures requiring annual maintenance
		Areas of erosion & braiding and widening exist (<50 ft.)
Poor		Major sections of trail are eroded
		Existing structures are in poor condition and multiple new structures are required to improve condition
		Areas of significant erosion & braiding exist (>50 ft.)
		Vegetation overgrowth is unmanageable through routine annual maintenance
		Reroutes are needed
Very Poor		Existing trail is not sustainably designed
		Re-routes or closures may be necessary
		Severe instances of trail braiding, obstacles and erosion
		Fall line segments and extreme vegetation overgrowth are present

Trail Project Types

Table 2. Trail Project Types

Trail Project Codes	
DB	De-Berming
DF	Drainage Feature
B	Bench Cut
A	Armoring
RR	Re-Routing
TC	Trail Closure
NT	New Trail
V	Vegetation Clearing

Table 3. Trails Assessment Summary

TRAILS ASSESSMENT SUMMARY	**Quantity**	
Total Yards	16,912	
Trail Mileage	9.3	
Good segments	56	49%
Fair segments	29	25%
Poor segments	19	17%
Very Poor segments	10	9%
Closed trails (landslides)	5	9%
Easy trails	21	19%
Intermediate trails	65	59%
Advanced trails	24	22%
Community Trailheads	10	
Trail Bridges	6	
Water Fountains	5	
Portajohn Locations	3	
Bike Lanes (miles)	2	
Staircases	9	
Bench Locations	4	

Map of Trail Segments

Figure 5. Riverview Park Map - Segments & Projects

Assessment of Trail Segments

***Note**: A Glossary of Terms is provided in the Appendices for reference.*

Table 4. Riverview Park Trail Segments & Project Recommendations

Trail	Segment Label	Length (yd.)	Condition	Issues	Future Trail Projects
Snowflake Trail					
	1. Mairdale Parking area to Wildflower Tr.	60	Poor	Steep, cupped, eroded	DB, DF
		50	Fair	Cupped, eroded	DB, DF
		75	Good		
		60	Very Poor	Steep, cupped, eroded to bedrock	RR
	2. Wildflower Tr. 20 Archery Tr.	160	Fair	Steep, cupped	DB, DF
Archery Trail					
	3A. Perry Academy spur	140	Poor	Steep, cupped	DB, DF, V, RR
	3B. Connector trail to soccer field	200		No trail exists to the park soccer fields	NT
	3. Snowflake Tr. to Wildflower Tr.	255	Good		
	4. Wildflower Tr. to Wissahickon Tr.	95	Good	LANDSLIDE	
	5. Riverview Ave. (horseshoe bend) to Wissahickon Tr.	20	Fair	Mud, poor drainage	DF
		90	Good	Cupped trail, poor drainage	DB, DF
Wildflower Trail					
	6. Snowflake Tr. to trail re-route (existing)	130	Good		
	7. Trail re-route (existing)	200	Good		
	8. Trail re-route to nature center steps – subject to change per PWSA plan, requires DPW approval	30	Poor	Steep	DF
		50	Good		DF
	9. Junction below archery field to Archery Tr.	90	Fair	Steep, erosion	DF
Old Wissahickon Rd.	10. Mairdale P to 1st junction	100	Good		
	11. 1st junction to 2nd junction (left and right connector trails)	130	Fair	Steep, eroded, loose gravel, 12 ft. wide	RR, TC
	12. 2nd junction to top/end of trail	45	Good		
Wissahickon Trail					
	13. Watson Tr. stream crossing to Wissahickon Rd.		Gone		
	14. Drainage pipe to Old Wissahickon Rd.	60	Good	Wildflower Tr. deer exclosure will create trail barriers	NT

		45	Good	Cupped trail	DB
		75	Fair	Cupped trail	DB
	15. Archery Tr.to drainage pipe	50	Fair	Cupped trail	DB
		25	Good	Cupped trail	DB
		65	Fair	Cupped trail, poor drainage	DB, DF
		130	Poor	Steep, drainage pipe buried	DF
	16. Visitor Center to Archery Tr.	85	Good	Cupped trail	DB, DF
		85	Poor	Cupped trail	DB, DF, A
		25	Good	Cupped trail	DB, DF
Watson's Trail	17. Wissahickon Rd. to Riverview Ave. by Watson's cabin	500	Good	Cabin has no formal trail connection	NT
Bob Harvey Trail	19. Riverview Ave. to Bear Pit Tr. connector	1,300	Good	Minor drainage issues	DF
	20. Bear Pit Tr. connector to Bear Pit Rd. (near Chapel Tr.)	100	Good	Bridge can be slippery	A, DB
	21. Connector to Centennial Pavilion	90	Very Poor	Washed out, loose rocks, fissures	TC
Rustic Woods Trail	22. Locust Grove to Watson Cabin	50	Fair	Steep, eroded	RR
Chapel Trail	24. Bear Pit Rd. to Riverview Ave.	400	Good		
Observatory Trail					
	25. Visitor Center to Old Barn Rd. Tr.	300	Good		
	26. Old Barn Rd. Tr. to Observatory Hill Tr. Ext.	65	Good	Cupped	DB, DF
	27. Observatory Hill Tr. Ext. to Riverview Ave. near playground	400	Fair	Grassy, cupped, eroded	DB, DF
Observatory Trail Ext.	28. Parallel and below Observatory Hill Tr.	95	Poor	Cupped, eroded, drainage	DB, DF, A
Playground Trail	29. Observatory Tr. Ext. to Riverview Ave.	40	Good	Erosion at Riverview Ave.	
	32. Playground to Riverview Ave.	200	Good	Drainage from Riverview Ave.	
Old Barn Road	30. Observatory Rd. to Riverview Ave.	240	Poor	Cupped, steep, eroded, loose rock, redundant with Observatory Tr.	TC
	30 (A). Riverview Ave. to Bob Harvey Tr.	80	Fair	Steep, loose gravel	DB, DF
	30 (B). White Ash Grove to Bob Harvey Tr.	100	Poor	Steep, eroded	RR
Cherry Blossom Trail	31. Observatory Trail (lower) to Allegheny Observatory	200	Paved		
Bear Pit Trail	33. Bob Harvey Tr. connector to Activities Bld.	100	Poor	Drainage, redundant with Bob Harvey and Playground Trails	TC
	34. Playground Tr. to Bob Harvey Tr. connector	50	Very Poor	Eroded, washed out, muddy, grassy	TC
Playground Road	35. Playground to Activities Building	100	Paved	LANDSLIDE	

Bridle Trail					
	36. Riverview Ave. near Mairdale Rd. to trail bridge	290	Fair	Cupped, eroded, bridge can be slippery	DB, DF
	37. Trail bridge to road near former Davis Bridge	320	Good	Cupped, roots	DB, DF
	37A. Connector to Woods Run Rd./Brighton Heights Park	75	Poor	Steep, roots, stream, bridge needed	B, bridge
Violet Lane Trail	38. Former Davis Bridge to stream crossing	115	Good		
		45	Fair	Steep, storm pipe emits rapid outflow	A
		55	Good		
		75	Fair	Steep, roots	DF, A
		60	Good	Stream crossing	
		40	Fair	Steep, roots, stream crossing	DF
	39. Stream crossing to Snyder's Point Tr. at Centennial Pavilion	130	Good		
		20	Poor	Seep, poor drainage, old rock armoring	A, DF
		65	Good	Seeps	A
		15	Fair	Poor drainage	DF
		110	Good		
		40	Poor	Erosion at Centennial Pav. Rd.	A
Snyder's Point Loop Tr.	40. Violet Lane to Moses Carper Tr. connector	250	Good		
	41. Moses Carper Tr. connector to Snyder's Descent	620	Good	Erosion, roots	
	42. 1st trail junction to Deer Hollow Tr.	510	Good	Erosion, roots	
	42A. Singletrack extension	235	Good		
Moses Carper Trail (Pope's View Trail)	43. Riverview Ave. to grassy meadow	120	Fair	Crumbling asphalt & brick, cupped	A
	43A. Moses Carper Tr. extension	95	Good	Roots	
	44. Snyder's Point meadow	120	Good	Grassy	V
	44A. Snyder's Point connector to Snyder's Loop Tr.	85	Fair	Steep	V
	45A. Snyder's Point extension	150	Good	Roots, grassy	V
	45B. Snyder's Point extension	160	Good	Roots, grassy	V
Deer Hollow Trail	46. Snyder's Point Tr. to trail behind DPW	35	Good	LANDSLIDE	
		25	Good	LANDSLIDE	
	47. Trail Junction to Kilbuck Rd. (below DPW)	130	Poor	Steep, eroded, clogged storm drain, knotweed	DB, DF, A
	47A. Trail above/behind DPW depot	300	Good		
Overlook Trail	48. Riverview Ave. to Short-Cut Tr.	175	Good	LANDSLIDE	

	49. Short Cut Tr. to Overlook Grove	180	Fair	Cupped, eroded, poor drainage	DB, DF
	50. Overlook Grove to Old Kilbuck Rd. near Charlotte Apts. (Riverview Ave.)	237	Fair	Roots, loose millings	DB, DF
	50 (A). Loop below Activities bld. & swimming pool	75	Fair	Redundant with Overlook Tr.	
Short-Cut Trail rd.	51. DPW to Riverview Ave	250	Fair	Steep, eroded, service road	
Old Kilbuck Road	52. Gate at Riverview Ave. to Overlook Tr.	200	Good	Paved	
	53. Overlook Tr. to road switchback (junction of Marshall Tr.) near landslide	200	Good		
	54. Marshall Tr. junction past landslide and Old Zoo Tr. to Kilbuck Rd.	280	Very Poor	LANDSLIDE	
Marshall Trail	55. Old Kilbuck Rd. switchback past Kilbuck Tr. to Leaning Ash Tr.	205	Good	Wide, flat	
	56. Leaning Ash Tr. to Kilbuck Tr.	675	Fair	Insloped, muddy & poor drainage overflowing to trails below near Kilbuck Tr. junction	DB, DF, A
	57. Kilbuck Tr. to Village in the Park apartments	230	Good	Cupped trail, mud	DB, DF, A
Kilbuck Trail	60. Marshall Tr. to bottom of hill	80	Very Poor	Steep, eroded, loose	RR, B
	60A. Bottom of hill to Old Zoo Tr. junction	90	Good		
	61. Old Zoo Tr. to junction with Ground Hog connector (69)	215	Fair	Bridge in poor condition, roots	DB, DF, A, bridge
	61A. Ground hog connector (69) to slump	150	Very Poor	Steep, eroded, slump, loose gravel	TC
	61B. Slump re-route to Marshall Tr.	75	Fair	Steep	B
	62. Marshall Tr. to Acorn Hill Tr.	140	Poor	Cupped, multiple water drainages	A, DF
	63. Acorn Hill Tr. to bus stop at Delaware St.	135	Good	Drainage features, cupped, log obstacle	DF
Acorn Hill Trail	64. Kilbuck Tr. to Perrysville Ave. at Watson Blvd.	140	Poor	Cupped, eroded, drainage	DB, DF, A
Highwood Trail	65. Marshall Tr. to ground hog connector (69)	170	Good	Steep, but well drained	
	66. Ground hog connector (69) to junction with trail toward Marshall apartments/Highwood Cemetery	100	Good	Steep, but well drained	
	71. Final descent to Kilbuck Rd.	50	Poor	Eroded, loose road millings	TC needed for RR done in 2019
Ground Hog Haven Tr.	67. Marshall Tr. to ground hog connector	130	Very Poor	Steep (fall line), eroded, loose rocks	TC
	68. Ground hog connector (69) to Valley Refuge Shelter	75	Poor	Steep (fall line), eroded, loose rocks	TC
Ground Hog	69A. Kilbuck Tr. to Valley Refuge	30	Good	Re-route of 69B	

connector**	double-track				
	69B. Kilbuck Tr. to Valley Refuge double-track	20	Very Poor	Fall line steep, washed out	TC
	69C. Valley Refuge tr. (70) to Ground Hog Haven Tr.	40	Good	Drainage	DF
	69D. Ground Hog Haven Tr. to Highwood Tr.	130	Fair	Poor drainage, cupped	DB, DF
Valley Refuge trail**	70. Valley Refuge Shelter up to Kilbuck Tr.	50	Very Poor	Cupped, eroded, drainage, loose rocks	TC
Leaning Ash Trail	73. Kilbuck Tr. & Marshall Tr. junction to bus shelter	150	Fair	Muddy, steep, grassy to trailhead	DF, V
	74. Marshall Tr. to bus shelter	125	Poor	Cupped, eroded, roots	DB, DF
Snyder's Point descent**	75. Snyder's Point Loop Tr. to Violet Lane Tr.	90	Good		
Violet Lane connector**	76. Former Davis Ave. Bridge to Riverview Ave.	100	Good		
Watson Trail extension**	77. Watson Tr. near stream crossing to Wissahickon Tr.	150	Good	Poor drainage	DF, B
		105	Fair	Steep, poor benching	B
		80	Fair	Poor benching, bridge needed	B, A, bridge
Old Zoo Trail	78. Old Kilbuck Rd. down to road junction below landslide	130	Very Poor	Unmaintained trail, slippery wooden steps in disrepair	V, DF, A
	79. Junction below landslide down to Kilbuck Tr. connector	80	Fair	Muddy stream crossing	DB, DF, RR, A, bridge
	79A. Connector to Kilbuck Tr.	100	Good		
	80. Kilbuck Tr. connector to Valley Refuge Shelter	100	Fair	Stream crossing, drainage	DF, V
Valley Refuge singletrack**	81. Valley Refuge Shelter to ground hog connector (69)	200	Good	One steep section	B, DF
**	** Unnamed trail				

Trail Project Recommendations

Projects are not listed in order of priority and were only assigned a number for identification purposes. Note that top 10 priority projects are denoted by an asterisk (*).

