



International Specification for Mountain Bike Orienteering Maps ISMTBOM



INTERNATIONAL ORIENTEERING FEDERATION

2010

Valid from 15 May 2010

1 INTRODUCTION

Orienteering is a world-wide sport. A common approach to the interpretation and drawing of orienteering maps is essential for fair competition and for the future growth of the sport.

These specifications should be read in conjunction with the Competition Rules for IOF Mountain Bike Orienteering Events. For IOF events, deviations are permissible only with the sanction of the IOF Map Commission (IOF MC). For other events such sanction must be given by the national federation.

It is the aim of the International Specification for Orienteering Maps (ISOM) to provide a map specification which can accommodate the many different types of terrain around the world and the many ways of doing orienteering. Map specifications for mountain bike orienteering are based on the specifications for foot orienteering maps. However, in order to meet the specific requirements put on the map by the nature of mountain bike orienteering, a complete and separate set of specifications is described in this set of rules.

2 GENERAL REQUIREMENTS

2.1 Orienteering and the map

Mountain bike orienteering (MTBO) is a sport in which the competitor completes a course of control points in the shortest possible time, aided only by map, compass and bike. As in all forms of sport, it is necessary to ensure that the conditions of competition are the same for all competitors. The more accurate the map, the better this can be done, and the greater the opportunity for the course planner to set a good and fair course.

From the competitors' point of view, an accurate and legible map is a reliable guide for choice of route, and it enables them to navigate along a route chosen to suit their navigational skill and physical ability. However, skill in route choice loses all meaning if the map is not a true picture of the ground — if it is inaccurate, out-of-date or of poor legibility.

The path and track network shows where the going and navigation is easiest. A detailed classification of the degrees of hindrance or good going helps the competitor to make the right decisions. Orienteering is, first of all, to navigate by map reading. An accurate map is, therefore, necessary for a good and effective route choice. In the ideal case no competitor should gain an advantage or suffer a disadvantage because of faults on the map.

The aim of the course planner is a course where the deciding factor in the results will be navigational skill. This can be achieved only if the map is sufficiently accurate, complete, and reliable, and also clear and legible under competition conditions. The better the map the course planner has, the greater the chance he has of setting good, fair courses, whether for the elite or for the novice.

For the mapper, the task is knowing which features to map and how to represent them. A continuing involvement in the sport is important for a basic understanding of the requirements for the orienteering map: its content, the need for accuracy, the level of detail and above all the need for legibility.

2.2 Content

Mountain bike orienteering is a sport in which the competitor uses the map to navigate a track and path network in order to visit a number of control points. The competitor must always stay on the tracks and paths and is not allowed to cycle freely in the terrain. This rule is important for the requirements of the map.

Mountain bike orienteering takes place on the track and path network and involves as a basic element complex route choice problems, including the estimating of height differences. It is obvious that the map must concentrate on clearly depicting these features. The map must also be legible when cycling at high speed. This means that the map should omit a large number of details in "free" terrain in order to exaggerate the track and path network and to simplify the presentation of the shape of the ground. Only details that impact a) route choice and b) navigation and positioning, need be shown on the map.

A mountain bike orienteering map is a detailed topographic map. The map must contain the features which are obvious on the ground to a competitor at speed. It must show every feature which could influence map reading or route choice.

The map must show the features which are obvious on the ground and which are of value from the point of view of map reading. When surveying, an attempt must be made to maintain the clarity and legibility of the map, i. e. the minimum dimensions designed for normal sight must not be forgotten when choosing the degree of generalization.

The map must contain magnetic north lines and may additionally contain some place names and peripheral text to help the competitor to orientate the map to north. This text should be written from west to east. Text within the map should be placed to avoid obscuring important features, and the style of lettering should be simple.

The sides of the map should be parallel to the magnetic north lines. Arrowheads may be used to show magnetic north.

