Trail Specifications

Trail Options	User Type	Trail Description	Materials	Width	Clear Zones	Shoulders	Installed Costs *	Annual Maintenance Costs (per LF)
1	Ped	All natural surface primitive trail with minor clearing.	Soil	2-6'	2'	N/A	$1-2 LF	Nominal
2	Ped	All natural surface hiking trail with minor trail surface improvements to improve drainage or minimize steep cross-slopes. No shoulder improvements necessary.	Mulch 3"	4-8'	2-4'	N/A	$2-4 LF	$1.50-3.00/LF @ 2 Yr. Maintenance interval
3	Ped	Primarily a natural surface with minor improved sections of gravel, culverts, or wooden footbridges in wetland areas. Horizontal alignments are less than 5% and cross-slopes are less than 3%. Minor drainage improvements are necessary. Shoulders optional. **	Mulch 3"	4-8'	4'	Optional 2-4'	$4-10 LF depending on site restrictions	$1.50-3.00/LF @ 2 Yr. Maintenance interval. 30 Yr. CIP replacement
4	Ped or M/U	Improved gravel soft surface multi use trail. Horizontal alignments are less than 5% (maximum 300 LF without grade change) and cross-slopes less than 3%. Full site improvements require drainage, signage, parking, public access, 4' clear zones. Shoulders optional. **	Gravel or cinders on fabric, or soil cement	6-10'	4'	Optional 2-4'	$8-14 LF depending on site restrictions and access	$1.50-2.35LF @ 3 Yr. Maintenance interval. 30 Yr. CIP replacement
5	M/U	Modified gravel and/or paved surface. Horizontal alignments are less than 5% and cross-slopes less than 2%. Full site improvements require drainage, signage, parking, public access, soft surface shoulders. **	Gravel, cinders, or paved on fabric	6-10'	2-4'	4'	$10-20 LF depending on trail type, width, site.	Interpolate numbers depending on trail type and width.
6	M/U	Paved surface using asphalt, concrete, or other paving. Horizontal alignments are less than 5% and cross-slopes are less than 2%. Full site improvements require drainage, signage, parking, public access, shoulders. **	Paved asphalt (concrete optional)	8-14'	2'	4'	$16-24 LF depending on trail width, site restrictions	Resurface asphalt @ 10 Yr. intervals $.80-1.40 LF/Yr. Replace concrete @ 20 Yr (no est.)
7	S/U	Specialty trails for equestrians, motorized uses, blueways for canoes and kayaks.						
8	Ped	Current Sidewalk Specifications 4" -20 Yr. Replacem't	Concrete	4'	0'	0'	$12-18 LF	$1.20 LF/Yr
9	M/U	Revised Sidewalk Specifications 4" -20 Yr. Replacem't	Concrete	8'	0'	0'	$24-30 LF	$2.40 LF/Yr
	*	Estimates are for trail installation only, includes labor and materials, not design & eng., nor other site improvements.						
	**	Does not include major water crossings such as boardwalk bridges.						