Table 5. Riverview Park Trail Projects

RIVERVIEW PARK - TRAIL PROJECTS							
Project Label	**Trail**	**Trail Segment Label** (Fig. 5)	**Issues**	**Project Types**	**Project Description**	**Skill Level**	**Benefit**
1*	Snowflake Trail	1. Mairdale Parking area to Wildflower Tr.	Steep, cupped, eroded	DB, DF	Re-grade trail to allow lateral drainage	Moderate	Less rocky
2	Snowflake Trail	1. Mairdale Parking area to Wildflower Tr.	Cupped, eroded	DB, DF	Re-grade trail to allow lateral drainage	Moderate	Less rocky
3*	Snowflake Trail	1. Mairdale Parking area to Wildflower Tr.	Steep, cupped, eroded to bedrock	RR	Bench cut trail to inside of rocky bend, close old trail	Advanced	Less rocky
4	Snowflake Trail	2. Wildflower Tr. 20 Archery Tr.	Steep, cupped	DB, DF	Install drainage features	Moderate	Less erosion
5*	Archery Trail	3A. Perry Academy spur	Cupped, steep	DB, DF, V, RR	Clear vegetation and bench cut switchbacks	Advanced	Gentler grade, less rocky, less erosion, better school access
5A	Archery Trail*	3B. Soccer field trail	No trail exists to the park soccer fields	NT	Determine trail alignment, clear vegetation, bench cut and drainage	Advanced	Access to and from key park amenity
6	Wildflower Trail	8. Trail re-route to nature center steps	Steep	DF	Bench-cut contour trail from Wissahickon Rd. up to Wildflower Tr.		

7	Wildflower Trail	9. Junction below archery field to Archery Tr.	Steep, erosion	DF	Dig nick for drainage	Moderate	Less erosion
8	Old Wissahickon Road	11. 1st junction to 2nd junction (left and right connector trails)	Steep, eroded, loose gravel, 12 ft. wide	RR, TC	Earth moving	Advanced	Gentler grade, less rocky, less erosion
9	Wissahickon Trail	14. Drainage pipe to Old Wissahickon Rd.	Cupped trail	DB	Dig nicks for drainage, add dirt to high side of trail	Advanced	Gentler grade, less rocky, less erosion
10	Wissahickon Trail	15. Archery Tr.to drainage pipe	Cupped trail	DB	Dig nicks for drainage, add dirt to high side of trail	Advanced	Gentler grade, less rocky, less erosion
11*	Wissahickon Trail	15. Archery Tr.to drainage pipe	Steep, cupped drainage pipe buried	DF	Dig nicks for drainage, raise high side of trail	Advanced	Less rocky, less erosion
12	Wissahickon Trail	16. Visitor Center to Archery Tr.	Cupped trail	DB, DF, A	Dig nicks for drainage, add dirt to high side of trail	Advanced	Gentler grade, less rocky, less erosion
13	Watson's Trail	17. Wissahickon Rd. to Riverview Ave. by Watson's cabin	No trail to cabin	NT	Place woodchips or other material to indicate trail	Easy	Clearer route to historic site
14	Bob Harvey Trail	20. Bear Pit Tr. connector to Bear Pit Rd. (near Chapel Tr.)	Bridge can be slippery….textured paint could be helpful	A, DB	Install bridge traction, e.g. steel lathe or anti-slip paint	Easy	Safety
15	Bob Harvey Trail	21. Connector to Riverview Ave./Centennial Pavilion	Washed out, loose rocks, fissures	TC	Block trail with debris, see Trail Closure methods	Moderate	Safety
16	Rustic Woods Trail	22. Locust Grove to Watson Cabin	Steep, eroded	RR	Bench-cut switchback	Advanced	Less erosion
17	Observatory Trail	27. Observatory Hill Tr. Ext. to Riverview Ave. near playground	Grassy, cupped, Eroded	DB, DF	Re-grade trail to allow lateral	Moderate	Less erosion, less rocky

					drainage		
18	Observatory Trail Ext.	28. Parallel and below Observatory Hill Tr.	Cupped, eroded, drainage	DB, DF, A	Re-grade trail to allow lateral drainage	Moderate	Less erosion, less rocky
19	Old Barn Road	30. Observatory Rd. to Riverview Ave.	Cupped, steep, eroded, loose rock, redundant with Observatory Tr.	TC	Block trail with debris, see Trail Closure methods	Moderate	Remove redundant trail
20	Old Barn Road	30 (A). Riverview Ave. to Bob Harvey Tr.	Steep, loose gravel	DB, DF	Dig nicks for drainage	Moderate	Gentler grade, less rocky, less erosion
21	Old Barn Road	30 (B). White Ash Grove to Bob Harvey Tr.	Steep, eroded	RR	Bench-cut switchbacks	Advanced	Gentler grade, less rocky, less erosion
22	Bear Pit Trail	34. Playground Tr. to Bob Harvey Tr. connector	Eroded, washed out, muddy, grassy	TC	Block trail with debris, see Trail Closure methods	Moderate	Safety
23	Bridle Trail	36. Riverview Ave. near Mairdale Rd. to trail bridge	Cupped, eroded, bridge is slippery	DB, DF	Install bridge traction, e.g. steel lathe or anti-slip paint	Easy	Safety
24*	Bridle Trail	37A. Connector to Woods Run/Brighton Hts. Park	Steep, roots, stream, bridge needed	B, bridge	Install small bridge at bottom	Advanced	Stormwater crossing
25	Violet Lane Trail	38. Former Davis Bridge to stream crossing	Steep, roots, stream crossing	DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rooty, less erosion
26*	Violet Lane Trail	39. Stream crossing to Snyder's Point Tr. at Centennial Pavilion	Steep, roots, stream crossing	DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rooty, less erosion
27	Violet Lane Trail	39. Stream crossing to Snyder's Point Tr. at Centennial Pavilion	Erosion at Centennial Pav. Rd.	A	Add dirt to cover roots, grade for drainage	Moderate	Less rooty, less erosion

28	Moses Carper Trail, aka Pope's View Trail	43. Riverview Ave. to grassy meadow	Crumbling asphalt & brick, cupped	A	Add dirt and grade for drainage	Moderate	
29	Moses Carper Trail, aka Pope's View Trail	44A. Snyder's Point connector to Snyder's Loop Tr.	Steep, fallen logs	V, RR	Clear logs, bench-cut switchback	Advanced	Less erosion, gentler grade
30	Deer Hollow Trail	47. Trail Junction to Kilbuck Rd. (below DPW)	Steep, eroded, clogged storm drain, knotweed	DB, DF, A	Dig nicks for drainage, add dirt to high side of trail	Advanced	Less rocky, less erosion
31	Overlook Trail	49. Short Cut Tr. to Overlook Grove	Cupped, eroded, poor drainage	DB, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rocky, less erosion
32	Overlook Trail	50. Overlook Grove to Old Kilbuck Rd. near Charlotte Apts. (Riverview Ave.)	Roots, loose millings	DB, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rocky, less erosion
33	Short-Cut Trail rd.	51. DPW to Riverview Ave	Steep, eroded, service road		Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rocky, less erosion
34	Marshall Trail	56. Leaning Ash Tr. to Kilbuck Tr.	Insloped, muddy & poor drainage overflowing to trails below near Kilbuck Tr. junction	DB, DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rocky, less erosion
35	Marshall Trail	57. Kilbuck Tr. to Village in the Park apts..	Cupped trail, mud	DB, DF, A	Dig nicks for drainage	Moderate	Less muddy
36*	Kilbuck Trail	60. Marshall Tr. to Old Zoo Tr. jct. near bridge	Steep, eroded, loose	RR, B	Bench-cut switchbacks	Advanced	Less erosion, gentler grade
37	Kilbuck Trail	61. Old Zoo Tr. to junction with Ground Hog connector (69)	Bridge needs replacement, roots	DB, DF, A, bridge	Install new bridge	Advanced	Safety
38	Kilbuck Trail	61A. Ground hog connector (69) to slump	Steep, eroded, slump, loose gravel	TC	Block trail with debris, see Trail Closure methods	Moderate	Safety

39*	Kilbuck Trail	61B. Slump re-route to Marshall Tr.	Steep	B	Bench-cut sustainable trail and widen existing trail	Advanced	Gentler grade, less erosion, firmer surface
40	Kilbuck Trail	62. Marshall Tr. to Acorn Hill Tr.	Cupped, multiple water drainages	A, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rocky, less erosion
41	Acorn Hill Trail	64. Kilbuck Tr. to Perrysville Ave. at Watson Blvd.	Cupped, eroded, drainage	DB, DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rocky, less erosion
42	Highwood Trail	66. Ground hog connector (69) to Kilbuck Rd. near DPW	Steep Eroded, loose road millings	RR, B	Improve benching	Moderate	Easier walking
43	Ground Hog Haven Tr.	67. Marshall Tr. to ground hog connector	Steep (fall line), eroded, loose rocks	TC	Block trail with debris, see Trail Closure methods	Moderate	Safety
44	Ground Hog Haven Tr.	68. Ground hog connector (69) to Valley Refuge Shelter	Steep (fall line), eroded, loose rocks	TC	Block trail with debris, see Trail Closure methods	Moderate	Safety
45	Ground Hog connector**	69B. Kilbuck Tr. to Valley Refuge double-track	Fall line steep, washed out	TC	Block trail with debris, see Trail Closure methods	Moderate	Safety
46	Ground Hog connector**	69C. Valley Refuge tr. (70) to Ground Hog Haven Tr.	Drainage	DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less muddy
47*	Ground Hog connector**	69D. Groundhog Haven Tr. to Highwood Tr.	Poor drainage, cupped	DB, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less muddy
48	Valley Refuge trail**	70. Valley Refuge Shelter up to Kilbuck Tr.	Cupped, eroded, drainage, loose	TC	Block trail with debris, see Trail Closure methods	Moderate	Safety

49	Leaning Ash Trail	73. Kilbuck Tr. & Marshall Tr. junction to bus shelter	Muddy, steep, grassy to trailhead	DF, V	Dig nicks for drainage	Moderate	Less muddy
50	Leaning Ash Trail	74. Marshall Tr. to bus shelter	Cupped, eroded, roots	DB, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rocky, less erosion
51	Snyder's Point descent**	75. Snyder's Point Loop Tr. to Violet Lane Tr.	Fallen trees	V, B	Clear fallen logs, improve benching	Advanced	Clearer passage
52	Watson Trail extension**	77. Watson Tr. near stream crossing to Wissahickon Tr.	Poor drainage	DF, B	Dig nicks for drainage	Moderate	Less muddy
53	Watson Trail extension**	77. Watson Tr. near stream crossing to Wissahickon Tr.	Steep, poor benching	B	Dig nicks for drainage, improve benching	Moderate	Better traction
54*	Watson Trail extension**	77. Watson Tr. near stream crossing to Wissahickon Tr.	Poor benching, bridge needed	B, A, bridge	Dig nicks for drainage, improve benching, install bridge	Advanced	Better traction
55	Old Zoo Trail	78. Old Kilbuck Rd. down to road junction below landslide	Unmaintained trail, slippery wooden steps in disrepair	V, DF, A	Clear logs and vegetation, dig nicks for drainage	Advanced	Clearer passage
56	Old Zoo Trail	79. Junction below landslide down to Kilbuck Tr. connector	Stream crossing needs channel improvement	DB, DF, RR, A, bridge	Dig nicks for drainage, install bridge	Advanced	Less muddy
57	Old Zoo Trail	80. Kilbuck Tr. connector to Valley Refuge Shelter	Stream crossing, drainage	DF, V	Dig nicks for drainage	Intermediate	Less muddy
*	*Top 10 Priority*						
**	*Unnamed Trail*						

