



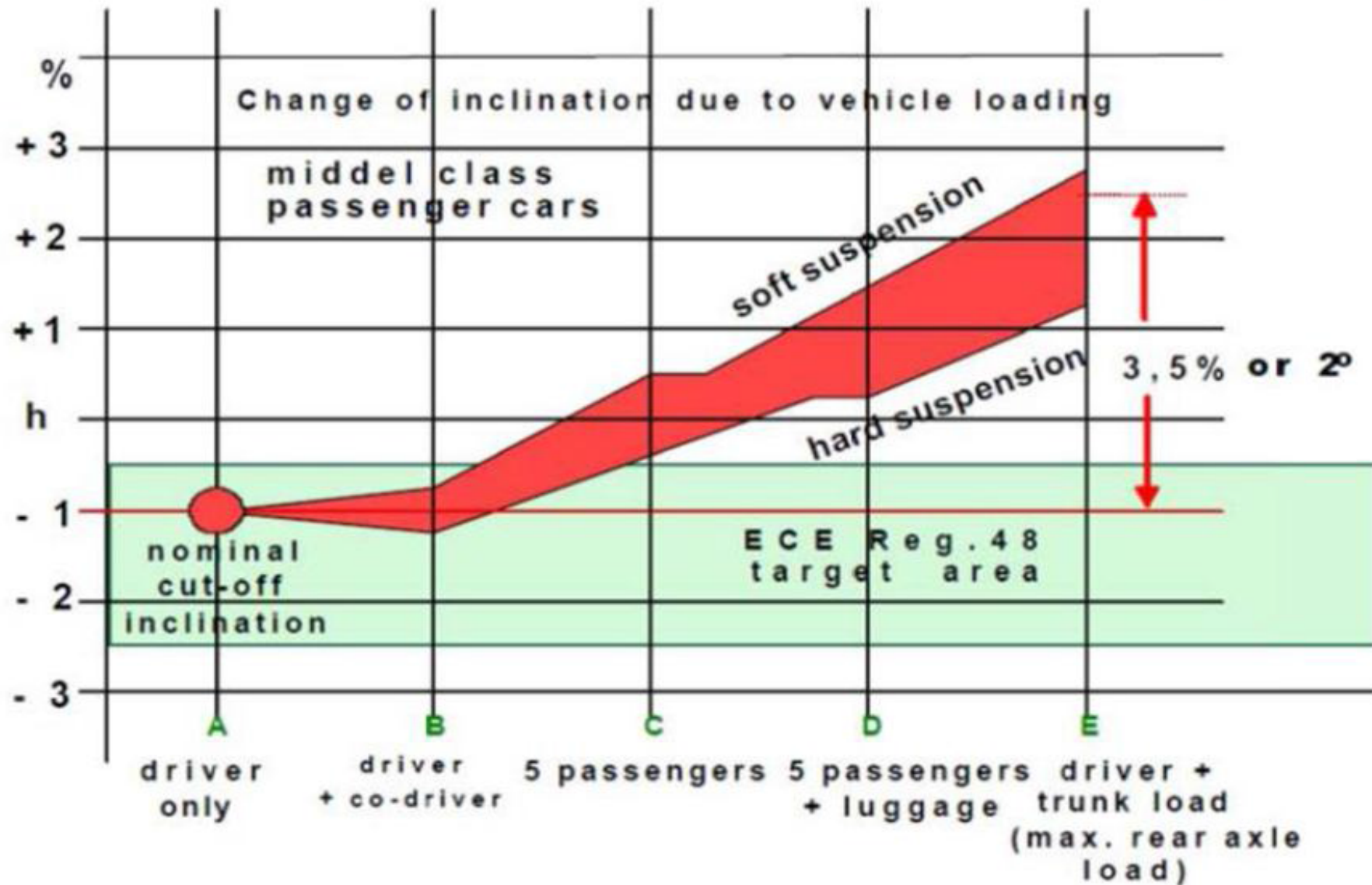
3rd IWG VGL, Paris 18-19 July 2016,

Consolidated explanations of rules for none/manual/automatic levelling in GRE-73-18

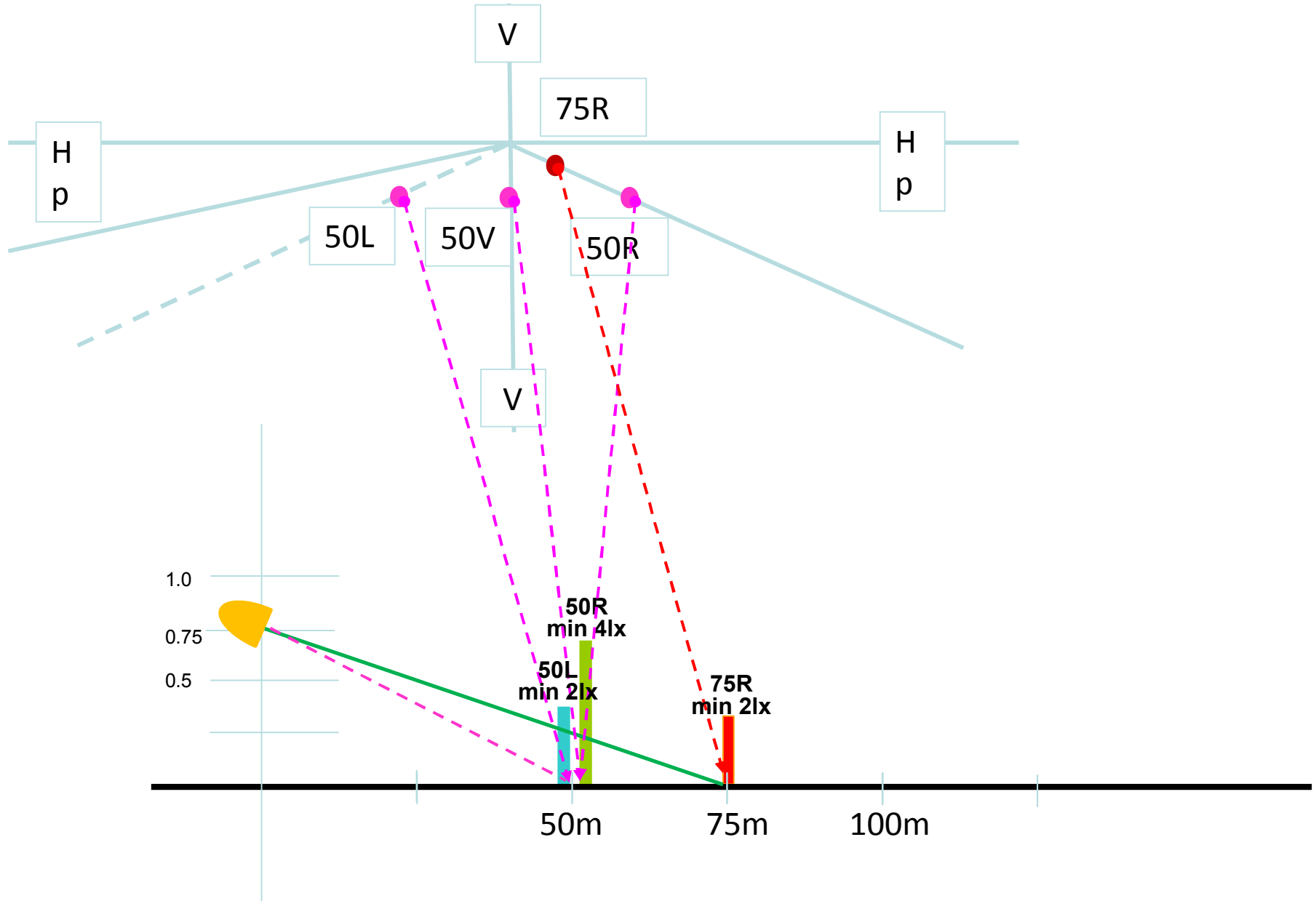
Tomasz Targosiński Ph. D. Eng
Poland



Hanno Westermann, History and Scientific Back-up

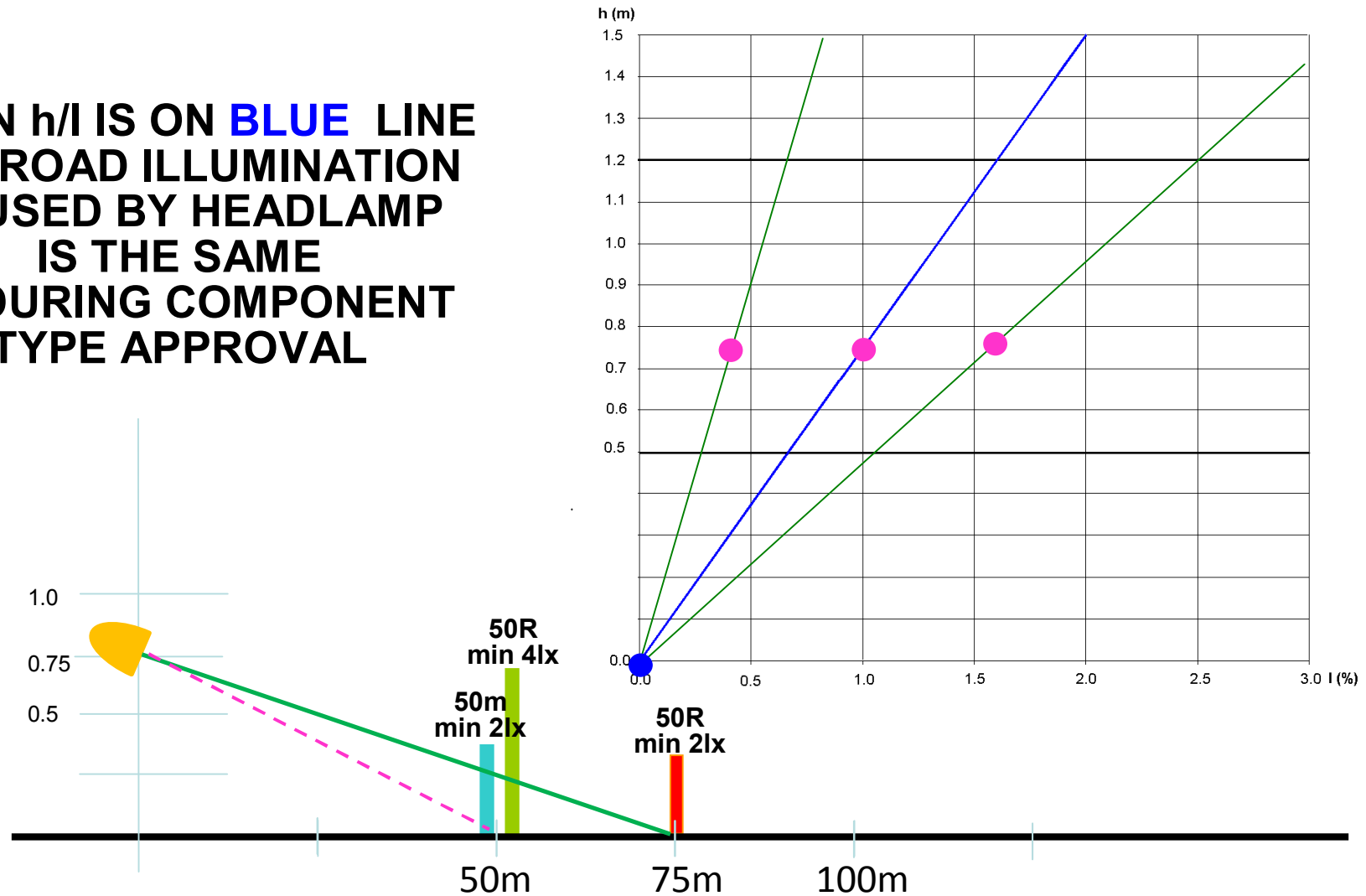


GEOMETRICAL BASE FOR PROPOSAL h(eight) vs. I(nclination)



