

((First Draft)) International Map Specification ISOM 201x

Comments by Adrian Uppill, Orienteering Australia

12 December 2012

103 Form line

The dotted and small dashed lines lose sharpness while the 75% brown line introduces another colour and being a pale colour is hard to read. Also adding slope tags to the dotted line does not work. Dotted lines can also be confused with 110 Small erosion gully, and for colour blind, the proposed green vegetation boundary 416.002. Therefore the preference is for 103.4 (thin line long dash) followed by 103.3 (thin line).

107 Earth wall

Suggest make the dots along the line about 2.0 apart. If the dots are closer they will tend to clutter the map as per comment from Christer.

108 Small Earth wall

Suggest keep the original description 'Small earth wall' rather than 'Ruined earth wall' ie. a small earth wall is not necessarily ruined.. Also as per 107 suggest the dots along the line be no less than about 2.0 apart.

209 Boulder cluster

The word "crain" is not an English word, if "cairn" is intended this is not the same as the current definition of Boulder Cluster. This is used to represent groups of boulders from 1.0 to several metres in height that are so closely clustered together that they cannot be marked individually.

The new symbol occupies about the same area as the old, and is too similar to other stony ground symbols and so will be lost in other rock detail.

Also the old Boulder cluster symbol had two sizes (1.0 and 0.8) which should be retained so as to indicate any significant height difference for these features.

Also the Sample Map (OCAD file 20.10.24_iof_revision_isom) with rock detail (middle right hand map) had several boulder clusters on the original map which are not shown when this is reproduced with the new symbols. If the new symbol is added it becomes lost and indistinguishable from the other 'stony ground' dots.

Therefore the existing 209 Boulder cluster symbol should be retained.

211 Sandy ground

The regular pattern of black dots makes the symbol distinctive from 210 Stony ground and is much better in this respect as compared to the proposed stochastic pattern. However the dots could be little bit smaller to improve the legibility of contours etc.

Rock (antrasite)

It is critical to instantly recognize mapped rock features particularly dangerous cliffs. Black is a standard colour for such features on most maps and hence it would auger well to stay with this convention. Using grey at 70%K makes this feature less obvious. Also note the grey rock face symbol when aligned to and is on the contour line is difficult to distinguish – see sample map with rock detail (middle right hand map) – particularly when the map is printed. And also by having rounded ends which may look nice, reduces legibility of the rock face line.

The use of 'antrasite' introduces yet another screen for people to experiment with and to make their own colour settings for CMYK printing.



Rocks & boulders: 100%K v 70%K

The example above shows that 100%K for rocks & boulders is greatly superior to 70%K. If Gray is to be used then a minimum setting of say 80%K should apply as I suggest 70%K is too pale as per example.

100%K should therefore be retained. Keeping it 100%K keeps it simple. May be in exceptional circumstances where there are numerous tracks in rock area should consideration be given to using Gray. More test examples are required if this is to be pursued.

213 (and 210 Stony ground)

I do not see any merit in combining Stony ground and Boulder field to make three levels of Stony ground as proposed. The proposal to introduce 6 new area screens and 6 new minimum area screens is too complicated. The simplicity of the existing 210 Stony ground symbol and 208 Boulder field together with their respective definitions are easy for the mapper to apply and importantly for the orienteer to comprehend.

With the new symbols it is not possible to adequately portray a single line of rock outcropping, thereby reducing the real picture of the terrain.

The current symbols for Stony ground and Boulder field should therefore be retained.

Water and marsh (blue)

315 Seasonal water body

In an often low rainfall environment it has been necessary to use blue to show features associated with water rather than the actual presence of water. Hence 305 Crossable water course, 306 Crossable small watercourse and 307 Minor water channel are used for dry water courses. The new symbols will formalize common practice.