Top 10 Priority Trail Projects

Table 6. Top 10 Priority Trail Projects

Project Label	**Trail**	**Trail Segment Label** (Fig. 5)	**Issues**	**Project Types**	**Project Description**	**Skill Level**	**Benefit**
1	Snowflake Trail	1. Mairdale Parking area to Wildflower Tr.	Steep, cupped, eroded	DB, DF	Re-grade trail to allow lateral drainage	Moderate	Less rocky
3	Snowflake Trail	1. Mairdale Parking area to Wildflower Tr.	Steep, cupped, eroded to bedrock	RR	Bench cut trail to inside of rocky bend, close old trail	Advanced	Less rocky
5	Archery Trail	3A. Perry Academy spur	Cupped, steep	DB, DF, V, RR	Clear vegetation and bench cut switchbacks	Advanced	Gentler grade, less rocky, less erosion, better school access
11	Wissahickon Trail	15. Archery Tr.to drainage pipe	Steep, cupped drainage pipe buried	DF	Dig nicks for drainage, raise high side of trail	Advanced	Less rocky, less erosion
24	Bridle Trail	37A. Connector to Woods Run/Brighton Hts. Park	Steep, roots, stream, bridge needed	B, bridge	Install small bridge at bottom	Advanced	Stormwater crossing
26	Violet Lane Trail	39. Stream crossing to Snyder's Point Tr. at Centennial Pavilion	Steep, roots, stream crossing	DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	Less rooty, less erosion
36	Kilbuck Trail	60. Marshall Tr. to Old Zoo Tr. jct. near bridge	Steep, eroded, loose	RR, B	Bench-cut switchbacks	Advanced	Less erosion, gentler grade
39	Kilbuck Trail	61B. Slump re-route to Marshall Tr.	Steep	B	Bench-cut trail tread and widen existing trail	Advanced	Gentler grade, less erosion, firmer surface
47	Ground Hog connector**	69D. Groundhog Haven Tr. to Highwood Tr.	Poor drainage, cupped	DB, DF	Dig nicks for drainage, raise high side of trail	Moderate	Less muddy
54	Watson Trail extension**	77. Watson Tr. near stream crossing to Wissahickon Tr.	Poor benching, bridge needed	B, A, bridge	Dig nicks for drainage, improve benching, install bridge	Advanced	Better traction
	** *Unnamed Trail*						

Annual Maintenance

Many of the sustainability issues in Riverview Park can be remedied by the projects identified in this Trail Plan and through routine annual maintenance of the trails and structures. At present, there is a significant backlog of deferred maintenance, as evidenced by the current condition of the trails. Managing this backlog should be a top priority, along with an annual schedule developed and shared amongst trail maintainers. See below for an example schedule.

Note: It will be important to determine how best to integrate the capabilities of city employees, e.g. DPW, and those of the nonprofit organizations and volunteer groups that work on the trails. See *Stakeholders and Next Steps* in the next section.

Annual Trail Maintenance Schedule
Adapted from the Pacific Crest Trail Association Trail Skills College materials

Early Season –Depending on annual weather conditions, this time frame may vary. The objective is to get the trail ready for the spring use. In addition to general trail cleanup, some of the more important tasks:

- Remove tree limbs and fallen trees from the trail, and prune encroaching limbs as needed.
- Make sure that all signs and trail markers are in place and well maintained.
- Inspect for standing water in the trail and take corrective action.
- Carefully inspect all bridges and structures– immediate safety needs should be met and tasks that are too large for immediate action noted.

Mid-Season – Mid season maintenance focuses on removal of annual growth so that the trail is kept clear for travel. The bulk of projects are accomplished during this time, when the largest numbers of volunteers are available. Key jobs for mid-season:

- Cut all weeds and brush encroaching on the trail. On sections of the trail that pass though fields or other places receiving direct sunlight, this may have to be done on a more frequent basis – perhaps monthly throughout the season.
- Prune all brush and overhanging limbs; all trail markers and signs must be visible
- Complete the larger projects identified during the spring.
- Maintain and improve all drainage features and trail structures.
- Prepare the trails for hiking and biking events.
- Be alert for noxious or exotic plant species – remove, kill, or inventory them for future vegetative management projects.

End of Season- Maintenance is geared toward preparing the trail for wetter/colder months.

- Finish any uncompleted jobs and recheck signs – replace and repair as necessary.
- Start planning project for the next year.

Note*: Before Undertaking Trail Projects in City Parks*

- Introduce yourself to the city and Pittsburgh Parks Conservancy (PPC) staff.
- Develop an annual plan with the trail volunteers (and possibly the Department of Public Works (DPW) staff) and get that plan approved by city of Pittsburgh park maintenance staff.
- Before work begins, have a field walk with appropriate staff – DPW Parks Maintenance Manager or Landscape Architect, Dept. City Planning, or Ecologist (usually PPC).
- Turn in forms to DPW to host a volunteer day. Feel free to list all dates on one form.
- Communicate plans to DPW, PPC and Friends of Riverview Park (FORP), dates and projects planned.
- On the workday, make sure the volunteers are a sensitive to the park's plants and erosive soil.

Stakeholder Groups and Next Steps

Below are the key stakeholder groups who provide staff and/or volunteers to build, maintain and improve the trails of Riverview Park. An important next step for implementing the Riverview Park Sustainable Trail Plan is to define how to integrate the skillsets and capabilities of city staff, Pittsburgh Parks Conservancy staff, professionally-led work crews (SCA, LF, HOLT), and volunteers (NYMBC, TP, FORP, PPC, VO).

A signage plan will be developed for Riverview Park by Pittsburgh Parks Conservancy, Friends of Riverview Park, and Hollow Oak Land Trust. The plan will include installation of Trail Head signs, as well as Trail Markers in 0.2 mile increments.

CITY OF PITTSBURGH
Landowner and policy manager for Riverview Park
Department of Public Works – Machine operators and access to materials
Department of Public Safety (City Park Rangers) – Trail usage and issues monitoring
Department of Planning – Best practices for signage and land use

FRIENDS OF RIVERVIEW PARK GROUP (FORP)
Volunteers, advocates and fundraisers for park improvements

PITTSBURGH PARKS CONSERVANCY (PPC)
City of Pittsburgh partner organization for the restoration of Riverview Park

NORTHSIDE YOUTH MOUNTAIN BIKE CLUB (NYMBC)
Northside kids, parents and coaches who provide volunteer trail maintenance activities, tools and learning opportunities to ride bikes on the trails of Riverview Park

TRAIL PITTSBURGH (TP)
Volunteer Trail Steward provides volunteer activities and tools for trail maintenance

STUDENT CONSERVATION ASSOCIATION (SCA)
Summer trail crew job opportunities for youth in Riverview Park

LANDFORCE (LF)
Work crews help restore and maintain trails and greenspace in the Pittsburgh area

VENTURE OUTDOORS (VO)
Provides the gear, guidance and inspiration to make outdoor recreation part of people's lives

HOLLOW OAK LAND TRUST (HOLT)
Trail services provider in the planning and development of sustainable, woodland trails

Additional Recommendations

Park Navigation

Riverview Park is almost entirely wooded and is covered with nearly 300 acres of mature hardwood forest. Other than the park road, very little pavement exists within the park. Mowed lawns or meadows exist only at the Allegheny Observatory, the picnic/event shelters, swimming pool, Activities Building, Snyder's Point, horseshoe pit, Samuel Watson's cabin, tennis courts, and dog parks.

Riverview Park provides visitors with the experience of travelling through the woods, whether by trail or roadway. The trail system is densely packed and can be challenging for a visitor to navigate, due to frequent trail junctions and minimal signage for reference. In some cases, the trail names on signs are inconsistent with trail names on the park map, e.g. Moses Carper Trail/Pope's View Trail.

Signs and trail markers should correspond to the park map. Currently, signs are only located at primary trailheads. Trail junctions should be clearly marked to indicate direction for each trail. Trail markers are needed along the length of every trail for wayfinding. Together, these improvements will allow visitors to self-navigate by using either a printed or online park map, which corresponding to what exists in the park.

Trail Naming and Consolidation

For illustration of the park's complex trail system, the landscape has been divided into four quadrants: North, Central, West, and East (Figure 6). Within each quadrant, opportunities have been identified to clarify and simplify trail naming. The Open Space Signage Standards by City Planning provide helpful guidelines. Of course, any changes to trail names in the park must be approved by the City of Pittsburgh. Once new names are determined, then appropriate Trail Head signs and Trail Markers can be installed.

East Quadrant

- Combine Old Kilbuck Rd. with Marshall Trail as a single entity (blue in Fig. 6). They comprise the flattest trail in the park, extending from Riverview Ave. at the Activities Building to the Village in the Park apartments. Old Kilbuck Rd. can be retained to name the former roadway suffering from a severe landslide near the Valley Refuge Shelter.
- Combine Kilbuck Trail with an unnamed segment and the lower portion of the Highwood Trail as a single entity (red in Fig. 6). They comprise a primary route from the Marshall Trail at the top of the park near Riverview Church to Kilbuck Rd. near the DPW facility. Highwood Trail can be retained to name the switchback trail, which begins at the Village in the Park apartments.
- Replace the two steep and eroded trails (Ground Hog Haven) from Valley Refuge Shelter with the newer, more sustainable trail up to Perrysville Ave. (orange, Fig. 6).

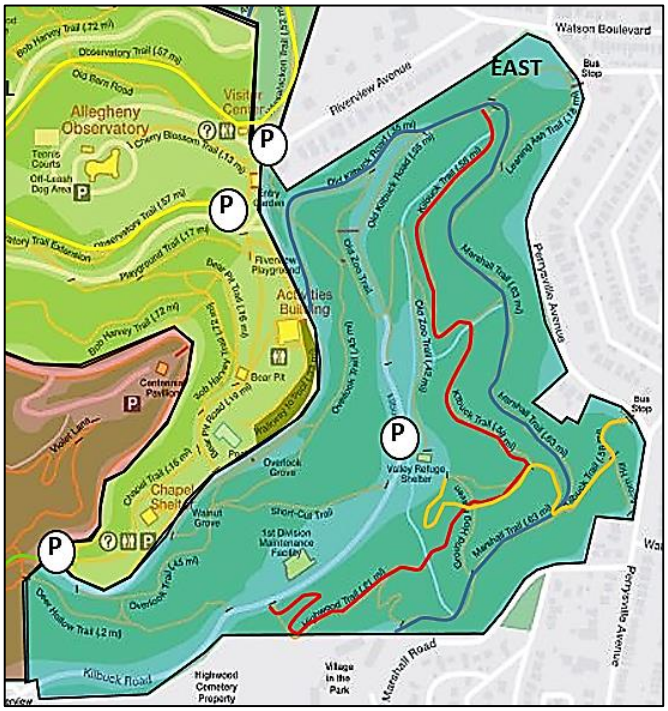


Figure 6. East quadrant of Riverview Park

North Quadrant

- Combine Snowflake and Archery Trails into one entity (blue in Fig. 7). They comprise a primary route along the Northern edge of the park from the Mairdale St. parking area to the horseshoe bend of Riverview Ave.
- Combine Watson's Trail with the unnamed trail that extends from stream crossing to junction with Wissahickon Trail (red in Fig. 7).

Central/North Quadrants

Combine Observatory and Wissahickon Trails into one entity (yellow in Fig. 7). They comprise a primary route through the center of the park and into the North quadrant to Old Wissahickon Rd.

West Quadrant

Combine Moses Carper Trail (per current sign), which is labeled as Pope's View Trail on the map with two side trails for a single loop (green in Fig. 7). Together, these trails comprise a single loop from Riverview Dr. to Snyder's Point, offering views of the Allegheny Observatory to the north and the valley to the south, as well as the meadow at Snyder's Point.

