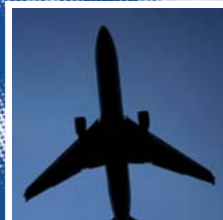




# Transport Canada Update to IESALC Government Contacts Subcommittee midyear meeting 17 April 2013



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## Summary .....

Many things going on. The following are commented in this presentation ....

- TP 14371 Aeronautical Information Manual – Now available in PDF version
- TP312 – Possible early 2014 for industry review.
- ADS [Aircraft Detection System] to have the audio signal as optional except for catenary crossings.
- Determination of range for lighting – An area for further work
- Pavement sign markings – criteria for character spacings.

## AIM – TP 14371

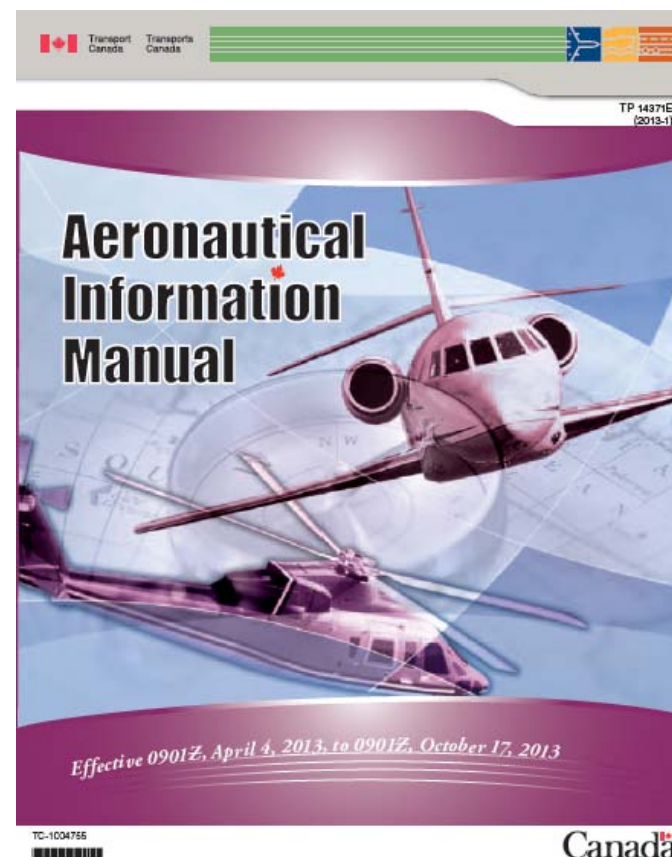
English [http://www.tc.gc.ca/media/documents/ca-publications/AIM-2013-1\\_ENG.pdf](http://www.tc.gc.ca/media/documents/ca-publications/AIM-2013-1_ENG.pdf)

French [http://www.tc.gc.ca/media/documents/ac-publications/AIM-2013-1\\_FRA.pdf](http://www.tc.gc.ca/media/documents/ac-publications/AIM-2013-1_FRA.pdf)

The AIM [Aeronautical Information Manual] is now available in PDF version and can be obtained from the above links.

Update twice a year.

The AGA – Aerodromes section has been substantially updated.

