



## Trail Class Matrix (FSH 2353.142, Exhibit 01)

Trail Classes are general categories reflecting trail development scale, arranged along a continuum. The Trail Class identified for a National Forest System (NFS) trail prescribes its development scale, representing its intended design and management standards.<sup>1</sup> Local deviations from any Trail Class descriptor may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Identify the appropriate Trail Class for each NFS trail or trail segment based on the management intent in the applicable land management plan, travel management decisions, trail-specific decisions, and other related direction. Apply the Trail Class that most closely reflects the management intent for the trail or trail segment, which may or may not reflect the current condition of the trail.

Trail Attributes	Trail Class 1 Minimally Developed	Trail Class 2 Moderately Developed	Trail Class 3 Developed	Trail Class 4 Highly Developed	Trail Class 5 Fully Developed
<b>Tread &amp; Traffic Flow</b>	<ul style="list-style-type: none"><li>♦ Tread intermittent and often indistinct.</li><li>♦ May require route finding.</li><li>♦ Single lane, with no allowances constructed for passing.</li><li>♦ Predominantly native materials.</li></ul>	<ul style="list-style-type: none"><li>♦ Tread continuous and discernible, but narrow and rough.</li><li>♦ Single lane, with minor allowances constructed for passing.</li><li>♦ Typically native materials.</li></ul>	<ul style="list-style-type: none"><li>♦ Tread continuous and obvious.</li><li>♦ Single lane, with allowances constructed for passing where required by traffic volume in places where there is no reasonable opportunity to pass.</li><li>♦ Native or imported materials.</li></ul>	<ul style="list-style-type: none"><li>♦ Tread wide and relatively smooth, with few irregularities.</li><li>♦ Single lane, with allowances constructed for passing where required by traffic volume in places where there is no reasonable opportunity to pass.</li><li>♦ Double lane where traffic volume is high and passing is frequent.</li><li>♦ Native or imported materials.</li><li>♦ May be hardened.</li></ul>	<ul style="list-style-type: none"><li>♦ Tread wide, firm, stable, and generally uniform.</li><li>♦ Single lane, with frequent turnouts where traffic volume is low to moderate.</li><li>♦ Double lane where traffic volume is moderate to high.</li><li>♦ Commonly hardened with asphalt or other imported material.</li></ul>
<b>Obstacles</b>	<ul style="list-style-type: none"><li>♦ Obstacles common, naturally occurring, often substantial, and intended to provide increased challenge.</li><li>♦ Narrow passages; brush, steep grades, rocks and logs present.</li></ul>	<ul style="list-style-type: none"><li>♦ Obstacles may be common, substantial, and intended to provide increased challenge.</li><li>♦ Blockages cleared to define route and protect resources.</li><li>♦ Vegetation may encroach into trailway.</li></ul>	<ul style="list-style-type: none"><li>♦ Obstacles may be common, but not substantial or intended to provide challenge.</li><li>♦ Vegetation cleared outside of trailway.</li></ul>	<ul style="list-style-type: none"><li>♦ Obstacles infrequent and insubstantial.</li><li>♦ Vegetation cleared outside of trailway.</li></ul>	<ul style="list-style-type: none"><li>♦ Obstacles not present.</li><li>♦ Grades typically &lt; 8%.</li></ul>