Trail Specification Cost Comparisons

Surface Options	User Type	Trail Description	Materials	Width	Clear Zones	Shoulders	Installed Costs *	Annual Maintenance Costs (per LF/Yr.)	30 Year Life cycle costs **
1	Ped	All natural surface with minor clearing	Soil	2-6'	2'	N/A	$1-2 LF	Nominal	$2 LF
2	Ped	Natural surface trail with minor surface improvements.	Mulch (3")	4-8'	2-4'	N/A	$2-4 LF	$1.50-3.00/LF @ 2 Yr. Maintenance interval	$23-46.00 LF
3	Ped	Natural surface with gravel and puncheon improved sections	Mulch (3")	4-8'	4'	Optional 2-4'	$4-10 LF	$1.50-3.00/LF @ 2 Yr. Maintenance interval. 30 Yr. CIP replacem't	$25-52.00 LF
4	Ped or M/U	Improved gravel soft surface w/ gravel fines, puncheon sections.	Gravel on fabric, or soil cement	6-10'	4'	Optional 2-4'	$8-14 LF	$1.50-2.35LF @ 3 Yr. Maintenance interval. 30 Yr. CIP replacem't	$22-35.00 LF
5	M/U	Modified gravel and/or paved surface.	Gravel or pavement on fabric	6-10'	2-4'	4'	varies	varies	N/A
6	M/U	Paved surface using asphalt, concrete, or other paving.	Paved asphalt (optional concrete)	8-14'	2-4'	4'	$16-24 LF	Resurface @ 10 Yr. Interval. $.80-1.40 LF/Yr.	$32-48 LF
7	S/U	Specialty trails for equestrians, ATV's, blueways .							
8	Ped	Current Sidewalk Specifications	Concrete (4")	4'	2'	N/A	$12-18 LF	20 Yr. Replacem't $24 LF ($1.20 LF/Yr)	$24-36 LF
9	M/U	Revised Sidewalk Specifications	Concrete (4")	8'	2'	4'	$24-30 LF	20 Yr. Replacement $48 LF ($2.40 LF/Yr)	$48-60 LF
	*	These are cost estimates. Variations in materials, site work, access, and construction market affect costs.							
	**	Does not include general maintenance such as mowing of grass shoulders, tree pruning, etc., and user variables.							