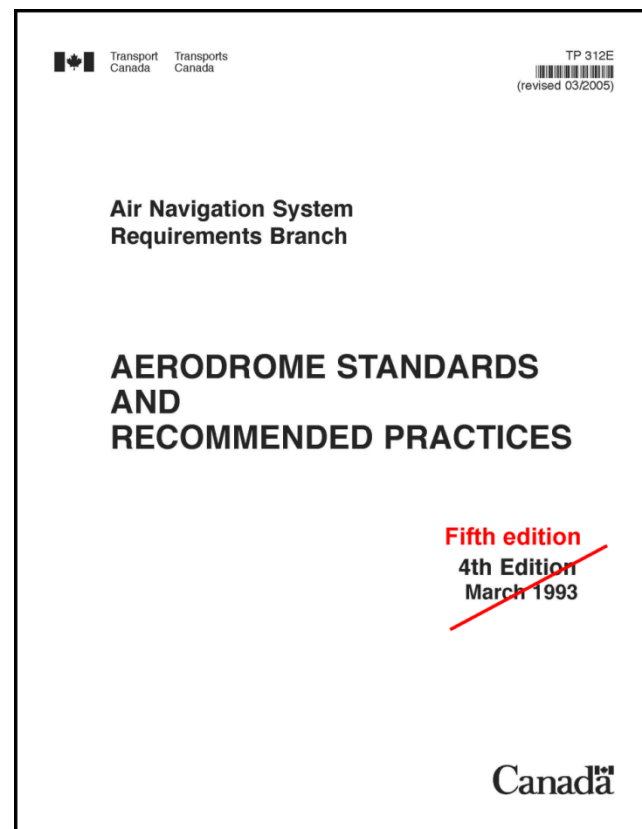




## TP312

The draft of 5<sup>th</sup> version of TP312 for land aerodromes is presently in translation.

It is now expected to have it available for industry comment in late 2013 or early 2014.





## **ADS [Aircraft Detection System]**

The ADS or AVWS [Audio Visual Warning System] of FAA comprises functions to turn on the obstacle lights and simultaneously emits an audio warning on VHF frequencies.

It is intended to make the requirement for voice warning optional and assessed on a site specific basis. For some installations such as windturbines near aerodromes it has been found that the voice warning can be a cause of confusion should it be broadcast at the same time as the pilot is to report their position. The audio warning is needed for catenary crossings [transmission lines] for reason that the lighting is on the support towers to sides of the pilot view. For other extensive objects, the lighting is directly in the pilot view and audio warning is redundant.



## Determination of Range for lighting

The determination of range for lighting is based on the use of Allard's Law.

$$E = I * T^D / D^2$$

or

$$I/E = D^2 * T^{-D}$$

Where E = threshold illuminance [for night this is 2 mile candela]

I = intensity

D = the range

T = Transmissivity

According to the Douglas/Booker report FAA-RD-77-8, the determination acquisition distance [range] for obstacle lighting is based on a transmissivity "T" that is different for nighttime than from daytime. This difference does not appear in ICAO. This aspect needs to be visited before we can move forward in determining the range of airport runway, taxiway and approach lighting.



The "e" version of AC 70/7460-1 gave the acquisition [range] distance of 1.18 miles for the 2000cd beacon in 1 mile visibility.

TIME PERIOD	METEOROLOGICAL VISIBILITY MILES (KILOMETERS)	DISTANCE STATUTE MILES (KILOMETERS)	INTENSITY CANDELAS	OBSTRUCTION LIGHT
N		1.18(1.9)	2,000	300mm Beacon-Red
I	1(1.6)	1.2(1.9)	3,000	Strobe-White
G		.64(1)	32	Steady Burning-Red
H	3(4.8)	3.0(4.8)	2,000	300mm Beacon-Red
T		3.2(5.2)	3,000	Strobe-White
		1.48(2.4)	32	Steady Burning-Red
D	1(1.6)	1.5(2.4)	200,000	Strobe-White
A		1.35(2.2)	100,000	Strobe-White
Y	3(4.8)	3.0(4.8)	200,000	Strobe-White
		2.6(4.2)	100,000	Strobe-White
TWI-LIGHT	1(1.6)	1.2(1.9) to 1.5(2.4)*	20,000	Strobe-White
	3(4.8)	1.5(2.4) to 4.0(6.4)*	20,000	Strobe-White

