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**PROJETO DE ESCORAMENTO DE VALAS
ATRAVÉS DE ÁBACOS**

Dissertação apresentada à Escola
Politécnica da Universidade de
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título de Mestre em Engenharia.

(Apêndice II)

São Paulo
1997

**ÁBACOS PARA A DETERMINAÇÃO
DOS ESFORÇOS SOLICITANTES EM
ESCORAMENTO COM DOIS NÍVEIS
DE ESTRONCAS**

**ÁBACOS PARA A DETERMINAÇÃO DOS
ESFORÇOS SOLICITANTES EM
ESCORAMENTO COM DOIS NÍVEIS DE
ESTRONCAS**

ÁBACOS ES2b

EMPUXO RETIFICADO

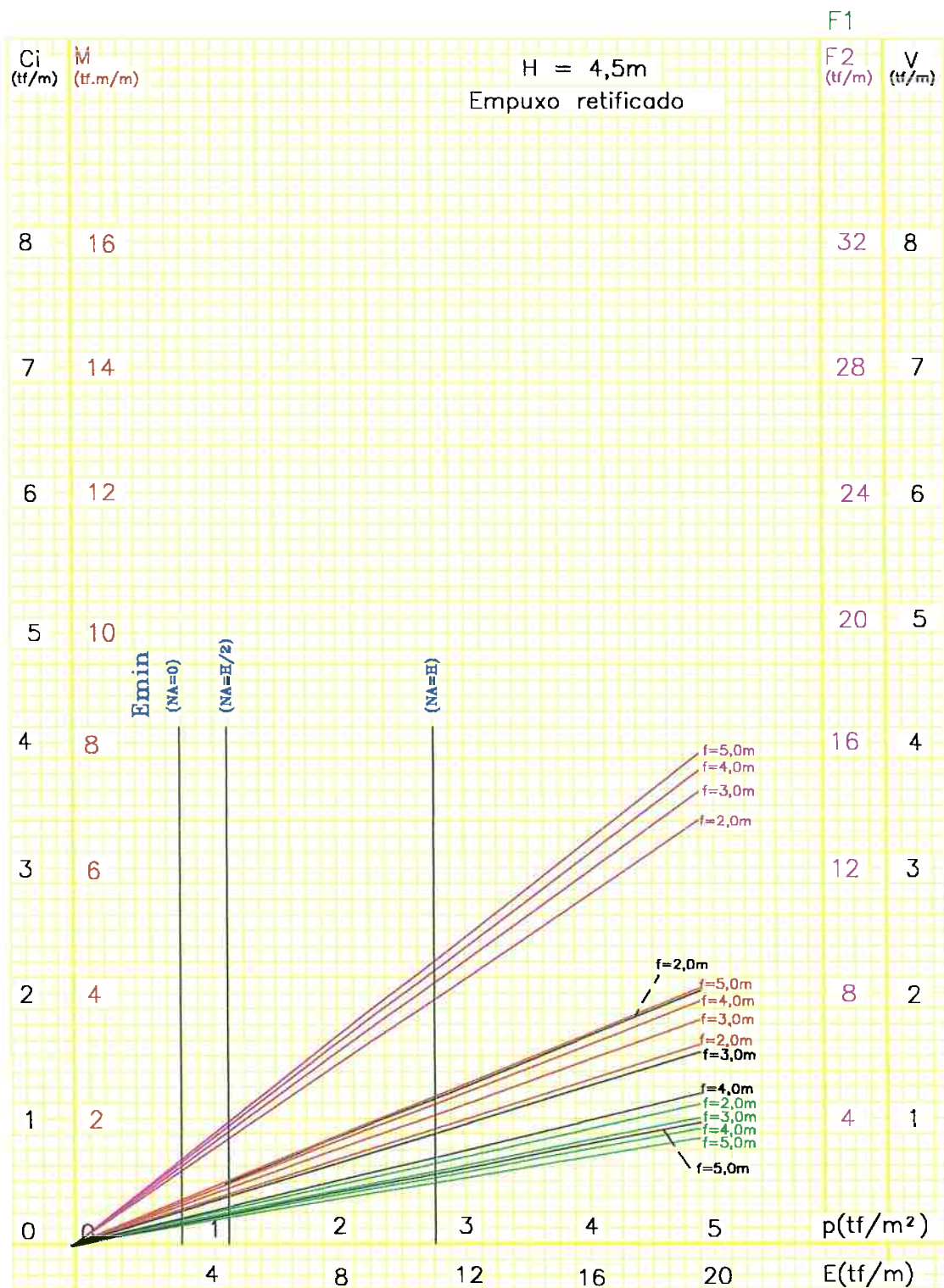


Fig. II.1- Ábaco tipo ES2a

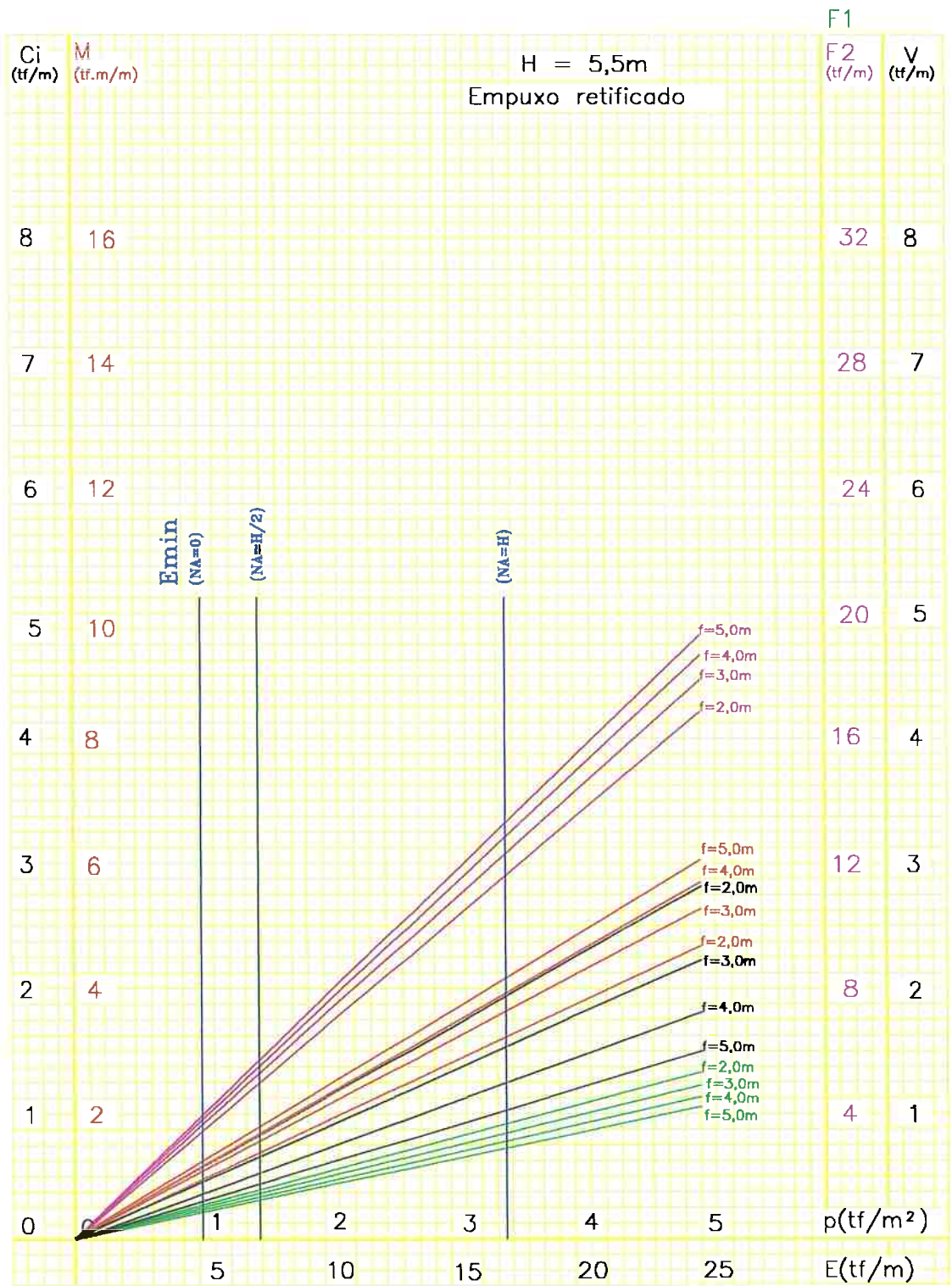


Fig. II.2- Ábaco tipo ES2a