Vegetation (Green + Yellow)

What is proposed with the colour Yellow. Is it to be called Orange (and if so, why) or is a new colour proposed. Yellow is currently defined as PMS 136 with CMYK values 00 27 79 00 while in this document PMS 136 is also called Orange but with CMYK values 00 42 93 00 (see section 5 Printing - Colour – table)!

Experimentation with a yellow setting closer to Process Yellow has shown to be better for colour blind as compared to the mustard colour PMS 136 (00 27 79 00) and particularly for the 50% Y for Rough open land. Settings used for digital printing have been found to give better colour differentiation when using the following settings: Y100% (00 20 80 00), Y70% (00 19 55 00) and Y50% (00 10 50 00). Some colour blinds would prefer Y100% to be Process Yellow or close thereto.

Also experimentation with Green for digital printing shows the following to give increased colour differentiation: Green 100% (76 00 91 00), Green 50% (38 00 50 00) and Green 30% (15 00 20 00).

401 Open land

I agree with Christer.

411 Forest runnable in one direction

Symbol 411 Forest runnable in one direction has been deleted from the proposed new symbols.

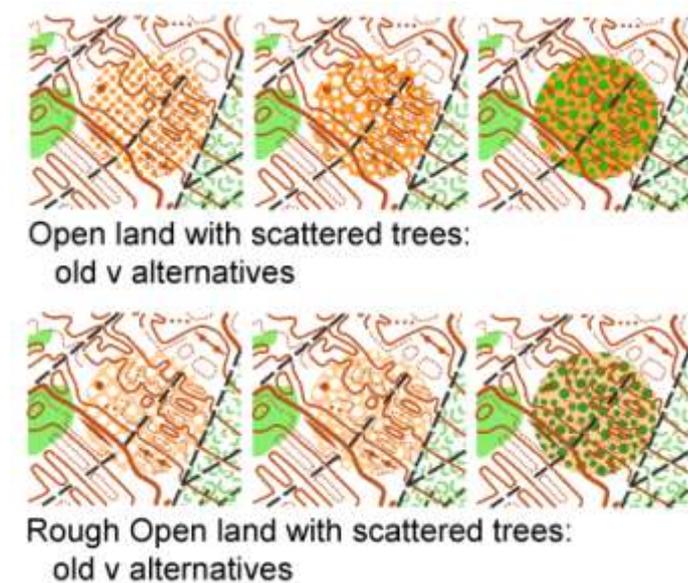
411 should be retained to show that it is easier to run in a certain direction through a planted forest. In planted forests the ground is firstly ripped in rows and the seedlings planted there in. It is then easier to run along the rows and not across the ripped rows. In addition, the tree spacing along the rows may be closer than the row spacing. This is important information for the orienteer and will affect route choice. It is not appropriate to use 509 Narrow ride as an alternative symbol. Symbol 509 may also be used in forests having directional run.

402 Open land with scattered trees

In all cases legibility is maximized when the screen is a regular pattern as compared to a stochastic or random pattern. When a regular pattern is used for scattered trees as per the existing symbols it is

instantly evident that this is the case, whereas with random white dots of varying size one is never quite sure if the white is real or not. And if there is a patch of 'white' then that is often lost in the context of the map.

Proposed 402.3 (random green circles of different sizes) will also be confusing with 418.007 Prominent vegetation feature, and additionally for colour blind with 112 Small knoll and 113 Small elongated knoll. In particular where 402.3 lies over Form lines and detailed contours, the map's legibility is greatly reduced (for colour blind the detail is lost or becomes confusing).



The proposed stochastic screen does not therefore increase legibility, if anything; it makes it worse as compared to the existing regular screen.

The same applies to the proposed Rough open land 404.002 and 404.003.

405.002 Forest boundary (Green)

For colour blind using a green line for vegetation boundaries will be confusing with contours. Therefore retain use of 416.001 Vegetation boundary (dotted black line).