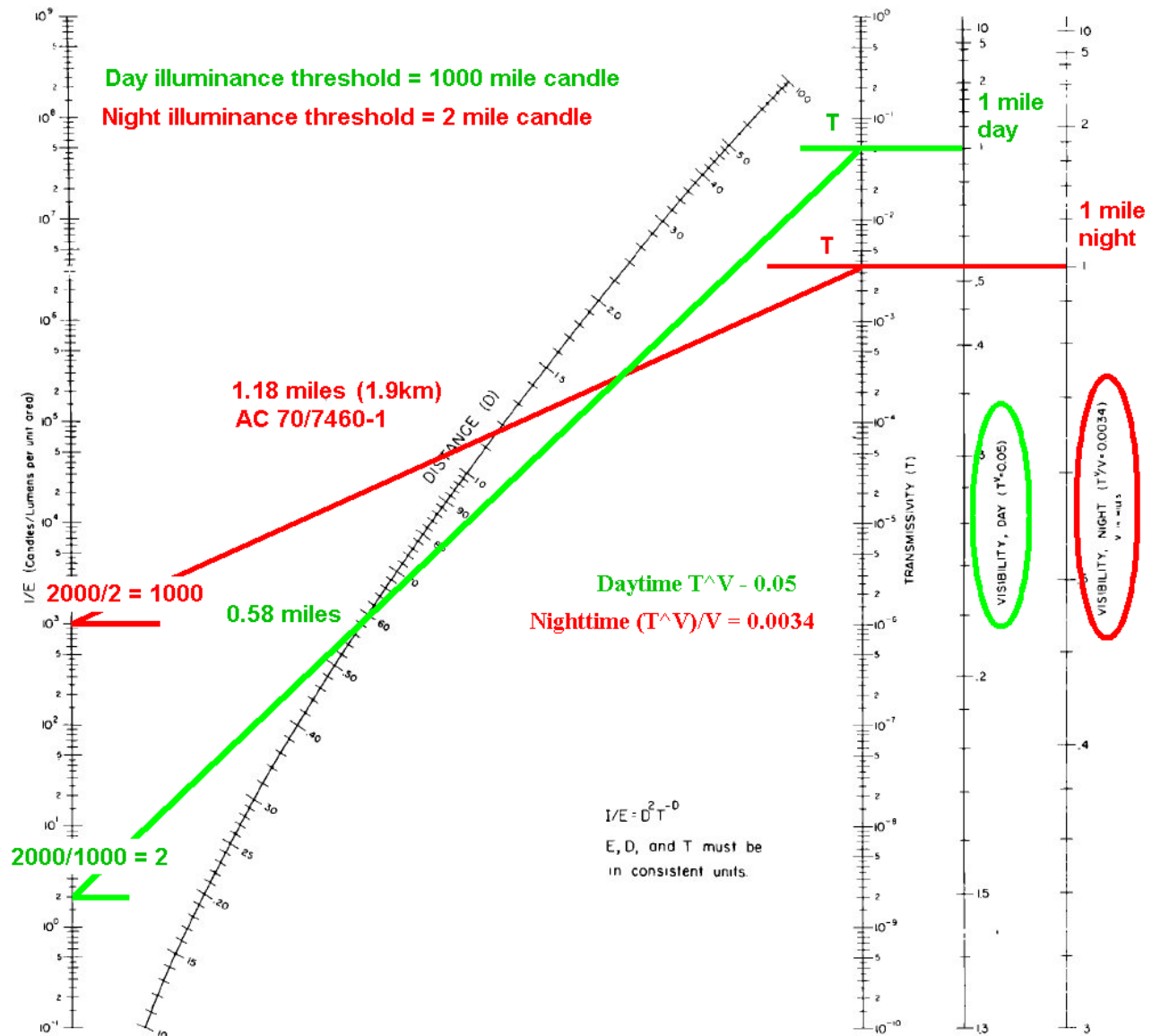
\* Distance depends on north sky illuminance:





The acquisition distance for the 2000cd beacon is derived from Allard's Law as shown in this monograph. But the transmissivity and thus the acquisition distance is dependent upon day or night operation. Granted this particular beacon would not be used for day protection, but the monograph shows that there is a significant difference depending upon the transmissivity and this in relation to day or night visibility.

Further work is needed on this subject.