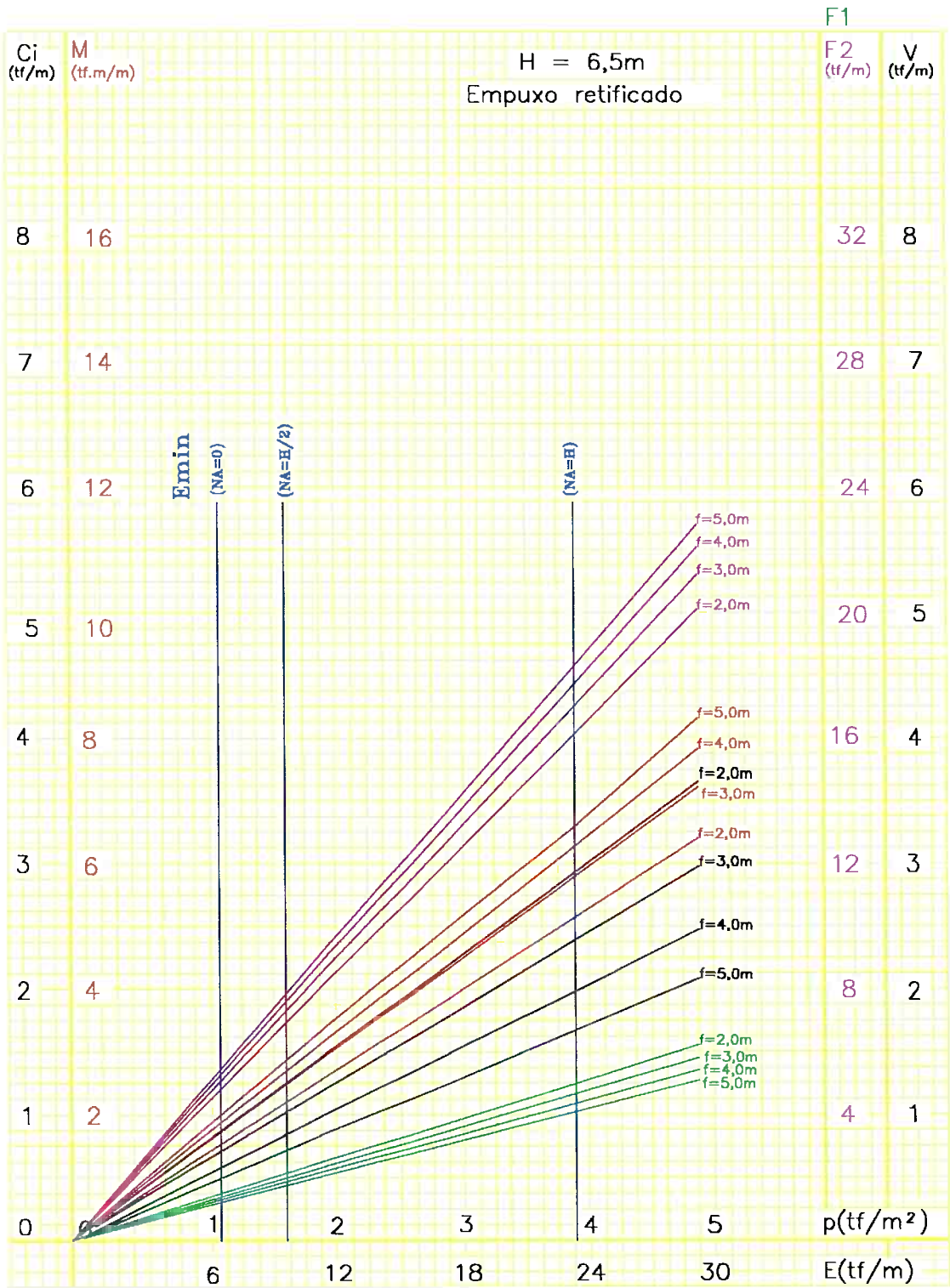


Fig. II.3- Ábaco tipo ES2a

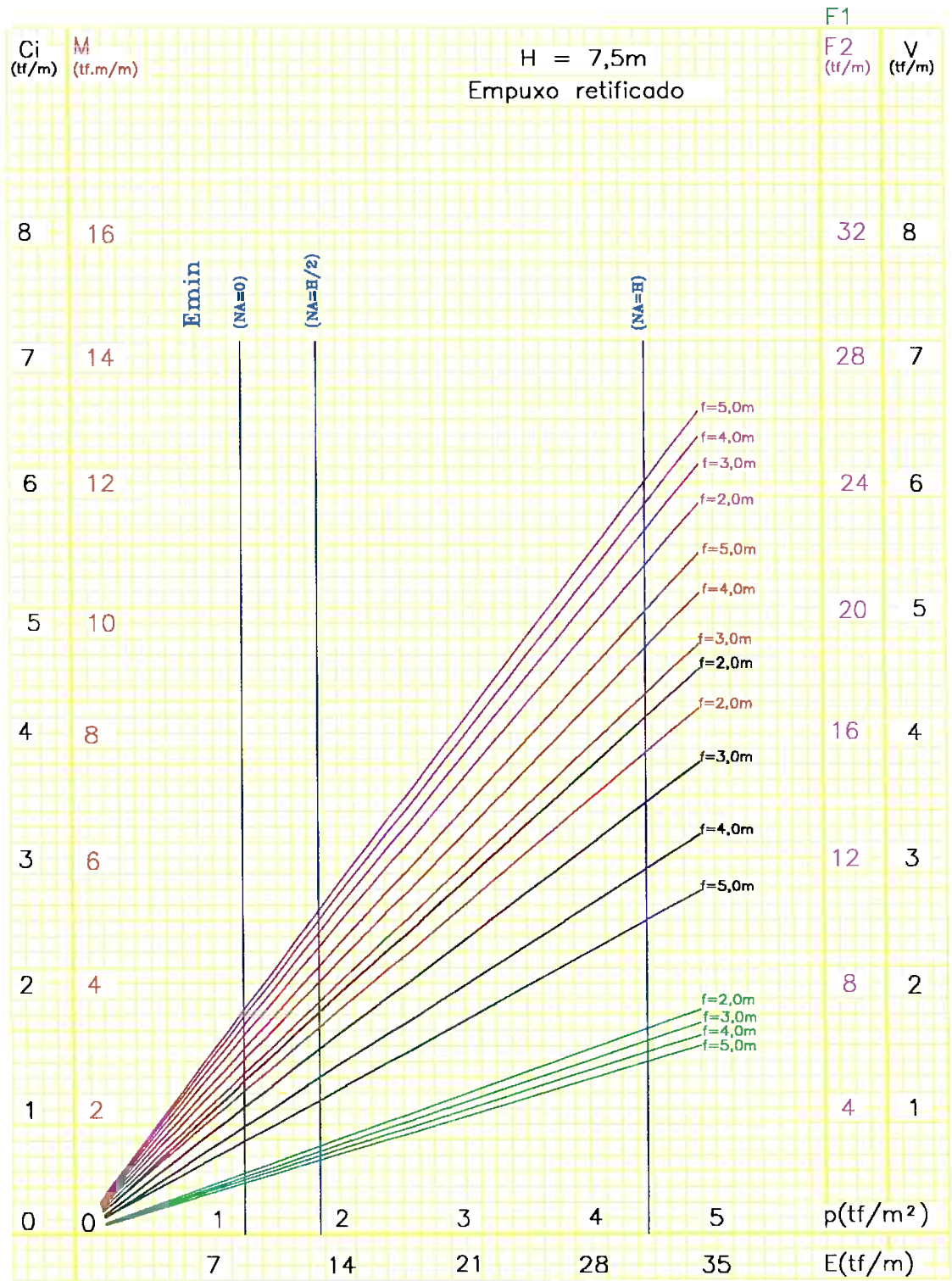


Fig. II.4- Ábaco tipo ES2a

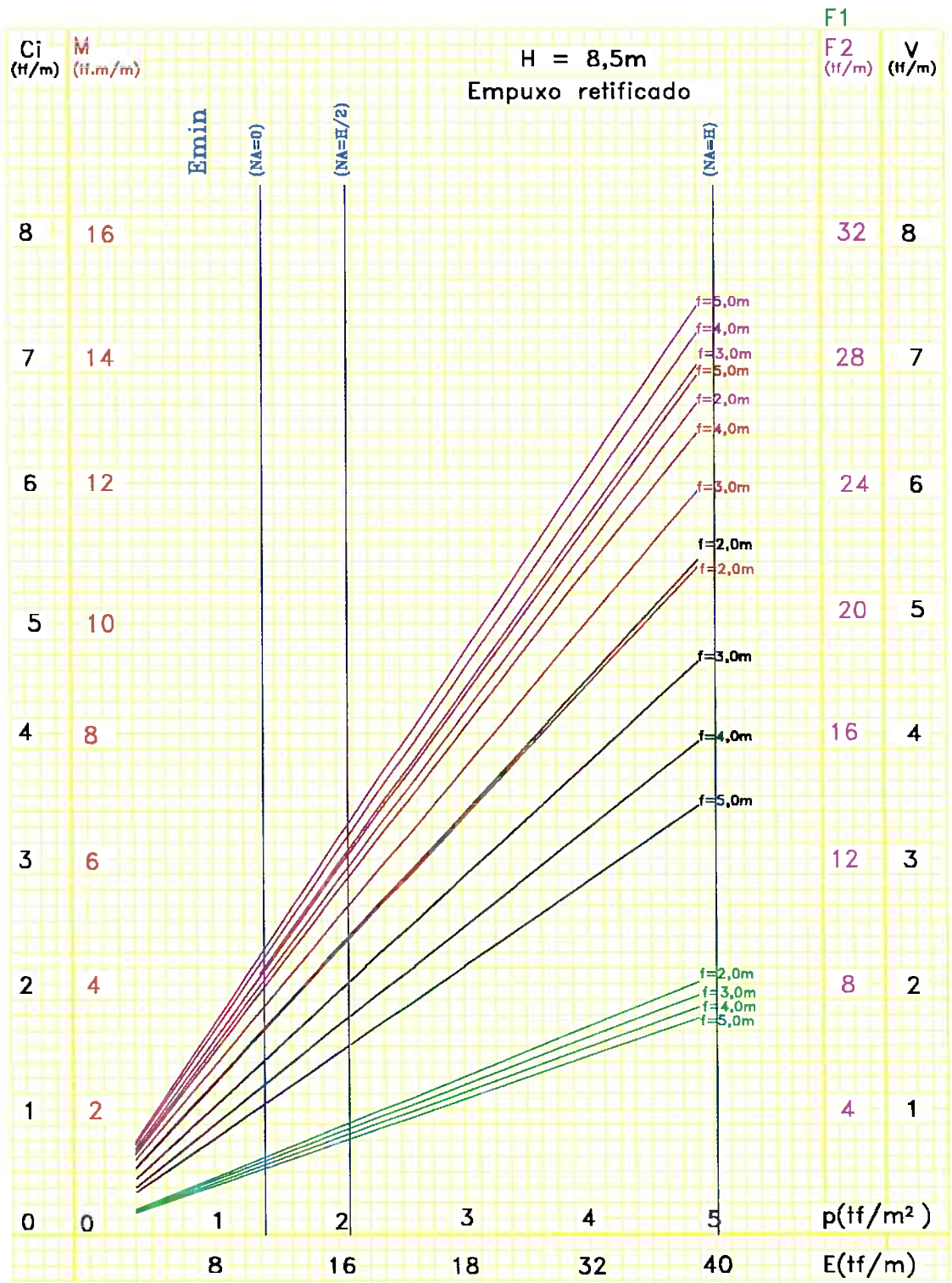


Fig. II.5- Ábaco tipo ES2a

EMPUXO TRIANGULAR

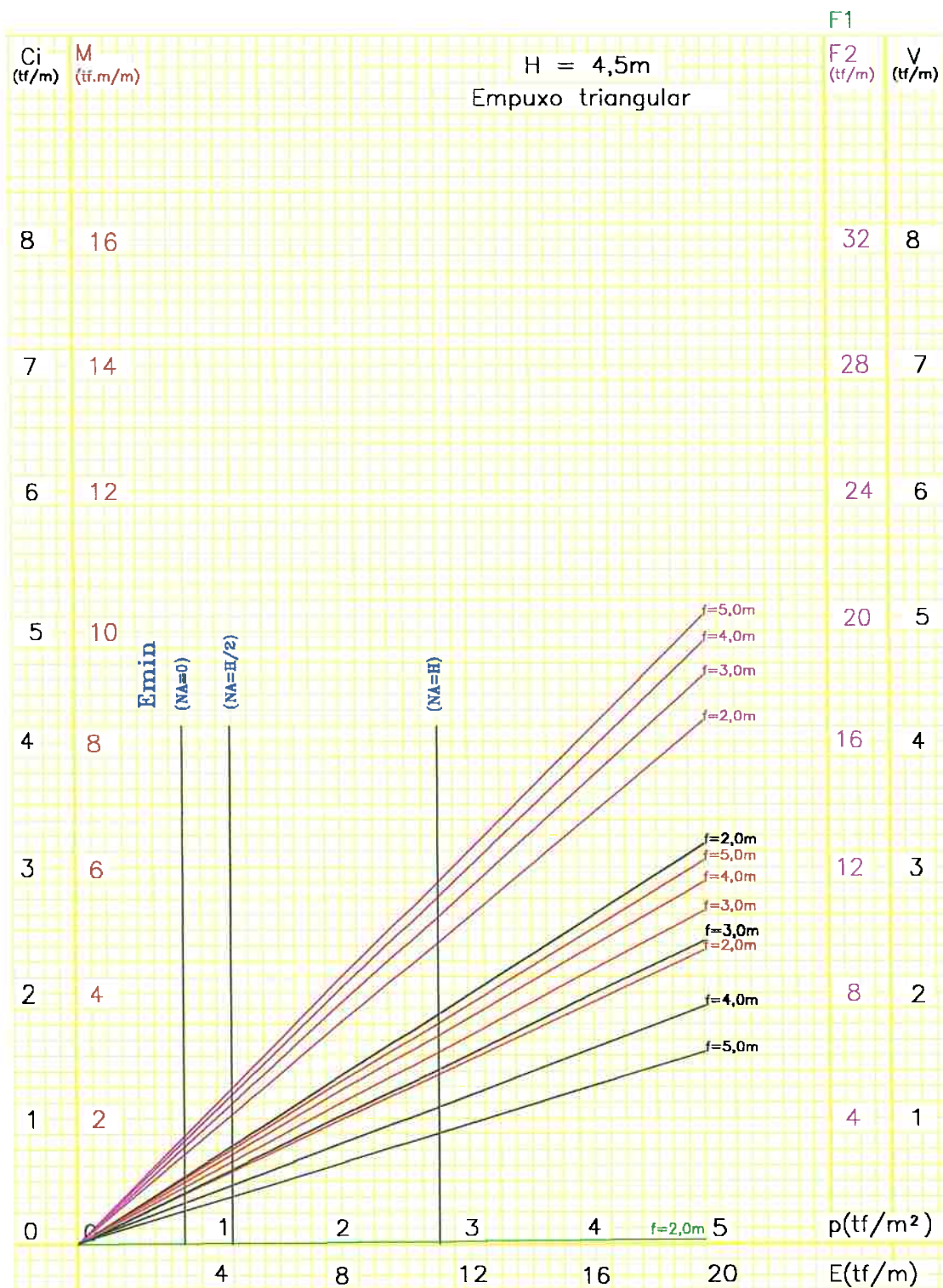


Fig. II.6- Ábaco tipo ES2a

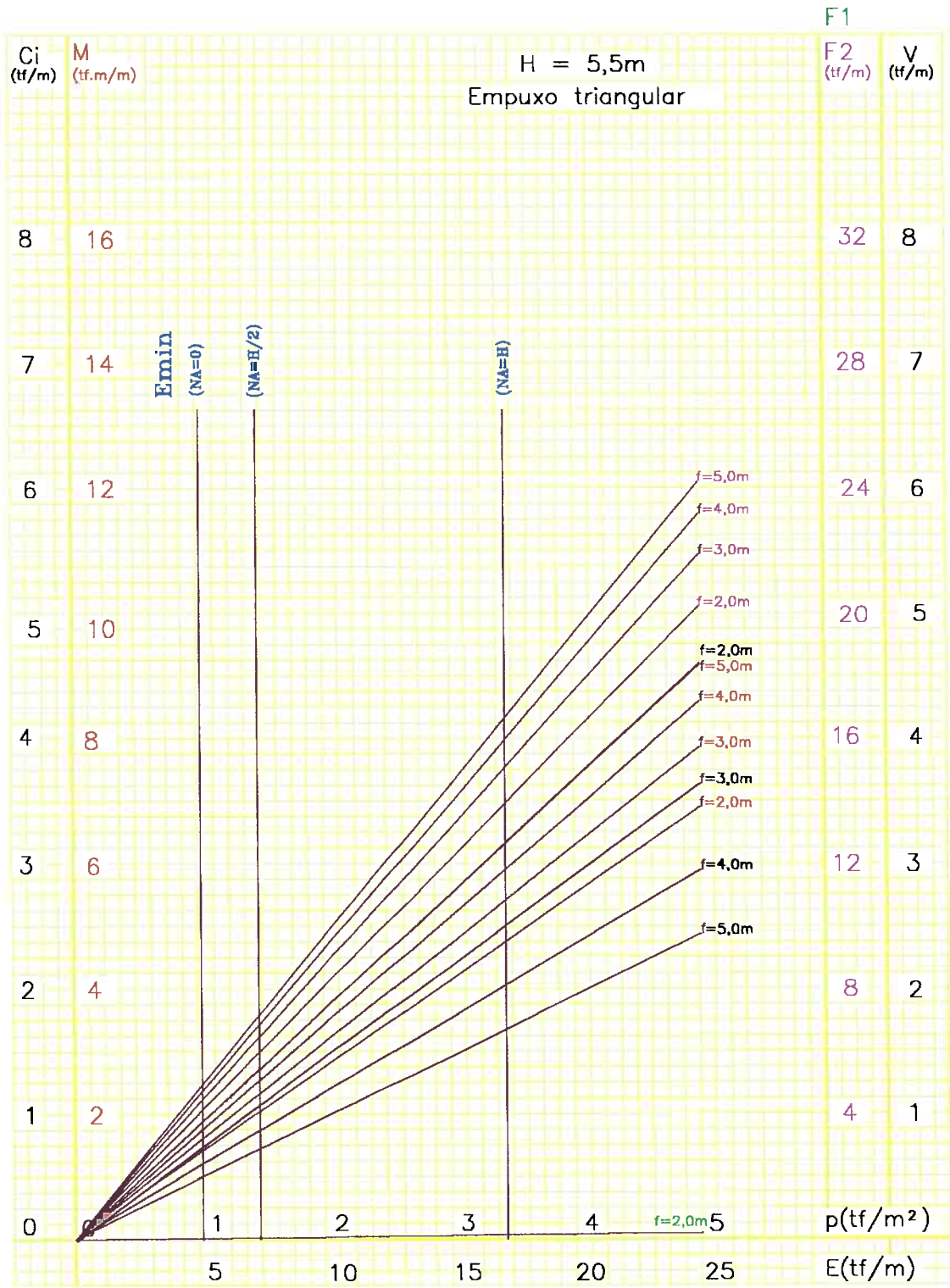