Figure 7. North, Central and West quadrants

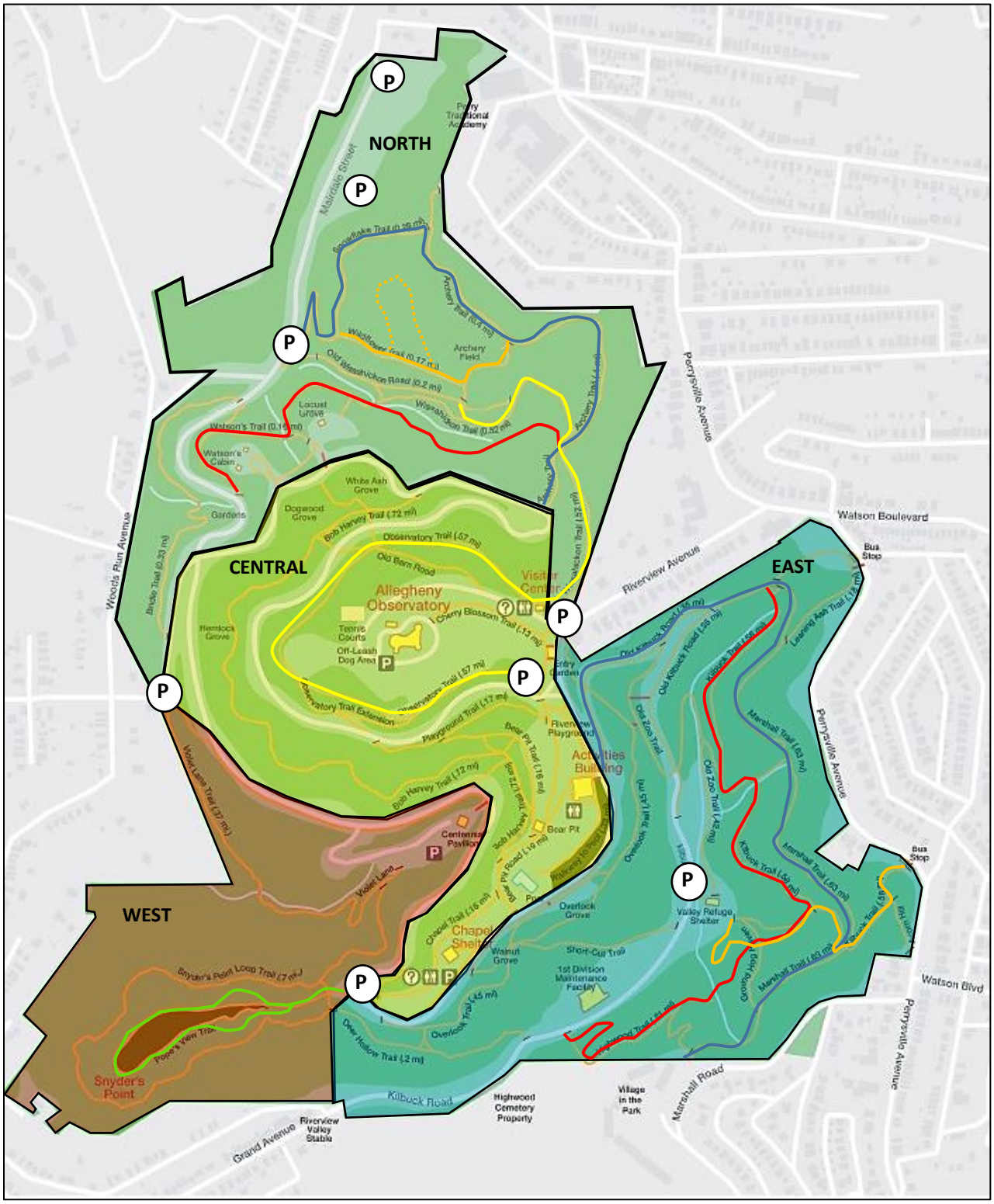


Figure 8. Riverview Park quadrants and recommendations for trail

Bridges

Wooden bridges are important infrastructure for crossing the drainage gullies and streams of Riverview Park. However, just like wooden stairs, these structures become slippery and dangerous when wet or when they become a bit mossy from their location in a shady valley. Each bridge in the park is in need of maintenance or improvement as described below. Installation of two small foot bridges would greatly improve newer trails. The park bridges and recommendations are included below, with trail segment labels in parentheses.

- Kilbuck Trail Bridge (60) – replacement recommended
- Bob Harvey Trail Bridge (20) – improved traction recommended
- Bridle Trail Bridge (37) – improved traction recommended
- Watson's Trail Bridge (17) – improved traction recommended
- Watson's Trail extension (77) – small footbridge installation recommended
- Brighton Heights Park connector (37A) – small footbridge installation recommended

Benches

Riverview Park is packed with woodland trails offering excellent opportunities to hike, run, mountain bike, or simply enjoy time in nature. The park terrain is quite hilly and park visitors likely appreciate benches where they can rest.

Benches do exist, such as the old wooden version shown at right, near the Visitor Center. Additional stone benches are scattered throughout the park, providing respite for park visitors. Creating an inventory of the locations and types of benches might help utilize future funding for park amenities.

Landslides

Riverview Park suffers from landslides, which closed or severely altered several trails in 2019: Archery Trail, Overlook Trail, Deer Hollow Trail, and Old Kilbuck Road. The Pittsburgh Department of Mobility and Infrastructure (DOMI) continues to investigate several major landslides and the final outcome is not yet known. Once the landslides have been stabilized and remediated, the closed trails should be repaired and reopened. Repairs should be feasible for all the affected trails except perhaps for Old Kilbuck Road.

If the former roadway cannot be repaired, The Old Zoo Trail may take its place as a route from Valley Refuge Shelter up to the wide, flat Marshall Trail. The Old Zoo Trail has not been maintained for some time, so fallen logs will need to be cleared and other improvements will be necessary to increase its functionality.

The trail above/behind the DPW facility should be opened as a landslide detour by combining with Deer Hollow Trail as a loop.

Riverview Park Map Updates

The Riverview Park Trail Map needs updating to reflect the current trail system. Some of the primary trails do not appear on the map, while other trails have been renamed. Along with the previous recommendations for trail consolidation, adding all trails to the map will aid users in park navigation.

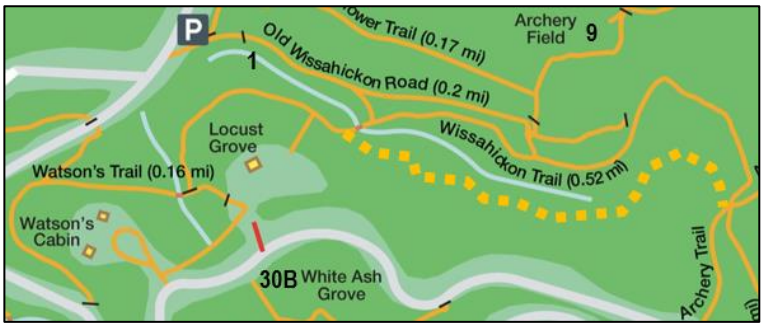


Figure 9. Watson's Trail extension (orange dotted line)

Watson Trail Extension

DPW staff constructed the trail that runs parallel to the stream along Old Wissahickon Rd. This trail extends from Watson Trail stream crossing (near Mairdale St. parking area) to the Wissahickon Trail directly below the Semicir St. landslide (orange dotted line, Fig. 9).

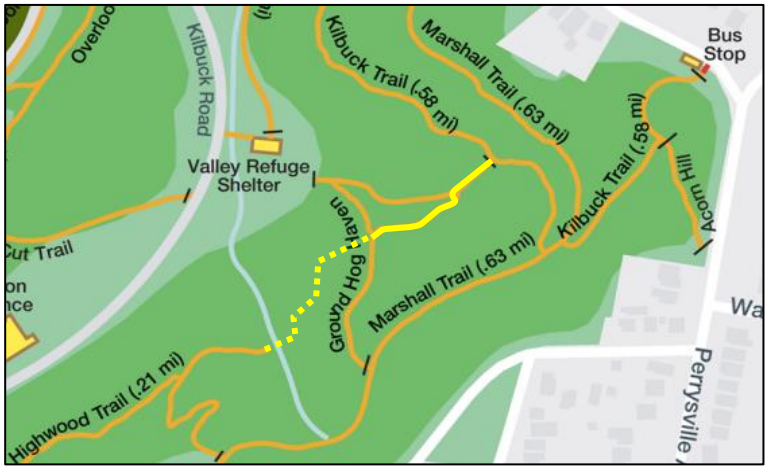


Figure 10. Kilbuck Trail extension (yellow dotted line)

Kilbuck Trail Extension

Currently, the Kilbuck Trail makes a hard left up toward the Bus Stop on Perrysville Ave. The more natural route is to continue along the same contour from Kilbuck Trail along an existing but unnamed trail above the Valley Refuge Shelter to the Highwood Trail (yellow, Fig. 11).
Note: Part of this trail is missing from the current park map and should be added (dotted yellow, Fig. 11).

Pope's View Trail aka Moses Carper Trail

The trail currently labelled as Pope's View Trail on the park map has been signed as the Moses Carper Trail. Either this name should be updated on the map or a new sign installed. The trail should include two side trails off the Snyder's Point meadow (yellow line, Fig. 11).

Snyder's Point to Violet Lane Trail

An informal trail currently links the Snyder's Point Loop Trail to the Violet Lane Trail (dotted orange line, Fig. 11). This quarter-mile trail adds a technical loop to the overall trail system for those looking for greater elevation change. Part of this trail was once called the Gravity Cavity, offering potential name for the formalized trail. Note: DPW/PPS review of this informal trail is pending.

Deer Hollow Trail to Short Cut Trail

A fine trail exists above the DPW facility, which links Deer Hollow Trail to the Short Cut Trail service road (orange dotted line, Fig. 12). During the onslaught of landslides in 2019, this trail also has provided an alternative to the blockage on Overlook Trail. This trail should be added to the park trail map park trail system. Since numerous raccoons are seen along this trail, perhaps it can be named after this common park denizen.

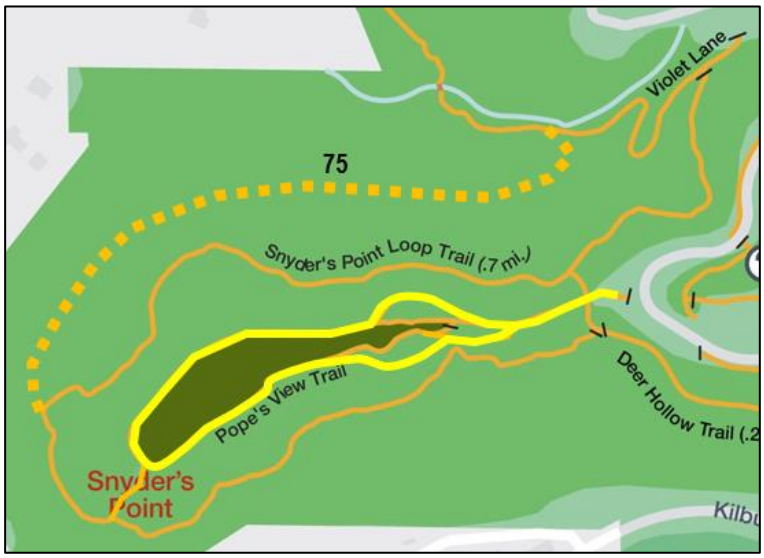


Figure 11. Snyder's Point trails (yellow)

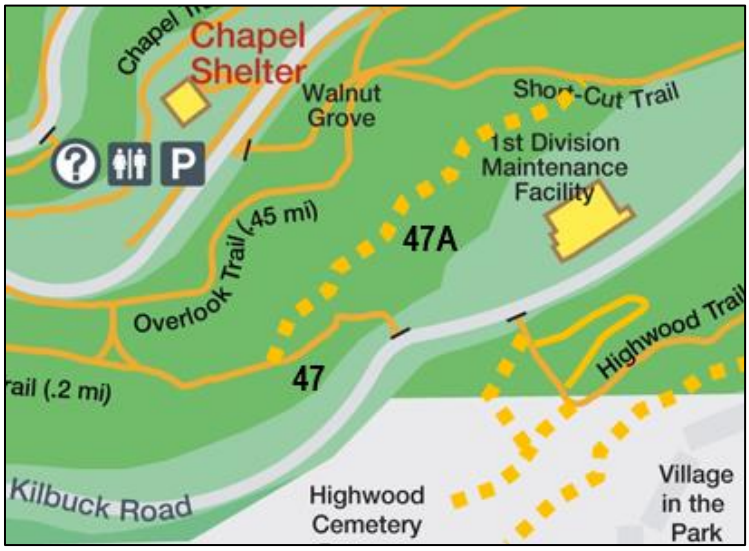


Figure 12. Informal trail from Deer Hollow Trail to Short-Cut Trail

Adjoining Park Land

At just under 300 acres, Riverview Park is one of the smallest of Pittsburgh's Regional Parks, but its trail system is informally augmented by adjacent open space that has the same natural character of mature forest with great potential for outdoor recreation.

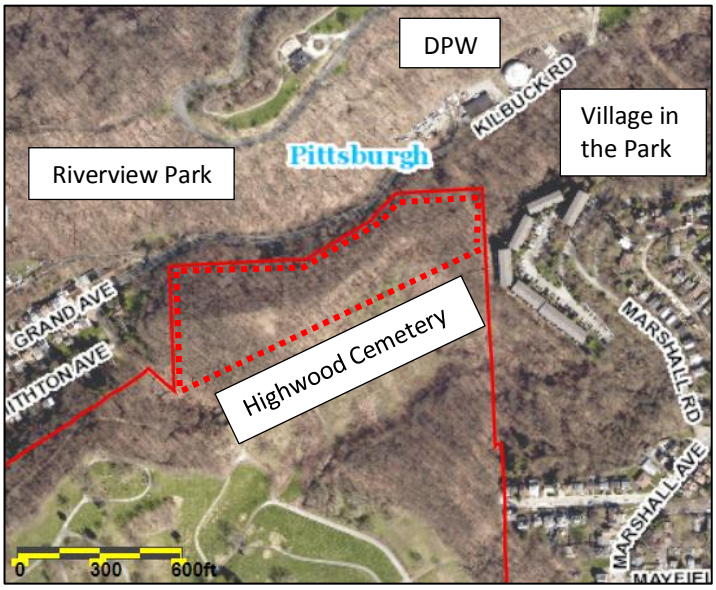


Figure 13. Southern edge of Riverview Park and adjacent greenspace owned by Highwood Cemetery Association

Highwood Cemetery

The Highwood Cemetery extends from Brighton Road to Village in the Park and shares a border with Riverview Park along Kilbuck Road. The 63-acre parcel (#76-R-10-0-1) owned by Highwood Cemetery Association includes approximately 10 acres of woodlands, which includes the hill bordering the park entrance on Kilbuck Road.