2.3 Accuracy

The general rule should be that competitors shall not perceive any inaccuracy in the map. The accuracy of the map as a whole depends upon the accuracy of measurement (position, height and shape) and the accuracy of drawing.

2.4 Generalization and legibility

Those features which are most essential for the competitor in competition must be selected and presented on the orienteering map. To achieve this, in such a way that the map is legible and easy to interpret, cartographic generalization must be employed. There are two phases of generalization — selective generalization and graphic generalization.

Selective generalization is the decision as to which details and features should be presented on the map. Two important considerations contribute to this decision — the importance of the feature from the competitors' point of view and its influence on the legibility of the map. These two considerations will sometimes be incompatible, but the demand for legibility must never be relaxed in order to present an excess of small details and features on the map. Therefore, it will be necessary at the survey stage to adopt minimum sizes for many types of detail. However, consistency is one of the most important qualities of the orienteering map.

Graphic generalization can greatly affect the clarity of the map. Simplification, displacement and exaggeration are used to this end.

3 MAP SPECIFICATION FOR MOUNTAIN BIKE ORIENTEERING

3.1 Scale and symbol sizes

The scale for a mountain bike orienteering map is often smaller than that for a foot orienteering map. Organisers are encouraged to use maps drawn specifically for mountain bike orienteering at an appropriate scale, which will normally be 1:10 000, 1:15 000 or 1:20 000. 1:5000 and 1:7500 scales are suitable for sprint.

The official map scales in official IOF mountain bike orienteering events:

- 1:20 000 for long distance events
- 1:15 000 for relay, middle and long distance events
- 1:10 000 for relay, sprint and middle distance events
- 1:7500 and 1:5000 for sprint and sprint relay events

For practical reasons, a map should not be larger than is necessary for the orienteering competition. Maps larger than A3 should be avoided.

The size of symbols in different scales:

Scale	Symbols
1:20 000	As specified in this publication
1:15 000	As specified in this publication
1:10 000	Enlargement (1.5x) from 1:15 000 map
1:7500	Enlargement (1.5x) from 1:15 000 map (same as 1:10 000)
1:5000	Enlargement (1.5x) from 1:15 000 map (same as 1:10 000)

3.2 Contour interval

The contour interval for mountain bike orienteering maps is 5 m. In very hilly terrain an interval of 10 m and in a flat terrain an interval of 2.5 m may be used. The aim is a clear representation of the elevation.

Note: The same interval must be used all over the map!

3.3 Colours

The correct order of colours plays an important role in the legibility of a mountain bike orienteering map. The order of colours of an mountain bike orienteering map is to be as follows:

- ◆ Upper purple: all purple symbols except control points (circles) and lines between them
- ◆ Black track and path symbols
- ◆ Lower purple: control points (circles) and lines between them
- ◆ Black 70 % symbols
- ◆ Brown
- ◆ Blue
- ◆ Green
- ◆ Yellow

3.4 Printing and reproduction

Even though new printing methods, like digital offset, colour copying etc., are developing rapidly, traditional offset is still superior in quality when printing detailed maps. For IOF events such as World Championships and World Cup this is the recommended method. However, if alternative methods produce maps with the same quality as traditional spot colour offset printing, they will be accepted.

For smaller competitions, maps are likely to be reproduced in relatively small quantities and for this the new and cheaper printing methods are well suited.

4 EXPLANATION OF SYMBOLS (MTBO)

Definitions of map features and specifications for the drawing of symbols are given in the following sections.

The dimensions of the symbols are the same in every scale.

Symbols are classified into 7 categories:

Land forms	(brown)
Rock and boulders	(black 70 % + grey for bare rock)
Water and marsh	(blue)
Vegetation	(green + yellow)
Man-made features	(black 70 %, tracks black)
Technical symbols	(black 70 % + blue)
Course symbols	(purple)

Note: dimensions are specified in mm at the real map scale.
All drawings are in double scale for clarity only.