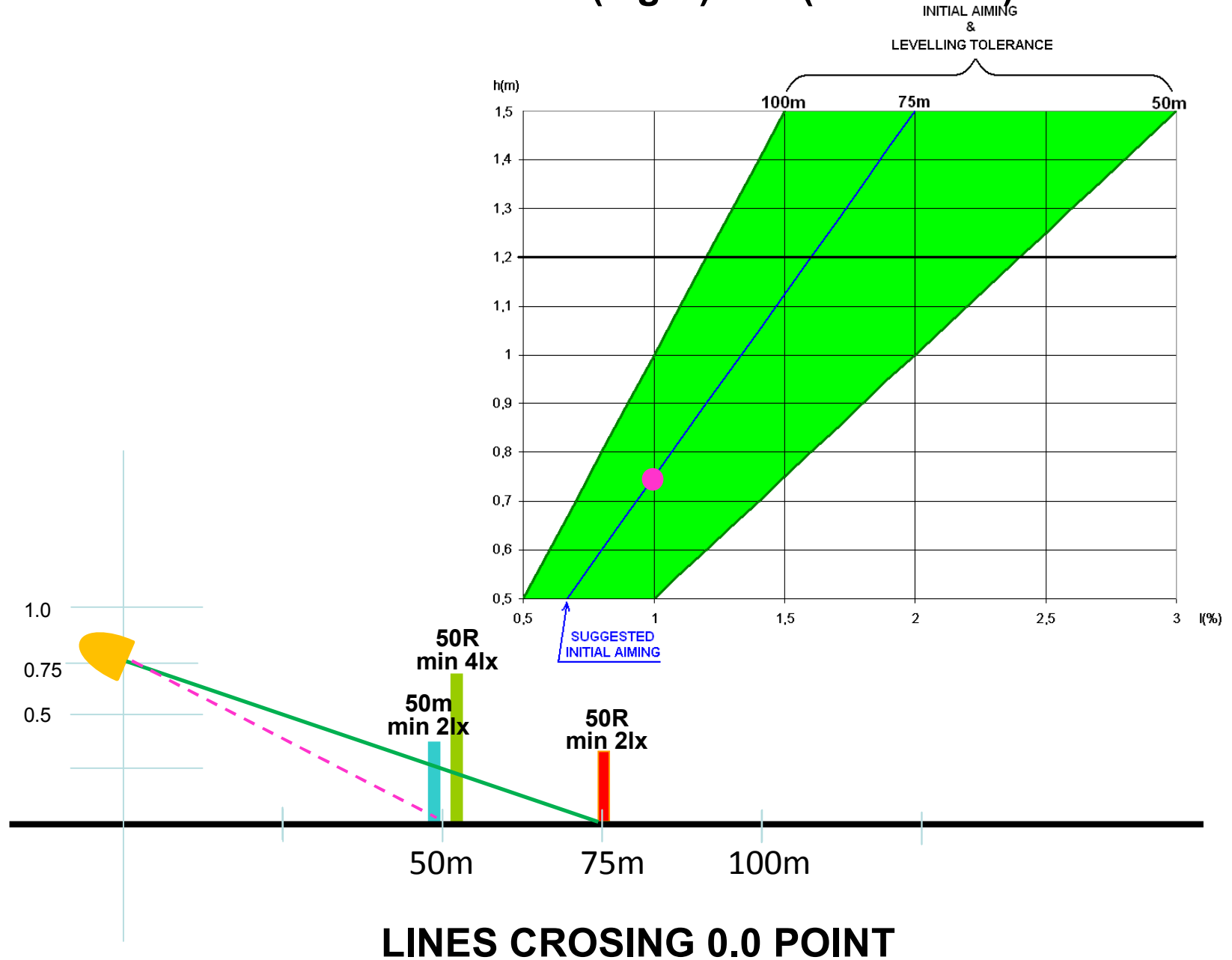
GEOMETRICAL BASE FOR POLISH PROPOSAL h(eight) vs. I(nclination)

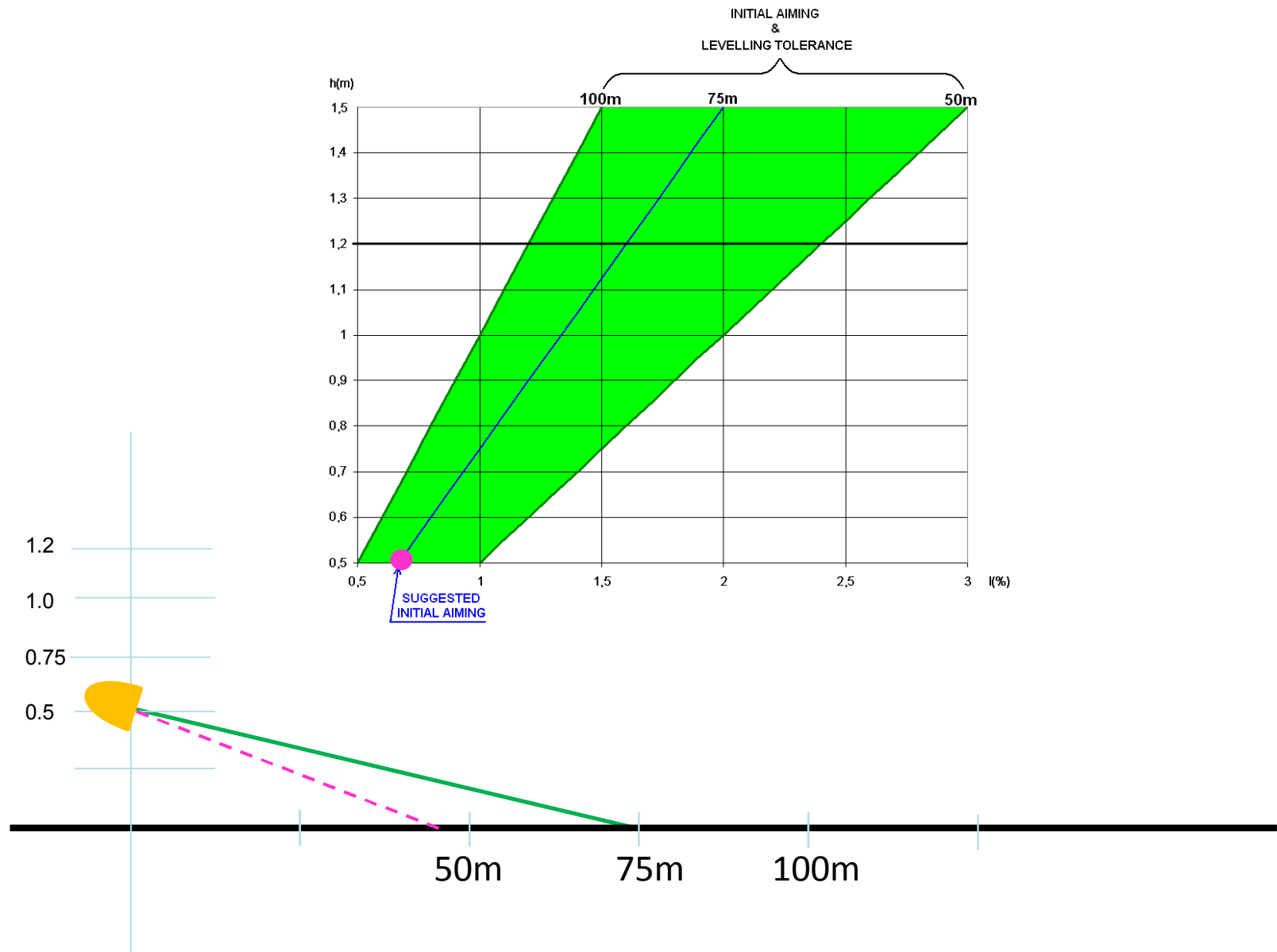
WHEN h/I IS ON **BLUE** LINE
THE ROAD ILLUMINATION
CAUSED BY HEADLAMP
IS THE SAME
AS DURING COMPONENT
TYPE APPROVAL