① Trail Design

Cross Section for Side Slopes less than 3%

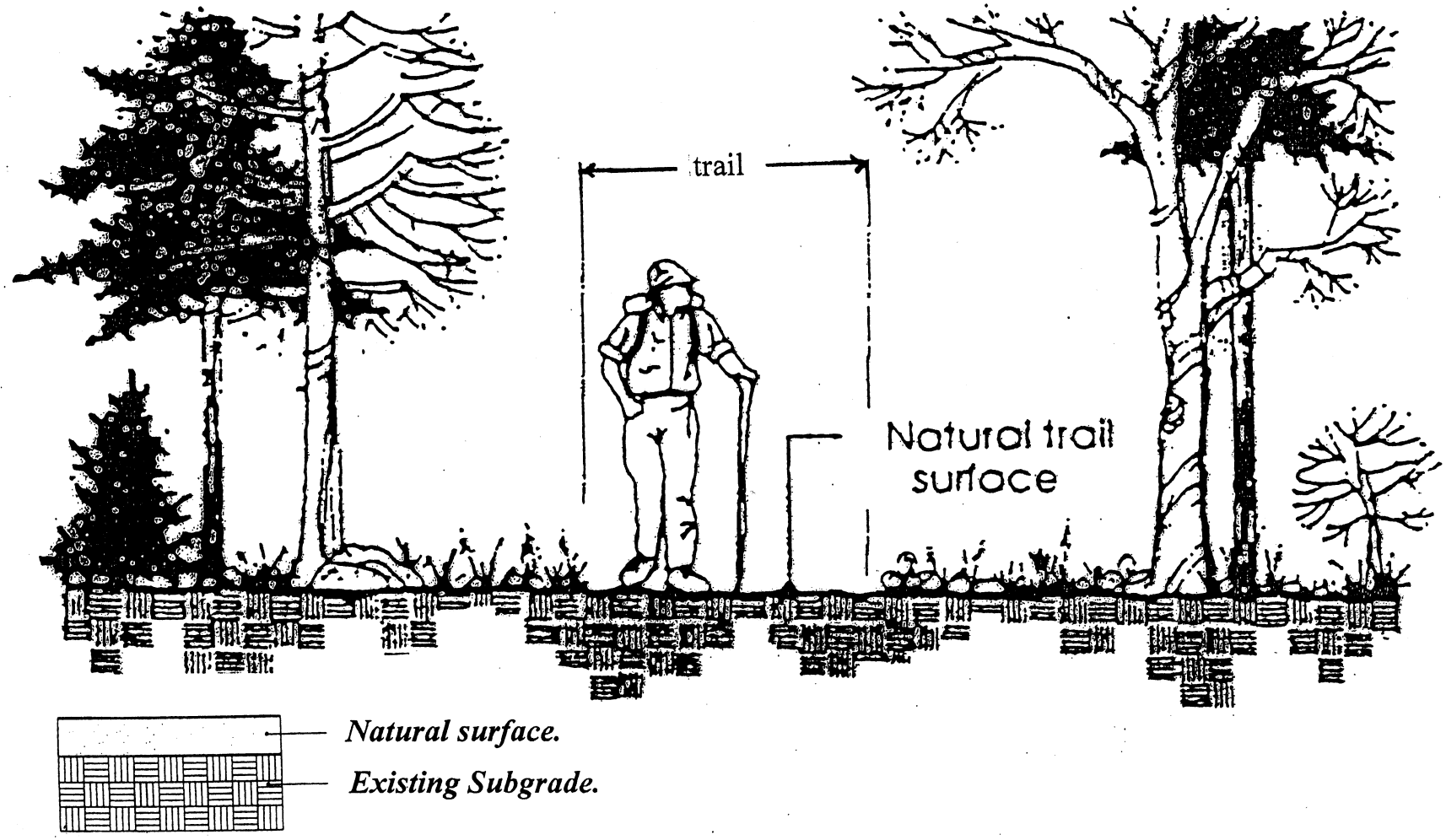