- < gap or infill between two lines
- line thickness
- distance from centre to centre or length of line
- ∅ diameter
- ↑ symbol orientated to north

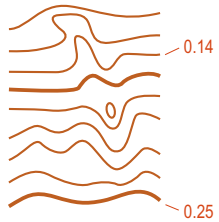
4.1 Land forms

The shape of land is shown by means of contours. This is complemented in black 70 % by the symbols for rock and cliffs. Orienteering terrain is normally best represented with a 5 m contour interval.

In order to maintain legibility of the map with scales down to 1: 20 000, when cycling at high speed the contour lines may be more generalised in comparison to foot orienteering maps.

The relative height difference between neighbouring features must be represented on the map as accurately as possible. Absolute height accuracy is of less importance. It is permissible to alter the height of a contour slightly if this will improve the representation of a feature. This deviation should not exceed 25 % of the contour interval and attention must be paid to neighbouring features.

101 Contour
A line joining points of equal height. The standard vertical interval between contours is 5 metres. The smallest bend in a contour is 0.25 mm from centre to centre of the lines.
Colour: brown.



102 Index contour
Every fifth contour shall be drawn with a thicker line. This is an aid to the quick assessment of height difference and the overall shape of the terrain surface. Where an index contour coincides with an area of much detail, it may be shown with a normal contour line.
Colour: brown.

104 Slope line
Slope lines may be drawn on the lower side of a contour line, e.g. along the line of a re-entrant or in a depression. They are used only where it is necessary to clarify the direction of slope.
Colour: brown.

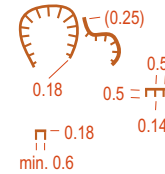


105 Contour value
Contour values may be included to aid assessment of large height differences. They are inserted in the index contours in positions where other detail is not obscured. The figures should be orientated so that the top of the figure is on the higher side of the contour.
Colour: brown



5

106 Earth bank
A steep earth bank is an abrupt change in ground level which can be clearly distinguished from its surroundings, e. g. gravel or sand pits, road and railway cuttings or embankments. The tags should show the full extent of the slope, but may be omitted if two banks are close together. Impassable banks should be drawn with symbol 201 (impassable cliff). The line width of very high earth banks may be 0.25 mm.
Colour: brown.



107 Earth wall
Distinct earth wall. Minimum height 1 m.
Colour: brown.



109 Erosion gully
An erosion gully or trench. Minimum depth 0.5 m.
Colour: brown.



4.2 Rock and boulders

Rock is a special category of land form. Rocks and boulders are not likely to affect route choice, but where prominent they can serve as valuable features for navigation and positioning. The maps may show these features when they are visible to the competitor.

201 Impassable cliff
An impassable cliff, quarry or earth bank (see 106) is shown with a 0.35 mm line and downward tags showing its full extent from the top line to the foot. For vertical rock faces the tags may be omitted if space is short, e. g. narrow passages between cliffs (the passage should be drawn with a width of at least 0.3 mm). The tags may extend over an area symbol representing detail immediately below the rock face. When a rock face drops straight into water making it impossible to pass under the cliff along the water's edge, the bank line is omitted or the tags should clearly extend over the bank line.
Colour: black 70 % (60 lines/cm).



202 Rock pillars/cliffs
In the case of unusual features such as rock pillars, massive cliffs, or gigantic boulders, the rocks shall be shown in plan shape without tags.
Colour: black 70 % (60 lines/cm).



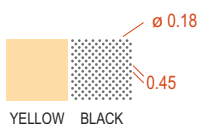
206 Boulder
A distinct boulder (minimum height 1 m). Every boulder marked on the map should be immediately identifiable on the ground. This symbol 206 is the only symbol for boulders.
Colour: black 70 % (60 lines/cm).



210 Boulder fields / Stony ground
A stony or rocky ground which affects going should be shown on the map. The dots should be randomly distributed with density according to the amount of rock. A minimum of three dots should be used.
Colour: black 70 % (60 lines/cm).