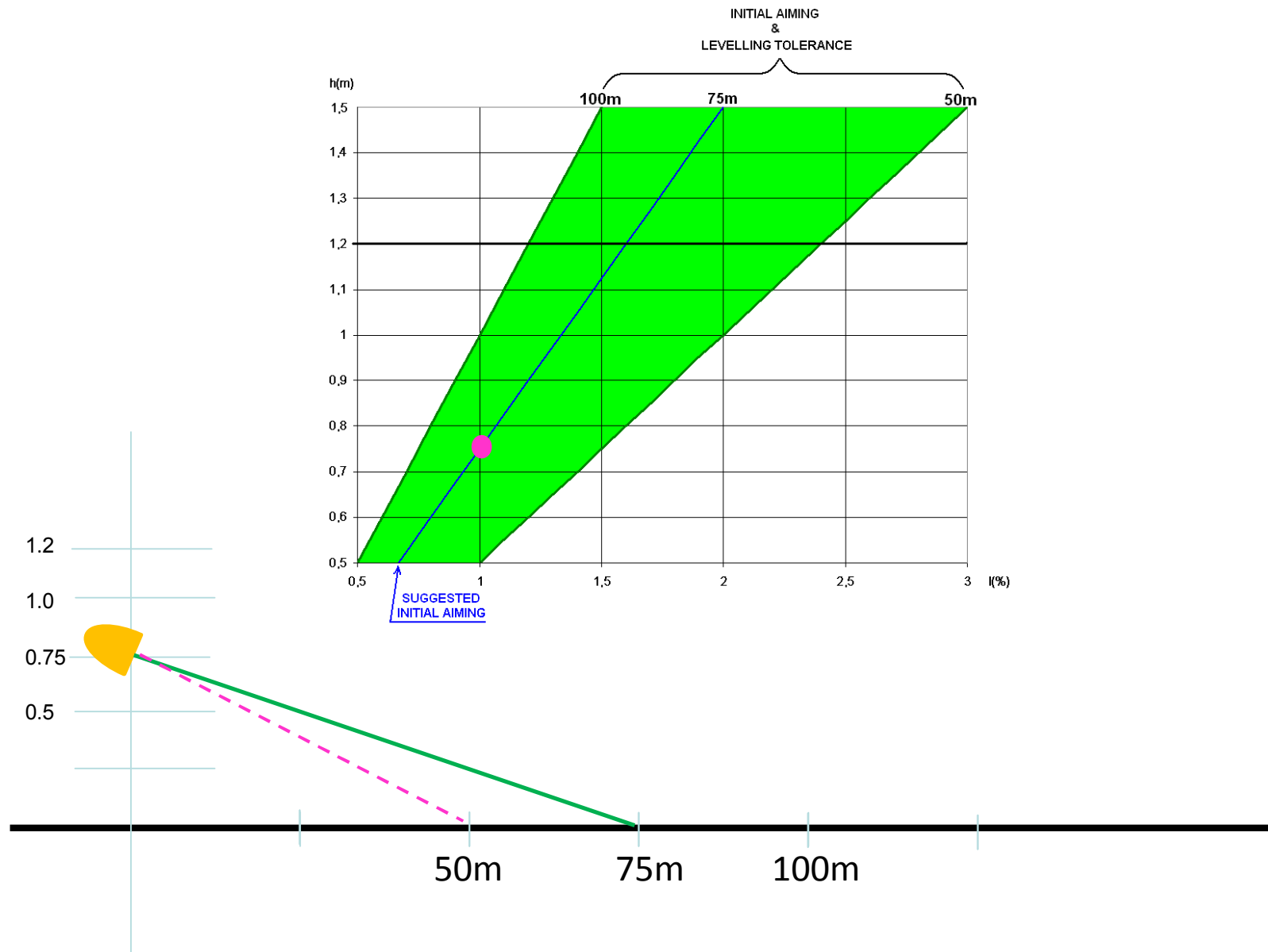


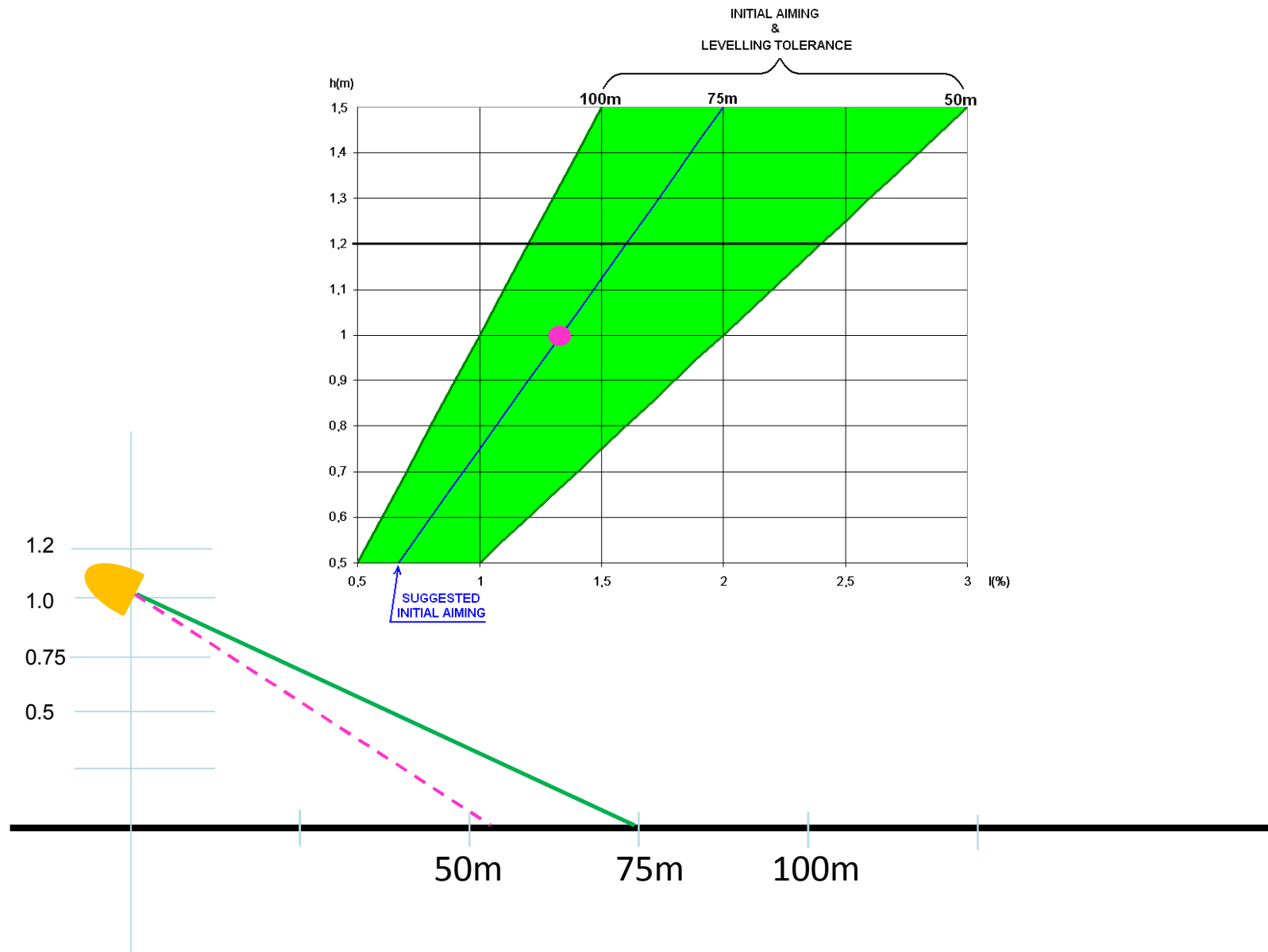
WHEN h/I IS ON ANOTHER **GREEN** LINE CROSSING **0.0** POINT THE ROAD
ILLUMINATION IS THE SAME FOR ANY HEIGHT

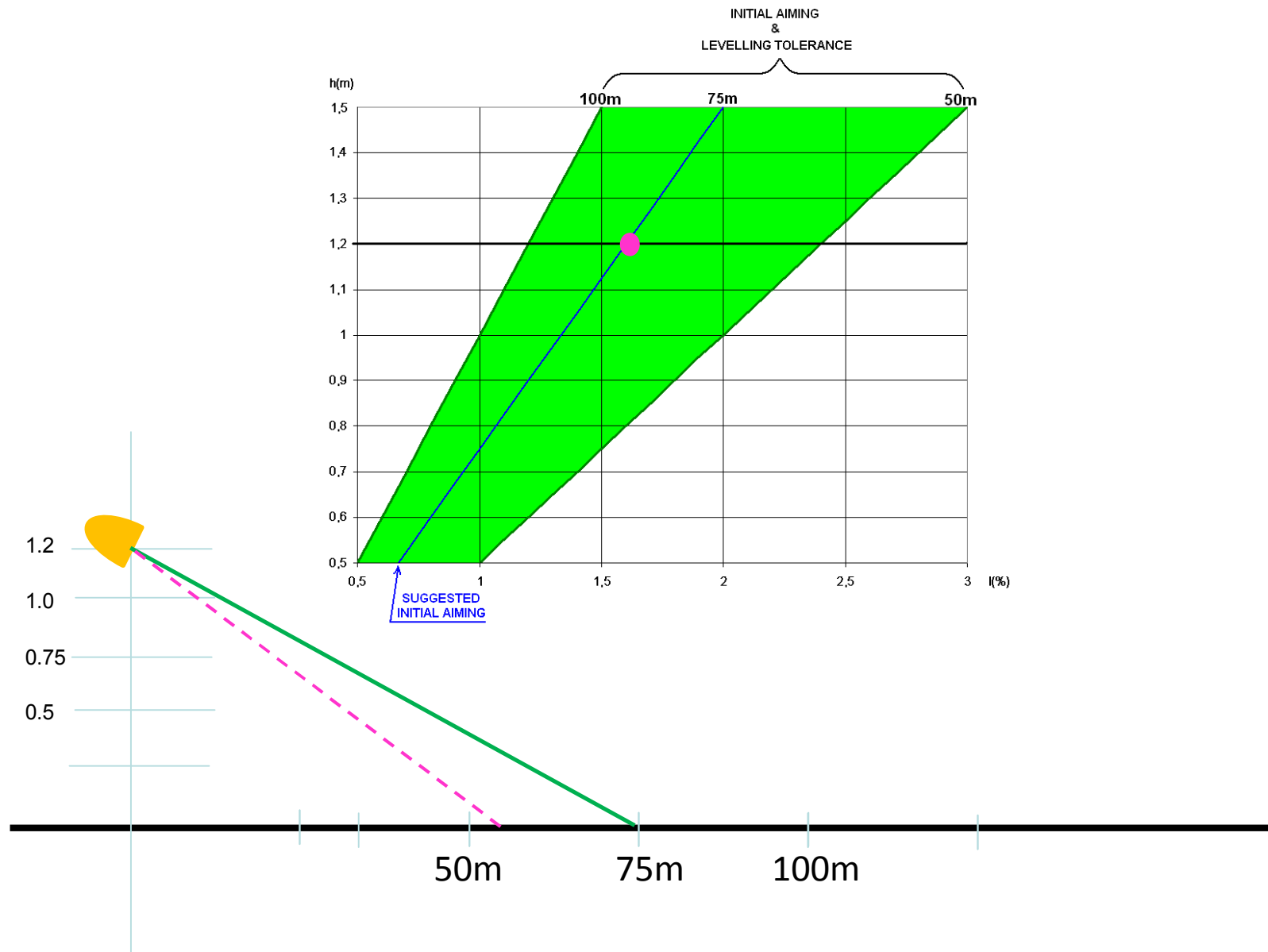
BASE FOR PROPOSAL h(eight) vs. I(nclination)