Approximately ¾ miles of trails stretch through this terrain, serving as an informal extension of the Riverview Park trail system. A lovely plateau exists above Kilbuck Road, with excellent wildlife viewing opportunities of the meadow on the opposite side. Coyotes have been found to den in the meadow, which abounds with song birds and other wildlife.

Figure 13 shows the approximately 10 acres of woodlands demarcated by a red dotted line along the parcel's northern edge. The trails in this area are in good condition and include a range of skill levels for hiking and biking. The Friends of Riverview Park group may wish to approach the cemetery association to learn more about their plans for that acreage.

Brighton Heights Park and City Property

Additional opportunities exist to expand Riverview Park into city-owned property. The City of Pittsburgh owns property along Mairdale Avenue, where Riverview Park could be expanded and perhaps a trail connection could link high school football field on Vinceton Avenue to the park, the soccer field and high school.

The city also owns acreage off of Woods Run Avenue at Birkoff Street directly across the street from Riverview Park. This acreage is part of Brighton Heights Park where City Planning has approved the formalization of a small trail system (Fig. 14). This trail system can be linked to Riverview Park and managed as part of Riverview as a regional park.

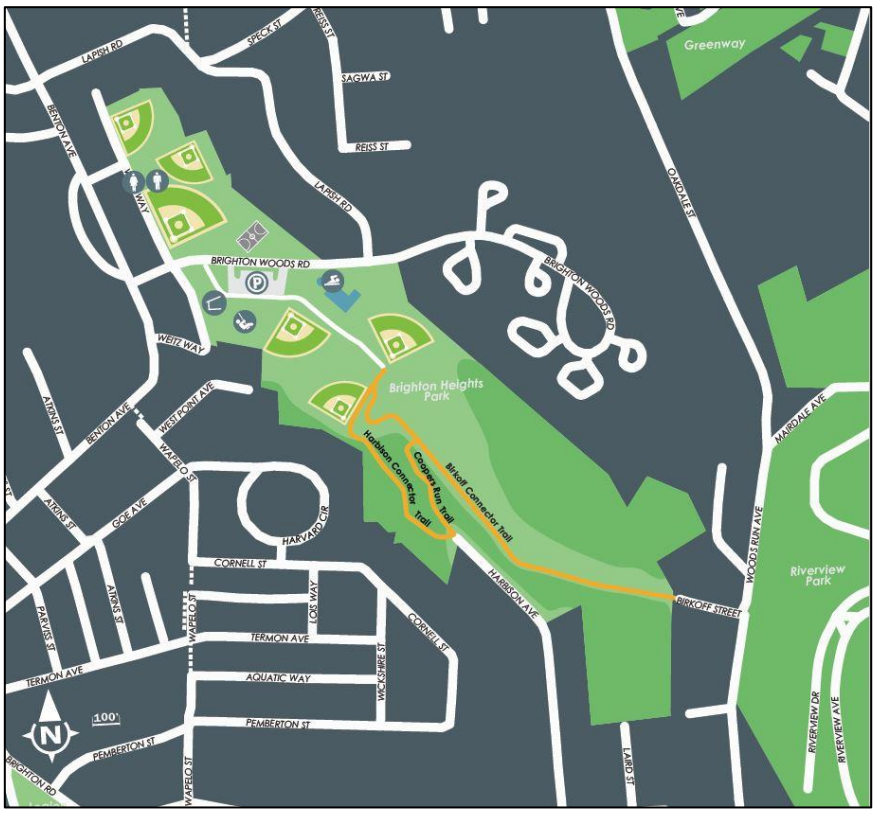


Figure 14. Brighton Heights Park and Riverview Park

Additional opportunities for park or trail expansion may be possible through the Hollows Conservation Greenway program on the Northside. Further information can be found in the following documents:

https://pittsburghpa.gov/onepgh/documents/library/GreenwaysForPittsburgh2-0.pdf

https://apps.pittsburghpa.gov/redtail/images/2913_Greenways_Policy_Guide_SMALL.pdf

Signage

Having standardized signage that is consistent throughout Riverview Park will greatly improve navigation for better visitor experiences. Currently, trail users have few signage references corresponding to the park trail map. First time visitors and those less familiar with the trail system require trail signs and trail markers to enable self-navigation.

The comprehensive **Open Space Signage Standards** developed by City Planning would be helpful for this process: https://apps.pittsburghpa.gov/redtail/images/7122_Open_Space_Signage_Plan.pdf

Trailhead Signage

Prominent signage should be provided for each trail departing the parking areas:

- Visitor Center
- Playground
- Mairdale Ave.
- Valley Refuge Shelter
- Former Davis Avenue bridge
- Moses Carper trailhead on Riverview Ave.

Other external points of access are listed below. These should have Trail Head signs, dedicated parking, and trail obelisks (stone work similar to half-columns at Riverview Park entry along Riverview Avenue near the Visitor's Center.

- Bus shelter on Perrysville Ave. between Watson Blvd. and Chemung St.
- Bus shelter on Perrysville Ave. at Delaware St.
- Acorn Hill Trailhead on intersection of Perrysville Ave. and Watson Blvd.
- Village in the Park apartments
- Perry Academy High School
- Woods Run Ave. near intersection with Oakdale Ave.

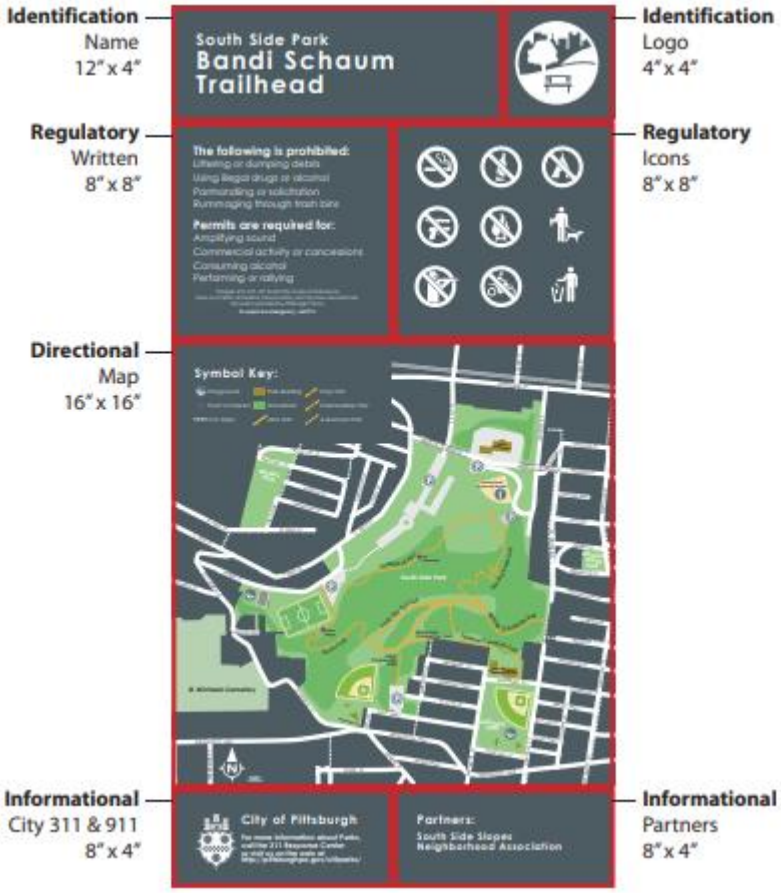


Figure 15. City of Pittsburgh Entry Sign

Wayfinding Signage

The Pittsburgh Open Space Signage Standards provide trail marker specifications: *Use trail markers only along trail circuits and where trails are long. They are to be spaced in even intervals, every 0.2 miles. The trail marker would display trail name, mileage, difficulty, and directional arrow if needed.*

Installation of trail markers on all named trails would significantly improve wayfinding for visitors to Riverview Park. Emphasis on trail junctions will clarify trail identification when several depart from a single junction.

Figure 16. City of Pittsburgh Trail Marker

APPENDICES

Sustainable Trail Specifications

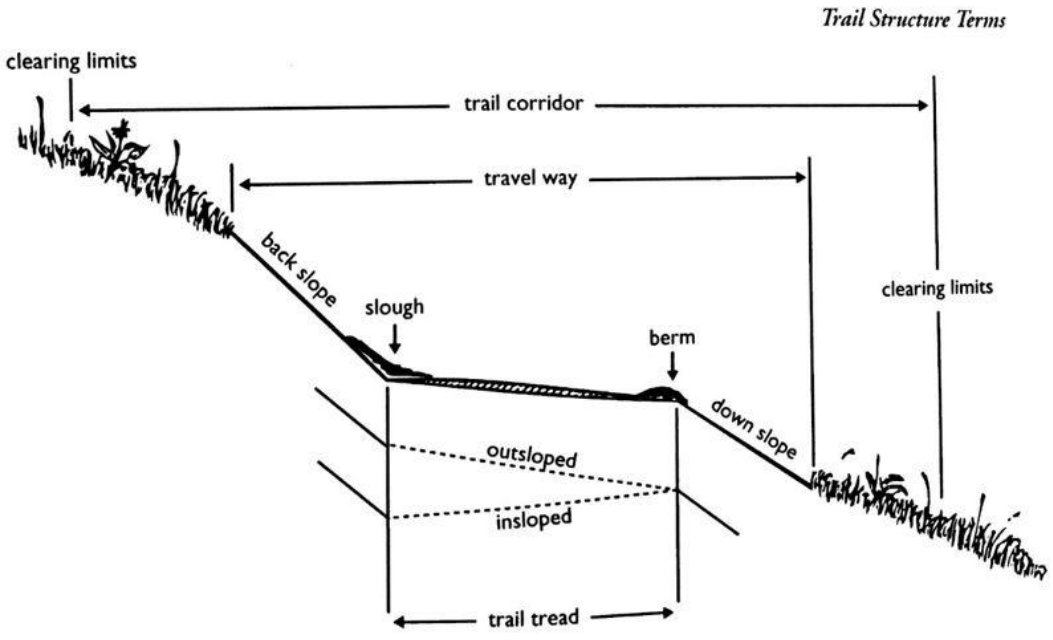
The following specifications were developed by compiling information from PA Department of Conservation and Natural Resources *Guidelines for Sustainable non-motorized Trails*, International Mountain Biking Association's *Trail Solutions*, the Student Conservation Association's *Lightly on the Land* and various United States Forest Service manuals.

Specifications are outlined for:

- Tread and Corridor
- Trail Structures
- Signage
- Restoration

Tread and Corridor Specifications

The specifications table below integrates various resources to create a set of multi-use guidelines for tread and corridor that best accommodate hiking, mountain biking and equestrian use, without prohibiting use by any of these groups. "Tread" refers to the surface portion of a trail upon which users travel and "corridor" refers to the full dimensions of the trail, including tread width and clearing limits.



Student Conservation Association (SCA)

TREAD AND CORRIDOR SPECIFICATIONS For shared use (hiking, mountain biking, equestrian) natural surface trails	
Clearing Height	8-10ft
Clearing Width	2-3ft on either side of trail
Tread Width	2-3ft up to 12ft on highly developed doubletrack
Tread Surface	Durable, firm and stable Primarily native materials with limited imported materials Gravel or pavement may be appropriate for doubletrack & developed areas Sidehill trail is constructed Minimal exposed roots
Tread Outslope	2-5% Avoid berms and insloped turns for low maintenance
Average Grade	10%
Max Grade	15% sustained (depending on cross slope) without structural support
Obstacles and Features	Clear of unavoidable obstacles on trail Avoidable obstacles should fall in zone of sacrifice Rocks and roots minimal-less than 6inches or avoidable
Cross Slope	Ideally under 3x grade of trail, not to exceed 2x grade of trail
Turns	Climbing turns are most sustainable for multiuse and should be used when slope <7% When slope exceeds 10%, switchbacks to designated specs may be utilized
Sight Distance	2 way traffic: 50-100 ft Motorized road crossings: 100-200 ft

Trail Structures

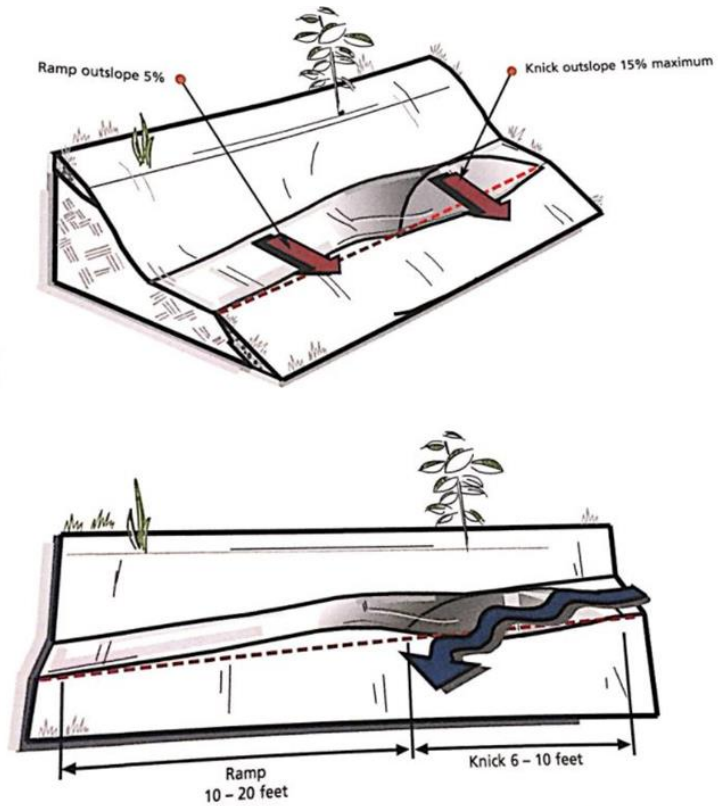
Structures can be used on a trail to allow for adequate drainage and water flow, to raise the trail surface out of a wet area, to mitigate erosion and to allow for sustainable travel on steep terrain. Some structures require importing material, e.g. Bridges, while other structures involve sculpting the existing trail surface, e.g. Drain Dips. All structures require maintenance, so the most sustainable trail is one that uses minimal structures and relies on the rolling contours of a hillside. Most trails will require some structure or design feature and annual maintenance should be planned accordingly. The following are common structures found on natural surface trails and the specifications identified are for structures on multi-use trails. This list is not exhaustive and further resources should be consulted when building any structure.