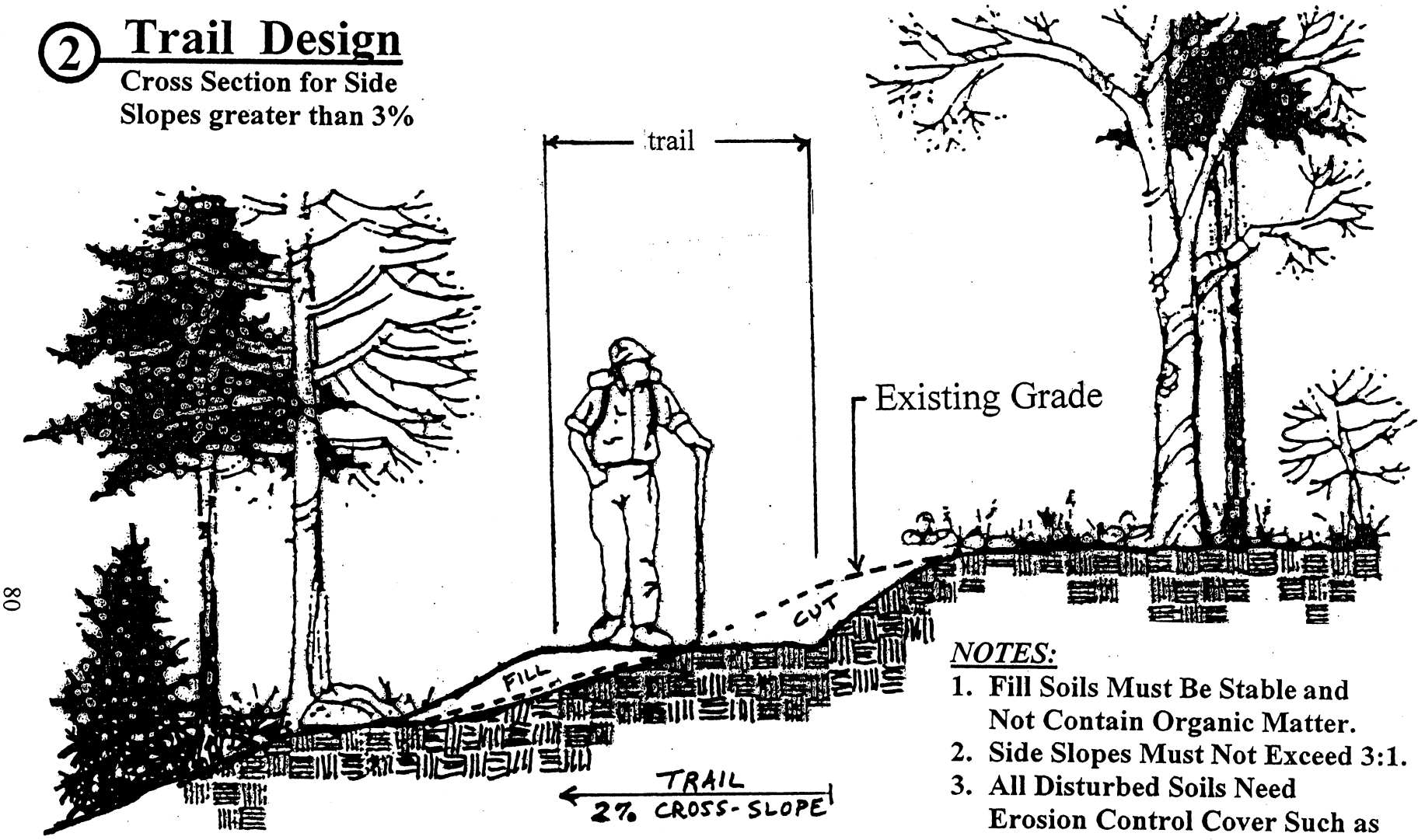
Figure TR1.1. Natural surface on existing soil.