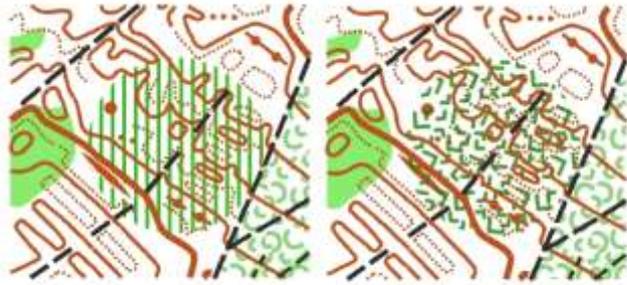
407 Undergrowth: slow running

Again as with vegetation scattered trees, the proposed stochastic screen reduces legibility of other map detail.

Given that is difficult to show a precise boundary with 407.1 it is suggested that 407.2 (regular narrow green vertical stripes but more dense) be used in preference to 407.3 stochastic screen.

409 Undergrowth: difficult to run

Similar comments apply as 407 with a preference to use the very dense vertical green stripe 409.3.



Undergrowth 2: stripe v alternative

416 Distinct vegetation boundary

For colour blind using green, either dotted or solid line will be confusing with Contours and 110 Small erosion gully. Hence Black is best as per existing symbol.

418 Prominent vegetation feature

The additional point symbols will be useful but I suggest 418.007 (green dot) be deleted as this will be confusing for colour blind with 112 Small knoll. That still leaves 4 green point symbols available for Prominent vegetation feature.

Also if a brown point feature symbol is used then it is strongly suggested that a different shape be used for the green point symbol (and vice versa).

517 Major cable way / Transmission line

Is the square really necessary? I suggest the existing cross line suffices.

519 Stonewall

I agree with Christer, re clutter if dots too close. Suggest minimum spacing of about 2.0.

520 Ruined stone wall

Perhaps line too short / too many dots, suggest 0.14/2.0/0.25/∅0.4

521 High stone wall

Perhaps line too short / too many dots, suggest 0.18/2.00/∅ 0.5/0.7

527 Settlement / Area with forbidden access

The use of olive green in both sprint and ISOM is a real problem, often leading to DSQ simply because the area was too small, not seen, colour not distinguishable and or illegible to the orienteer on the run. Also Olive green is a terrible colour for colour blind. The following remedies are suggested for consideration to this problem:

A use Olive green and always with a bounding line

B use olive green with thin purple vertical stripes and always with a bounding line

Below are suggestions we have experimented with for Sprint maps

Options for Forbidden areas in Sprint maps:



Options for Area with forbidden access:

A use Olive green and always with a bounding line

B use Impassable vegetation

C use Olive green with thin purple vertical stripes and always with a bounding line

D use a thin purple vertical stripe over any vegetation area that is out of bounds and always with a bounding line

The draft needs to add as F527.3 the alternative black line screen, black 32.5% (27 l/cm). This symbol is commonly used for residential areas on urban maps.

538 Fodder rack

Symbol probably not needed in lieu of the 2 new Special man made features which makes a total of 4.

8 Questionnaire for Reference Group

From IOF Map Specification Wiki

Specifications

The MC intends to create a specification similar to the ISOM2000, meaning that it has to be very much to the point, so that it can easily be translated into other languages than English. The

current document is probably too comprehensive, so some of the text will probably have to be moved to appendices or related documentation.

What should be in the core specification (the new version of the ISOM2000 booklet)?

ISOM2000 is a well written and is concise.

ISOM2000 should therefore be the basis for the revised document.

Additions to the core specifications should include Colour vision deficiency. This is proposed.

What should / could be changed compared to the ISOM2000 booklet?

As per Orienteering Australia submission

[http://www.orienteeing.asn.au/gfolder/ISOM %20Revision %20OA %20Submission %20181208.pdf](http://www.orienteeing.asn.au/gfolder/ISOM%20Revision%20OA%20Submission%20181208.pdf) a number of changes were suggested.

In the revision document many of these suggestions have been adopted in the new text or symbols.