6



211 Open sandy ground

An area of soft sandy ground or gravel with no vegetation and where cycling is slow. Where an area of sandy ground is open but cycling is good, it is shown as open land (401/402).

Colour: black 70 % (60 lines/cm) / 12.5 % (22 lines/cm) and yellow 50 % (see 403).

212 Bare rock

A rideable area of rock without earth or vegetation is shown as bare rock. An area of rock covered with grass, moss or other low vegetation is shown as open land (401/402).

Colour: black 30 % (60 lines/cm) or grey.



4.3 Water and marsh

Besides navigation and positioning, this group is important to the competitor as it facilitates the interpretation of height in maps with complex contouring. In dry areas the features listed in this section may only contain water in some seasons.



301 Lake

Large areas of water are shown with dot screen (50 %). Small areas of water should be shown with full colour. The colour of the bank line is blue 100 %.

Colour: blue.



304 Uncrossable river

An uncrossable river or canal is drawn with blue bank lines.

Colour: blue.



305 Crossable watercourse

A crossable watercourse, minimum 2 m wide. The width of watercourses over 5 m wide should be shown to scale.

Colour: blue.



306 Crossable small watercourse

A crossable watercourse (including a major drainage ditch) less than 2 m wide. For better legibility a ditch in a marsh should be drawn as a crossable watercourse (305).

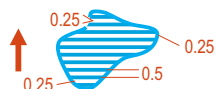
Colour: blue.



307 Minor water channel

A natural or man-made minor water channel which may contain water only intermittently.

Colour: blue.



309 Uncrossable marsh

A marsh which is uncrossable or dangerous for the competitor. A blue line surrounds the symbol.

Colour: blue.



310 Marsh

A crossable marsh, usually with a distinct edge. The symbol should be combined with vegetation symbols to show runnability and openness. Where a small marsh area should be combined with either 403 or 404 it is permitted to use 401 / 402 to improve legibility.

Colour: blue.



314 Special water feature

A special small water feature. The definition of the symbol must always be given in the map legend.

Colour: blue.

0.18

4.4 Vegetation

The representation of vegetation is of importance to the competitor only for navigational purposes, not for route choices. For example, if the forest is dense on one side of the path and sparse on the other, this presents navigation and positioning information. It is not necessary to grade the forest for "speed" purposes, unlike in maps for foot orienteering, only for visibility. In order to meet the demands for highest possible legibility, the 30 % green colour used for symbol 406 (forest: reduced visibility) has been judged optimal.

It should also be noted that the foot orienteering symbols 414 and 416 (cultivation boundaries) should be omitted since they may cause confusion with some of the symbols used for tracks and paths.

COLOUR

The basic principle is as follows:

white represents forest with good visibility,

yellow represents open areas divided into several categories,

green represents the density of the forest according to its runnability.

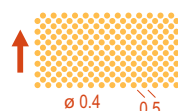


401 Open land

Cultivated land, fields, meadows, grassland, etc. without trees. If yellow coloured areas become dominant, a screen (75 %) instead of full yellow may be used. The areas that are presented with the symbol 415 (cultivated land) in the foot orienteering map shall be presented with this symbol in the mountain bike orienteering map.

Colour: yellow.

100%



402 Open land with scattered trees

Meadows with scattered trees or bushes, with grass or similar ground cover. Areas smaller than 10 mm² on the map are shown as open land (401). Individual trees may be added (418, 419, 420).

Colour: yellow (20 lines/cm).

50%

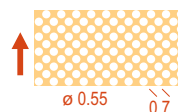


403 Rough open land

Heath, moorland, felled areas, newly planted areas (trees lower than ca. 1 m) or other generally open land with rough ground vegetation, heather or tall grass.

Colour: yellow 50 % (60 lines/cm).