Optional surface improvements include mulch if trail gets worn.

[Sketches adapted from Greenways, Flink & Searns, p. 208-9.]

② Trail Design

Cross Section for Side Slopes greater than 3%



3" Mulched surface.

Existing Subgrade.

NOTES:

1. **Fill Soils Must Be Stable and Not Contain Organic Matter.**
2. **Side Slopes Must Not Exceed 3:1.**
3. **All Disturbed Soils Need Erosion Control Cover Such as Mulch or Seeding.**
4. **Channel Water Away from Trail.**
5. **Maintain 2% Cross Slope.**

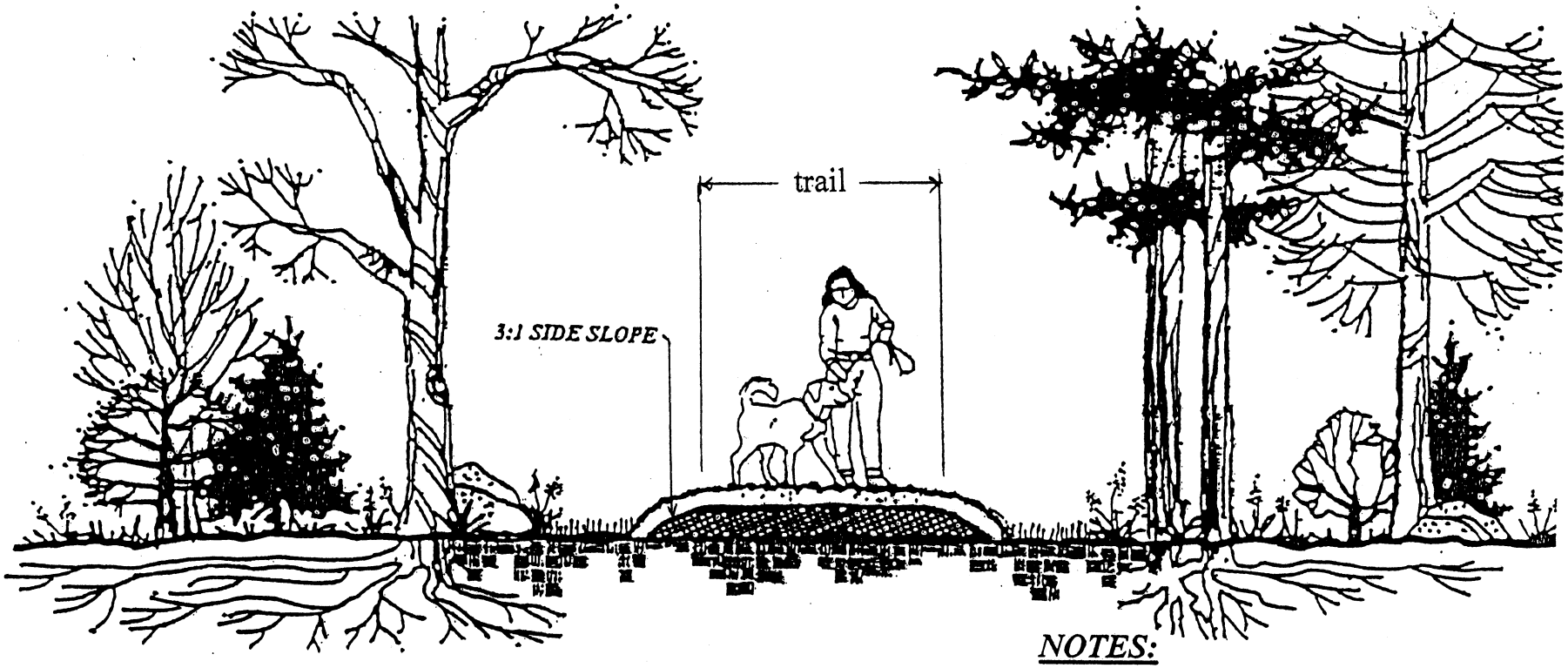
Figure TR2.1. Mulched surface on existing soil.