DRAIN DIPS/ROLLING GRADE DIPS

Drain dips and rolling grade dips are features designed in the trail tread to allow water to drain off of the trail. Drains should be built as an outsloped depression followed by a long, gentle ramp and located where a natural grade reversal can be accentuated. Drain dips can be added to mitigate erosion issues, whereas rolling grade dips are typically designed into a trail's original design.

General specs:

- 15-30 ft. total, depending on trail steepness
- Comprised of 10-20 foot ramp (outslope 5%) and 6-10 foot nick (outslope 15%)



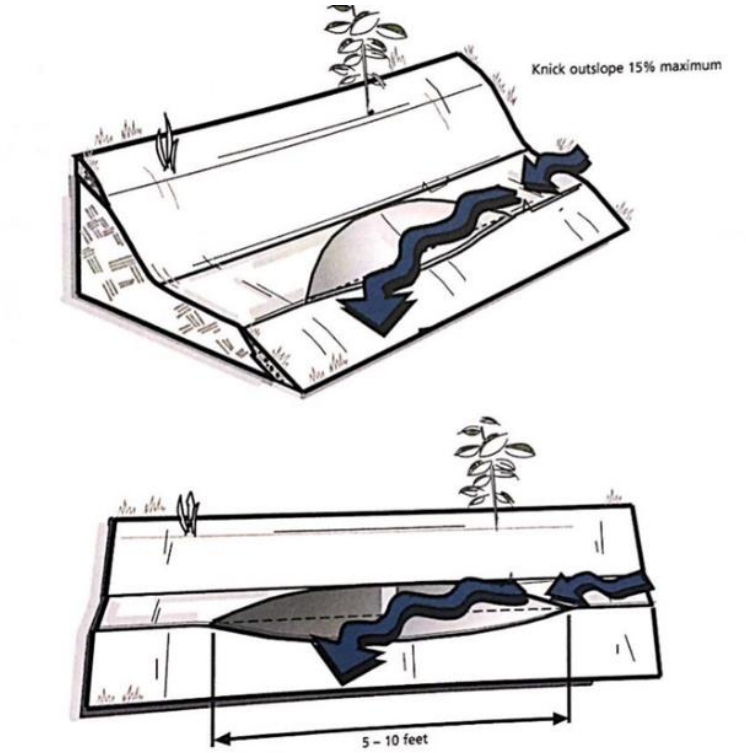
Trail Solutions, International Mountain Biking Association (IMBA)

NICKS

Nicks, similar to drain dips, are constructed to remove water from gentle sections of trail where water puddles.

General Specs:

- Must drain to lower ground below the trail
- 10 ft. diameter
- Outsloped at 15%



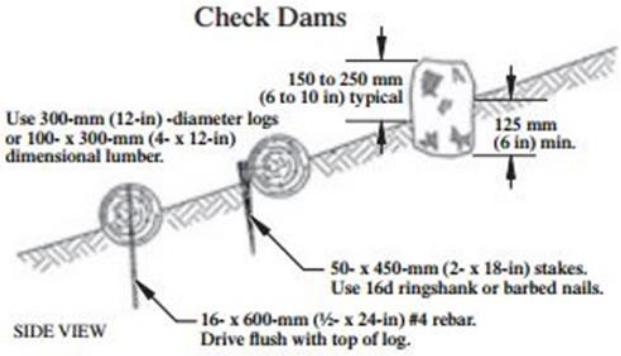
IMBA Trail Solutions

CHECK STEPS/ DAMS

Check steps and check dams are used to salvage badly eroded tread or in restoration or trail closures. The structure slows erosion and allows silt to collect behind structures. Like staircases, check steps and dams are best avoided on multi-use trails when possible.

General Specs:

- Rock or timber
- 7-10 inch rise
- Bury 1/3-2/3 of step



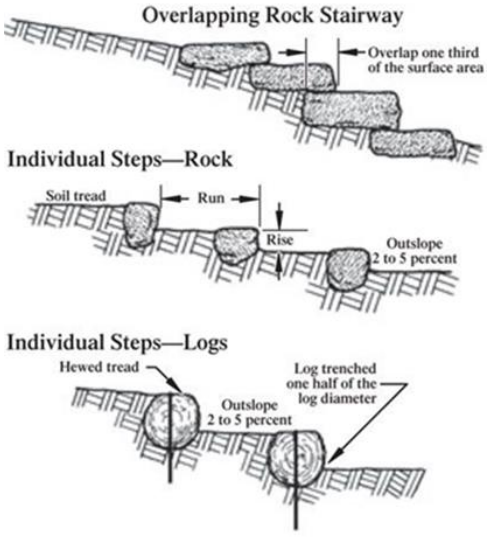
United States Forest Service (USFS)

STAIRCASES

When possible, staircases should be avoided on equestrian and mountain bike trails. If necessary, they must be constructed to meet the needs of multiple trail uses.

General Specs:

- Stairs may be timber or rock
- Minimum 4ft platforms
- Include bicycle runnels or similar feature



United States Forest Service (USFS)

ROCK PAVING AND ARMORING

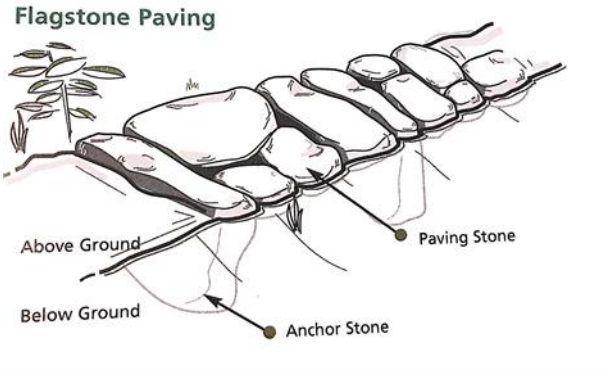
Rock paving and armoring are methods used to correct user created erosion by raising and hardening the trail surface.

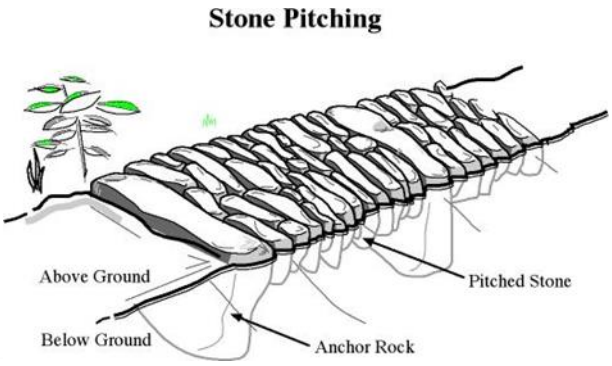
Two methods are primarily used on multi-use trails:

- Flagstone Paving: Large flat faced stone placed on mineral soil or aggregate with smoothest face up
- Pitching: Medium rocks set on end and placed closely together for smooth, even tread

General Specs:

- Water drainage issues will make unsustainable
- Remove organic material prior to installation
- Anchor rocks: large, stable, immobile; at least 2/3 buried
- Break joints between rocks
- Utilize tie stones every 4-6 ft.





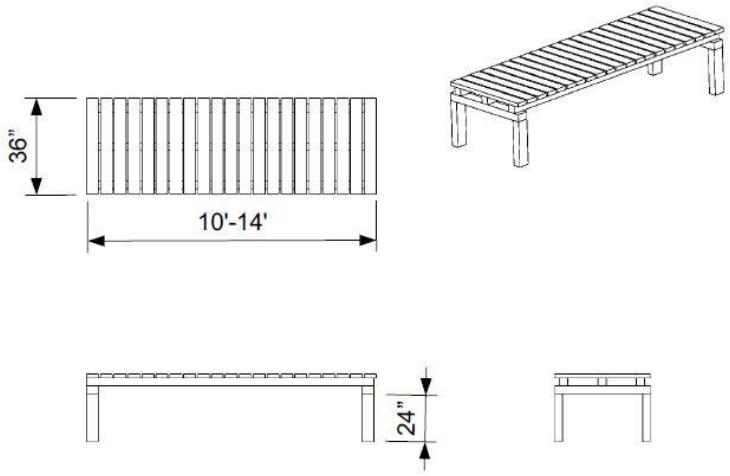
International Mountain Biking Association (IMBA)

BRIDGES

Bridges are used on trails to cross a short span and are built above the seasonal high water of a drainage ditch or creek. Bridges and other wooden structures often become slippery in shady and frozen conditions and a traction material should be added, such as sheets of steel lath used for plaster. An engineer or expert should be consulted prior to construction.

General Specs:

- 36"-48” or wider and should utilize traction control
- Approach on a gentle grade < 8%
- Stringers should not touch the ground-rest on stone sills or replaceable wood
- Avoid sharp turns in approach or on structure
- When possible, add traction material , such as sheets of steel lath used for plaster



BILL OF MATERIALS desc	qty	est cost
1) 2x6 x 36” pressure treated lumber	24	16.00
2) 4x6 x 10'-14' pressure treated lumber	3	39.00
3) 4x6 x 32” pressure treated lumber	2	12.00
4) 4x6 x 24” pressure treated lumber	4	16.00
5) 3” galvanized decking screws	100	17.00
6) 3/8” x 8”galvanized lag bolts	12	30.00
7) 3/8” galvanized flat washers	24	4.00
8) 3/8” x 10” landscaping spikes	8	8.00
9) concrete 80 lb bags	4	16.00
10) 30”x8' metal lathe	2	10.00
11) 3/16” fender washers	75	10.00
12) 1 1/2” decking screws	75	7.00
13) metal strips 1-3/8 x 30” 14 gauge	3	15.00
	total	200.00

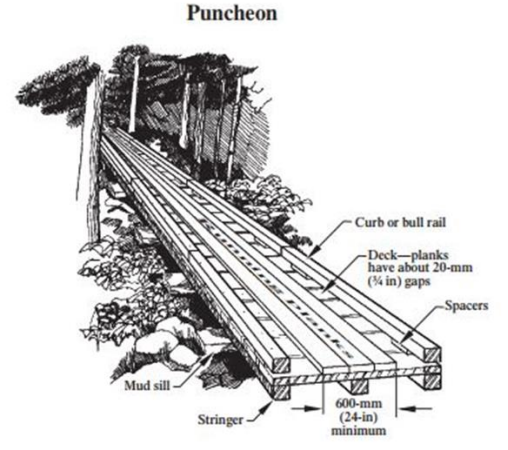
Trail Pittsburgh

BOARDWALKS AND PUNCHEON

Boardwalks and Puncheon are used in wet, boggy areas, where there are no other options. Boardwalk is typically elevated on pilings, whereas Puncheon rests on sills in direct contact with ground.

General Specs:

- Use rot resistant materials
- Span from dry land to dry land
- 12" clearance between deck and ground surface
- Limit 8% grade
- When possible, add traction material , such as sheets of steel lath used for plaster



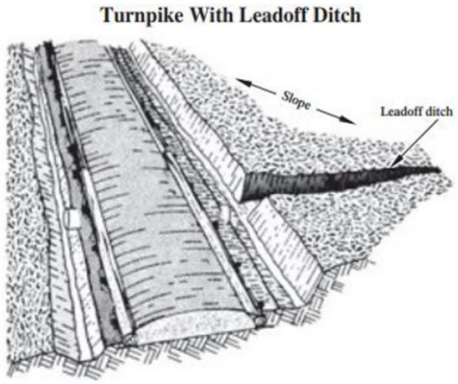
United States Forest Service (USFS)

TURNPIKES

Turnpikes raised the trail tread out of saturated soil, usually from seeps or ongoing moisture. Turnpikes are labor intensive and should be used when reroutes are not an option.