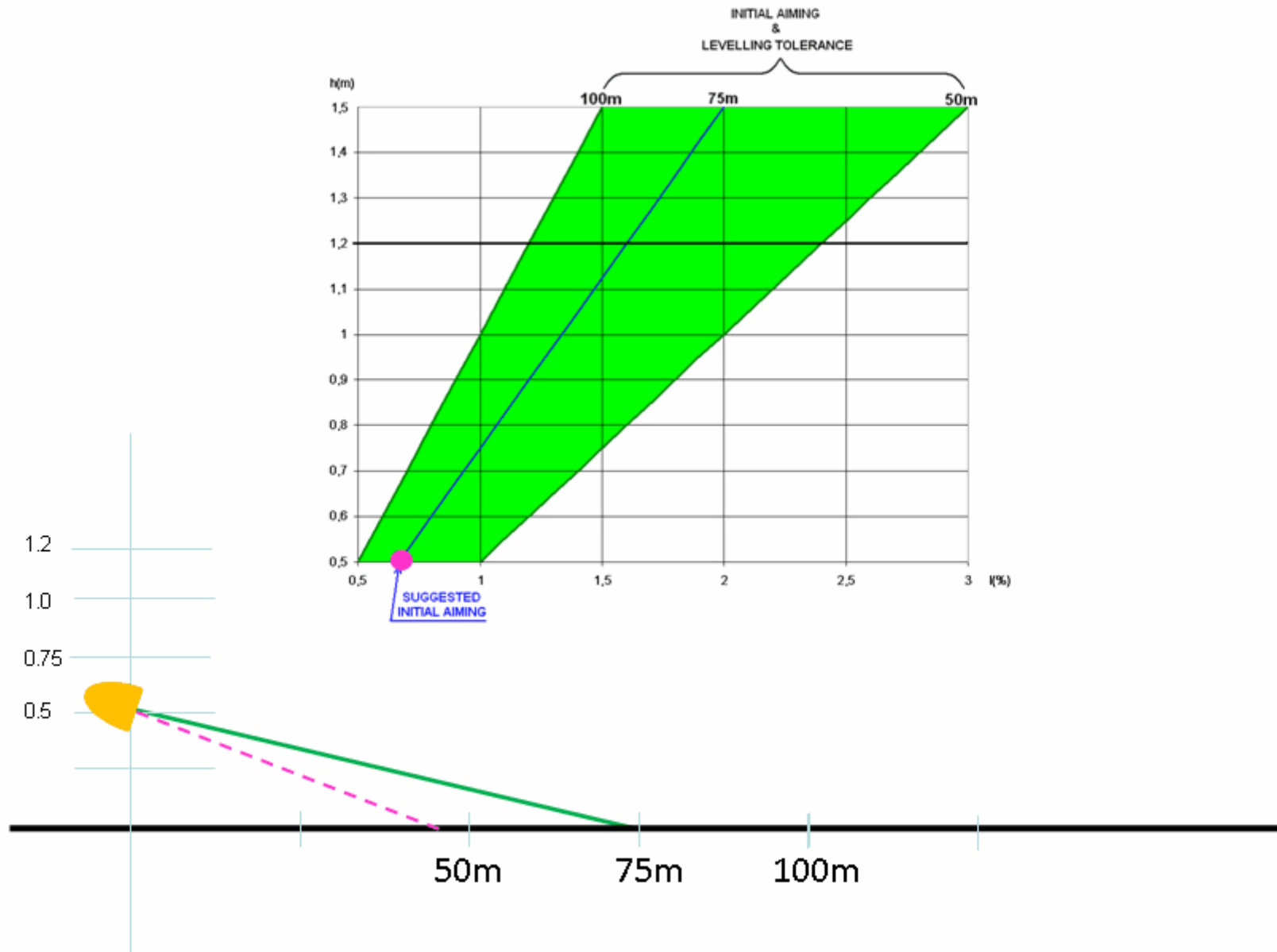








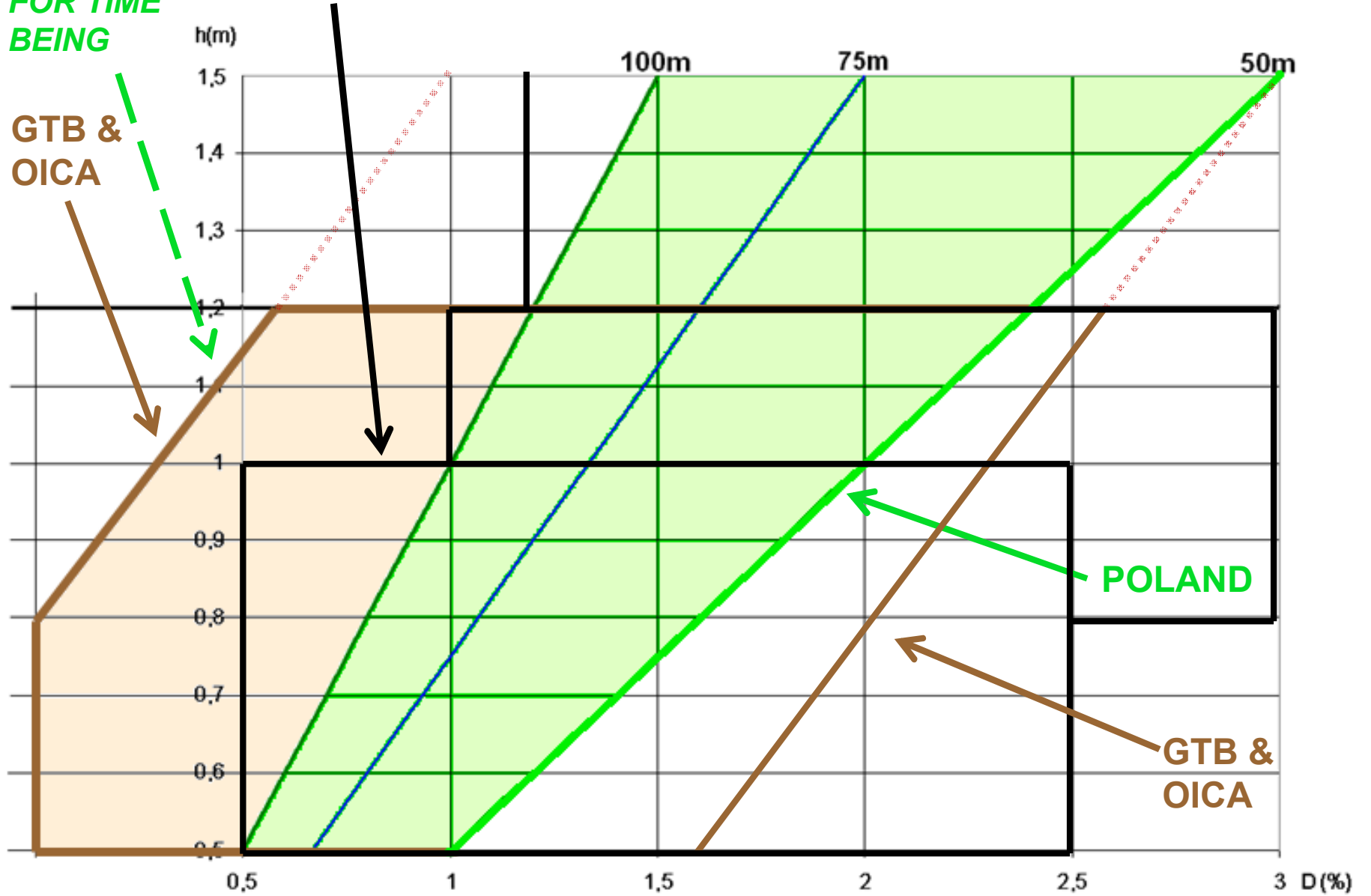




**POLAND
FOR TIME
BEING**

**GTB &
OICA**

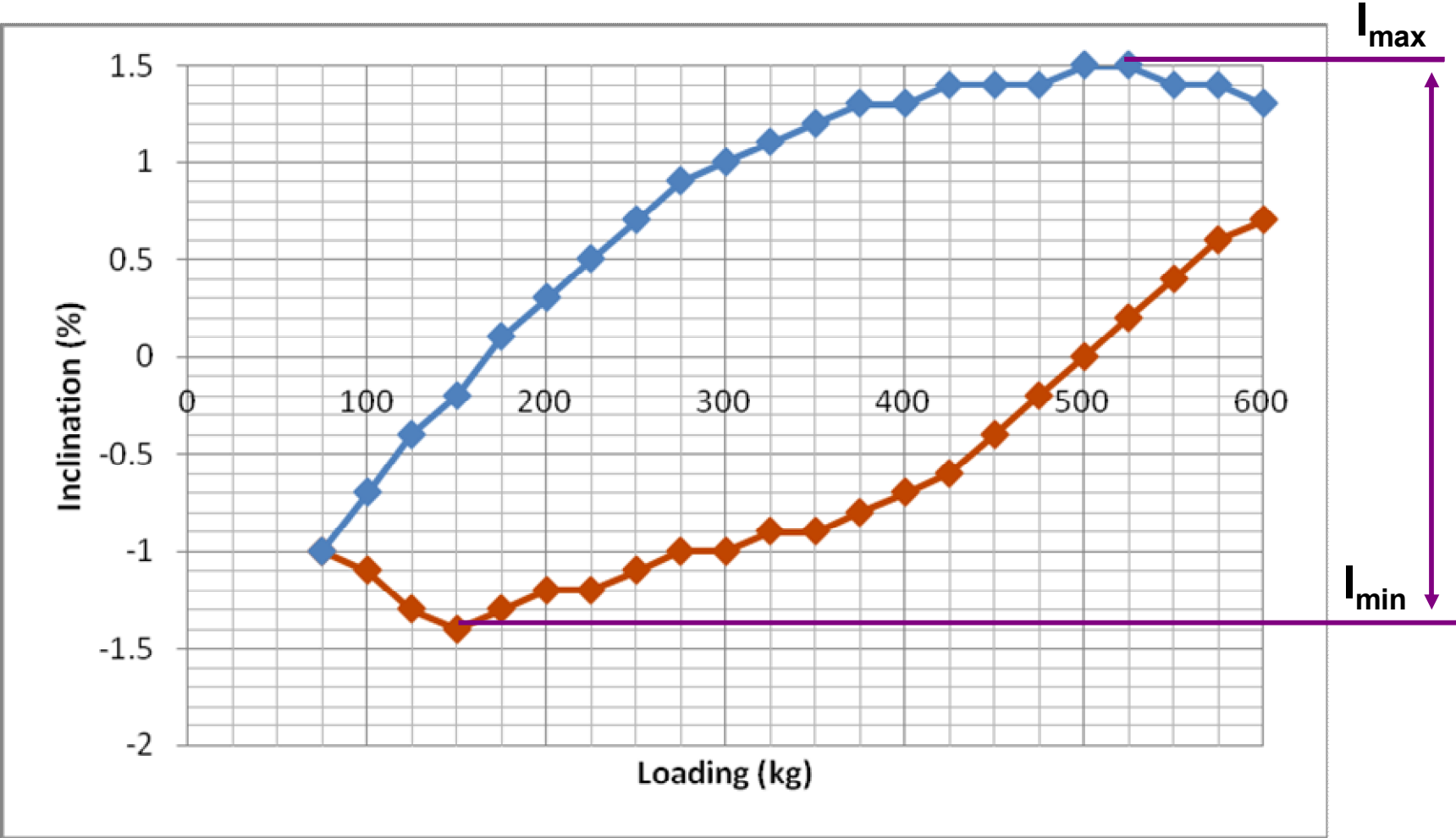
Reg. 48



POLAND