10/16/2008

Trail Attributes	Trail Class 1 Minimally Developed	Trail Class 2 Moderately Developed	Trail Class 3 Developed	Trail Class 4 Highly Developed	Trail Class 5 Fully Developed
<b>Constructed Features &amp; Trail Elements</b>	<ul style="list-style-type: none"> <li>Structures minimal to non-existent.</li> <li>Drainage typically provided without structures.</li> <li>Natural fords.</li> <li>Typically no bridges.</li> </ul>	<ul style="list-style-type: none"> <li>Structures of limited size, scale, and quantity; typically constructed of native materials.</li> <li>Structures adequate to protect trail infrastructure and resources.</li> <li>Natural fords.</li> <li>Bridges as needed for resource protection and appropriate access.</li> </ul>	<ul style="list-style-type: none"> <li>Structures may be common and substantial; constructed of imported or native materials.</li> <li>Natural or constructed fords.</li> <li>Bridges as needed for resource protection and appropriate access.</li> </ul>	<ul style="list-style-type: none"> <li>Structures frequent and substantial; typically constructed of imported materials.</li> <li>Constructed or natural fords.</li> <li>Bridges as needed for resource protection and user convenience.</li> <li>Trailside amenities may be present.</li> </ul>	<ul style="list-style-type: none"> <li>Structures frequent or continuous; typically constructed of imported materials.</li> <li>May include bridges, boardwalks, curbs, handrails, trailside amenities, and similar features.</li> </ul>
<b>Signs<sup>2</sup></b>	<ul style="list-style-type: none"> <li>Route identification signing limited to junctions.</li> <li>Route markers present when trail location is not evident.</li> <li>Regulatory and resource protection signing infrequent.</li> <li>Destination signing, unless required, generally not present.</li> <li>Information and interpretive signing generally not present.</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing limited to junctions.</li> <li>Route markers present when trail location is not evident.</li> <li>Regulatory and resource protection signing infrequent.</li> <li>Destination signing typically infrequent outside wilderness areas; generally not present in wilderness areas.</li> <li>Information and interpretive signing uncommon.</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and as needed for user reassurance.</li> <li>Route markers as needed for user reassurance.</li> <li>Regulatory and resource protection signing may be common.</li> <li>Destination signing likely outside wilderness areas; generally not present in wilderness areas.</li> <li>Information and interpretive signs may be present outside wilderness areas.</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and for user reassurance.</li> <li>Route markers as needed for user reassurance.</li> <li>Regulatory and resource protection signing common.</li> <li>Destination signing common.</li> <li>Information and interpretive signs common.</li> <li>Accessibility information likely displayed at trailhead.</li> </ul>	<ul style="list-style-type: none"> <li>Route identification signing at junctions and for user reassurance.</li> <li>Route markers as needed for user reassurance.</li> <li>Regulatory and resource protection signing common.</li> <li>Destination signing common.</li> <li>Information and interpretive signs common.</li> <li>Accessibility information likely displayed at trailhead.</li> </ul>
<b>Typical Recreation Environments &amp; Experience<sup>3</sup></b>	<ul style="list-style-type: none"> <li>Natural and unmodified.</li> <li>ROS: Typically Primitive to Roaded Natural.</li> <li>WROS: Typically Primitive to Semi-Primitive.</li> </ul>	<ul style="list-style-type: none"> <li>Natural and essentially unmodified.</li> <li>ROS: Typically Primitive to Roaded Natural.</li> <li>WROS: Typically Primitive to Semi-Primitive.</li> </ul>	<ul style="list-style-type: none"> <li>Natural and primarily unmodified.</li> <li>ROS: Typically Primitive to Roaded Natural.</li> <li>WROS: Typically Semi-Primitive to Transition.</li> </ul>	<ul style="list-style-type: none"> <li>May be modified.</li> <li>ROS: Typically Semi-Primitive to Rural</li> <li>WROS: Typically Portal or Transition.</li> </ul>	<ul style="list-style-type: none"> <li>May be highly modified.</li> <li>Commonly associated with visitor centers or high-use recreation sites.</li> <li>ROS: Typically Roaded Natural to Urban.</li> <li>Generally not present in Wilderness areas.</li> </ul>

<sup>1</sup> For National Quality Standards for Trails, Potential Appropriateness of Trail Classes for Managed Uses, Design Parameters, and other related guidance, refer to FSM 2353 and FSH 2309.18.

<sup>2</sup> For standards and guidelines on the use of signs and posters on trails, refer to the Sign and Poster Guidelines for the Forest Service (EM-7100-15).

<sup>3</sup> The Trail Class Matrix shows combinations of Trail Class and Recreation Opportunity Spectrum (WROS) or Wilderness Recreation Opportunity Spectrum (WROS) settings that commonly occur, although trails in all Trail Classes may and do occur in all settings. For guidance on the application of the ROS and WROS, refer to FSM 2310 and 2353 and FSH 2309.18.