However I think it is preferable that we go back to the original text to make changes and additions.

So at this stage I refer you to the OA submission which suggests changes to the original text.

There is a definite need for the new section 'Colour vision deficiency' as per new text, however rewriting and editing is required. I note several others have commented on this as well.

Should something be removed from the current version of the document?

How should the ISOM be published (the MC wants at least a short document to be available as PDF)?

The booklet format of ISOM2000 is an excellent production and should form the basis of the revised document.

Agree that an online version in PDF format should be available.

Printing and colour

Quality control of the orienteering course map

There is no reference to the PrintTech Project and in particular using its spot colour, offset printed 'Test Sheet'. This is a valuable quality control tool for the controller / advisor to use when assessing the suitability of any printing method and paper used for the production of an

orienteeing map. The printed 'Test Sheet' provides a quality standard for nations around the world to follow.

Acknowledging that Spot colour, offset printing still produces the best quality map for orienteeing, there are situations where a course map may be suitable for high level competition even though it has not been printed using the recommended method of spot colour, offset printing. Depending on the nature of the terrain, a digitally printed map may be suitable for relatively bland terrain, whereas using the same printing method and paper the printed map may be unsuitable for complex mapped terrain. Hence the emphasis for map quality should be on the legibility of mapped features as distinct from the actual print quality. This also brings into play the principles of simplification and generalization and the essential requirement that a map must be legible at the 1:15000 scale.

Accordingly there should be a defining quality control statement about the printed map such as: *'Any printing method may be used provided the course map is legible for the purpose of the orienteeing competition and satisfies the criteria of fair play'*.

Colour reference: CIELAB?

Yes if this will aid colour consistency.

The table listing of PMS, CIELAB and CMYK for all colours as per section 5 Printing is a good addition to the specifications.

Colour deficiency - should it be addressed by the ISOM. How hard should we try to find colours that can be distinguished by people with colour deficiencies?

It should definitely be addressed by ISOM and hence the new section 'Color vision deficiency' is strongly supported.

The usefulness of an IOF media wedge?

Possibly, but I suggest at this stage as a separate document to ISOM.

The optional use of dark gray / anthracite for the path system or rocky ground?

Possibly only in exceptional circumstances should dark grey be permitted for Rock, so as to highlight tracks.

Paler brown for form lines?

No.

General issues

Map scale - no changes are suggested, except to make 1:10000 an even more strict enlargement (north lines, overprint symbols)?

The need for an even stricter enlargement rule is strongly supported.

This also includes the enlargement option of overprint symbols where both 1:15000 and 1:10000 map scales are being used at the same event ie 9mm circles on 1:10000, 6mm on 1:15000. This is needed to avoid problems in control descriptions.

However probably help full to the orienteer to permit an in-between N line for 1:10000 ie 250m line spacing, so that at least one line always falls under the compass dial. However I have mistakenly printed maps with wide N spacings on 1:10000 and nobody noticed it, even elites!

Generalisation - the usefulness of including measures for the footprint on the ground of the graphical (minimum) dimension for symbols?

Including measures for the footprint of symbols on the ground is useful.

Minimum graphical dimension and minimum gaps?

This is useful.

The definition of flat terrain (for 2.5 meter contour interval)?

?

Should it be allowed to use form lines when you use 2.5 meter contour interval?

No.

Symbols

New alternatives for vegetation

Yes to the new point symbols but exclude the green dot so it is not confused with the brown dot by colour blind.

Undergrowth / green vertical stripes - alternative graphical implementations

Retain the existing vertical stripes albeit at closer spacing.

Do not use the stochastic or random pattern as this tends to reduce the legibility of other mapped features.

Semi-open

Retain the regular pattern for best legibility of other map features.

Sandy area

The regular pattern of black dots makes the symbol distinctive from 210 Stony ground and is much better in this respect as compared to the proposed random / stochastic pattern. However the dots could be little bit smaller to improve the legibility of contours etc.