Fig. II.7- Ábaco tipo ES2a

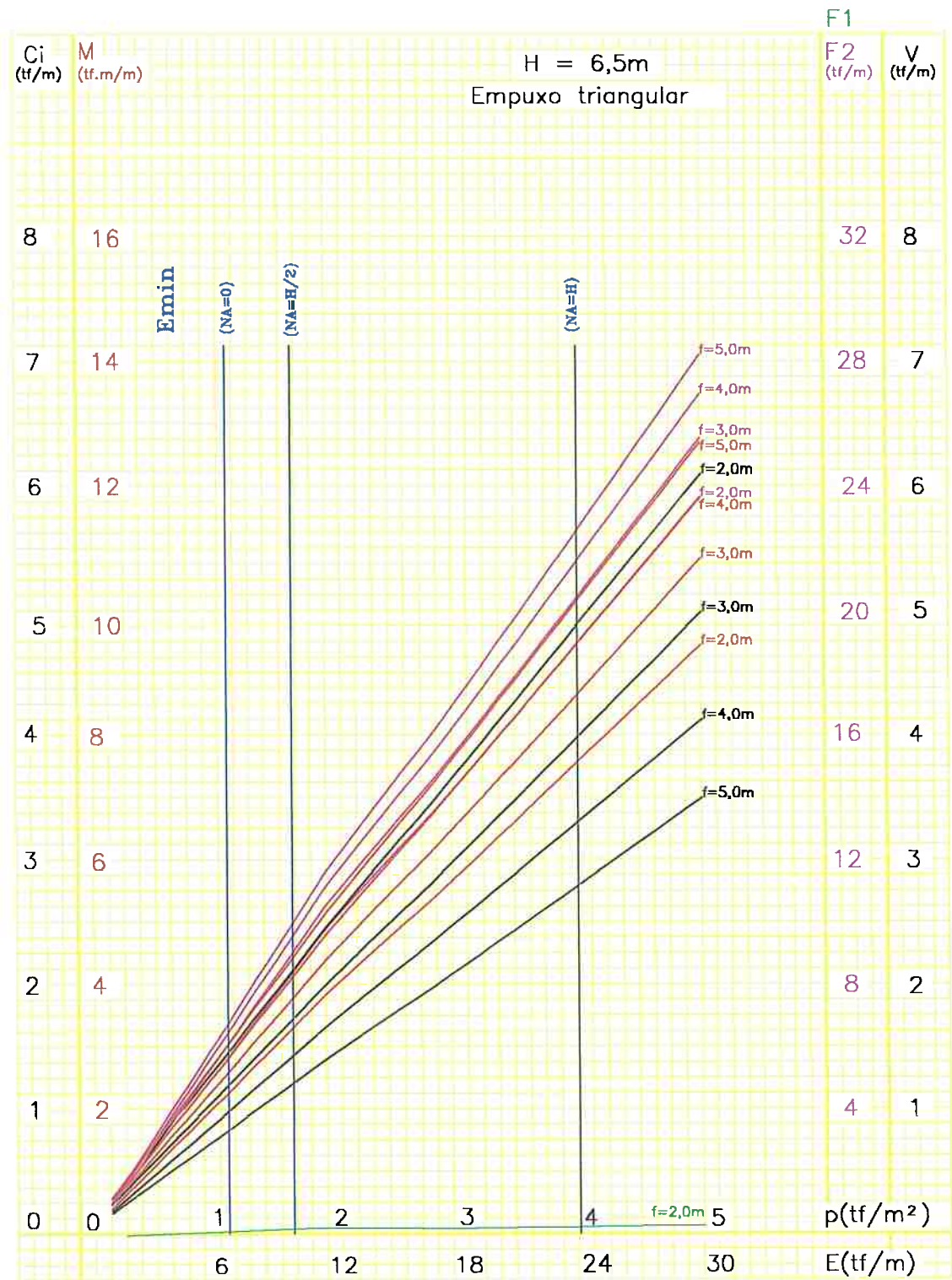


Fig. II.8- Ábaco tipo ES2a

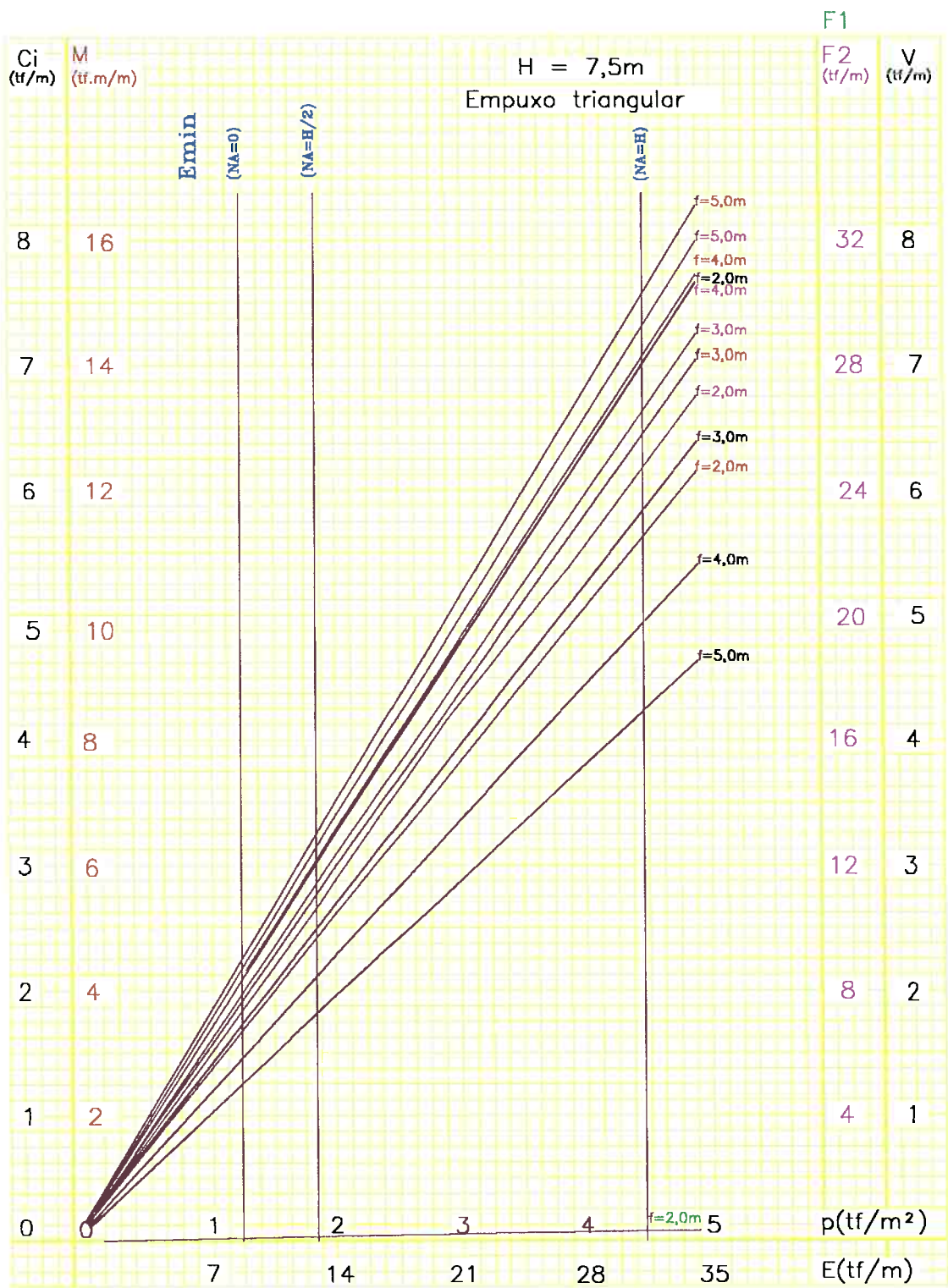


Fig. II.9- Ábaco tipo ES2a

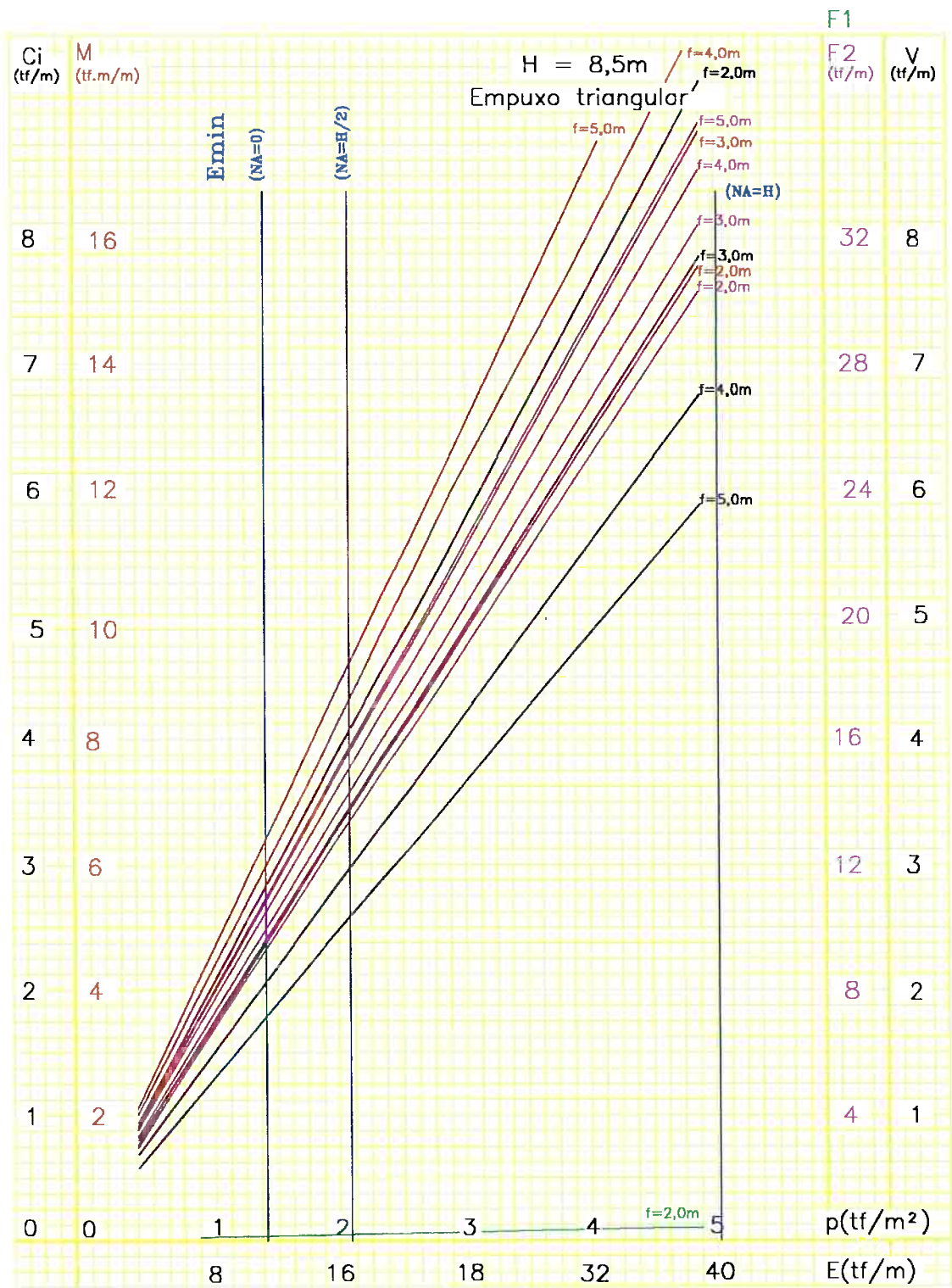


Fig. II.10- Ábaco tipo ES2a

**ÁBACOS PARA A DETERMINAÇÃO DOS
ESFORÇOS SOLICITANTES EM
ESCORAMENTO COM DOIS NÍVEIS DE