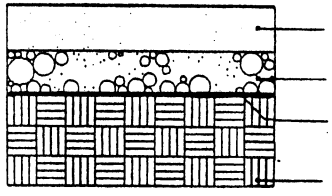
Optional surface improvements include gravel fines, shredded tires or other recycled materials, etc., if trail gets worn.

[Sketches adapted from Greenways, Flink & Searns, p. 208-9.]

③ Trail Design

Cross Section for trails in wetlands and sites with standing water





3" Mulched surface
6" Crusher run or 22-B gravel base
Woven geotextile
Existing Subgrade

Figure TR3.1. Natural surface on gravel base.

Surface improvements are primarily limited to denuded trail sections, seasonally wet soils, or sensitive areas requiring turnpike construction. Stable trail sections will employ Option #2.

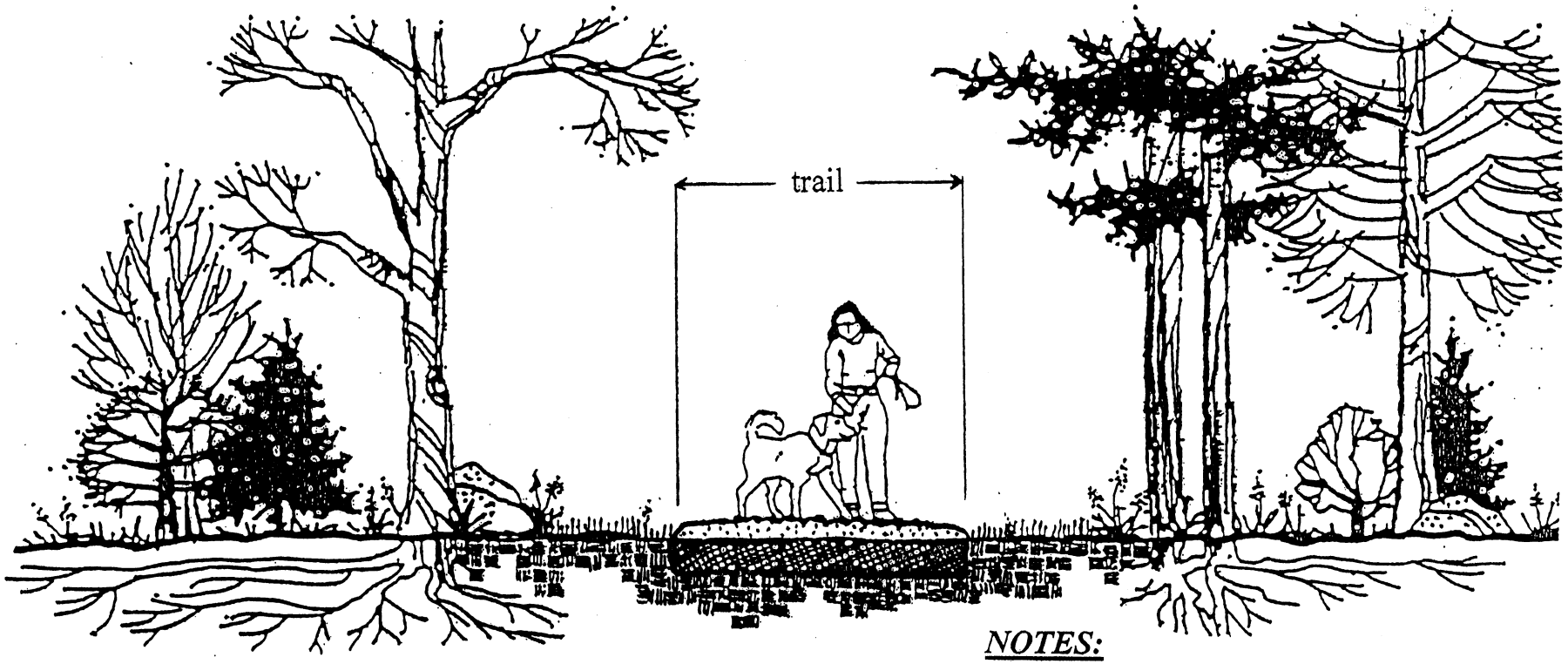
[Sketches adapted from Greenways, Flink & Searns, p. 208-9.]