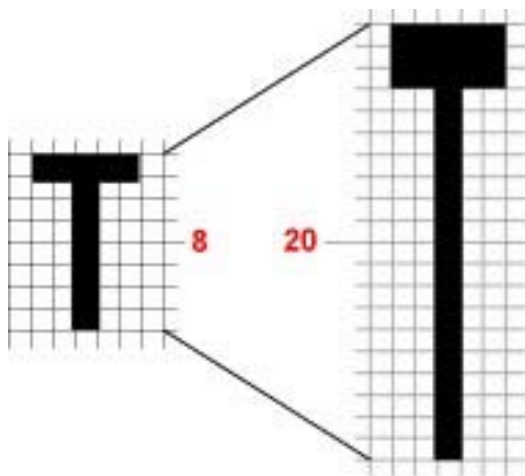




## Pavement Sign Markings

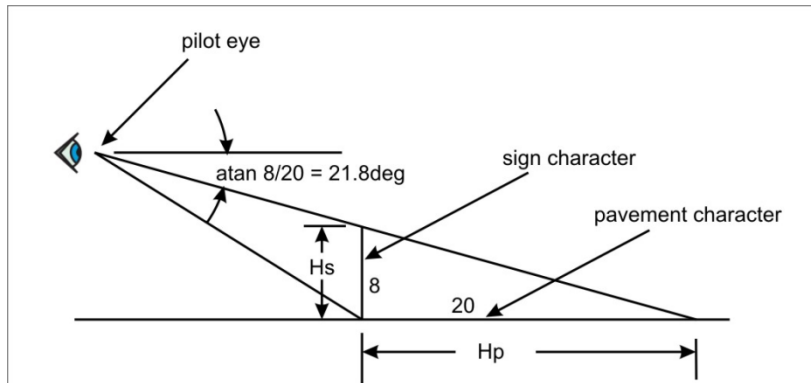
Pavement sign markings are specified in AC 150/5340-1 and in Annex 14. However, neither document gives information as to the spacings between characters.

The characters are actually a transformation of the elevated sign characters by a factor of  $20/8 = 2.5$ , based on the respective grid representations.



The elevated sign characters are to FHWA Standard Alphabets, Series D font.

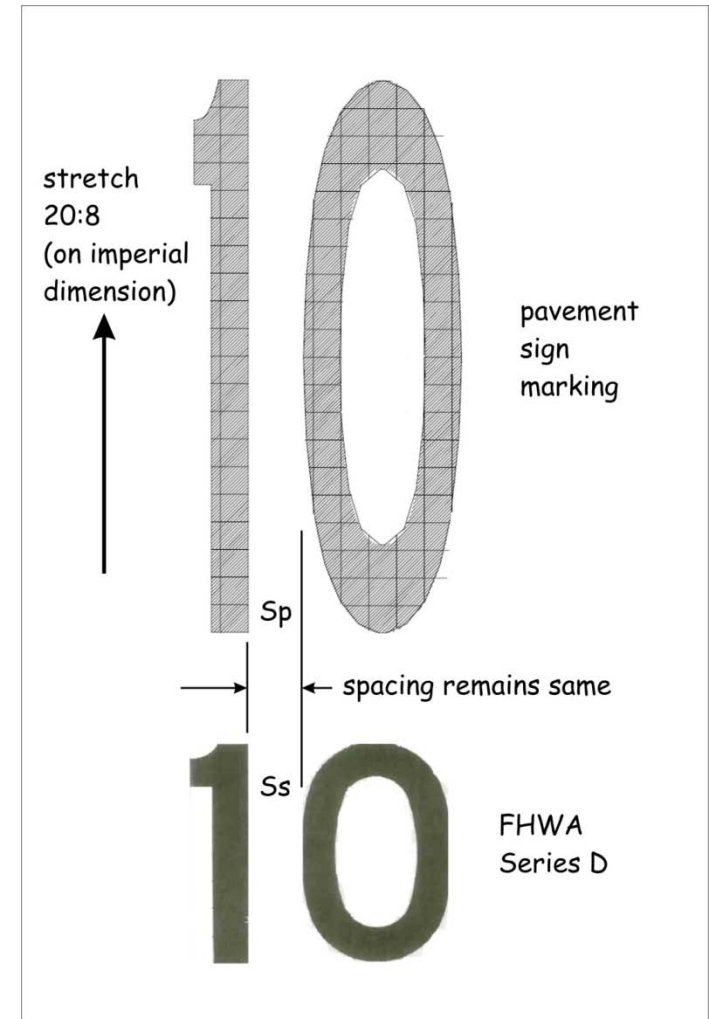
Note that the specification in FAA documents is in Imperial [English] dimensions.



The pavement character is as if stretching the elevated sign character by a factor of 2.5.

To find the spacing of characters, work backwards to find the hypothetical elevated sign.