ESTRONCAS**

ÁBACOS ES2b

**NÍVEL DE ÁGUA
NA SUPERFÍCIE**

H = 4,5 m

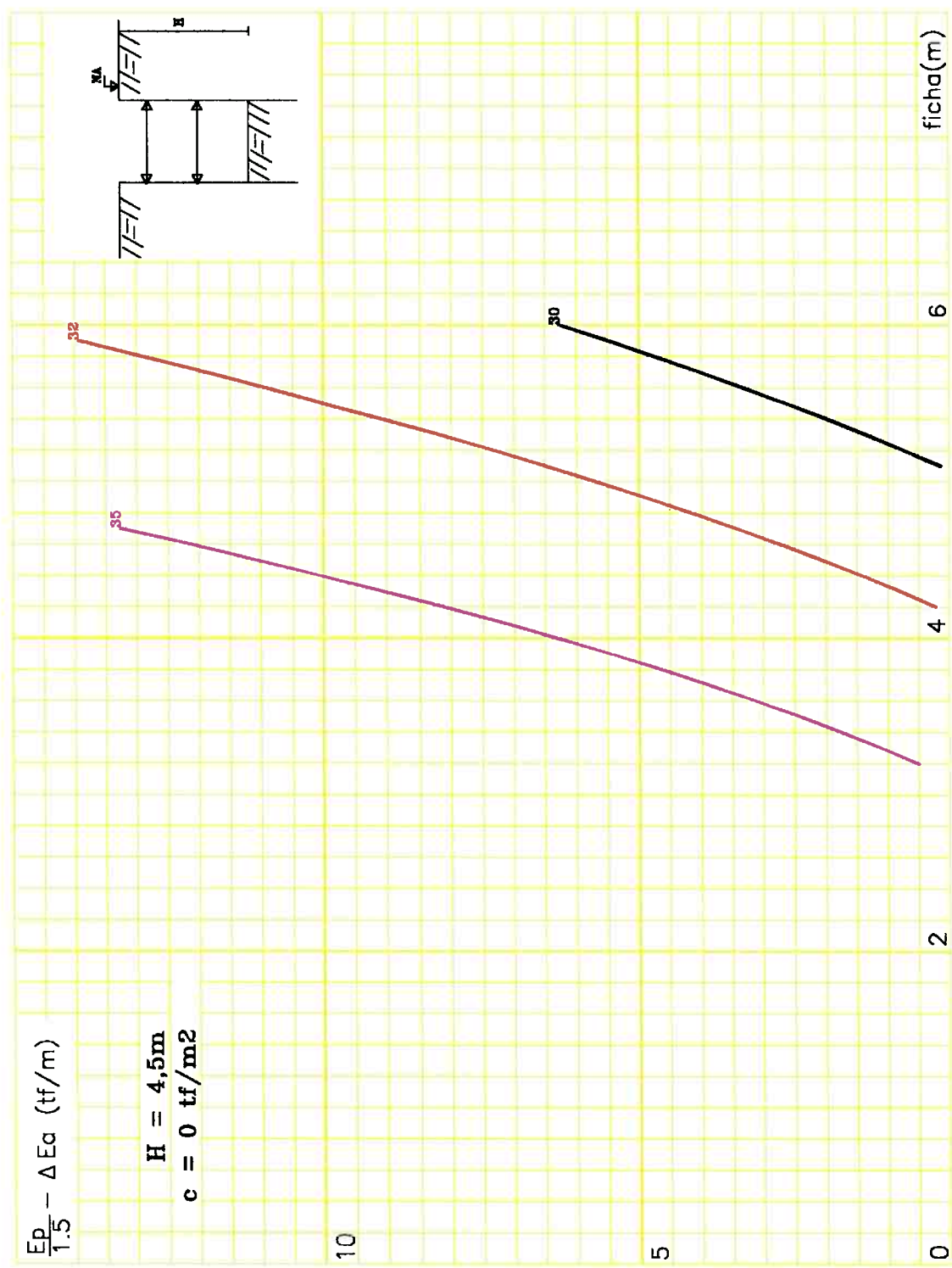


Fig. II.11- Ábaco tipo ES2b

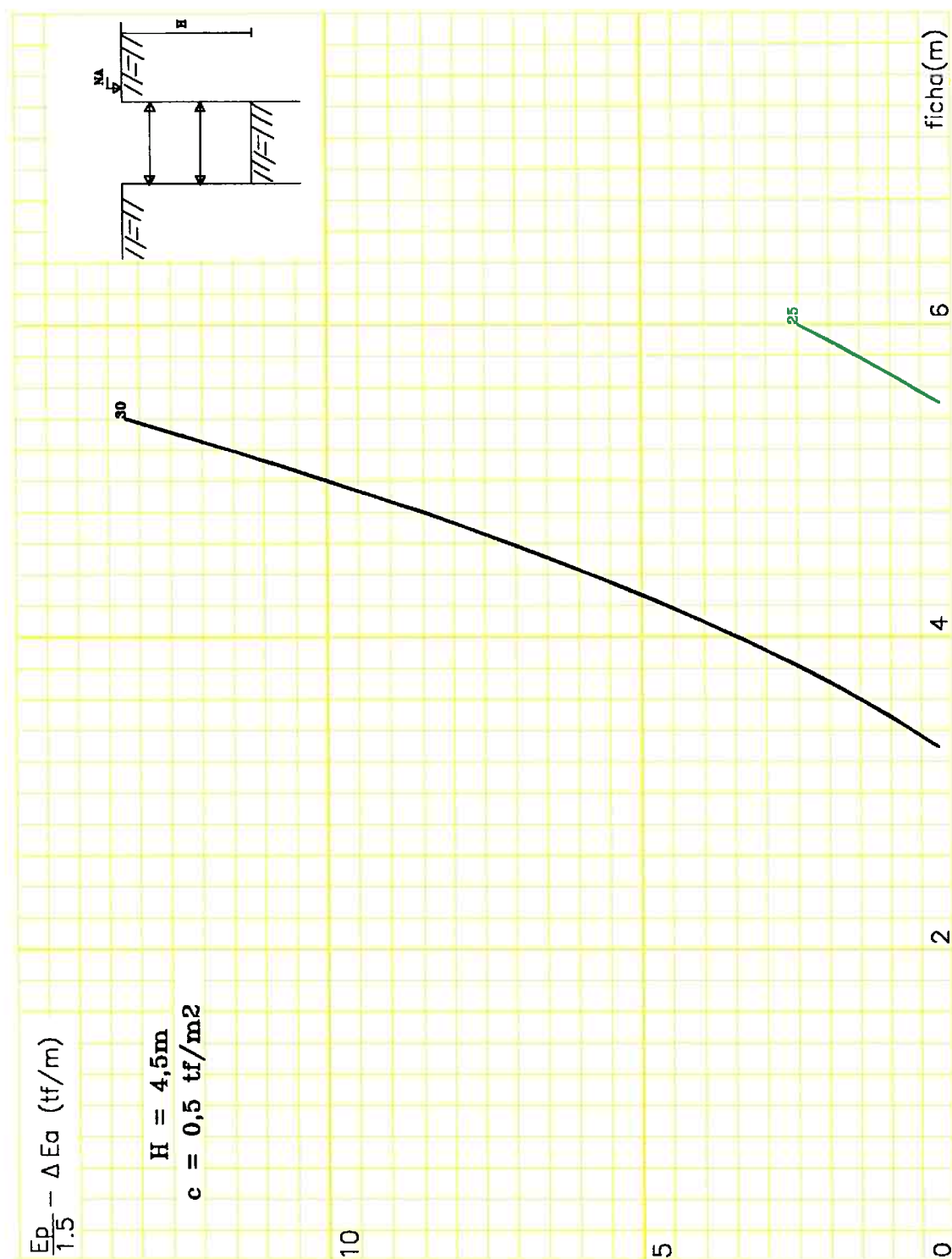


Fig. II.12- Ábaco tipo ES2b

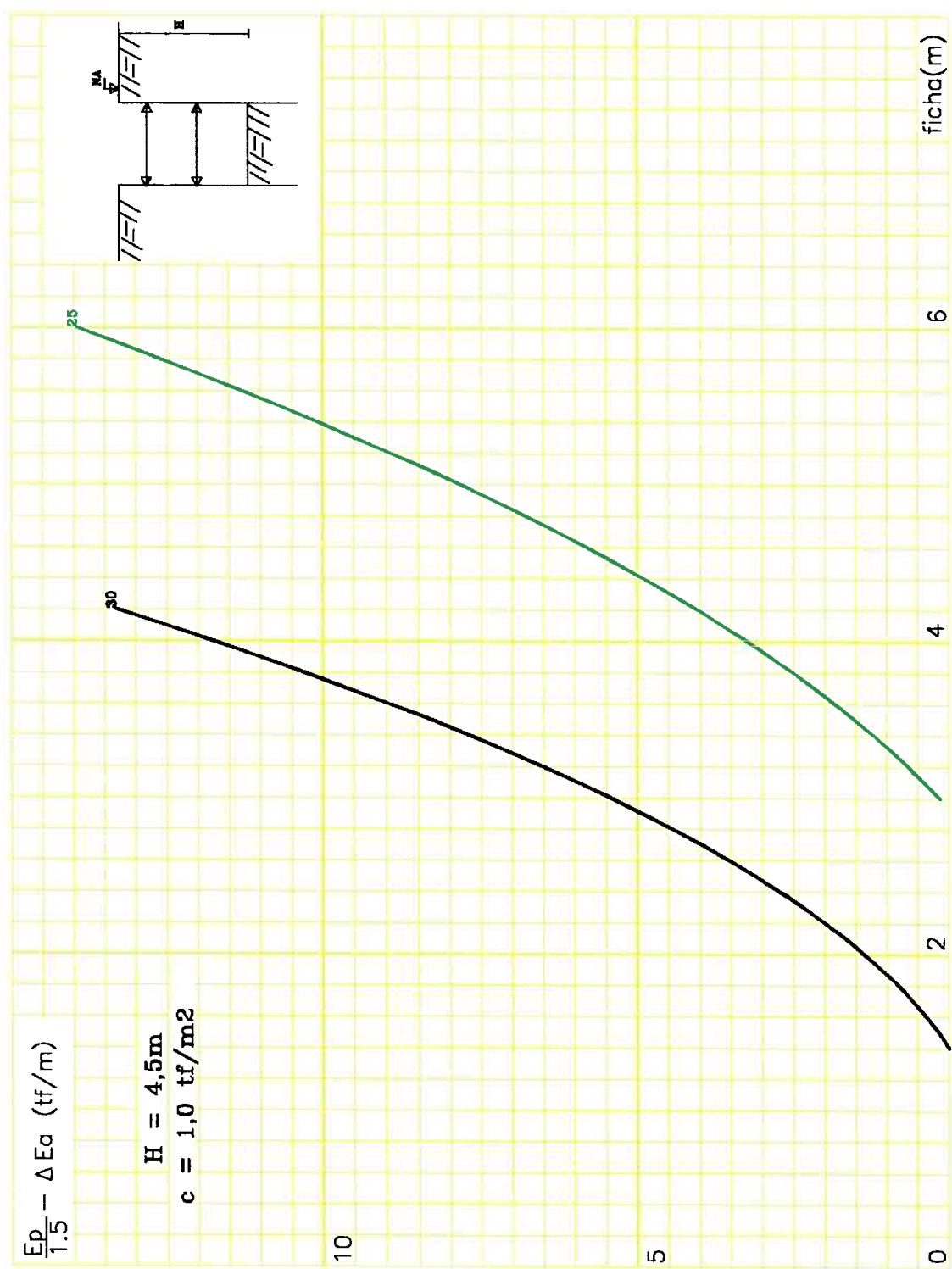


Fig. II.13- Ábaco tipo ES2b

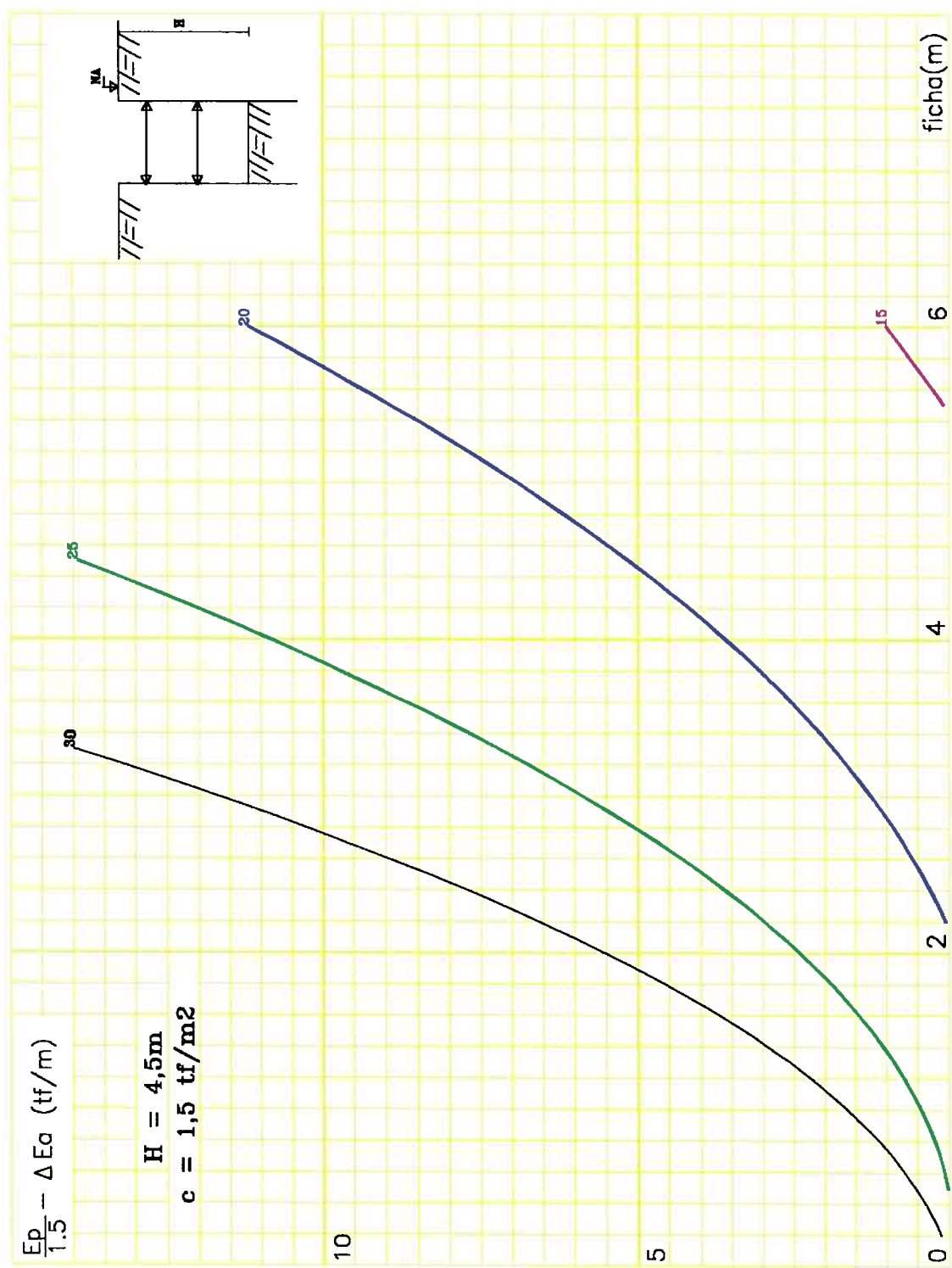