Runnability emphasis for stony ground / rocky ground

There appears to be no additional benefit or merit in combining Stony ground and Boulder field to make three levels of Stony ground as proposed. The proposal to introduce 6 new area screens and 6 new minimum area screens is confusing and complicated. The simplicity of the existing 210 Stony ground symbol and 208 Boulder field together with their respective definitions are easy for the mapper to apply and importantly for the orienteer to comprehend.

With the new symbols it is not possible to adequately portray a single line of rock outcropping, thereby reducing the real picture of the terrain.

The current symbols for Stony ground and Boulder field should therefore be retained.

Fixed densities / patterns (three levels) for stony ground / rocky ground

See above.

Form lines - alternative graphical implementations (we need to make some examples)

The preference is for 103.4 (thin line long dash) followed by 103.3 (thin line).

The dotted and small dashed lines lose sharpness while the 75% brown line introduces another colour and being a pale colour is hard to read. Also adding slope tags to the dotted line does not work. Dotted lines can also be confused with 110 Small erosion gully, and for colour blind, the proposed green vegetation boundary 416.002.

Suggestions for additional symbols for special features

Agree.

Could now delete 538 Fodder rack

Special line feature

The addition of a green line (dotted, dashed or full line) or use of 405.002 Forest boundary as proposed, will be confusing for colour blind with 110 Small erosion gully, contour lines & form lines.

Point features

The removal of some symbols (some have been changed to the applications of other symbols)

Adjustment of symbol sizes

Reduced size of point symbols for special features?

The legibility of point features on any map should always be critically examined particularly for digital printing.

The slight reduction in size for 'O', 'X' and 'V' is probably OK even for digital printing. However in the OCAD file the new 117.004 Broken ground small dot is barely visible hence illegible for digital printing. The new graphic symbol for 311 Seasonal marsh symbol is an improvement.

As there is a demand to use more digital printing it seems prudent to adopt minimum sizes for symbols that are also legible when digitally printed on a good quality commercial printer.

Vegetation boundaries - alternative graphical implementation (avoiding black)

The existing black dotted line for vegetation boundary must be retained as using other colours will be confusing particularly to colour blind.

Forbidden areas, uncrossable features

Impassable / passable bodies of water

Impassable - forbidden to pass? («Competition rules» included in the map specification)

There is a problem in using pointed ends for cliffs as to where along the line the cliff becomes 'forbidden to pass' if this Sprint rule is to apply. Also how would it be policed in competition to check that athletes do not cross 'forbidden' cliff lines.

Forbidden areas

The use of olive green in both sprint and ISOM is a real problem, often leading to DSQ simply because the area was too small, not seen, colour not distinguishable and or illegible to the orienteer on the run.

Also Olive green is a terrible colour for colour blind.

The following remedies are suggested for consideration to this problem:



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Option B makes it instantly clear what is out of bounds while Option D reflects the actual vegetation on the ground that is out of bounds.

ISSOM approach (change the name of 527 and remove 528, and introduce impassable vegetation)

The 4th green 100% impassable as per ISSOM will remove the element of chance hence is a useful addition to ISOM.

It would probably be rarely used.

Introducing Map B symbols

There is a need to gather more experience with some of the alternative graphical implementations suggested on the ISOM wiki. The Map Commission is considering introducing "B symbols" to encourage testing. B symbols shall not be used in championships and World Cups, but could be used in for instance WorldRanking Events. Examples: The use of dark grey as an alternative to black for some symbols and alternative representation for form lines.

What do you think about introducing B symbols?

There is merit in this idea particularly as it would give a formal procedure for experimenting and putting forward new symbols or variations thereof.

However it should not become a second symbol set, but only contain a couple of symbols that may be needed at the local or national level.

If B symbols are to be introduced, which symbols would you suggest using B symbols for.

There is a need to do experimentation on alternatives for Forbidden area / Olive green as per comments above.

Ongoing experimentation with colour.