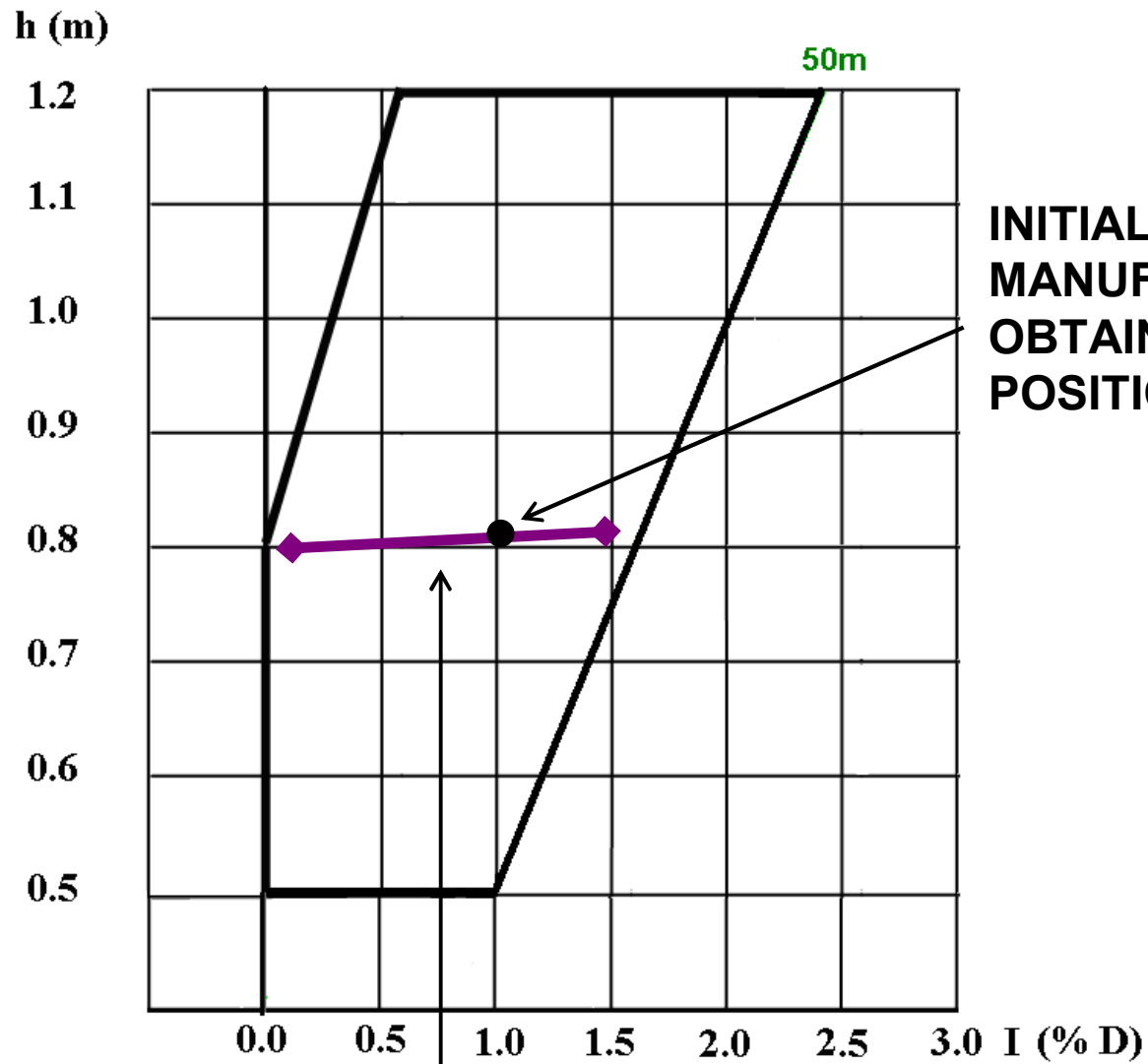
**GTB &
OICA**

ΔI MEASUREMENT PROCEDURE

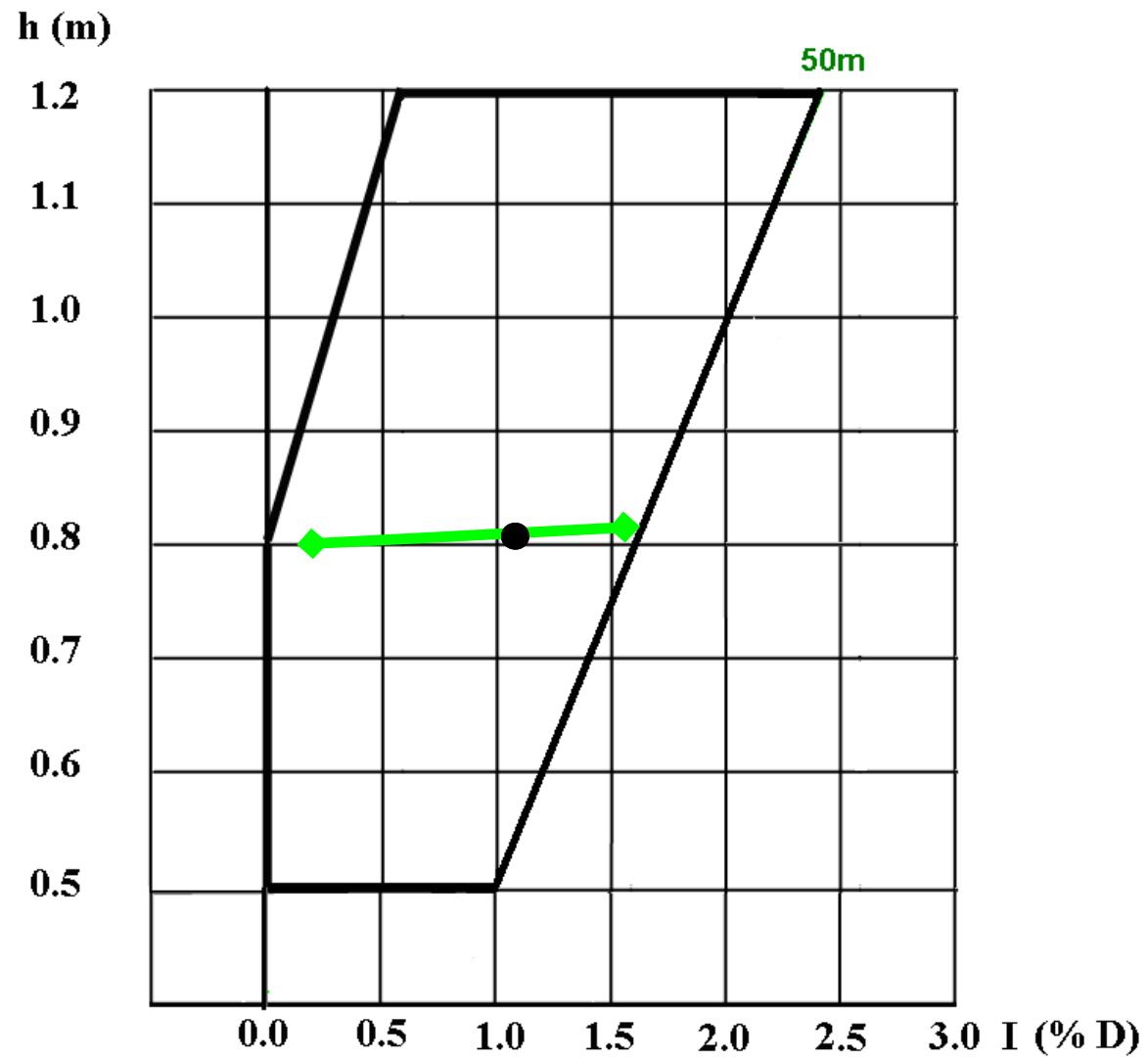


$$\Delta I = I_{max} - I_{min}$$

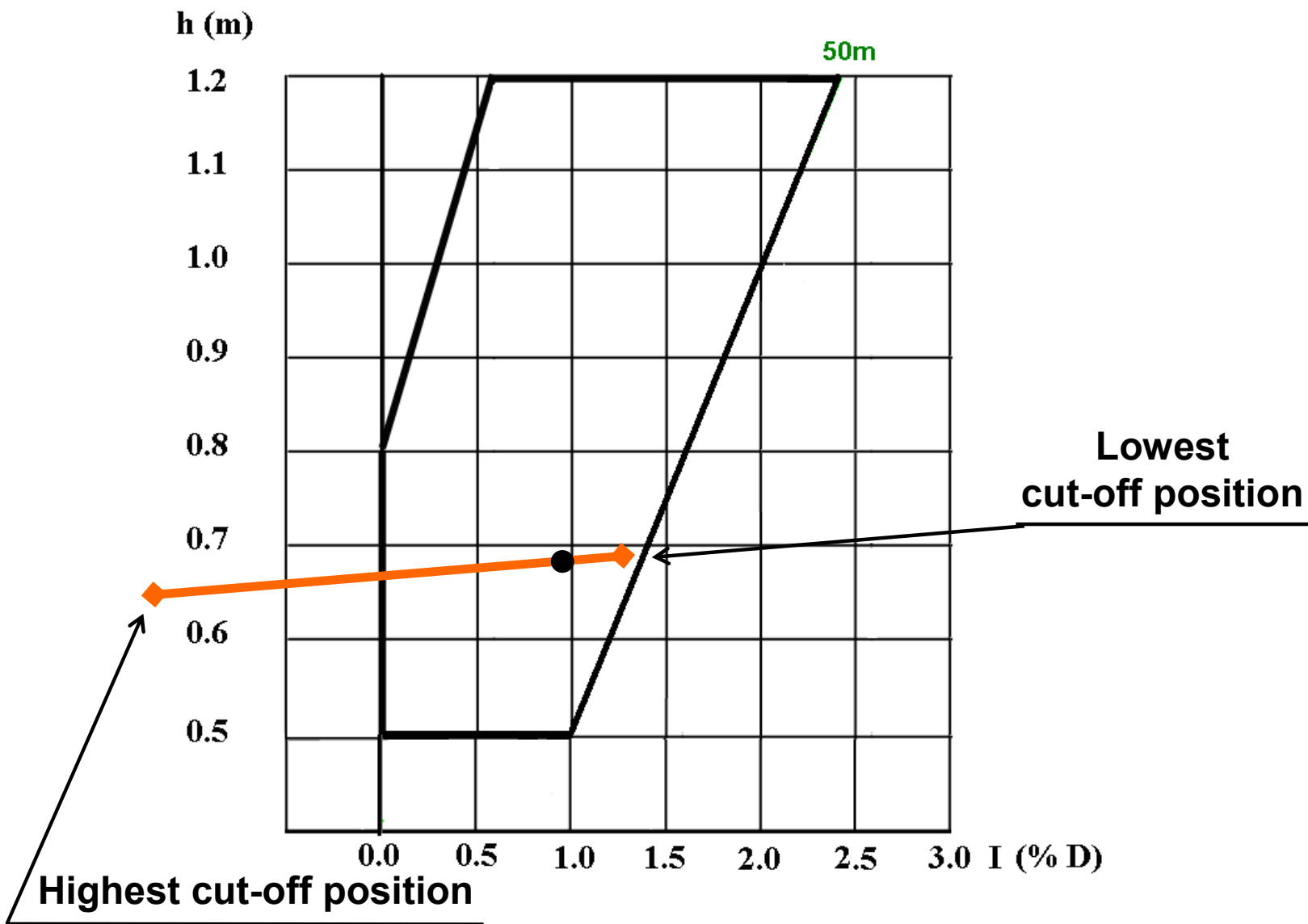
ΔI „PLACEMENT IN TOLLERANCES BOX”