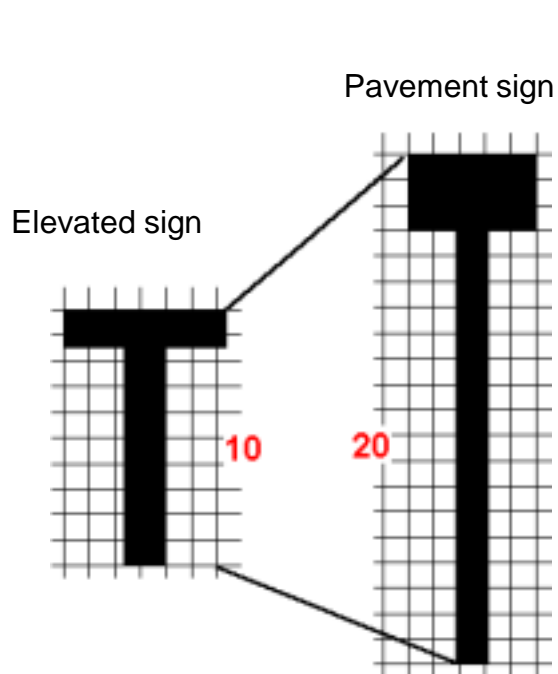
If the pavement sign height is to be 4m, the elevated sign is  $4000/2.5 = 1600\text{mm}$ .



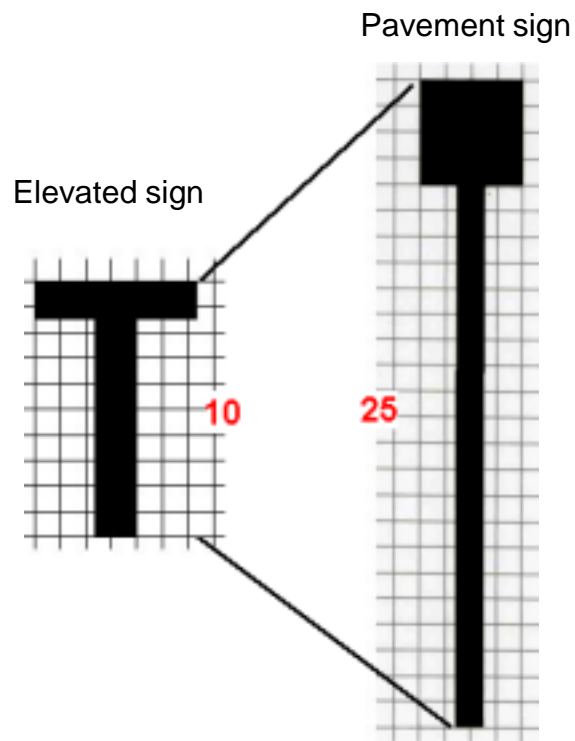
For Annex 14, proportion from the characteristics Table A4-1(c) for the particular code number. The largest character height in this table is 400mm. If the hypothetical elevated sign character height is 1600mm, the spacing for code #1 would be  $96 \times 1600 / 400 = 384\text{mm}$ .

c) Space between characters			
Code No.	Letter height (mm)		
	200	300	400
	Space (mm)		
1	48	71	96
2	38	57	76
3	25	38	50
4	13	19	26

Note that ICAO has adopted the FAA pavement sign character but without converting the grid to metric. Thus the character height shown Appendix 3 is the same 20 square height as in the FAA 150/5340-1. However, the ICAO grid for elevated signs is metric and the character height is shown as being 10 grid squares instead of the 8 grid squares in FAA. Thus Annex 14 seems to imply that the change is from 10 squares to 20 squares for a factor of  $20/10 = 2$ . When adopting FAA, the ICAO figure should have been changed to a 25 squares height. This, however, should not present a problem for the user as long as the grid is defined by the character. For example if the character is 4m in height, the grid is  $4000/20 = 20\text{cm}$ . For a 2m character the grid is  $2000/20 = 10\text{cm}$ .