50%



404 Rough open land with scattered trees

Where there are scattered trees in rough open land, areas of white (or green) should appear in the tone. Such an area may be generalised by using a regular pattern of large white dots in the yellow screen. Areas smaller than 16 mm² on the map are shown as rough open land (403). Individual trees may be added (418, 419, 420).

Colour: yellow 70 % (60 lines/cm), white 48.5 % (14.3 lines/cm).

(36%)



405 Forest: good visibility

Typically open forest for the particular type of terrain. Wherever a part of the forest is too dense to be traversed pushing or carrying a bicycle, no white should appear on the map.

Colour: white.



30%

406 Forest: reduced visibility

An area with dense trees (low visibility) which reduces the speed of traversing the forest pushing or carrying a bicycle significantly or even makes it impossible to traverse.

Colour: green 30 % (60 lines/cm).



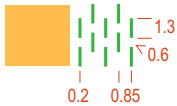
ø 0.45 0.8

YELLOW GREEN

412 Orchard

Land planted with fruit trees or bushes. The dot lines may be orientated to show the direction of planting. If yellow coloured areas become dominant, a screen (75 %) instead of full yellow may be used.

Colour: yellow and green 25 % (12.5 lines/cm).



1.3

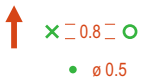
0.6

0.2 0.85

413 Vineyard

The green lines may be orientated to show the direction of planting. If yellow coloured areas become dominant, a screen (75 %) instead of full yellow may be used.

Colour: yellow and green.



0.8

ø 0.5

0.18

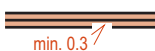
418, 419, 420 Special vegetation features

Symbols 418, 419 and 420 can be used for special small vegetation features. The definition of the symbol must be given in each case in the map legend.

Colour: green.

4.5 Man-made features

The track and path network provides information fundamental to the competitor. Other man-made features are also important both for map reading and as control points.



min. 0.3

0.18

501 Motorway

A road with two carriageways. The width of the symbol should be drawn to scale, but not smaller than the minimum width. The space between the black lines must be filled with brown (50 %).

Colour: black and brown (50 %).



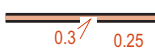
min. 0.5

0.18

502 Major road

Tarmac/asphalt road wider than 5 m. The width of the symbol should be drawn to scale, but not smaller than the minimum width. The space between the black lines must be filled with brown (50 %). The symbol may only be used for tarmac roads.

Colour: black and brown (50 %).



0.3 0.25

0.18

503 Minor road

Tarmac/asphalt road 1.5 - 5 m wide. The space between the black lines must be filled with brown (50 %). The symbol may only be used for tarmac roads.

Colour: black and brown (50 %).

Riding speed on tracks and paths is divided into four categories according to possible cycling speed.

The following ratios apply:

Fast riding	75-100 %
Medium riding	50-75 %
Slow riding	25-50 %
Difficult to ride	max 25 %



0.60

831 Track: fast riding

A track with stabilised surface, at least 1.5 m wide. Forest road or well-maintained track with no obstacles. Speed 75-100 %.

Colour: black.



0.40

832 Path: fast riding

Well-maintained path narrower than 1.5 m wide. Smooth, clean path with no erosion or obstacles. Speed 75-100 %.

Colour: black.



0.60

833 Track: medium riding

A track at least 1.5 m wide with some reduction in speed with the possibility of small obstacles such as stones, rocks, ruts, grass, sand or mud. Speed 50-75 %.

Colour: black.



0.40

834 Path: medium riding

A path narrower than 1.5 m wide with some reduction in speed with the possibility of small obstacles such as stones, rocks, ruts, grass, sand or mud. Speed 50-75 %.

Colour: black.



0.60

835 Track: slow riding

A track at least 1.5 m wide, with obstacles that require the riders to choose their way to avoid obstacles such as stones, rocks, ruts, grass, sand or mud. Possibility of rocky surfaces. Pedaling is more difficult, riding is slowed. Skilled/fit riders will pass. Less skilled/fit riders may have to dismount. Speed 25-50 %.