General Specs:

- 36-48" wide
- Fill rocks large -> small for percolating drainage
- Cap with soil where available
- Crown tread to shed water
- Install ditches along one or both sides and allow for drainage every 8-10 ft



United States Forest Service (USFS)

SWITCHBACKS AND CLIMBING TURNS

Switchbacks and Climbing Turns are very similar features designed to climb a hillside at a sustainable grade. While not without similarities, the two features are distinctly different and should not be substituted for one another. Switchbacks may be used on much steeper slope than a climbing turn.

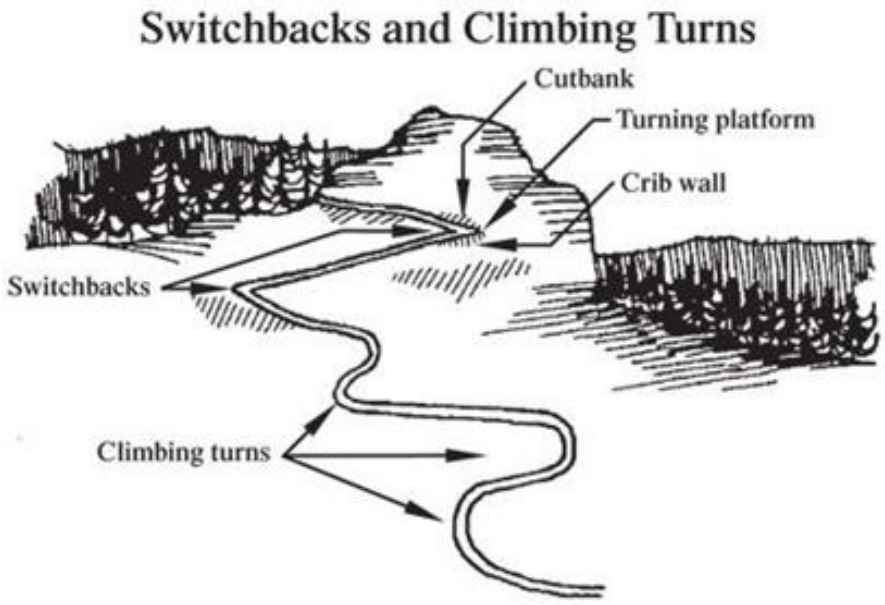
General Specs:

Climbing turn

- Use on shallow slopes not exceeding a grade of 10%
- Turning radius >20 ft
- Establish grade reversals before each turn to divert water
- Create barriers to prevent shortcutting

Switchback

- Rolling crown switchbacks should be utilized for sustainable drainage
- 5-8% grade on upper leg
- Upper leg in-sloped with ditch draining at platform
- Platform slightly crowned
- Turning radius of platform 6-8 ft. minimum
- Retaining walls increase stability
- Utilize natural features as anchor point
- Create barriers to prevent shortcutting, don't stack switchbacks



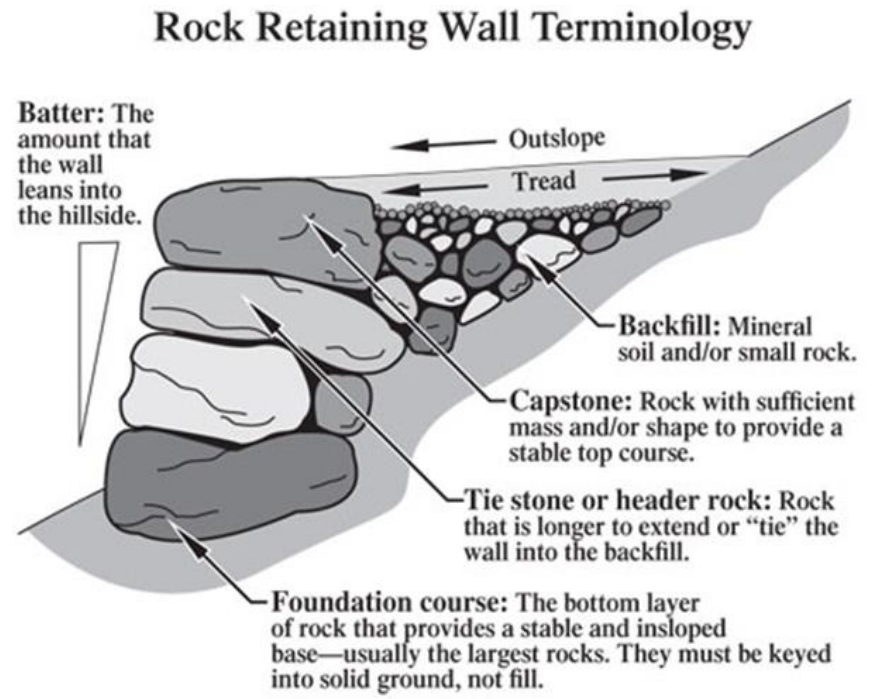
United States Forest Service (USFS)

ROCK RETAINING WALLS

Dry-set rock retaining walls are used to hold back soil on steep hillsides or switchbacks, typically on the downhill edge of the trail.

General Specs:

- In-sloped foundation (batter)
- Break joints between rocks when stacking layers
- All rocks stable, immobile
- Utilize anchor rocks and capstones



United States Forest Service (USFS)

Sign Standards

Trail signs allow users to have great park experiences by providing the information needed to navigate the trail system safely and confidently. Signs can also help to protect the environment by encouraging responsible trail use and a more thorough understanding of park resources. Sign standards have been formally adopted by the City of Pittsburgh for the Regional Parks, including trails and trailheads, and should be used accordingly. With a variety of existing sign types that have accumulated in Riverview Park over the years, it will be critically important to replace them all with a consistent family of signs. Caution must be used to not cause "sign pollution" by installing too many signs, thereby distracting from the users experience in nature.

The Open Space Signage Standards developed by Pittsburgh City Planning may be helpful:
https://apps.pittsburghpa.gov/redtail/images/7122_Open_Space_Signage_Plan.pdf

Primary Types of Trail Signage:

Identification:
Used at entrances and facilities. Trailhead identification signs include a park map and use guidelines.

Regulatory:
Provides park rules, permitted activities, etc. that are critical for law enforcement. Regulatory signs should use standardized language established by the City of Pittsburgh.

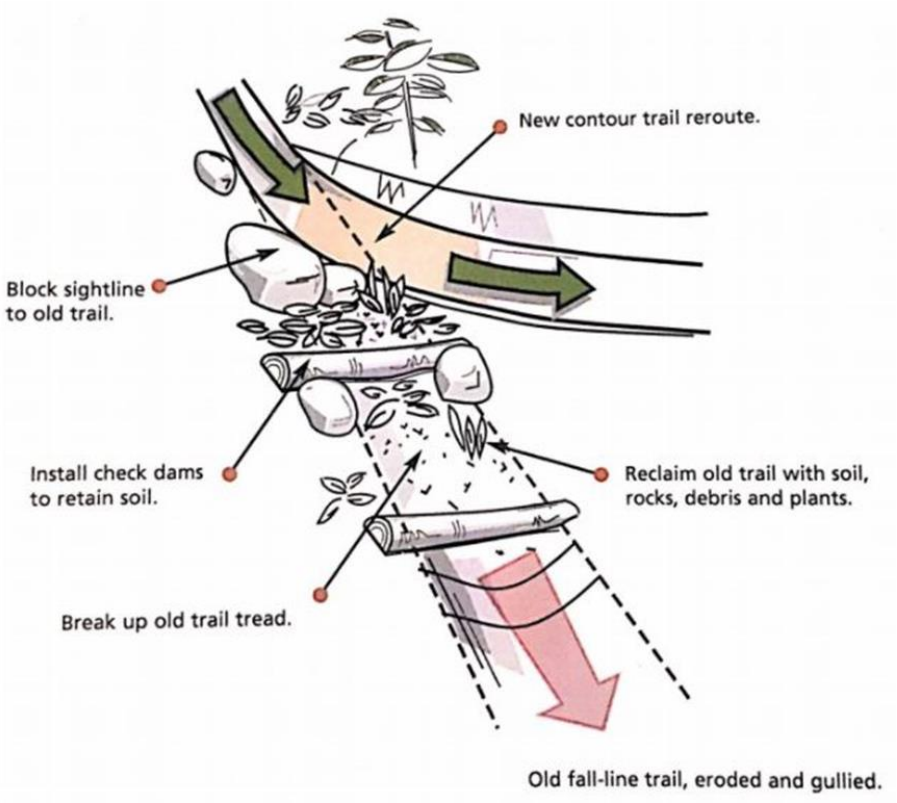
Directional (wayfinding):
Trails can use reassurance markers along the trail to improve navigation especially when the ground is covered with snow or leaves. Wayfinding signage may also show the distance or direction to destinations or other trail junctions.

Interpretive:
Highlights features of interest and enhances user experience with maps, graphics, and text. Interpretive signs may be used at positive control points along a trail or to highlight historical or natural features. Trailhead kiosks can provide a central location for park users to gain information about trails and to share information for Friends groups or trail maintainers. .

Ecological Restoration for Trail Closures

This process outlines best practices for trail closures. Restoration of trail braiding or of work areas during construction follows the same fundamental steps for disguising and restoring without the need to create transitions onto the rerouted trail or inform the public of changes. (For more information, see *Trail Solutions, IMBA's Guide to Building Sweet Singletrack*.)

1. Plan ahead
    - Provide alternative routes
    - Install signage to inform trail users
    - Block corridor with fence and/or signs if necessary
    - Allow ample time: restoring a closed trail takes comparable time, effort and resources to building a new trail
2. Control erosion on closed trail
    - Grades over 30% will require rock or timber check dams
    - Use fill dirt only when necessary, matching the composition of existing soil
3. Create a smooth transition onto rerouted trail (IMBA diagram p 214)
4. Install visual barriers to block sight lines using native materials and match surrounding landscape
    - Rocks: useful in open areas, use large securely placed rocks
    - Logs: embedded logs establish environment for regrowth
    - Snags: may be "planted" vertically
5. De-compact or scarify trail tread and revegetate site
    - Scarify/till 2-6 inches deep
    - Loosen soil without turning over to allow new plants to grow in topsoil
    - Seeding & Transplanting: Use only approved native seed mix and transplants; plant and seed in the spring or fall.
    - If using onsite material, remove <10% of material from a given location
6. Educate Trail Users
    - Adjust and add signage as necessary
    - Update maps



International Mountain Biking Association (IMBA)

Trail Projects Checklist

Table 7. Riverview Park Trail Projects Checklist

RIVERVIEW PARK - TRAIL PROJECTS - CHECKLIST							
Project Label	**Trail**	**Trail Segment Label** (Fig. 5)	**Issues**	**Project Types**	**Project Description**	**Skill Level**	**Complete (✓)**
1*	Snowflake Trail	1. Mairdale Parking area to Wildflower Tr.	Steep, cupped, eroded	DB, DF	Re-grade trail to allow lateral drainage	Moderate	
2	Snowflake Trail	1. Mairdale Parking area to Wildflower Tr.	Cupped, eroded	DB, DF	Re-grade trail to allow lateral drainage	Moderate	
3*	Snowflake Trail	1. Mairdale Parking area to Wildflower Tr.	Steep, cupped, eroded to bedrock	RR	Bench cut trail to inside of rocky bend, close old trail	Advanced	
4	Snowflake Trail	2. Wildflower Tr. 20 Archery Tr.	Steep, cupped	DB, DF	Install drainage features	Moderate	
5*	Archery Trail	3A. Perry Academy spur	Cupped, steep	DB, DF, V, RR	Clear vegetation and bench cut switchbacks	Advanced	
5A	Archery Trail*	3B. Soccer field trail connector	No trail exists to the park soccer fields	NT	Determine trail alignment, clear vegetation, bench cut and drainage	Advanced	Access to and from key park amenity
6	Wildflower Trail	8. Trail re-route to nature center steps	Steep	DF	Bench-cut contour trail from Wissahickon Rd. up to Wildflower Tr.		
7	Wildflower Trail	9. Junction below archery field to Archery Tr.	Steep, erosion	DF	Dig nick for drainage	Moderate	

8	Old Wissahickon Road	11. 1st junction to 2nd junction (left and right connector trails)	Steep, eroded, loose gravel, 12 ft. wide	RR, TC	Earth moving	Advanced	
9	Wissahickon Trail	14. Drainage pipe to Old Wissahickon Rd.	Cupped trail	DB	Dig nicks for drainage, add dirt to high side of trail	Advanced	
10	Wissahickon Trail	15. Archery Tr.to drainage pipe	Cupped trail	DB	Dig nicks for drainage, add dirt to high side of trail	Advanced	
11*	Wissahickon Trail	15. Archery Tr.to drainage pipe	Steep, cupped drainage pipe buried	DF	Dig nicks for drainage, raise high side of trail	Advanced	
12	Wissahickon Trail	16. Visitor Center to Archery Tr.	Cupped trail	DB, DF, A	Dig nicks for drainage, add dirt to high side of trail	Advanced	
13	Watson's Trail	17. Wissahickon Rd. to Riverview Ave. by Watson's cabin	No trail to cabin	NT	Place woodchips or other material to indicate trail	Easy	
14	Bob Harvey Trail	20. Bear Pit Tr. connector to Bear Pit Rd. (near Chapel Tr.)	Bridge can be slippery….textured paint could be helpful	A, DB	Install bridge traction, e.g. steel lathe or anti-slip paint	Easy	
15	Bob Harvey Trail	21. Connector to Riverview Ave./Centennial Pavilion	Washed out, loose rocks, fissures	TC	Block trail with debris, see Trail Closure methods	Moderate	
16	Rustic Woods Trail	22. Locust Grove to Watson Cabin	Steep, eroded	RR	Bench-cut switchback	Advanced	
17	Observatory Trail	27. Observatory Hill Tr. Ext. to Riverview Ave. near playground	Grassy, cupped, Eroded	DB, DF	Re-grade trail to allow lateral drainage	Moderate	