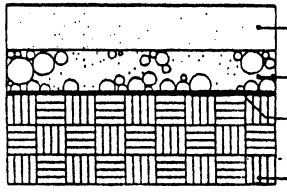
NOTES:

1. **For turnpike construction, existing soils must be stable, free of holes, and not contain excess organic matter.**
2. **Stumps and roots must be removed.**
3. **Side slopes must not exceed 3:1 and must be compacted to remain stable.**
4. **All disturbed soils need erosion control cover such as mulch or seed.**
5. **Channel water away from trail. Water pockets along trail will cause gravel to pump and become soft. If necessary, provide cross drainage using culverts under gravel.**

④ Trail Design

Cross Section for most pedestrian trails on typical soils, not in wetlands





3-4" Gravel fines surface
4-6" Crusher run gravel base
Woven geotextile or soil cement
Existing Subgrade

Figure TR4.1. Crusher fines on gravel base.

Surface improvements using gravel are for high traffic multiple use trails. Gravel should be compacted. Gravel fines should be replaced when the base course comes to the surface.

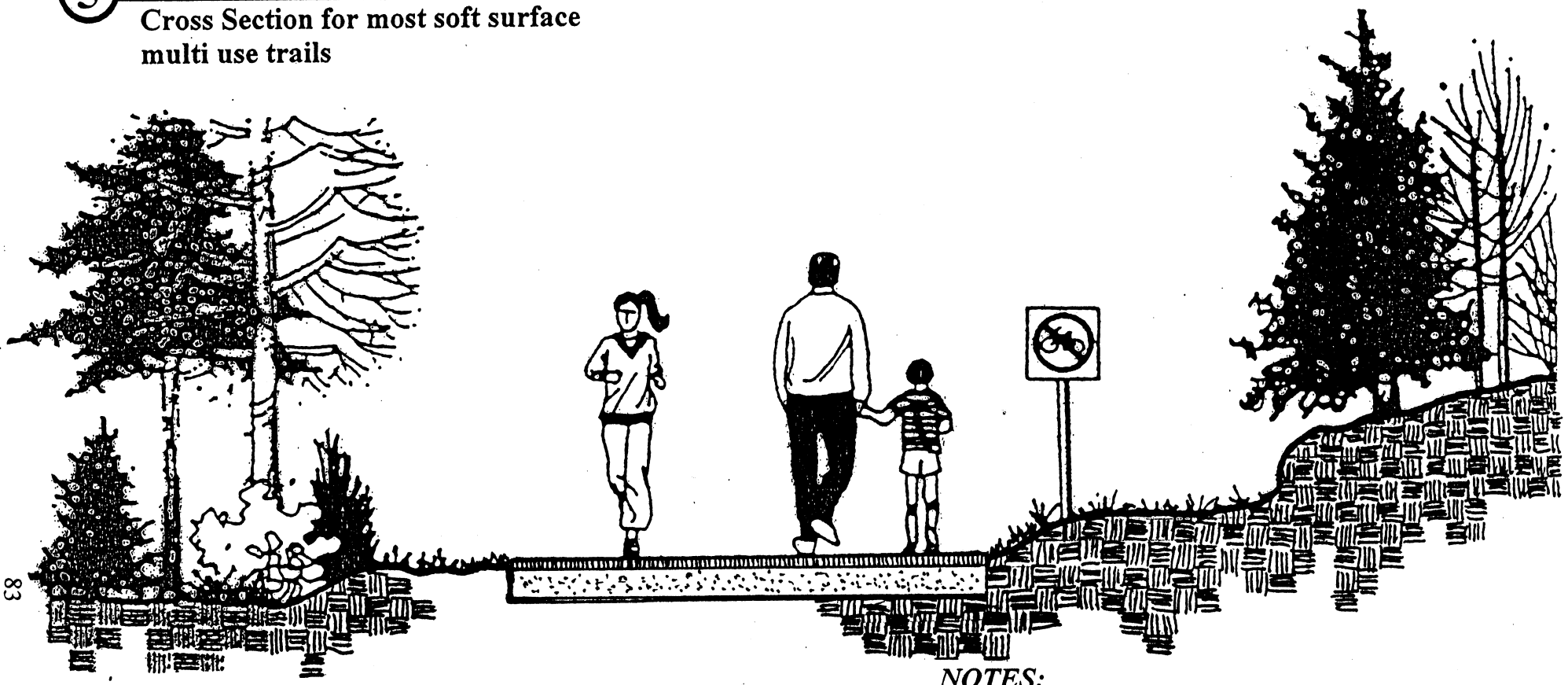
[Sketches adapted from Greenways, Flink & Searns, p. 208-9.]

