



# Standard Guide for Training and Equipping Search and Rescue Personnel Operating on Mountain Bikes (Mountain Bike SAR Endorsement)<sup>1</sup>

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## 1. Scope

1.1 This guide establishes the minimum training and equipment requirements, including general and field knowledge, skills, and abilities, for search and rescue personnel who operate on mountain bikes.

1.2 Mountain Bike Search and Rescue Endorsed individuals may, under qualified supervision, perform their normal duties safely and effectively on mountain bikes.

1.3 A Mountain Bike Search and Rescue Endorsement alone is not sufficient to indicate that an individual has the knowledge, skills, or abilities to perform any specific duties, including search and rescue operations, other than those defined within this guide.

1.4 Personnel trained to only this guide are not qualified to operate in leadership positions.

1.5 Mountain Bike Search and Rescue Endorsed individuals operate on the surface of the land only, including urban or disaster areas that may be isolated or have lost supporting infrastructure.

1.6 Human land SAR resources that may utilize personnel trained to this guide are classified in Classification **F1993**.

1.6.1 Further training may be required before Mountain Bike Search and Rescue Endorsed personnel may participate on a particular *Category* or *Kind* of SAR resource, depending on local needs, regulations, or policies of the authority having jurisdiction.

1.7 This guide alone does not provide the minimum training requirements for SAR personnel to operate on mountain bikes while performing operations in partially or fully collapsed structures, in- or on-water, in confined spaces, underground (such as in caves, mines, and tunnels), or in mountain or alpine environments.

1.8 Personnel trained to this guide are not qualified to perform rescue. No training in rope use, high or low angle litter evacuation, or other rescue skills is included in this guide.

1.8.1 Basic rescue skills and knowledge are found in Guide **F2751**.

1.9 Mountain Bike Search and Rescue Endorsed personnel must work under qualified supervision, as deemed appropriate by the AHJ.

1.10 This standard is created without regard to the type of mountain bike, gear, panniers, first aid supplies, or personal protective equipment that is used by a Mountain Bike Search and Rescue Endorsed individual.

1.11 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

2.1 *ASTM Standards*:<sup>2</sup>

**F1447** Specification for Helmets Used in Recreational Bicycling or Roller Skating

**F1633** Guide for Techniques in Land Search

**F1773** Terminology Relating to Climbing, Mountaineering, Search and Rescue Equipment and Practices

**F1952** Specification for Helmets Used for Downhill Mountain Bicycle Racing

**F1993** Classification System of Human Search and Rescue Resources

**F2209** Guide for Training of Land Search Team Member

**F2751** Guide for Training of a Land Search and Rescue Team Member

**F2890** Guide for Hazard Awareness for Search and Rescue Personnel

**F3068** Guide for Contents and Use of a Position Task Book (PTB)

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

F3071 Guide for Basic Wilderness GPS/GNSS Use (GPS/GNSS-IW) Endorsement

## 2.2 Other Documents:

Snell Memorial Foundation standard N-94, Standard for Protective Headgear for Use in Non-Motorized Sports (including addendum B95A)<sup>3</sup>

Snell Memorial Foundation standard B-95, Standard for Protective Headgear for Use With Bicycles (including addendum B95A)

National Wildfire Coordinating Group (NWCG) publication PMS 304-2, Fitness and Work Capacity<sup>4</sup>

State statutes pertaining to bicycle use and operation

International Mountain Bike Association (IMBA) Trail Difficulty Rating System

4.4.2 Nothing in this guide precludes an AHJ from adding additional requirements for its own members.

4.5 A person meeting the requirements of this guide does not necessarily possess adequate field skills and knowledge to make mission-critical decisions.

4.6 This guide by itself is not a training document. It is an outline of the topics required for training or evaluating Mountain Bike Search and Rescue Endorsed personnel.

4.7 This guide is an outline of the topics required for training or evaluating Mountain Bike Search and Rescue Endorsed personnel and may be used to assist in the development of a training document or program.

4.8 This guide can be used to evaluate a document to determine if its content includes the topics necessary for training an individual to be Mountain Bike Search and Rescue Endorsed personnel. Likewise, this guide may be used to evaluate an existing training program to see if it meets the requirements in this guide.

4.9 The knowledge, skills, and abilities presented in the following sections are not in any particular order and do not represent a training sequence.

4.10 This guide does not stand alone and must be used with other ASTM Standards to identify the knowledge, skills, and abilities needed for a Mountain Bike Search and Rescue Endorsed individual to perform safely and effectively.

4.11 Mountain Bike Search and Rescue Endorsed personnel shall document training by completion of a position task book, compliant with ASTM F3068, or by field demonstration under qualified supervision.

4.11.1 Where proficiency in a skill or ability must be demonstrated, unless stated otherwise it shall be demonstrated for initial qualification, and as often as required by the AHJ.

4.11.2 Proficiency shall be demonstrated to a qualified observer as defined by the AHJ.

## 5. General Operator Training

5.1 Mountain Bike Search and Rescue Endorsed personnel shall earn and maintain certification in adult and child CPR.

5.2 Mountain Bike Search and Rescue Endorsed personnel shall earn and maintain certification in first aid or a more advanced level of emergency medical care.

## 6. Equipment

6.1 The bicycle used by a Mountain Bike Search and Rescue Endorsed individual must have the following minimum characteristics:

6.1.1 Designed and built for off-road use;

6.1.2 Capable of carrying heavy loads in varied terrain in wilderness and urban environments and conditions.

6.2 The bicycle used by a Mountain Bike Search and Rescue Endorsed individual shall be equipped with at least the following equipment:

6.2.1 Off-road wheels and tires;

6.2.2 Brakes intended for wet, icy, and muddy conditions;

## 3. Terminology

### 3.1 Definitions:

3.1.1 *foot tap, n*—a brief touch of a rider’s foot on the ground or an obstacle to maintain balance or to prevent falling while riding a mountain bike. An obstacle that knocks the riders foot from the pedal is not considered a foot tap.