Fig. II.14- Ábaco tipo ES2b

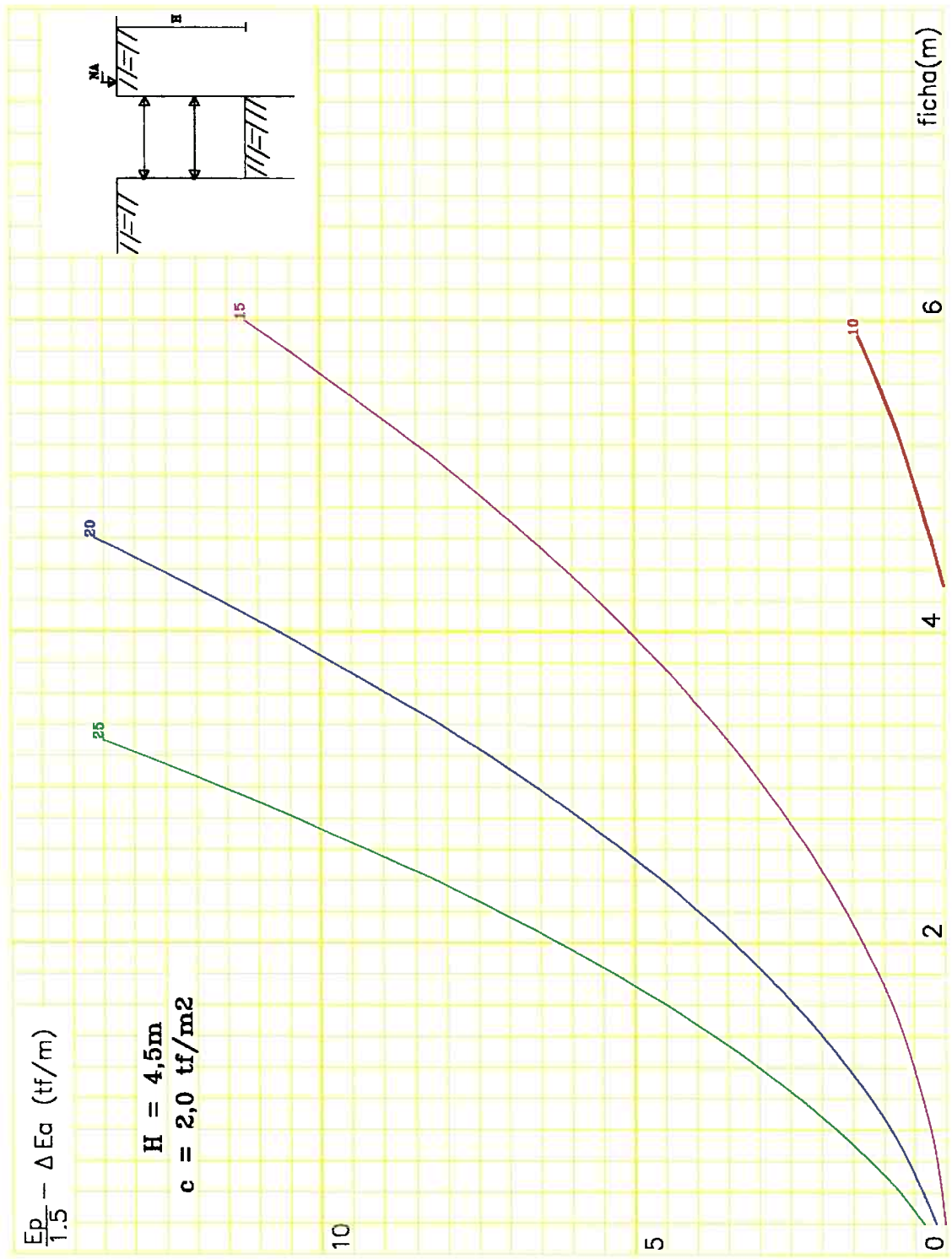


Fig. II.15- Ábaco tipo ES2b

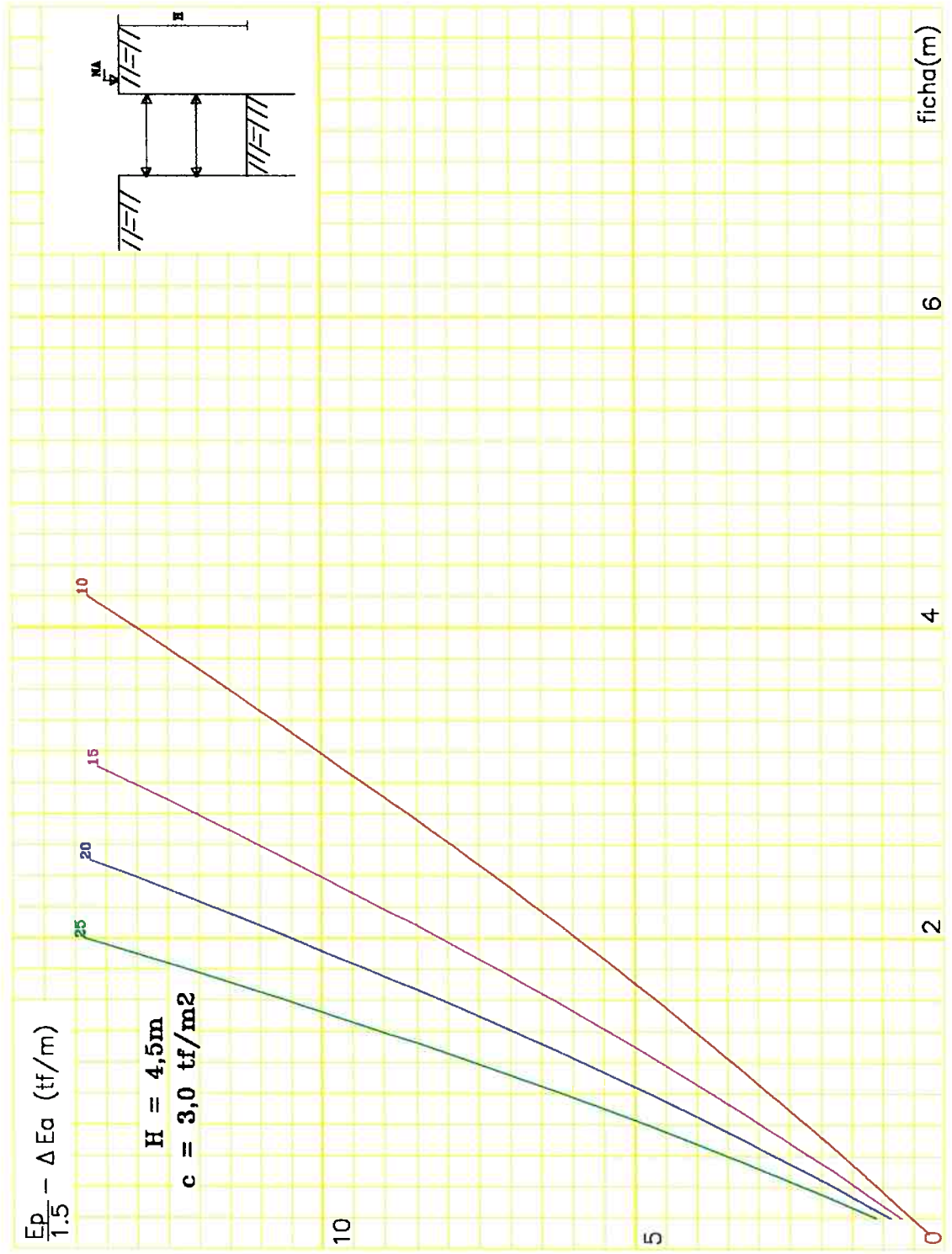


Fig. II.16- Ábaco tipo ES2b

H = 5,5 m

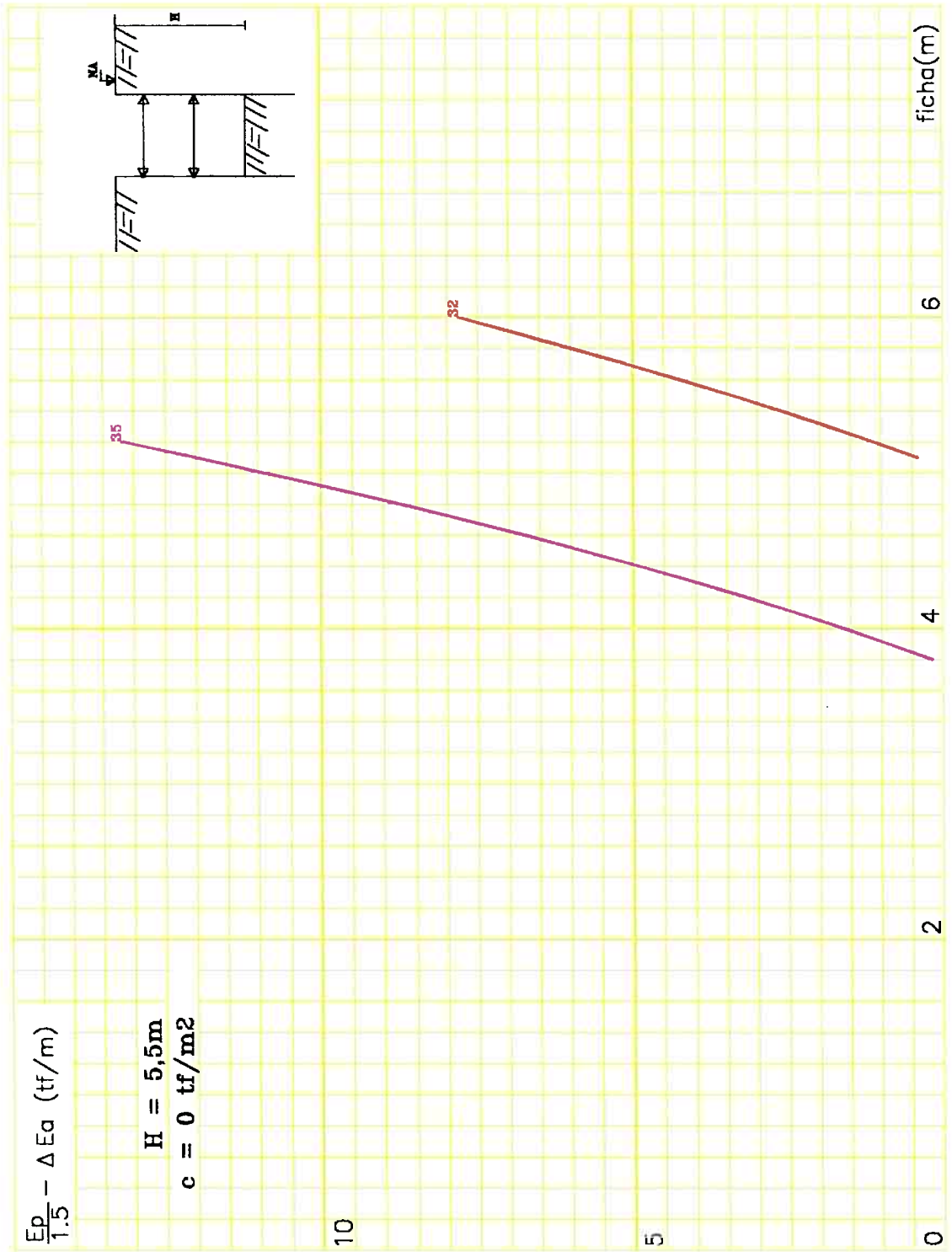


Fig. II.17- Ábaco tipo ES2b

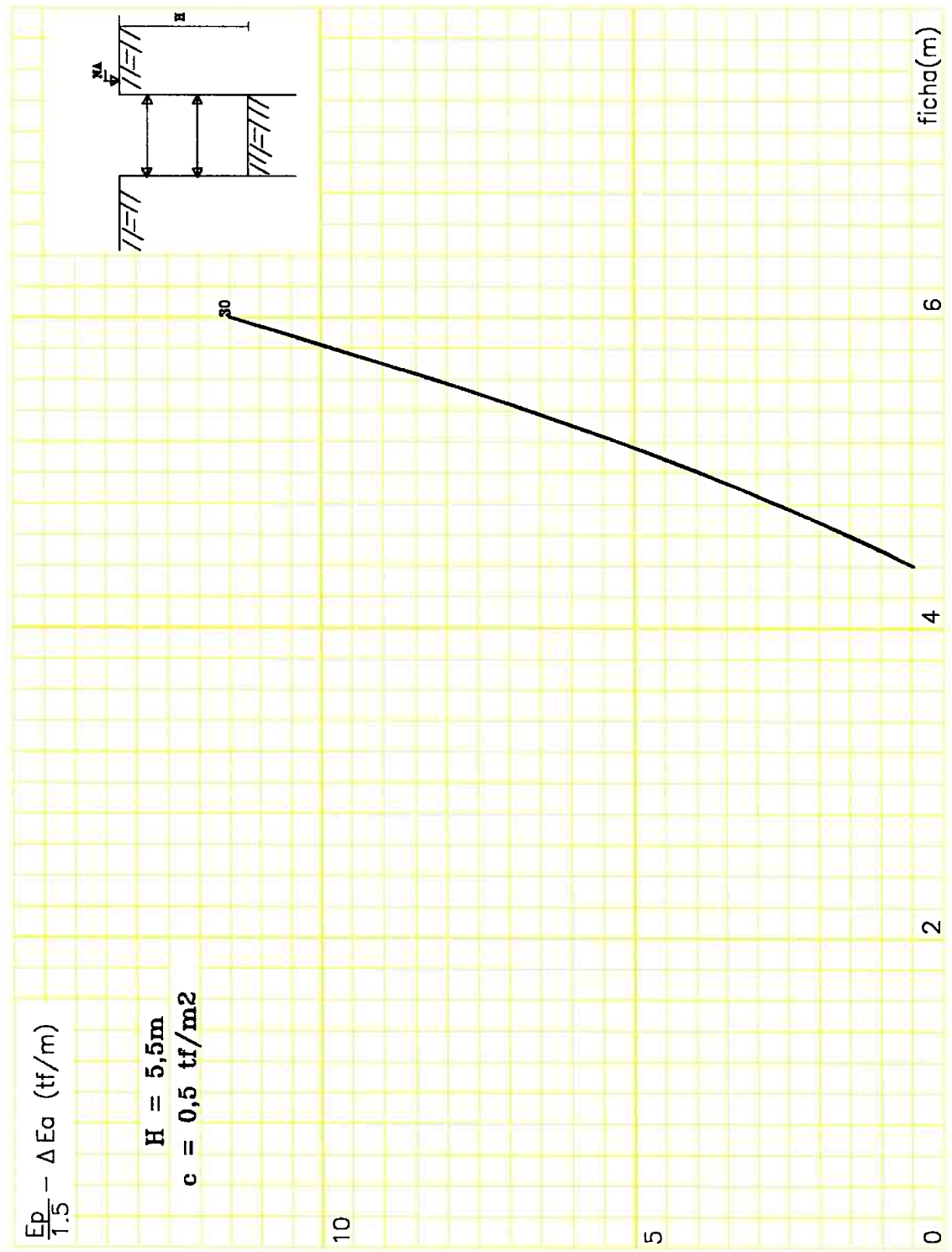


Fig. II.18- Ábaco tipo ES2b