Colour: black.

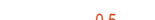


0.40

836 Path: slow riding

A path narrower than 1.5 m wide, with sufficient obstacles to require the riders to choose their way to avoid obstacles such as stones, rocks, ruts, grass, sand or mud. Possibility of rocky surfaces. Pedaling is more difficult, riding is slowed. Skilled/fit riders will pass. Less skilled/fit riders may have to dismount. Speed 25-50 %.

Colour: black.



0.60

837 Track: difficult to ride

A track at least 1.5 m wide, with difficult obstacles such as roots, deep sand/mud, erosion or rocky steps. Very slow riding or impossible to ride. Skilled/fit riders may be required to dismount. Speed max 25 %.

Colour: black.



0.40

838 Path: difficult to ride

A path less than 1.5 m wide, with difficult obstacles such as roots, deep sand/mud, erosion or rocky steps. Very slow riding or impossible riding. Skilled/fit riders may be required to dismount. Speed max 25 %.

Colour: black.

See Appendix 1 for details on Page 15

839: Area where off-track riding is allowed and possible, unofficial

This symbol describes an off-track area which may be ridden on in a terrain where off-track riding is normally forbidden. The symbol can also be used for small areas with path networks that are too dense to be mapped properly.

This symbol will be tested by IOF MTBO Commission in the international MTBO competitions during 2010-2011. The aim is that it will be officially approved by IOF in 2012. (Appendix 1)

509.1 Narrow ride

Non-ridable narrow forest rides should be represented. Colour: yellow (100%).



510 Visible path junction

When a junction or intersection of paths or tracks is visible, the dashes of the symbols are joined at the junction. Colour: black.



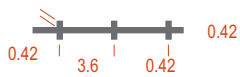
511 Indistinct junction

When a junction or intersection of paths or tracks is not clear, the dashes of the symbols are not joined. Colour: black.



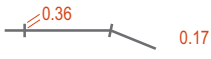
515 Railway

A railway or other kind of railed track. Colour: black 70 % (60 lines/cm).



516 Power line, cableway or ski lift

The bars indicate the exact location of the pylons. Colour: black 70 % (60 lines/cm).



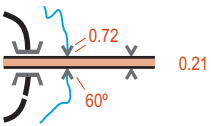
517 Major power line

Major power lines should be drawn with a double line. The gap between the lines may indicate the extent of the power line. Colour: black 70 % (60 lines/cm).



518 Tunnel

A way under roads, railways, etc., which may be used by the competitor. This symbol is used whether or not the tunnel has a track leading to it. Colour: black 70 % (60 lines/cm).



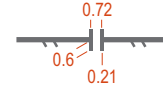
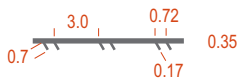
521 Stone wall

This stone wall symbol should represent all visible walls. If a stone wall is forbidden to cross, it shall be marked with the symbol 707 (uncrossable boundary). Colour: black 70 % (60 lines/cm).



524 High fence

A boarded or wire fence, not crossable by the riders, e.g. deer fence. If a fence is forbidden to cross, it shall be marked with the symbol 707 (uncrossable boundary). Colour: black 70 % (60 lines/cm).



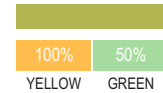
525 Crossing point

All ways through or over high fences or walls must be indicated. The symbol may also be used for a gate through or stile over a stone wall (521) or a fence (524) or a pipeline (534). Colour: black 70 % (60 lines/cm).



526 Building

A building is shown with its ground plan as so far as the scale permits. There should be no black line around buildings. The black colour is strictly restricted to areas that can be ridden on. Colour: black 70 % (60 lines/cm).



527 Settlement

Houses and gardens and other built up areas. Roads, buildings and other significant features within a settlement must be shown. Colour: green 50 % (60 lines/cm) and yellow 100 %.