3.1.2 *MBSAR (Mountain Bike Search And Rescue), n*—search and rescue operations performed by an individual, or individuals, while utilizing a mountain bike.

3.1.3 *qualified supervisor, n*—an individual with demonstrated knowledge or competence in a task, to whom the AHJ has granted the authority to observe and oversee an individual performing that task.

3.1.4 *slow ride, n*—rider-controlled continuous forward movement of a bike at a speed slower than a walk.

3.1.5 *speed jump, n*—a bike action in which the rider and bike leap over an obstacle or gap while riding at speed.

3.1.6 *steep hill ascent or descent, n*—riding a bike up or down terrain with a slope of 15 degrees or greater.

3.2 For definitions of other terms used in this guide see Terminology F1773, Guides F1993, F2209, and F2751.

## 4. Significance and Use

4.1 This guide establishes the minimum training criteria for Mountain Bike Search and Rescue Endorsed personnel.

4.2 At no time will this standard supersede any established protocols of international, national, federal, state, tribal, local, or regional governments.

4.3 Every person who is identified as a Mountain Bike Search and Rescue Endorsed individual shall have met the requirements of this guide.

4.4 Though this guide establishes only minimum standards, it does not imply that a Mountain Bike Search and Rescue Endorsed individual is a “trainee,” “probationary,” or other similarly termed member of an agency or organization.

4.4.1 The AHJ is responsible for determining the requirements and qualifications for its team member ratings.

<sup>3</sup> <http://www.smf.org/standards/b/b95std#add>

<sup>4</sup> [http://www.nwcg.gov/pms/pubs/newshelt/workcapest\\_lo.pdf](http://www.nwcg.gov/pms/pubs/newshelt/workcapest_lo.pdf)

6.2.3 Headlight or a helmet mounted headlamp with a minimum brightness of 42 lumens at 10 ft (3m);

6.2.4 Red taillight, either steady or flashing.

6.3 Mountain Bike Search and Rescue Endorsed individuals shall wear the personal protective equipment (PPE) specified by the AHJ. The following is recommended as a minimum:

6.3.1 A helmet which meets at least one of the following approvals or certifications:

6.3.1.1 Certified in accordance with ASTM **F1447**;

6.3.1.2 Certified in accordance with ASTM **F1952**;

6.3.1.3 Approved by the Snell Memorial Foundation per their B-95 standard;

6.3.1.4 Approved by the Snell Memorial Foundation per their N-94 standard;

6.3.1.5 Certified by the Consumer Product Safety Commission (CPSC).

6.3.2 Eye protection (shatter-resistant, wraparound, clear or tinted);

6.3.3 Padded cycling gloves;

6.3.4 Wind and tear-resistant shirt;

6.3.5 Tear-resistant long pants or shorts;

6.3.6 Shoes suitable for use with the bike and for walking.

6.4 A Mountain Bike Search and Rescue Endorsed individual shall carry, in the field, a repair kit specified by the AHJ. The following is recommended as a minimum:

6.4.1 Tire pump;

6.4.2 Tube patch kits (2);

6.4.3 Spare tire tubes (2);

6.4.4 Tire levers (min. of 2);

6.4.5 Spoke tool;

6.4.6 Headset wrench;

6.4.7 Spare chain links and pins;

6.4.8 Chain link tool;

6.4.9 Bike lube;

6.4.10 Spare tire (1);

6.4.11 Spare spokes (2).

6.5 A Mountain Bike Search and Rescue Endorsed individual may carry additional mission-specific equipment as determined by the AHJ.

6.6 A Mountain Bike Search and Rescue Endorsed individual shall have the ability, and shall be equipped, to be a self-supporting resource deployable for a minimum of 24 hours.

## 7. Rider Skills and Abilities

7.1 A Mountain Bike Search and Rescue Endorsed individual shall demonstrate the following bicycle repair and maintenance skills:

7.1.1 Adjust the bicycle's components to properly fit the rider;

7.1.2 Adjust the brakes, shifters, and derailleurs for smooth operation;

7.1.3 Remove and reinstall a wheel, tire, and tube using only the tools in the rider's field tool kit;

7.1.4 Repair a broken chain using only the tools in the rider's field tool kit;

7.1.5 Demonstrate a pre-ride safety inspection of the bicycle.

7.2 A Mountain Bike Search and Rescue Endorsed individual shall demonstrate the following riding abilities and skills:

7.2.1 Good balance and control;

7.2.2 Rapidly and easily change speed and direction;

7.2.3 Perform a quick stop;

7.2.4 Jump off a slow moving bike without falling or stumbling;

7.2.5 Slow ride for a minimum distance of 100 feet (30.5m);

7.2.6 Ride on paved roads in accordance with applicable state laws;

7.2.7 Ride five (5) miles on an IMBA blue square-rated trail typical of the responder's normal area of operations;

7.2.7.1 The rider shall complete the ride with no more than five (5) foot taps;

7.2.8 If the trail allows, the rider shall successfully deal with the following obstacles while riding:

7.2.8.1 Cross a curb or similar obstacle, at least 5 inches (13mm) high, both up and down;

7.2.8.2 Descend a drop off with a minimum height of 12 inches (30mm);

7.2.8.3 Cross a bridge with a maximum width of 24 inches (60mm) and a minimum length of 6 feet (3m);

7.2.9 If the trail does not include any of the obstacles listed above, the rider's ability to negotiate them successfully shall be evaluated separately.

## 8. Keywords

8.1 bike; bicycle; MBSAR; mountain bike; SAR; search

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