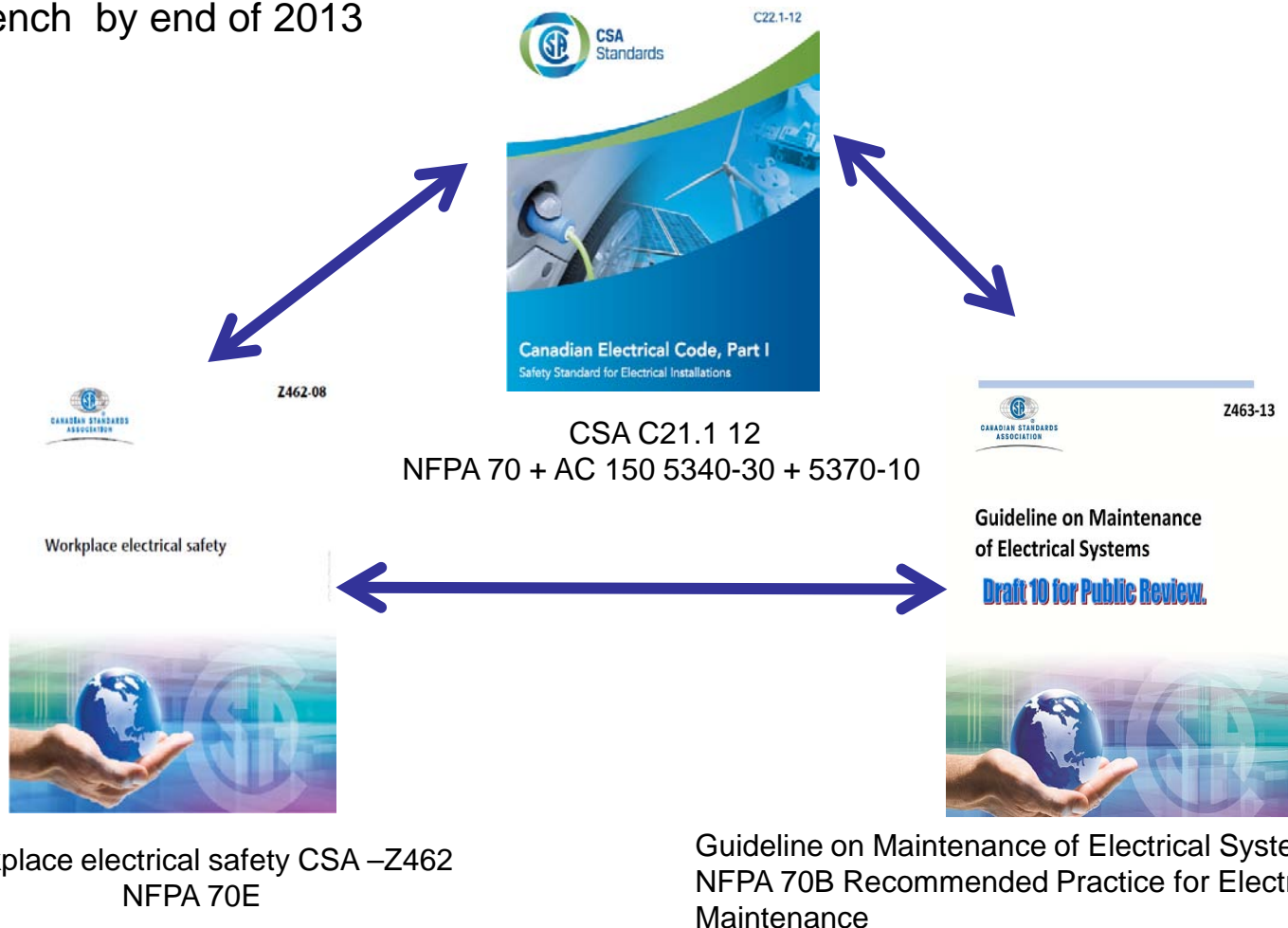
ICAO implied transformation  
(pavement sign grid is Imperial)



ICAO actual transformation in metric



Outside of Transport Canada, work is being done to develop a CSA Guideline on Maintenance of Electrical Systems. This guideline also address maintenance of airport installations. A vote for approval to happen second quarter of 2013, third quarter publication and then translation into French by end of 2013



Transport  
Canada

Transports  
Canada

Canada



Outside of Transport Canada, work is being done to participate at IEC TC97

**Title of proposal:**

97/XXX/RVN

Electronic lamp systems in constant  
current series circuits - General safety  
requirements

**Voting process:**

Took place last February  
Accepted by 11/12 members

**First meeting:**

Berlin May 2 and 3rd 2013

modifications are annexed ☐





## Questions ....

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