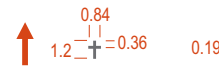
529 Paved area

An area of hard standing used for parking or other purposes. Riding on paved areas is normally allowed. If not, the symbol 709 (out-of-bounds area) shall be used as an overprint. Colour: black (70 %) and brown (50 %).



531 Firing range

A firing range is shown with a special symbol to indicate the need for caution. Associated buildings are individually marked. Colour: black 70 % (60 lines/cm).



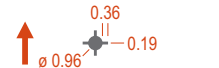
532 Grave

A distinct grave marked by a stone or shrine. Location is at the centre of gravity of the symbol, which is orientated to north. A cemetery is shown by using grave symbols as space permits. Colour: black 70 % (60 lines/cm).



534 Uncrossable pipeline

A pipeline which cannot be crossed. If an uncrossable pipeline is forbidden to cross, it shall be marked with the symbol 707 (uncrossable boundary). Colour: black 70 % (60 lines/cm).



535 High tower

A high tower or large pylon, standing above the level of the surrounding forest. Location is at the centre of gravity of the symbol. Colour: black 70 % (60 lines/cm).



536 Small tower

An obvious shooting platform or seat, or small tower. Location is at the centre of gravity of the symbol. Colour: black 70 % (60 lines/cm).



538 Fodder rack

A fodder rack which is free standing or built on to a tree. Location is at the centre of gravity of the symbol. For land access reasons these may be omitted. Colour: 70 % (60 lines/cm).



539, 540 Special man-made features

Special man-made features are shown with these symbols. The definition of the symbols must be given in each case in the map legend.
Colour: 70 % (60 lines/cm).

4.6 Technical symbols



601 Magnetic north line

Magnetic north lines are lines placed on the map pointing to magnetic north. At the scale of 1:5000, 1:7500 and 1:10 000 the spacing of north lines on the map should be 30 mm, while at the scale of 1:15 000 and 1:20 000 the spacing on the map should be 20 mm. North lines may be broken where they obscure small features such as boulders, cliffs, stream junctions, and path ends.
Colour: blue.



602 Registration marks

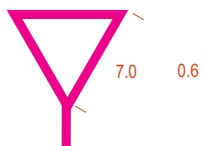
At least three registration marks must be placed within the frame of a map in a non-symmetrical position. In addition, a colour check should also be possible.
Colour: all printed colours.



603 Spot height

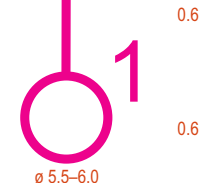
Spot heights are used for the rough assessment of height differences. The height is given to the nearest metre. The figures are orientated to the north. Water levels are given without the dot.

4.7 Overprinting symbols



701 Start

The start or map issue point (if not at the start) is shown by an equilateral triangle which points in the direction of the first control. The centre of the triangle shows the precise position of the start point.
Colour: upper purple.



702 Control point

The control points are shown with circles. The centre of the circle shows the precise position of the feature. Sections of circles should be omitted to leave important detail showing.
Colour: lower purple.
Diameter of control circles is the same in all scales.



840 Control point with focus point (in MTBO maps)

The focus point (i.e. the point in the centre of a control circle) can be used when it is necessary to clarify the exact position of a control for instance in a dense track network. The focus point shall be used in case of necessity when the exact position of a control is not clear. A focus point helps to specify the exact track where a control is situated.
Colour: lower purple (circle), upper purple (focus point).



703 Control number

The number of the control is placed close to the control point circle in such a way that it does not obscure important detail. The numbers are orientated to north.
Colour: upper purple.
Font: Arial, height of letters 4 mm.



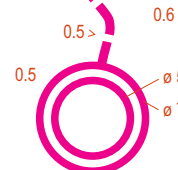
704 Line

Where controls are to be visited in order, the start, control points, and finish are joined together by straight lines. Sections of lines should be omitted to leave important detail showing.
Colour: lower purple.