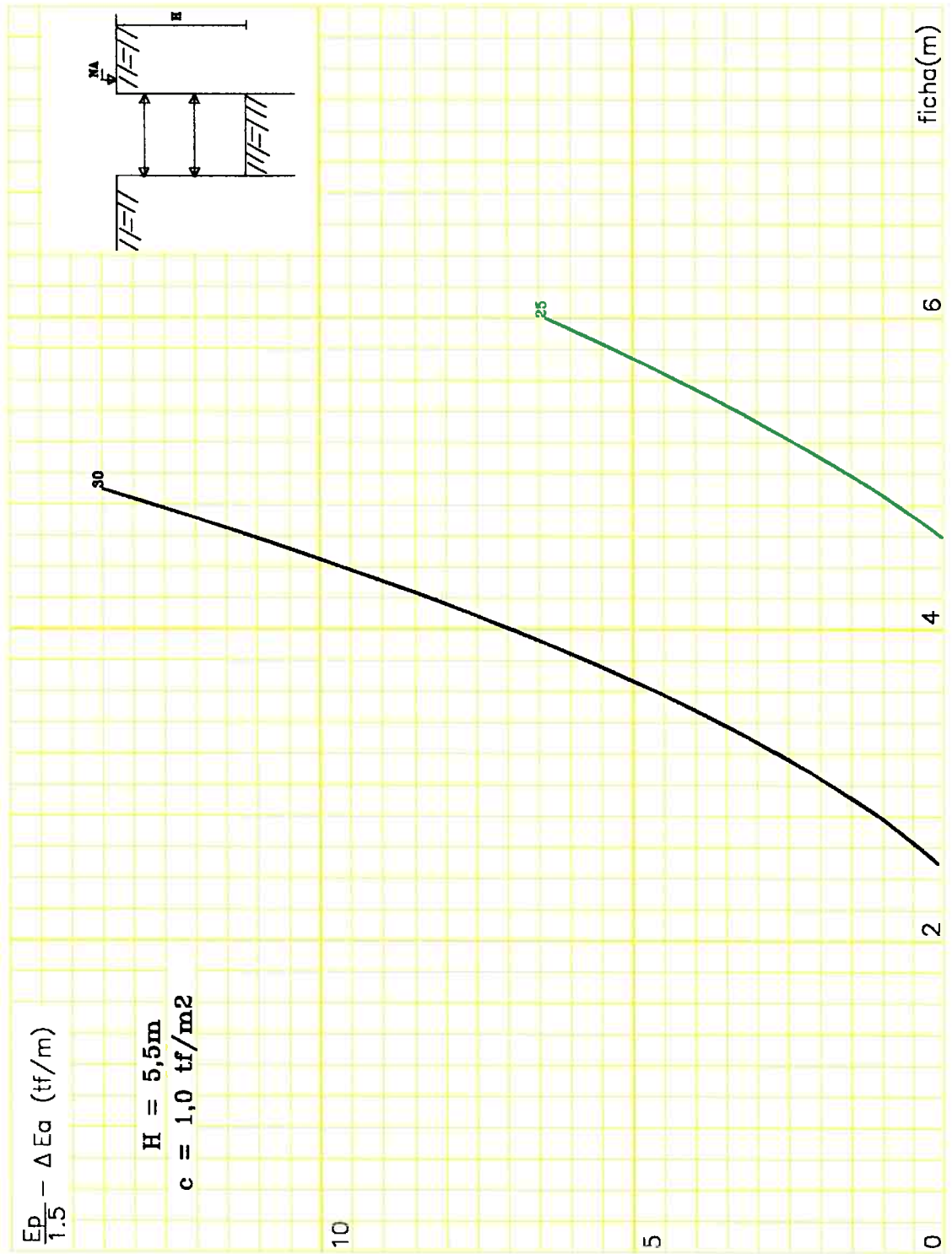


Fig. II.19- Ábaco tipo ES2b

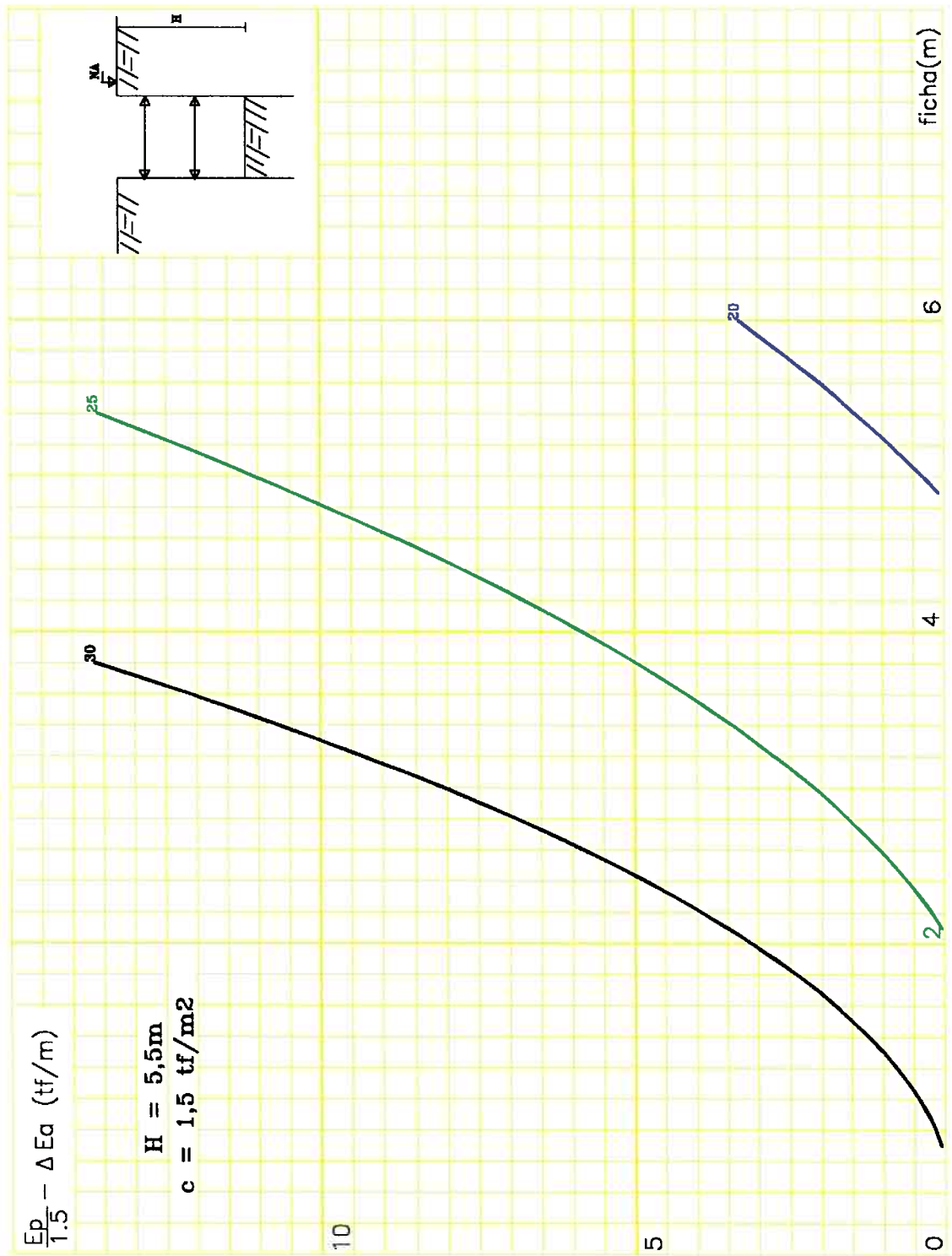


Fig. II.20- Ábaco tipo ES2b

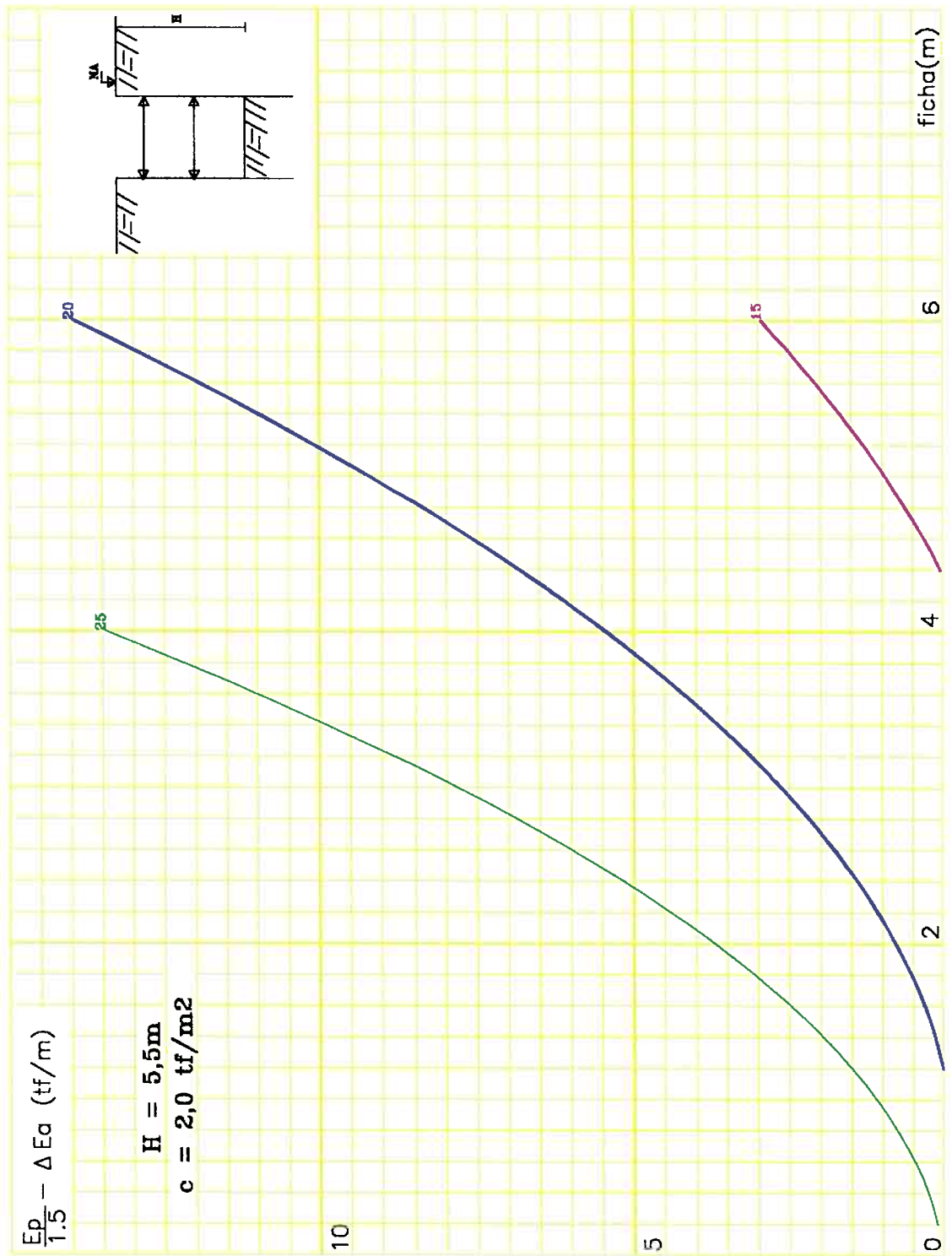


Fig. II.21- Ábaco tipo ES2b

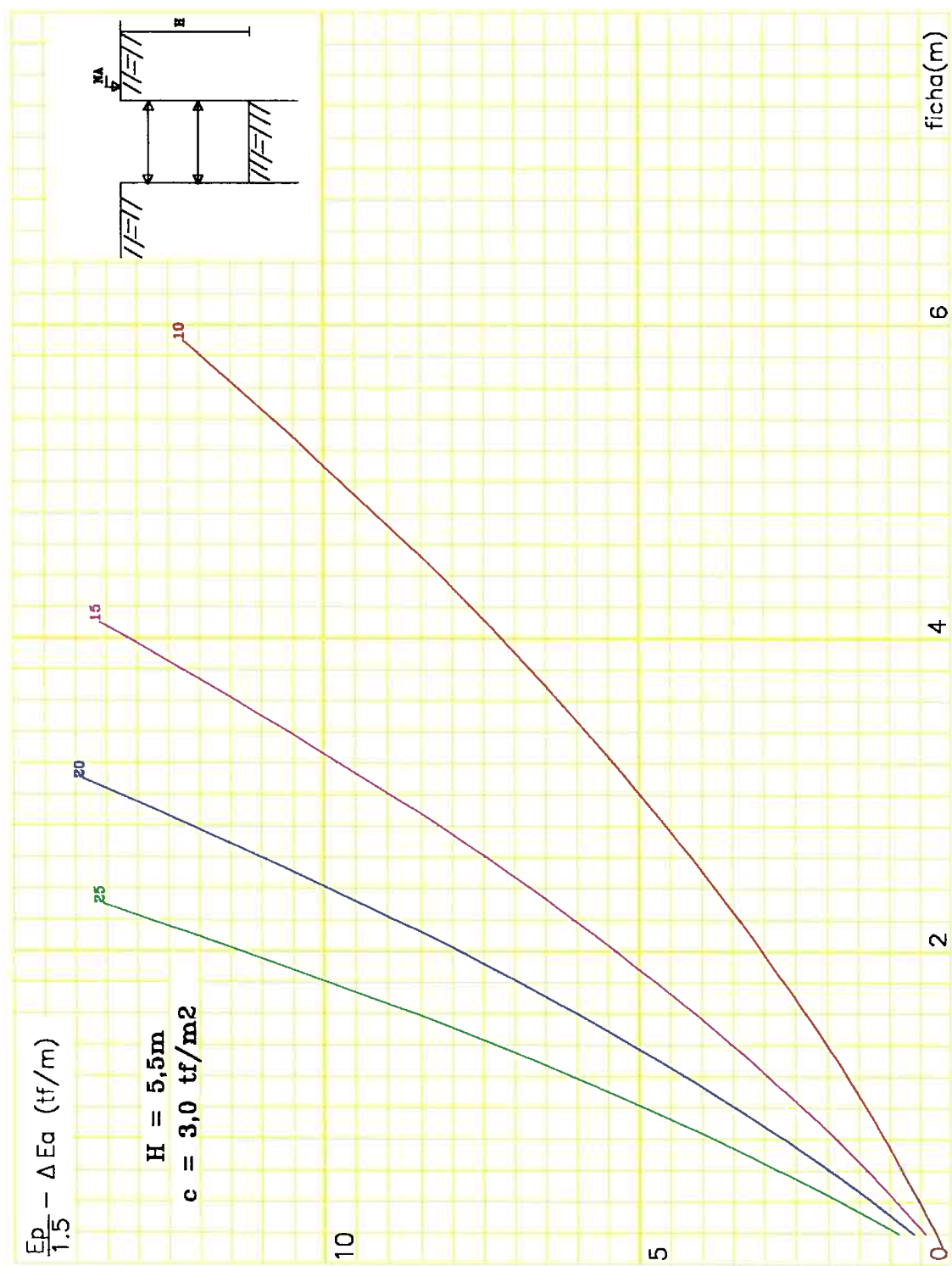


Fig. II.22- Ábaco tipo ES2b

H = 6,5 m

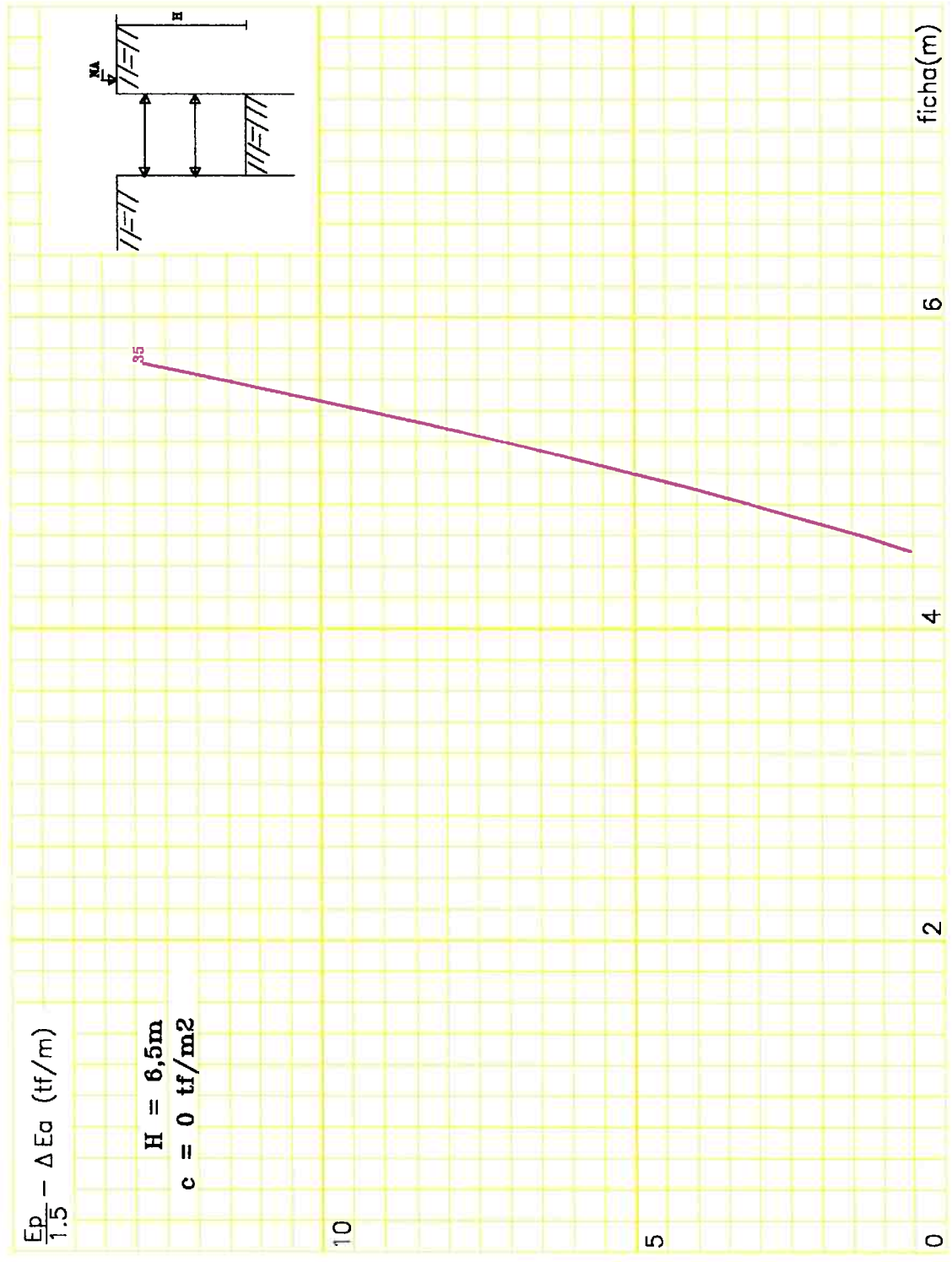