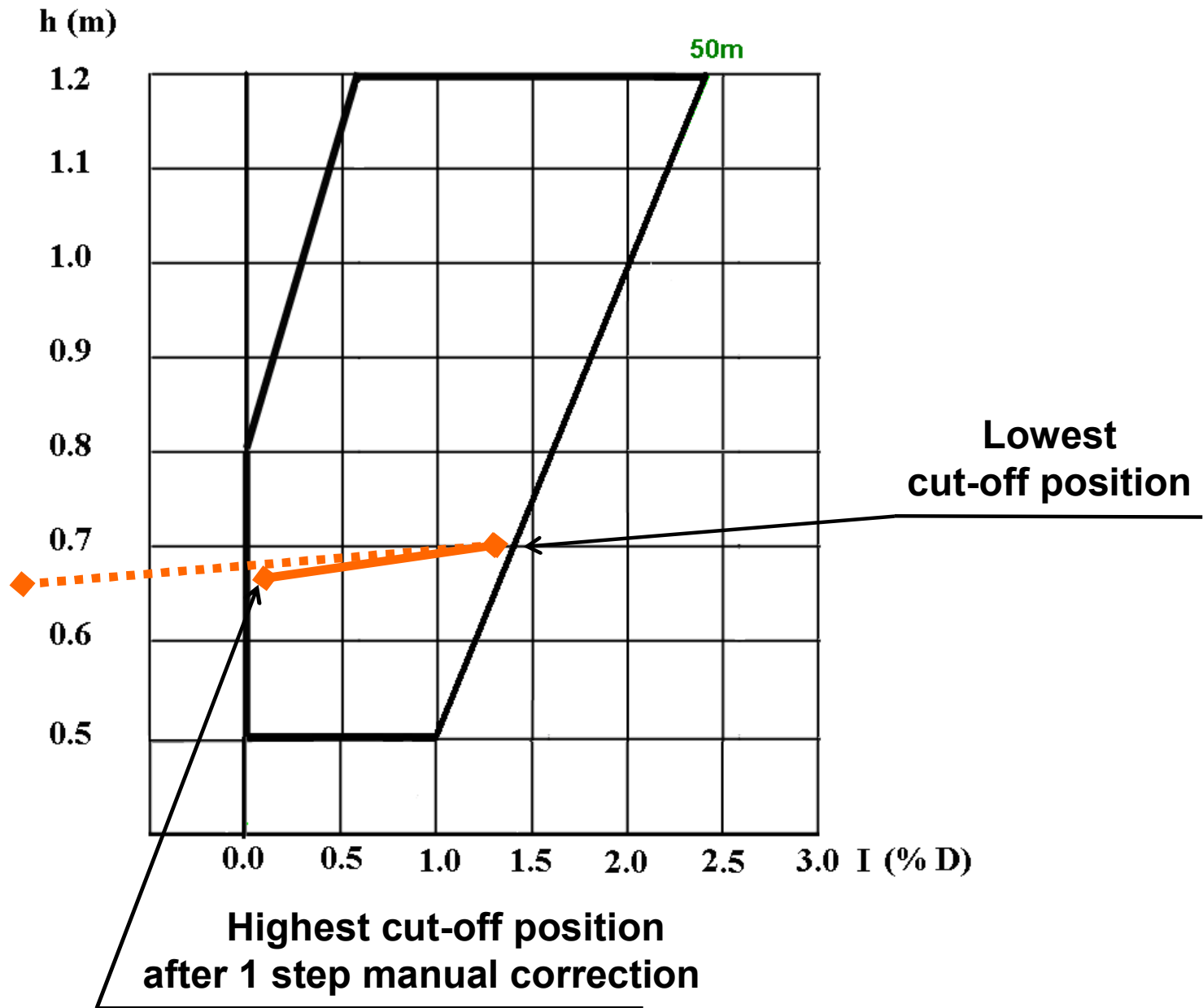


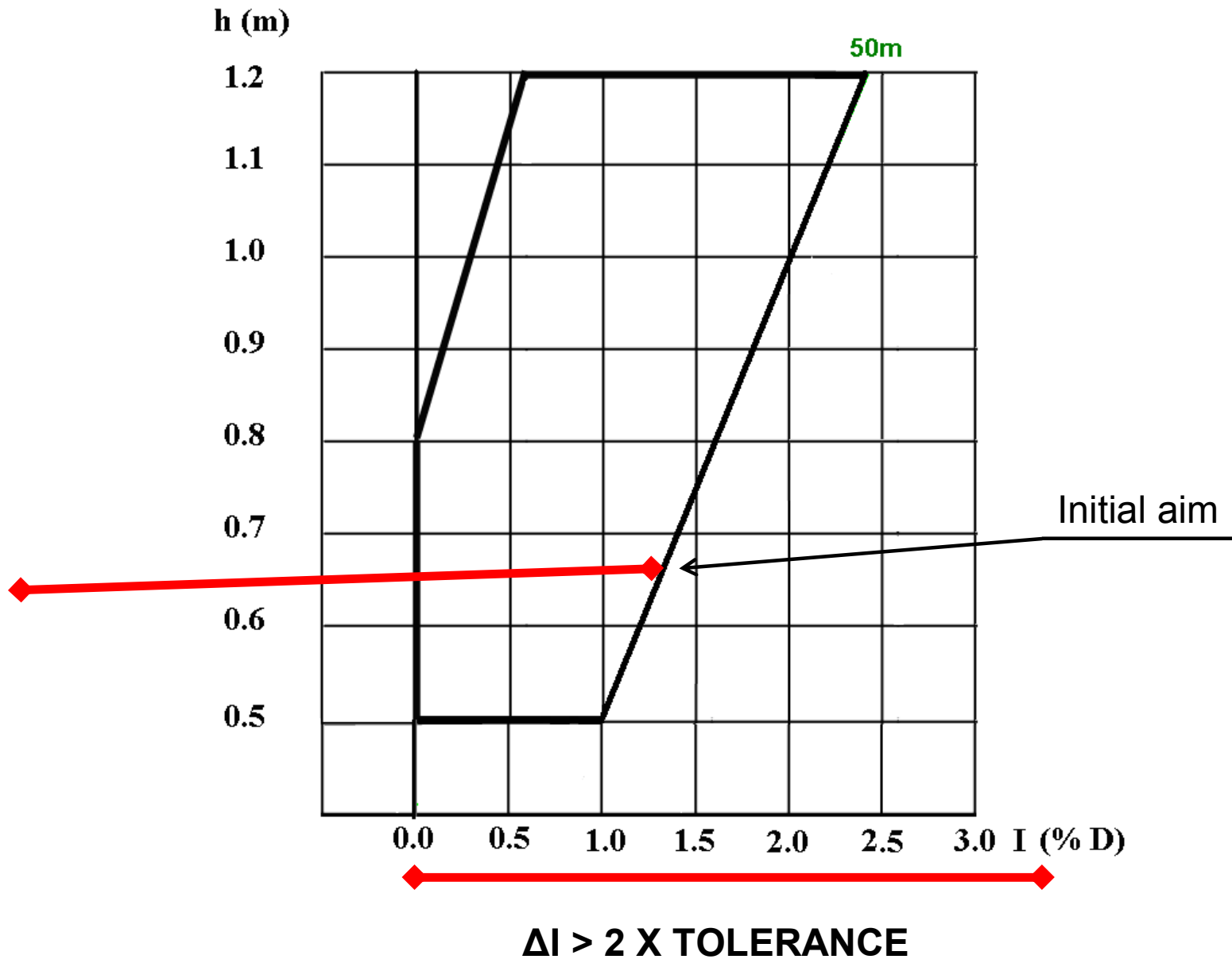
$$\Delta I = I_{\max} - I_{\min}$$

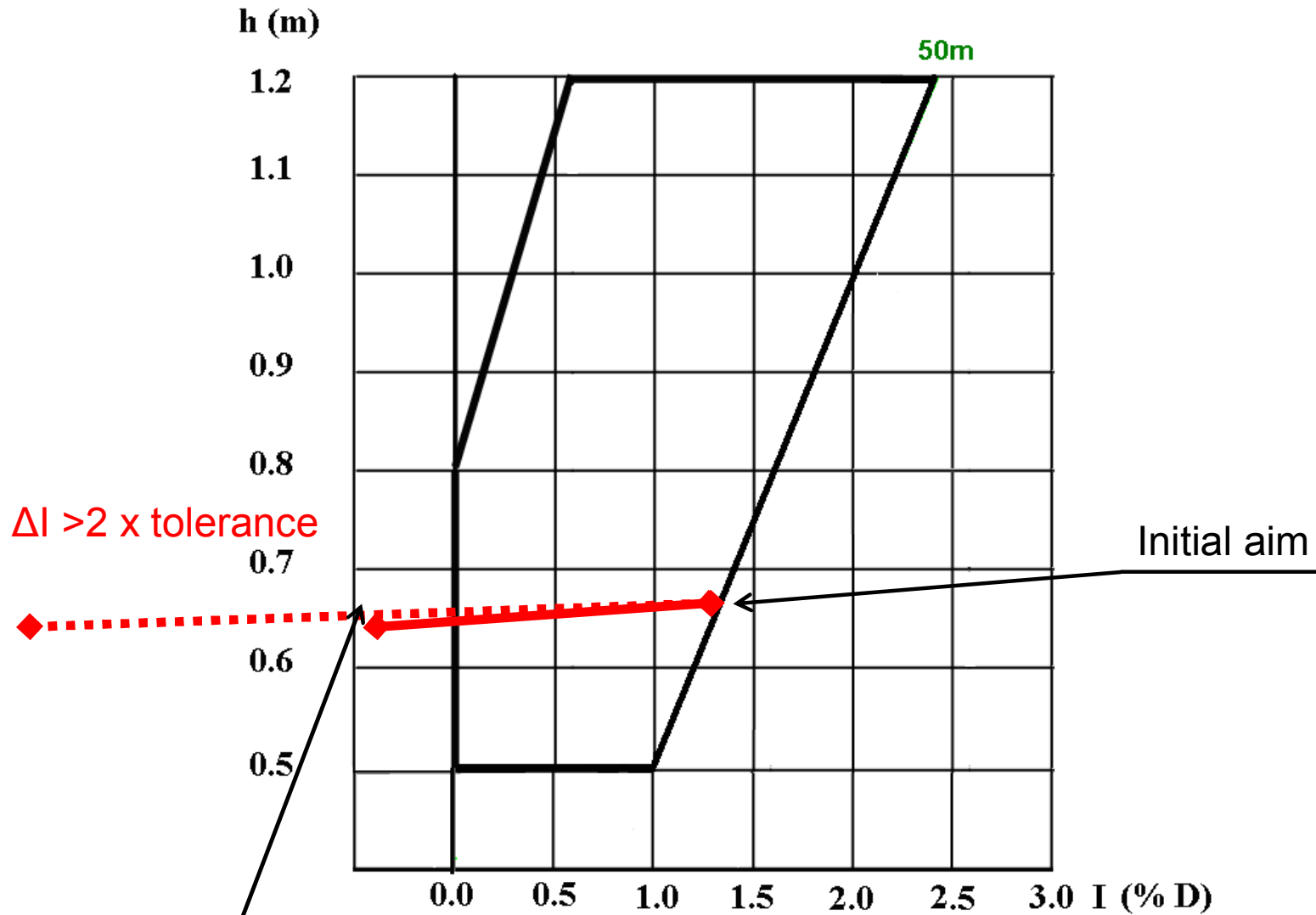


ΔI INSIDE TOLERANCE - NO LEVELLING DEVICE NEEDED







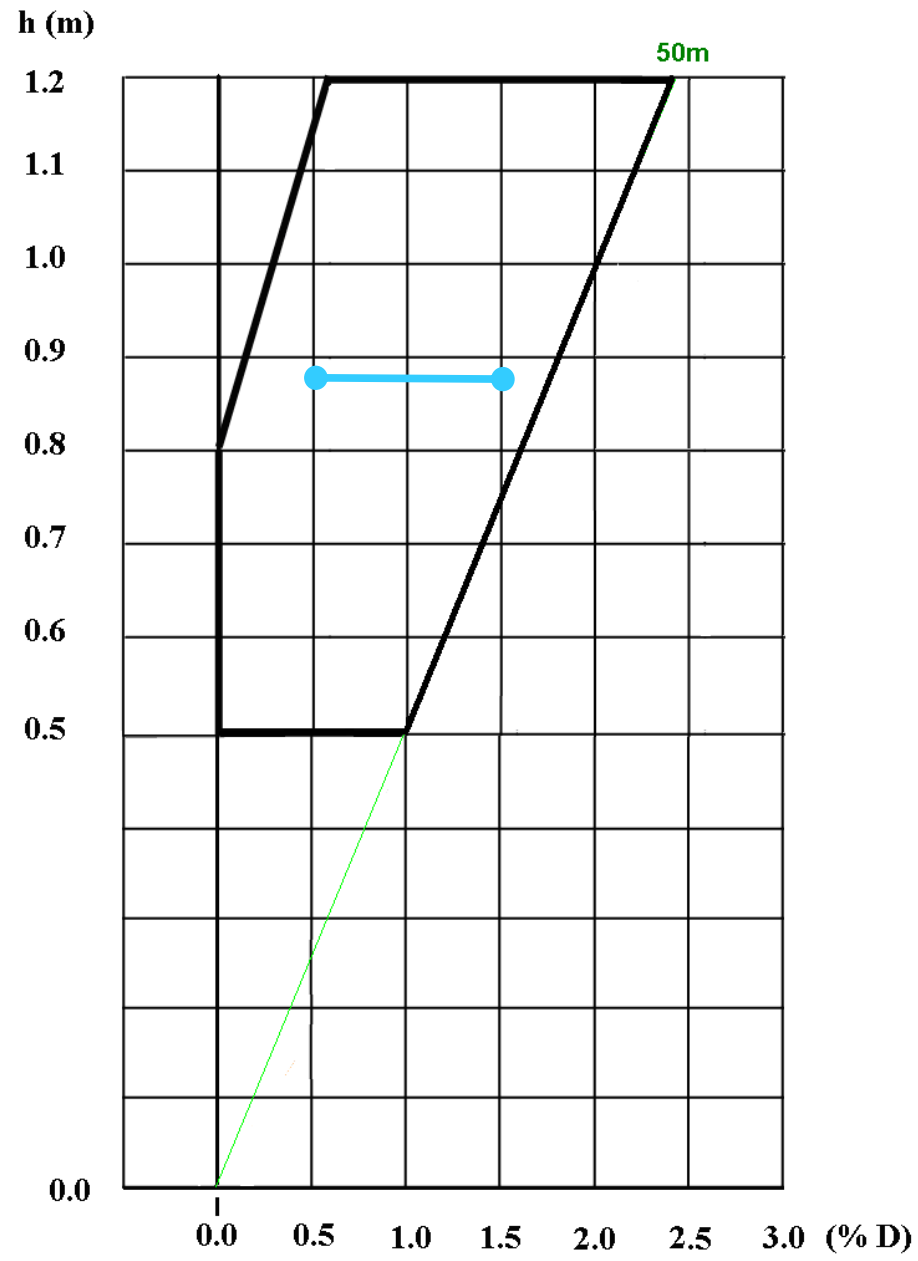


No possibility to correct
with 1 step manual device

AUTOMATIC LEVELLING REQUIRED