705 Marked route

A marked route is shown on the map with a dashed line. If the symbol is used instead of symbol 704 before or after a control, it represents an obligatory route for the competitors. The symbol can also be used in areas where off-track riding is forbidden to represent allowed routes that are marked in the terrain.
Colour: upper purple.



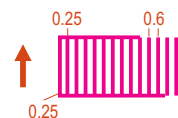
706 Finish

The finish is shown by two concentric circles.
Colour: upper purple.



707 Uncrossable boundary

A boundary which it is not permitted to cross.
Colour: upper purple.



709 Out-of-bounds area

An out-of-bounds area is shown with vertical stripes. A bounding line may be drawn. The areas which may be dangerous to competitors shall be presented by this symbol.
Colour: upper purple.



711 Forbidden route

A route which is out-of-bounds and forbidden to cross is shown with a zigzag. The zigzag line should be as continuous as possible. If there is a crossing point over the forbidden route, it shall be presented like a gate by two perpendicular lines over the forbidden route. Also a longer crossing section shall be presented clearly on the map by using the perpendicular lines at the end of the zigzag lines.
Colour: upper purple.



712 First aid post

The location of a first aid post.
Colour: upper purple.



713 Refreshment point

The location of a refreshment point which is not at a control.

Colour: upper purple.



843 Dangerous object across tracks or paths, stairs

These barriers must be highly visible on the map and should be overprinted in purple.

The symbol should be used for all obstacles that are difficult to cross. For uncrossable barrier, symbol 844 shall be used. This symbol can be used for stairs. There is no particular stair symbol.

Colour: upper purple.



844 Uncrossable barrier / forbidden to cross

This symbol can be used for all spots that are forbidden or impossible to pass, e.g. uncrossable barriers; fences or walls that are forbidden or impossible to cross; short sections of roads, tracks or paths that are forbidden to use (for longer sections, symbol 711 shall be used). In spots where two tracks or paths almost meet, but the situation is not obvious on the map, this symbol can be used to indicate that crossing is forbidden.

Colour: upper purple.

839 Area where off-track riding is allowed and possible, Ridable area

In terrain where competitors normally only are allowed to ride on roads and tracks, the symbol is used for areas where riding is exceptionally permitted off tracks. The symbol can also be used for areas with such a dense track network that it is not possible to show all the tracks.

Testing ridable area symbols

This version of ISMTBOM does not include a symbol for ridable area. No perfect solution has been found and testing the symbol is needed before including it in the Map specifications.

Organisers who need the ridable area symbol are encouraged to try out one or more of the following examples of ridable area. Based on experience and feedback, the IOF MTBO and Map Commissions will decide in 2012 whether to include the symbol in the Map specifications.

	<p>Ridable Area 1 - Black dots</p> <p>Advantages: Black is the colour competitors recognise as legal to ride on because all tracks are black. Can be used both for Open forest and Open land.</p> <p>Disadvantages: Black dots can be mistaken as Cultivated Land, although the symbol is no longer part of the MTBO map standards. Could also be mistaken for Stony Ground which is 70 % black. Narrow ridable areas are hard to map with dots, but could be mapped using a track symbol instead.</p>
	<p>Ridable Area 2 - Orange colour</p> <p>Advantages: Distinguishable colour. Details can easily be read underneath.</p> <p>Disadvantages: New colour is added. Riders may expect orange to be similar to Open Land.</p>
	<p>Ridable Area 3 - Black pattern</p> <p>Advantages: Easy to see. Black is recognised as legal to ride on.</p> <p>Disadvantages: Details cannot be read underneath the pattern. Could be mistaken as dense network of perpendicular tracks.</p>
	<p>Ridable Area 4 - Yellow 100 %</p> <p>Advantages: Details are easy to read underneath. Already in use in Australia with success.</p> <p>Disadvantages: Riders expect to see Open land when 100 % yellow is used. This can be confusing in areas with trees.</p>