18	Observatory Trail Ext.	28. Parallel and below Observatory Hill Tr.	Cupped, eroded, drainage	DB, DF, A	Re-grade trail to allow lateral drainage	Moderate	
19	Old Barn Road	30. Observatory Rd. to Riverview Ave.	Cupped, steep, eroded, loose rock, redundant with Observatory Tr.	TC	Block trail with debris, see Trail Closure methods	Moderate	
20	Old Barn Road	30 (A). Riverview Ave. to Bob Harvey Tr.	Steep, loose gravel	DB, DF	Dig nicks for drainage	Moderate	
21	Old Barn Road	30 (B). White Ash Grove to Bob Harvey Tr.	Steep, eroded	RR	Bench-cut switchbacks	Advanced	
22	Bear Pit Trail	34. Playground Tr. to Bob Harvey Tr. connector	Eroded, washed out, muddy, grassy	TC	Block trail with debris, see Trail Closure methods	Moderate	
23	Bridle Trail	36. Riverview Ave. near Mairdale Rd. to trail bridge	Cupped, eroded, bridge is slippery	DB, DF	Install bridge traction, e.g. steel lathe or anti-slip paint	Easy	
24*	Bridle Trail	37A. Connector to Woods Run/Brighton Hts. Park	Steep, roots, stream, bridge needed	B, bridge	Install small bridge at bottom	Advanced	
25	Violet Lane Trail	38. Former Davis Bridge to stream crossing	Steep, roots, stream crossing	DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	
26*	Violet Lane Trail	39. Stream crossing to Snyder's Point Tr. at Centennial Pavilion	Steep, roots, stream crossing	DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	
27	Violet Lane Trail	39. Stream crossing to Snyder's Point Tr. at Centennial Pavilion	Erosion at Centennial Pav. Rd.	A	Add dirt to cover roots, grade for drainage	Moderate	

28	Moses Carper Trail, aka Pope's View Trail	43. Riverview Ave. to grassy meadow	Crumbling asphalt & brick, cupped	A	Add dirt and grade for drainage	Moderate	
29	Moses Carper Trail, aka Pope's View Trail	44A. Snyder's Point connector to Snyder's Loop Tr.	Steep, fallen logs	V, RR	Clear logs, bench-cut switchback	Advanced	
30	Deer Hollow Trail	47. Trail Junction to Kilbuck Rd. (below DPW)	Steep, eroded, clogged storm drain, knotweed	DB, DF, A	Dig nicks for drainage, add dirt to high side of trail	Advanced	
31	Overlook Trail	49. Short Cut Tr. to Overlook Grove	Cupped, eroded, poor drainage	DB, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	
32	Overlook Trail	50. Overlook Grove to Old Kilbuck Rd. near Charlotte Apts. (Riverview Ave.)	Roots, loose millings	DB, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	
33	Short-Cut Trail rd.	51. DPW to Riverview Ave	Steep, eroded, service road		Dig nicks for drainage, add dirt to high side of trail	Moderate	
34	Marshall Trail	56. Leaning Ash Tr. to Kilbuck Tr.	Insloped, muddy & poor drainage overflowing to trails below near Kilbuck Tr. junction	DB, DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	
35	Marshall Trail	57. Kilbuck Tr. to Village in the Park apts..	Cupped trail, mud	DB, DF, A	Dig nicks for drainage	Moderate	
36*	Kilbuck Trail	60. Marshall Tr. to Old Zoo Tr. jct. near bridge	Steep, eroded, loose	RR, B	Bench-cut switchbacks	Advanced	
37	Kilbuck Trail	61. Old Zoo Tr. to junction with Ground Hog connector (69)	Bridge needs replacement, roots	DB, DF, A, bridge	Install new bridge	Advanced	
38	Kilbuck Trail	61A. Ground hog connector (69) to slump	Steep, eroded, slump, loose gravel	TC	Block trail with debris, see Trail Closure methods	Moderate	

39*	Kilbuck Trail	61B. Slump re-route to Marshall Tr.	Steep	B	Bench-cut sustainable trail and widen existing trail	Advanced	
40	Kilbuck Trail	62. Marshall Tr. to Acorn Hill Tr.	Cupped, multiple water drainages	A, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	
41	Acorn Hill Trail	64. Kilbuck Tr. to Perrysville Ave. at Watson Blvd.	Cupped, eroded, drainage	DB, DF, A	Dig nicks for drainage, add dirt to high side of trail	Moderate	
42	Highwood Trail	66. Ground hog connector (69) to Kilbuck Rd. near DPW	Steep Eroded, loose road millings	RR, B	Improve benching	Moderate	✓
43	Ground Hog Haven Tr.	67. Marshall Tr. to ground hog connector	Steep (fall line), eroded, loose rocks	TC	Block trail with debris, see Trail Closure methods	Moderate	
44	Ground Hog Haven Tr.	68. Ground hog connector (69) to Valley Refuge Shelter	Steep (fall line), eroded, loose rocks	TC	Block trail with debris, see Trail Closure methods	Moderate	
45	Ground Hog connector**	69B. Kilbuck Tr. to Valley Refuge double-track	Fall line steep, washed out	TC	Block trail with debris, see Trail Closure methods	Moderate	
46	Ground Hog connector**	69C. Valley Refuge tr. (70) to Ground Hog Haven Tr.	Drainage	DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	
47*	Ground Hog connector**	69D. Groundhog Haven Tr. to Highwood Tr.	Poor drainage, cupped	DB, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	
48	Valley Refuge trail**	70. Valley Refuge Shelter up to Kilbuck Tr.	Cupped, eroded, drainage, loose	TC	Block trail with debris, see Trail Closure methods	Moderate	

49	Leaning Ash Trail	73. Kilbuck Tr. & Marshall Tr. junction to bus shelter	Muddy, steep, grassy to trailhead	DF, V	Dig nicks for drainage	Moderate	
50	Leaning Ash Trail	74. Marshall Tr. to bus shelter	Cupped, eroded, roots	DB, DF	Dig nicks for drainage, add dirt to high side of trail	Moderate	
51	Snyder's Point descent**	75. Snyder's Point Loop Tr. to Violet Lane Tr.	Fallen trees	V, B	Clear fallen logs, improve benching	Advanced	
52	Watson Trail extension**	77. Watson Tr. near stream crossing to Wissahickon Tr.	Poor drainage	DF, B	Dig nicks for drainage	Moderate	
53	Watson Trail extension**	77. Watson Tr. near stream crossing to Wissahickon Tr.	Steep, poor benching	B	Dig nicks for drainage, improve benching	Moderate	
54*	Watson Trail extension**	77. Watson Tr. near stream crossing to Wissahickon Tr.	Poor benching, bridge needed	B, A, bridge	Dig nicks for drainage, improve benching, install bridge	Advanced	
55	Old Zoo Trail	78. Old Kilbuck Rd. down to road junction below landslide	Unmaintained trail, slippery wooden steps in disrepair	V, DF, A	Clear logs and vegetation, dig nicks for drainage	Advanced	
56	Old Zoo Trail	79. Junction below landslide down to Kilbuck Tr. connector	Stream crossing needs channel improvement	DB, DF, RR, A, bridge	Dig nicks for drainage, install bridge	Advanced	
57	Old Zoo Trail	80. Kilbuck Tr. connector to Valley Refuge Shelter	Stream crossing, drainage	DF, V	Dig nicks for drainage	Intermediate	
*	*Top 10 Priority*						
**	*Unnamed Trail*						

Glossary of Terms

Access Points: Designated areas and passageways that allow users to reach a trail.

Armoring: Reinforcement of a surface with rock, brick, stone, concrete, or other wear resistant "paving" material so as to provide a hardened tread or prevent erosion on a steep slope or in a drainage.

Bench Cut: A relatively flat, stable surface (tread) on a hillside made by excavation.

Berm: A raised shoulder along the downhill (outside) edge of the tread. Berms prevent the flow of water across the trail tread, thus causing erosion along the length of the trail tread.

Blaze: a trail marker.

Braiding: parallel routes usually around an obstacle; identified by worn and eroded vegetation.

Bridge: A structure, including supports, erected over a depression (stream, river, chasm, canyon or road) and having a tread or deck for carrying trail traffic.

Brushing: The process of clearing the trail corridor of plants, trees, and branches that could impede the progress of trail users.

Clearing Limits: The area over and beside a trail that is cleared of trees, limbs, and other obstructions.

Climbing Turn: A turn to reverse direction that doesn't have a constructed turning platform or landing.

Corridor: The full dimensions of the trail including tread and clearing limits.

Culvert: A pipe or box-like construction of native rock, wood, metal, plastic, or concrete that conveys water under a trail without constricting the flow.

Cupping: a process of erosion that turns the trail into a gully.

Deberm: Removing the high ridge of material that has formed along the outer (downhill) edge of a trail, allowing water to once again flow off the side – and not down – the trail.

Doubletrack: a trail that allows for two users to travel side by side, or to pass without one user yielding.

Drainage Feature: A water diversion structure constructed across the trail tread to remove water flowing down the trail tread or to prevent it from entering the tread.

Elevated Tread: Trail tread that is raised above the level of the surrounding ground by the placement and compaction of mineral soil or other material. Elevated tread is similar to a low turnpike and is usually crowned.

Equestrian: Of horses, horseback riding, riders, and horsemanship.

Erosion: The natural process of wearing down and removing rock and soil by wind, water and traffic.

Fall Line: Steepest line across a given contour or the direction water flows down a slope (path of least resistance) under most circumstances.

Grade Reversal/Grade dip: regular ups and downs designed into a trail alignment is the best way to shed water from a new trail.

Grade: The vertical distance of ascent or descent of the trail expressed as a percentage of the horizontal distance, commonly measured as a ratio of rise to length or as a percent.

Half-rule: trail building practice that states a trail's grade shouldn't exceed half the grade of the cross-slope.

Hazard Tree: Tree or limb that is either dead, or has some structural fault, that is hanging over, or leaning towards the trail or sites where people congregate.

Inslope: Where the tread is sloped downward toward the backslope of the trail. An inslope drain causes water to run along the inside (uphill) edge of the trail.

Knick: shaved section of trail about 10 ft in diameter with an exaggerated outslope. Used to shed water and remedy flat spots on a trail.

Land Manager: the governmental agency managing public lands or other land owner.

Multi-use: a trail that permits more than one user group. Trails are open to equestrians, pedestrians and mountain bikers.

Natural Surface (trail): a tread made from clearing and grading the native soil without added surfacing materials.

Negative control point: a feature to avoid (sensitive area, safety concern, etc.).

Obstacle: Physical objects large enough to significantly impede or slow travel on a trail. User-generated obstacles are obstacles created for the benefit of a single user group which may impede the experience of other trail users or general trail safety.

Outslope: The downward grade from the backslope (inside or uphill edge) of the tread to the critical edge (outside or downhill) edge of the trail tread

Positive control point: a feature that is desired to highlight along the trail (natural feature, vista, etc.).

Reassurance Markers: signage used to mark the trail corridor when the tread may be difficult to follow.

Restoration: The process of repairing or returning damaged areas back to their original state.

Retaining Wall: A structure used to prevent soil from slumping, sliding, or falling, usually made of timber or stone.

Rhino Marker: flexible post to mark trail where trees or other surface is unavailable.

Rogue (trail): a trail that is unmapped, generally user created.

Rolling Grade Dip: A broad, gradual excavated trail feature to shed water off the trail at regular intervals to prevent tread erosion by interrupting the normal grade of a section of trail.

Scarify: To break up, loosen, or roughen the trail tread surface.

Shortcut: an unmapped trail less than 30ft in length.

Singletrack: a trail so narrow that users must generally travel in single file.

Slope: The natural or man-made pitch of the land, as shown on contour maps. Generally refers to the hillside (land), not the trail, as trail "slope" is called the grade.

Structure: anything constructed or erected that requires location on the ground such as a bridge, wall, steps, etc. on or near a trail.

Switchback, Rolling Crown: a sustainable turn on a hillside engineered for drainage. The trail is routed onto a crowned landing or deck where it makes a transition to the opposite direction. The upper approach is insloped to drain water out the back of the landing and the lower approach is outsloped.

Switchback: A sustainable turn on a hillside which doubles back or "switches back" on itself.

Tread Width: The width of the portion of the trail used for travel.

Tread: The surface portion of a trail upon which users travel.

Vegetation: Plant life; growing plants.

Wayfinding Signage: signage directing users from point to point or confirming progress along a route.