## Design Parameters (FSH 2309.18, Section 23.11, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent<sup>1</sup>. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use		Trail Class 1	Trail Class 2	Trail Class 3 <sup>2</sup>	Trail Class 4 <sup>2</sup>	Trail Class 5 <sup>2</sup>
<b>Design Tread Width</b>	<b>Wilderness</b> (Single Lane)	0" – 12"	6" – 18"	12" – 24" Exception: may be 36" – 48" at steep side slopes	18" – 24" Exception: may be 36" – 48" at steep side slopes	Not applicable
	<b>Non-Wilderness</b> (Single Lane)	0" – 12"	6" – 18"	18" – 36"	24" – 60"	36" – 72"
	<b>Non-Wilderness</b> (Double Lane)	36"	36"	36" – 60"	48" – 72"	72" – 120"
	<b>Structures</b> (Minimum Width)	18"	18"	18"	36"	36"
<b>Design Surface<sup>3</sup></b>	<b>Type</b>	Native, ungraded May be continuously rough	Native, limited grading May be continuously rough	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough	Native with improved sections of borrow or imported material, and routine grading Minor roughness	Likely imported material, and routine grading Uniform, firm, and stable
	<b>Protrusions</b>	≤ 24" Likely common and continuous	≤ 6" May be common and continuous	≤ 3" May be common, not continuous	≤ 3" Uncommon, not continuous	No protrusions
	<b>Obstacles</b> (Maximum Height)	24"	14"	10"	8"	No obstacles
	<b>Target Grade</b>	5% – 25%	5% – 18%	3% – 12%	2% – 10%	2% – 5%
<b>Design Grade<sup>3</sup></b>	<b>Short Pitch Maximum</b>	40%	35%	25%	15%	5% FSTAG: 5% – 12% <sup>2</sup>
	<b>Maximum Pitch Density</b>	20% – 40% of trail	20% – 30% of trail	10% – 20% of trail	5% – 20% of trail	0% – 5% of trail

10/16/2008

Designed Use HIKER/PEDESTRIAN		Trail Class 1	Trail Class 2	Trail Class 3 <sup>2</sup>	Trail Class 4 <sup>2</sup>	Trail Class 5 <sup>2</sup>
Design Cross Slope	Target Cross Slope	Natural side slope	5% – 20%	5% – 10%	3% – 7%	2% – 3% (or crowned)
	Maximum Cross Slope	Natural side slope	25%	15%	10%	3%
Design Clearing	Height	6'	6' – 7'	7' – 8'	8' – 10'	8' – 10'
	Width	≥ 24" Some vegetation may encroach into clearing area	24" – 48" Some light vegetation may encroach into clearing area	36" – 60"	48" – 72"	60" – 72"
	Shoulder Clearance	3' – 6"	6" – 12"	12" – 18"	12" – 18"	12" – 24"
Design Turn	Radius	No minimum	2' – 3'	3' – 6'	4' – 8'	6' – 8'

<sup>1</sup> For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

<sup>2</sup> Trail Classes 3, 4, and 5, in particular, have the potential to provide accessible passage. If assessing or designing trails for accessibility, refer to the Forest Service Trail Accessibility Guidelines (FSTAG) for more specific technical provisions and tolerances (FSM 2350).

<sup>3</sup> The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.



### Trail Class 3



**TC3 – Tread:** Tread continuous and obvious.



**TC3 – Obstacles:** Obstacles may be common. Vegetation cleared outside of trailway.





### **TC3 – Constructed Features:**

Trail structures (walls, steps, drainage, raised trail) may be common and substantial.



**TC3 – Signs:** Route identification signing at junctions and as needed for user reassurance. Route markers as needed for user reassurance. Destination signing likely outside of wilderness.





**TC3 – Typical Rec. Environment / Experience:** Recreation environment natural and primarily unmodified.