NOTES:

1. **Typical trail construction method.**
2. ***Subgrade* soils after excavation must be stable, free of holes, contain no organic matter, and pass proof roll before laying geotextile or stone.**
3. **Stumps and roots must be removed.**
4. **In areas with nearby trees, use geotextile to prevent root intrusion.**
5. **All disturbed soils need erosion control cover such as mulch or seed.**
6. **Channel water away from trail. Water pockets along trail will cause gravel to pump and degrade. If necessary, provide culverts and swales for positive drainage.**

5 Trail Design

Cross Section for most soft surface multi use trails



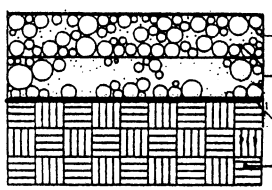


Figure TR5.1. Gravel fines on gravel base.

Heavy duty gravel base suitable for vehicles. Optional surface improvements include asphalt or concrete pavement if trail sections require a lot of maintenance.

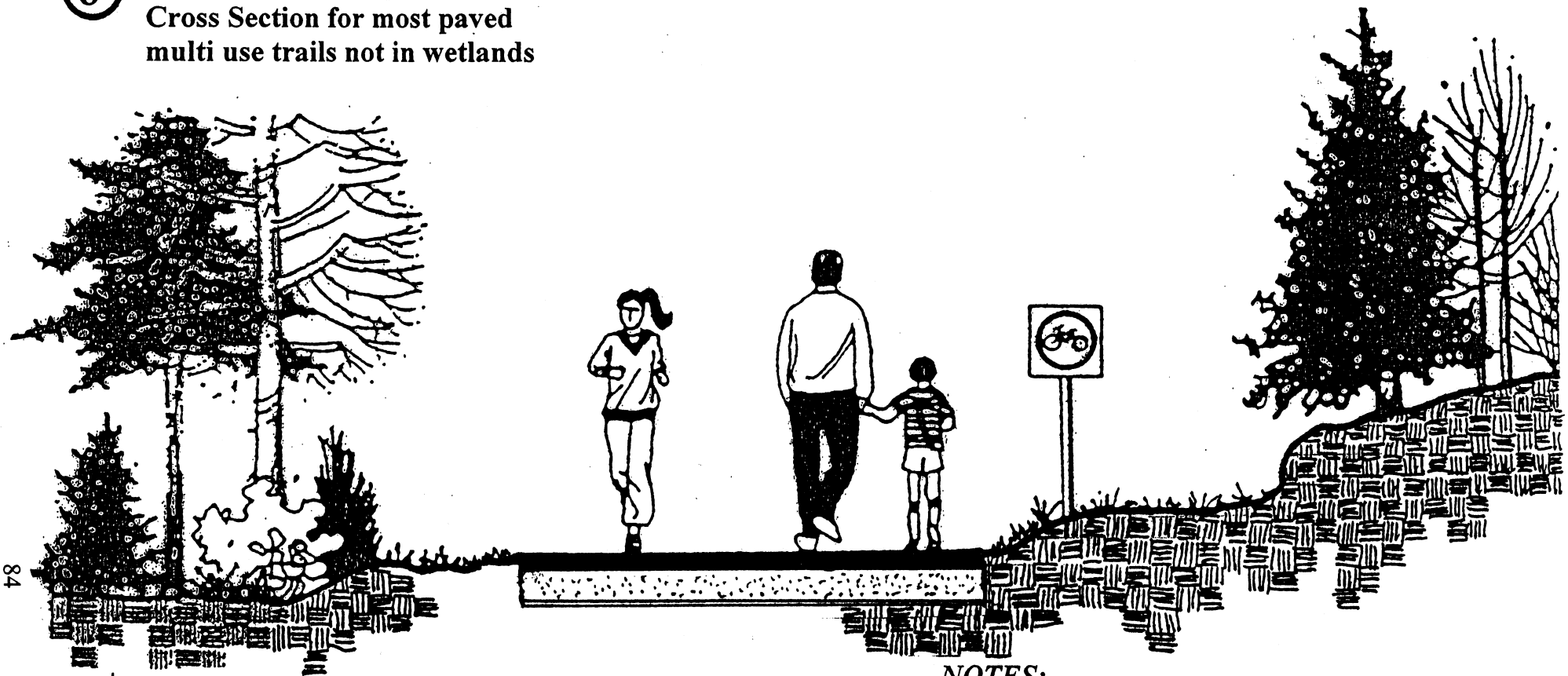
[Sketches adapted from Greenways, Flink & Searns, p. 208-9.]

NOTES:

1. **Typical trail construction method.**
2. **Subgrade soils after excavation must be stable, free of holes, contain no organic matter, and pass proof roll before laying geotextile or stone.**
3. **Stumps and roots must be removed.**
4. **In areas with nearby trees, use geotextile to prevent root intrusion.**
5. **All disturbed soils need erosion control cover such as mulch or seed.**
6. **Channel water away from trail. Water pockets along trail will cause gravel to pump and degrade. If necessary, provide culverts and swales for positive drainage.**

⑥ Trail Design

Cross Section for most paved multi use trails not in wetlands



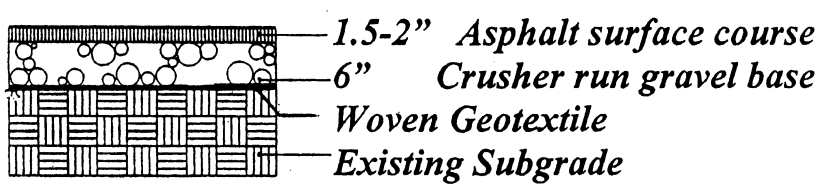


Figure TR6.1. Paved surface on gravel base.

Surface improvements are designed as high traffic multiple use trails. Seasonally wet soils may require a thicker gravel base, drainage improvements and/or underdrains.

[Sketches adapted from Greenways, Flink & Searns, p. 208-9.]

NOTES:

1. **Typical trail construction method.**
2. **Subgrade soils after excavation must be stable, free of holes, contain no organic matter, and pass proof roll before laying geotextile or stone.**
3. **Stumps and roots must be removed.**
4. **In areas with nearby trees, use geotextile to prevent root intrusion.**
5. **All disturbed soils need erosion control cover such as mulch or seed.**
6. **Channel water away from trail. Water pockets along trail will cause gravel to pump and degrade. If necessary, provide culverts and swales for positive drainage.**