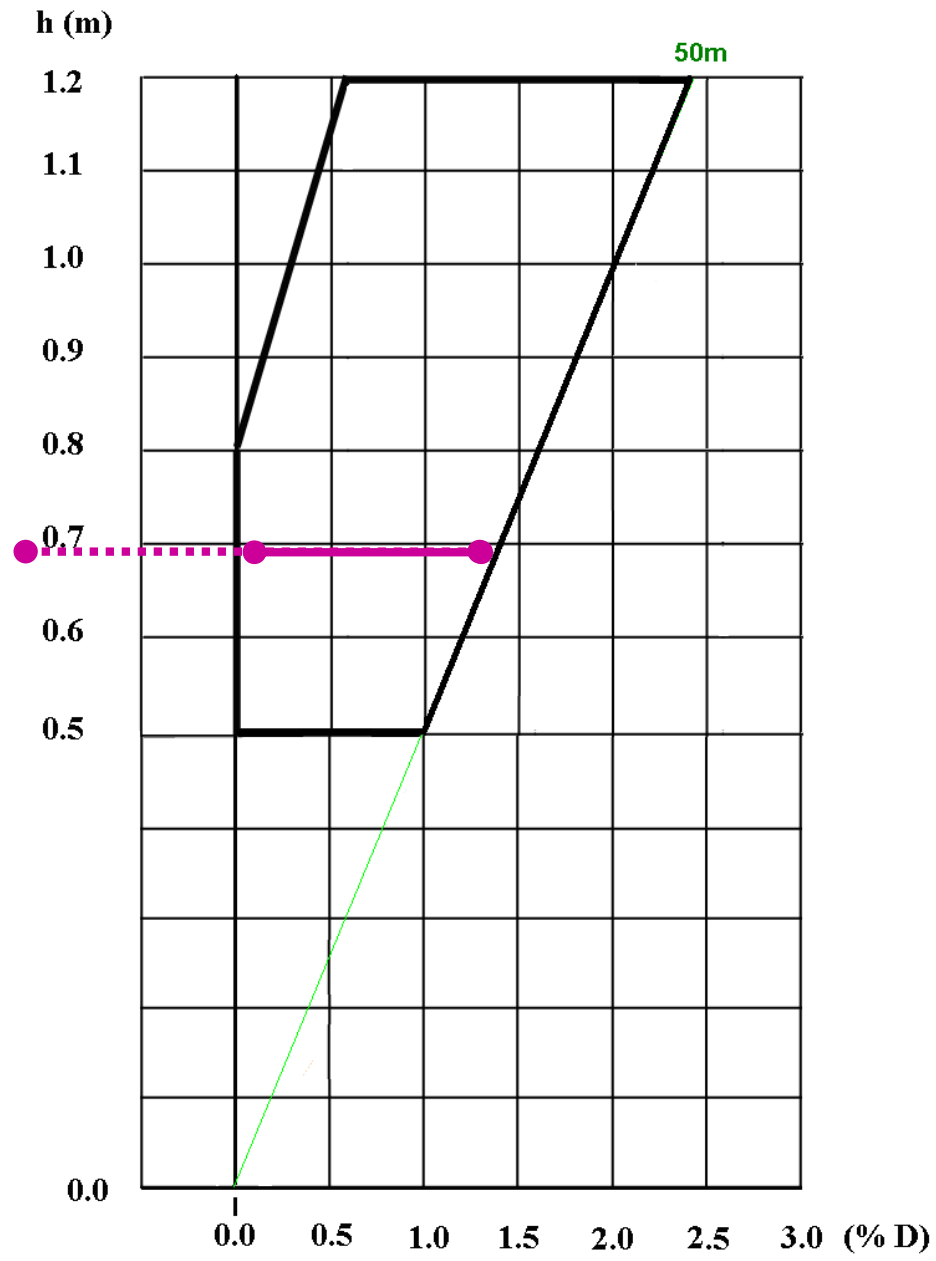
Measurement results

Vehicle	Headlamp height (m)	ΔI (I _{max} - I _{min})
1	0.74	1.6
2	0.70	0.9
3	0.64	2.1
4	0.84	1.2
5	0.82	1.4
6	0.88	1
7	0.83	1.1
8	0.68	1.7
9	0.87	1.7
10	0.67	3.3
11	0.80	2.1
12	0.74	2
13	0.89	2.3
14	0.79	1.3
15	0.66	1.7
16	0.69	2.4
17	0.75	1.6
18	0.73	2.1
19	0.72	2
20	0.70	1.6
21	0.76	2.2



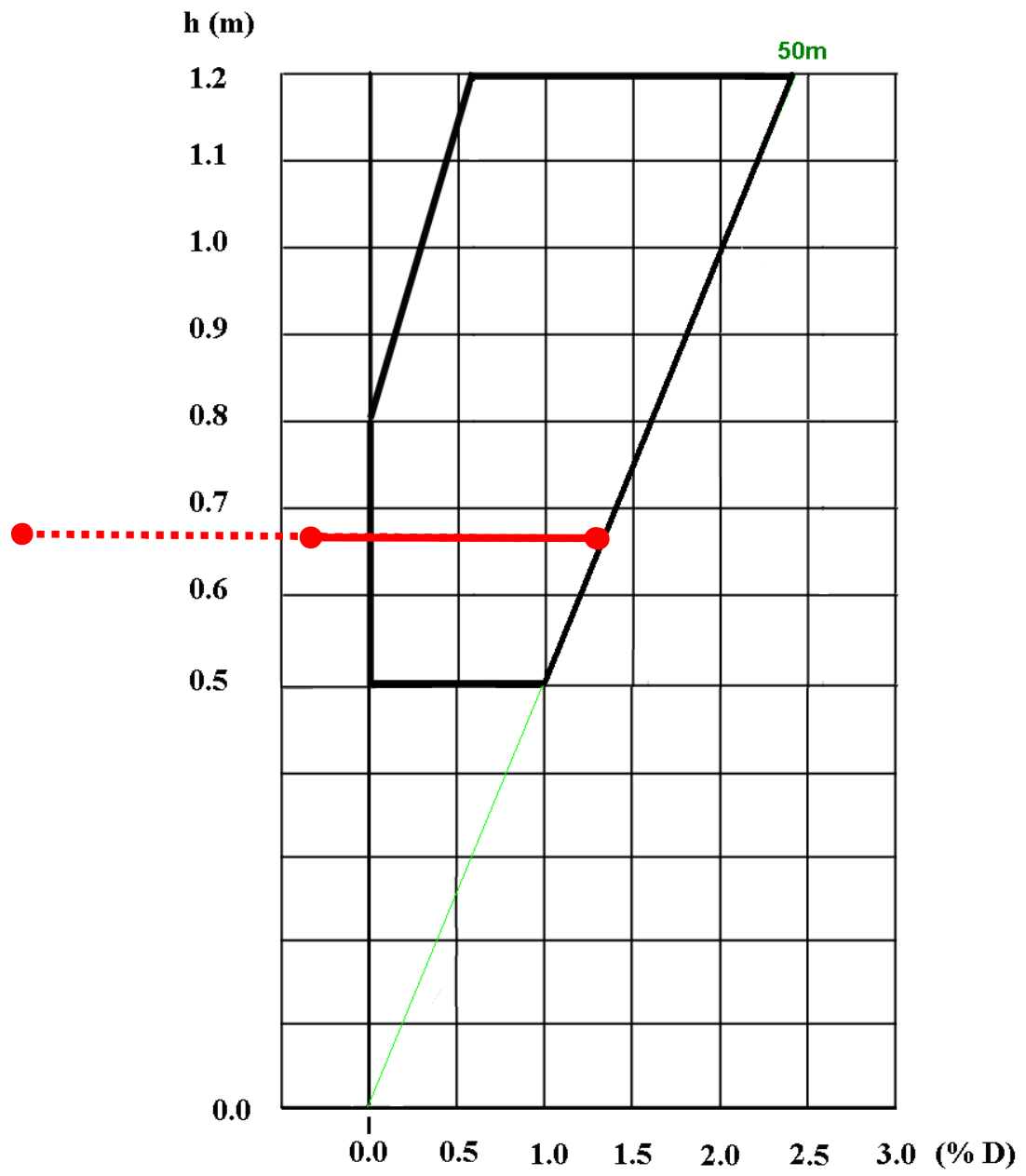
Example No 6

No levelling device
needed



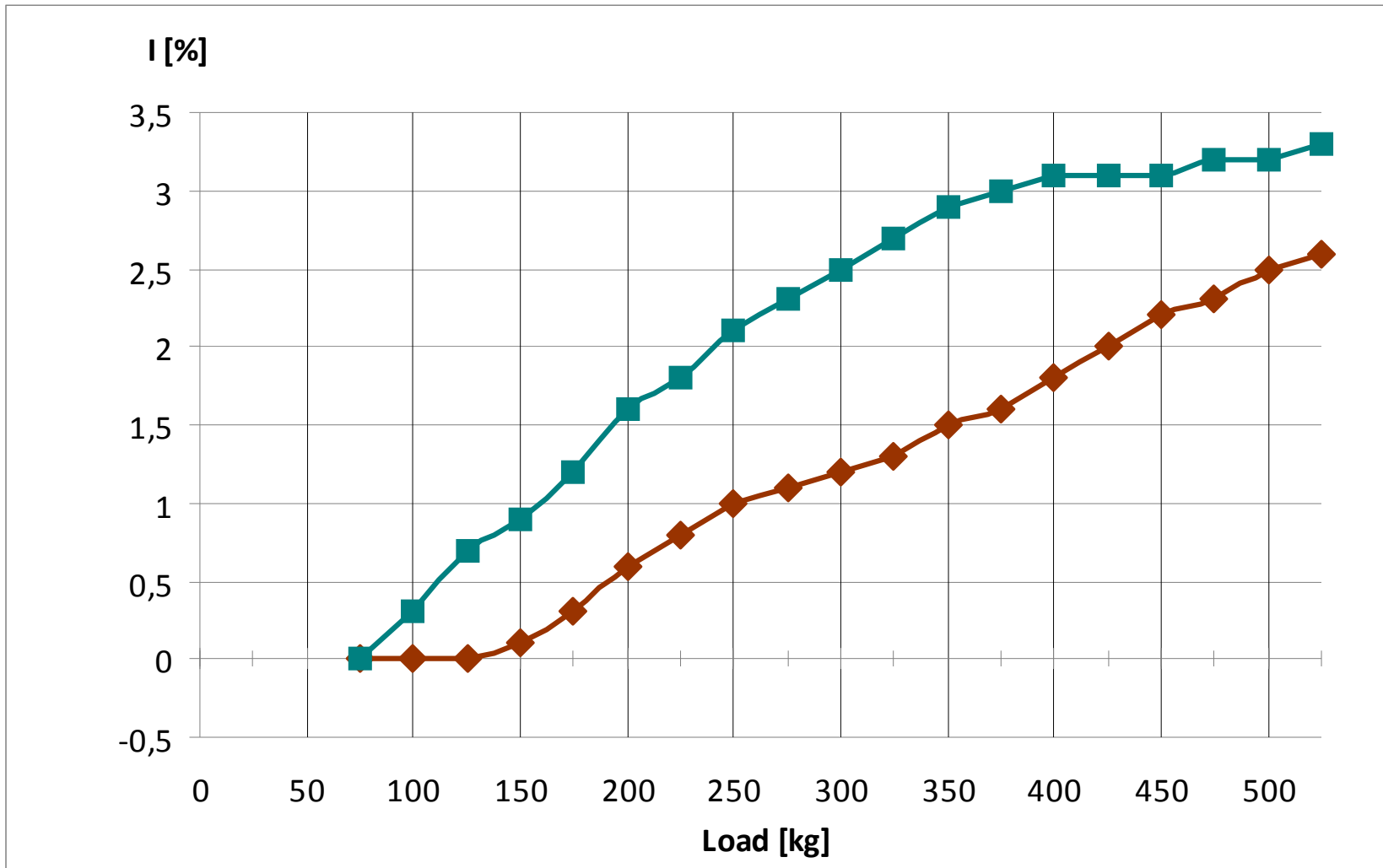
Example No 16

Inside tolerances with
two position manual
device

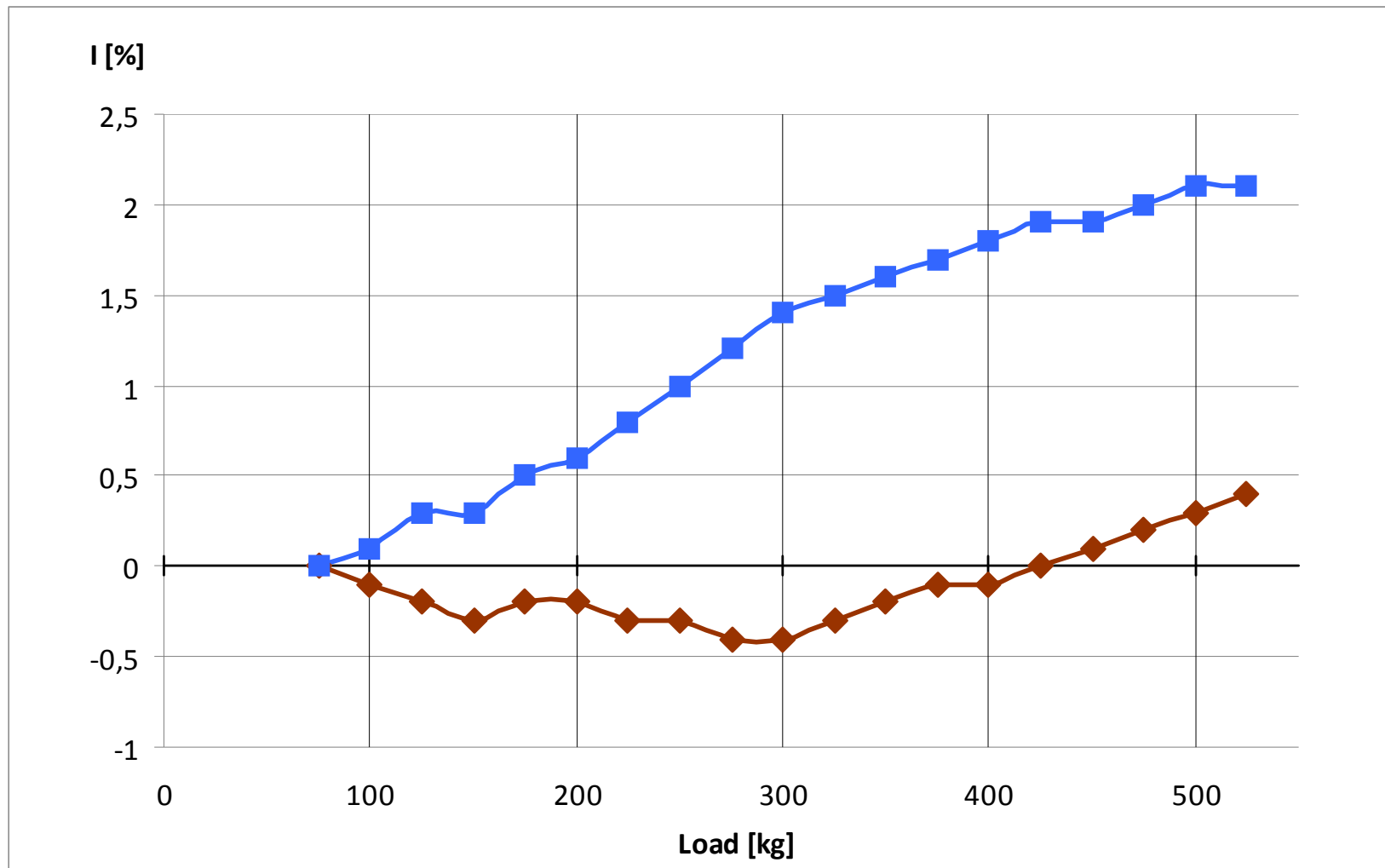


Example No 10

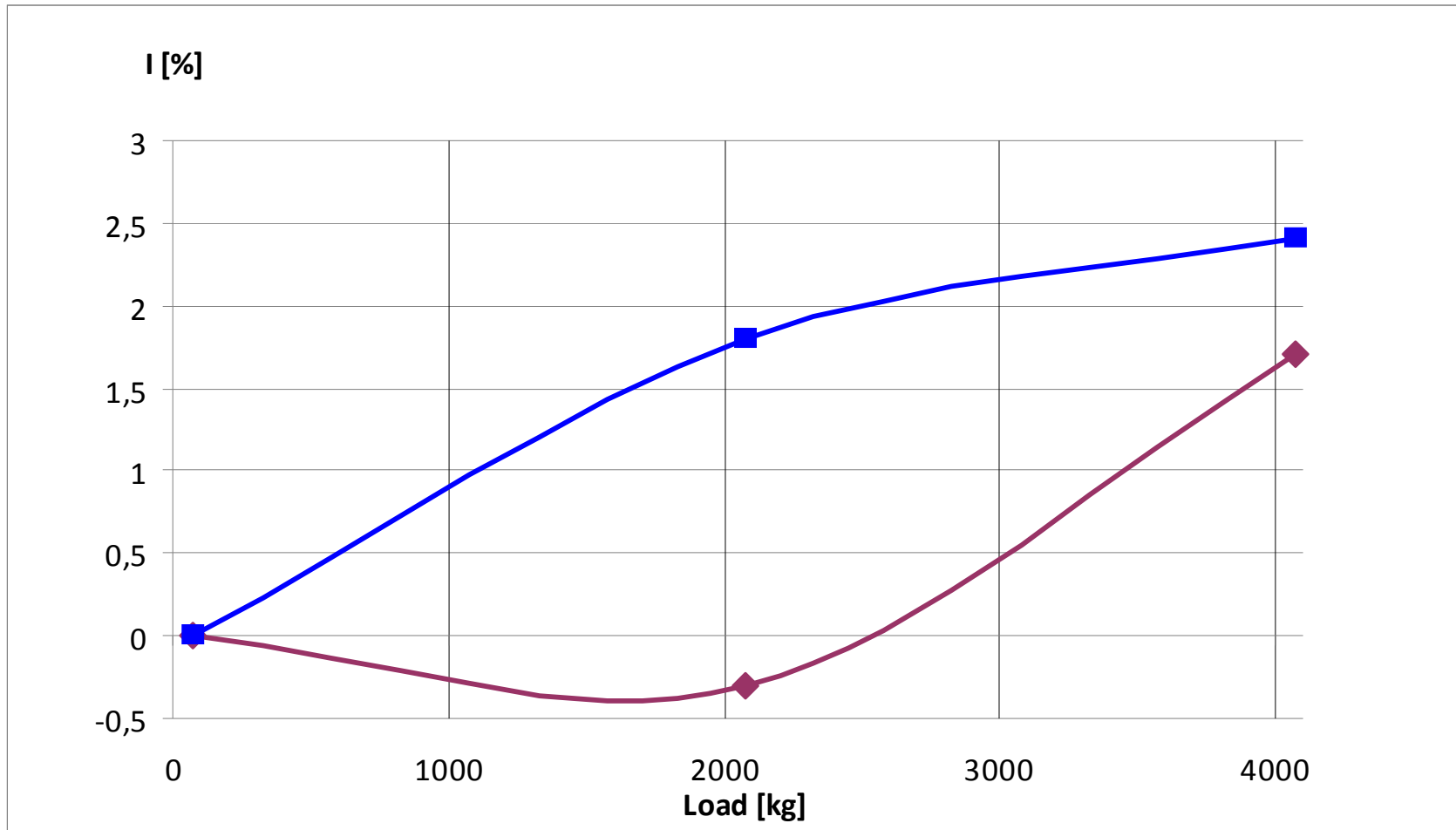
**Automatic levelling
needed**



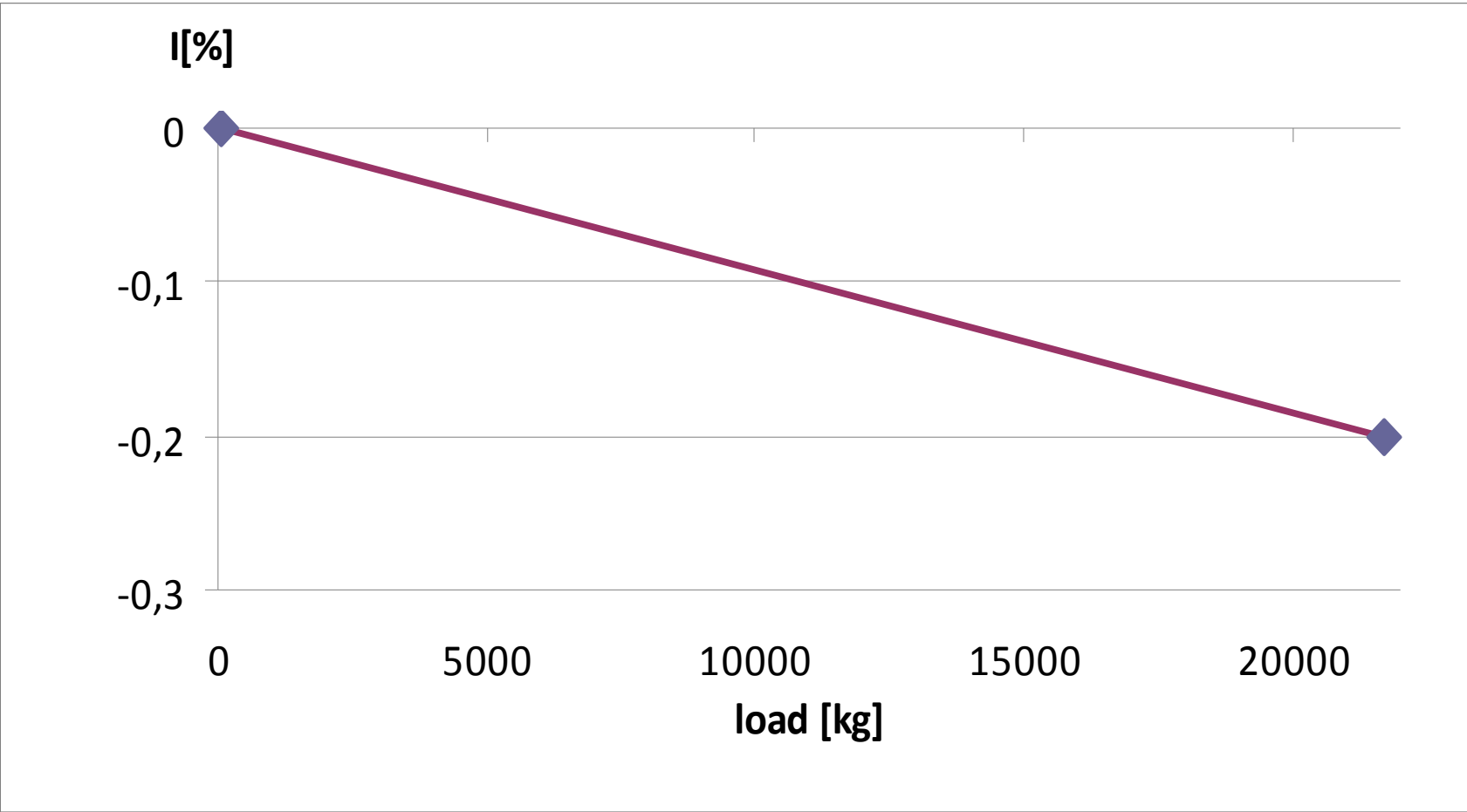
Real example - passenger car



Real example - passenger car



Real example - truck. Spring suspension



Real example - heavy truck. Pneumatic suspension



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