Fig. II.23- Ábaco tipo ES2b

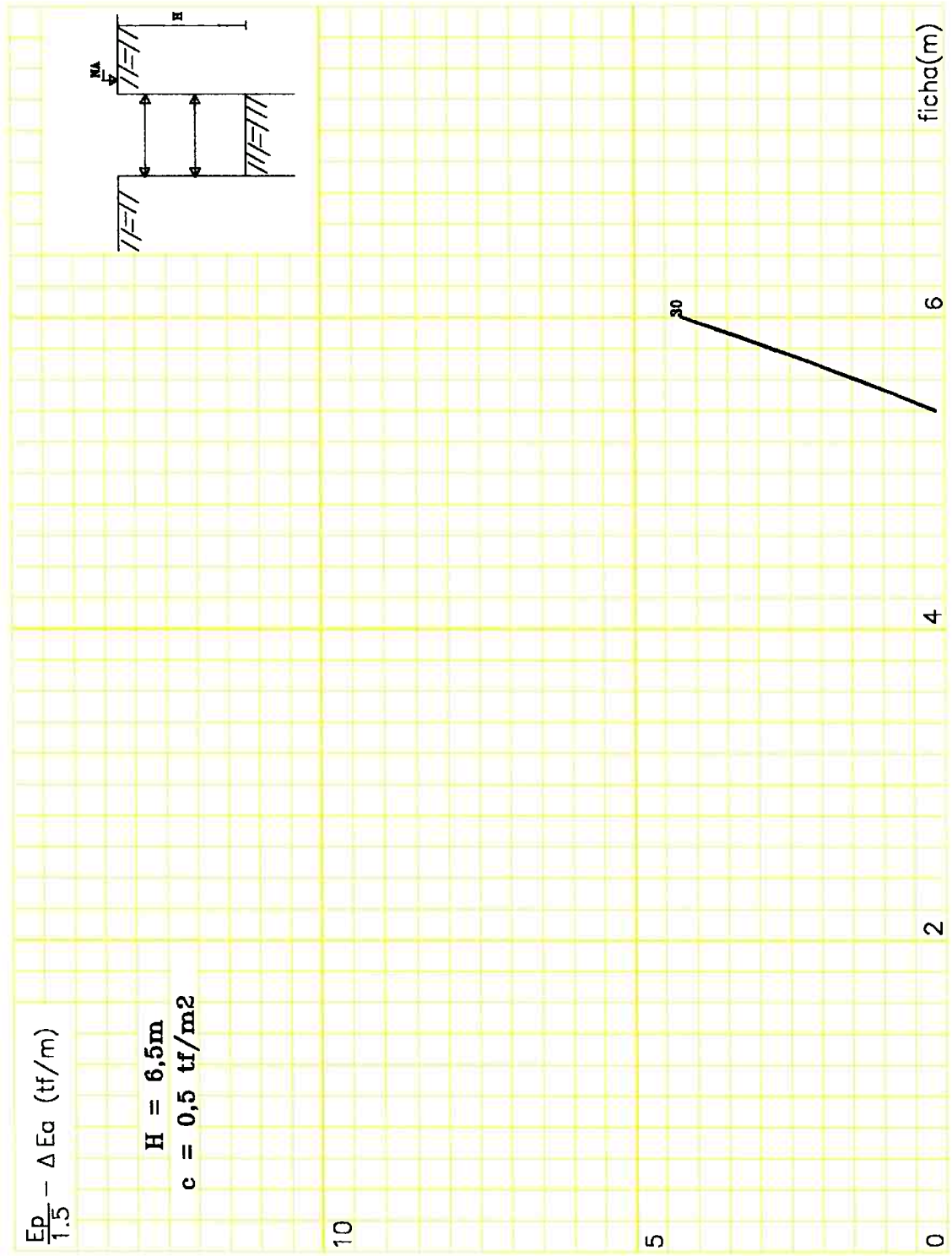


Fig. II.24- Ábaco tipo ES2b

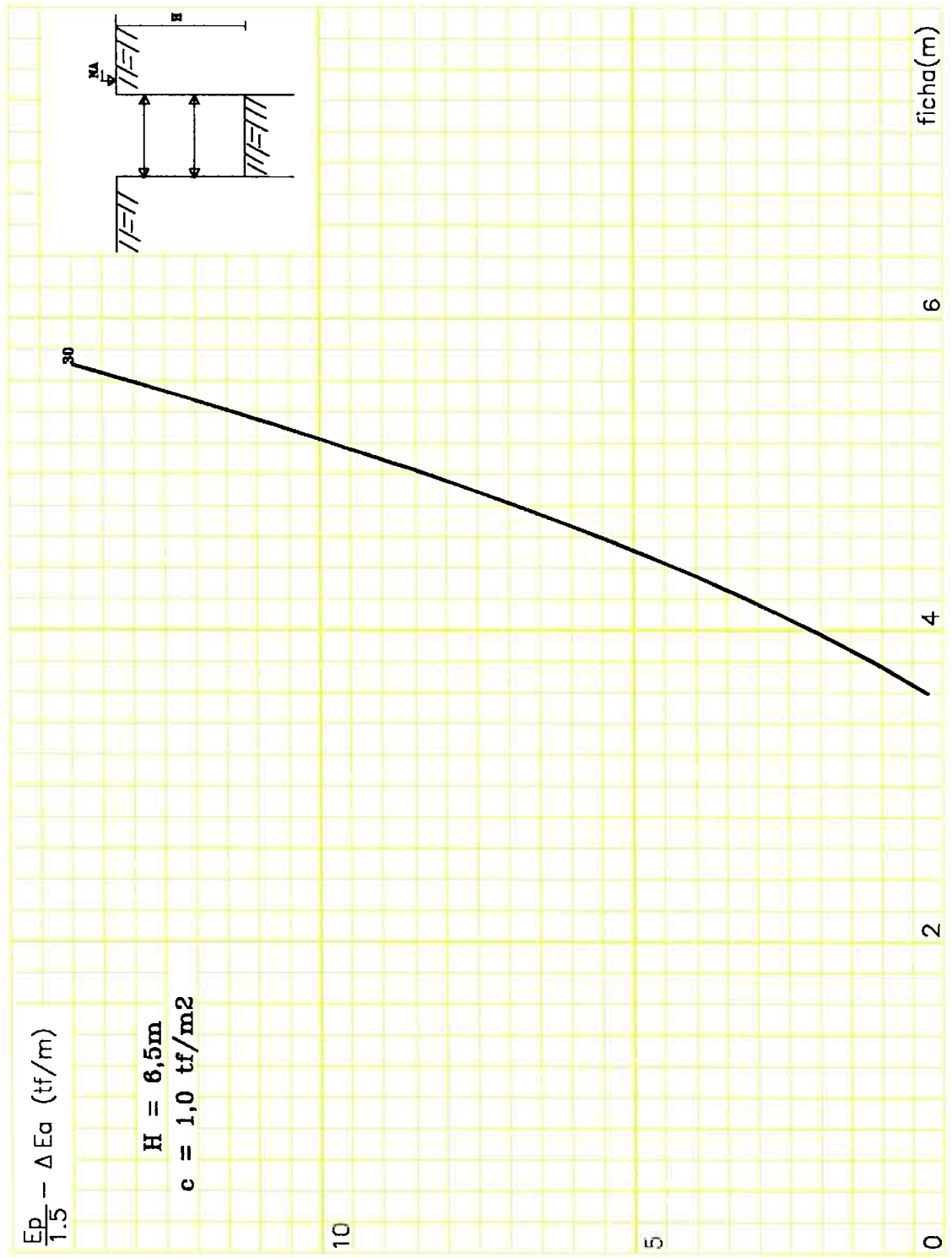


Fig. II.25- Ábaco tipo ES2b

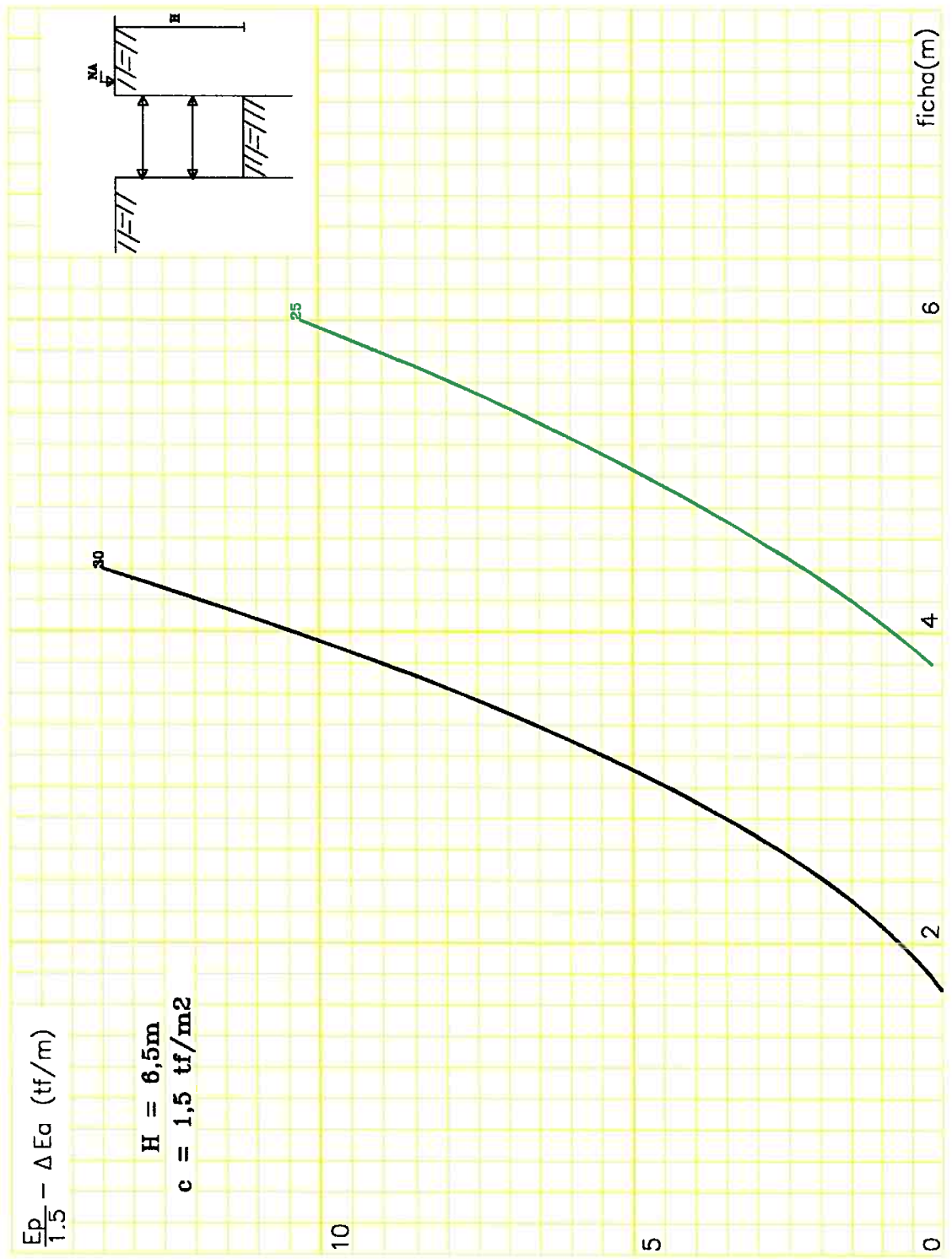


Fig. II.26- Ábaco tipo ES2b

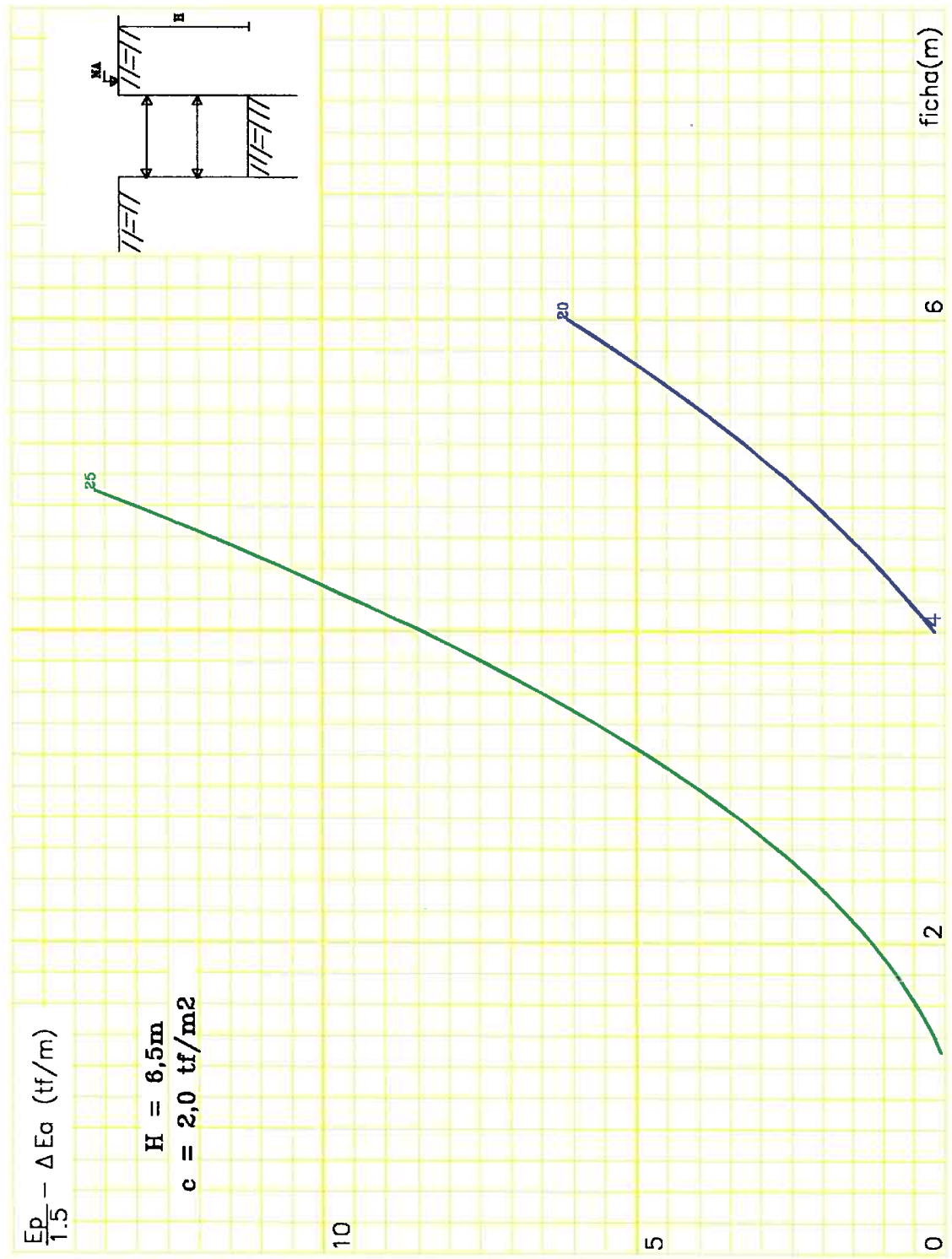


Fig. II.27- Ábaco tipo ES2b

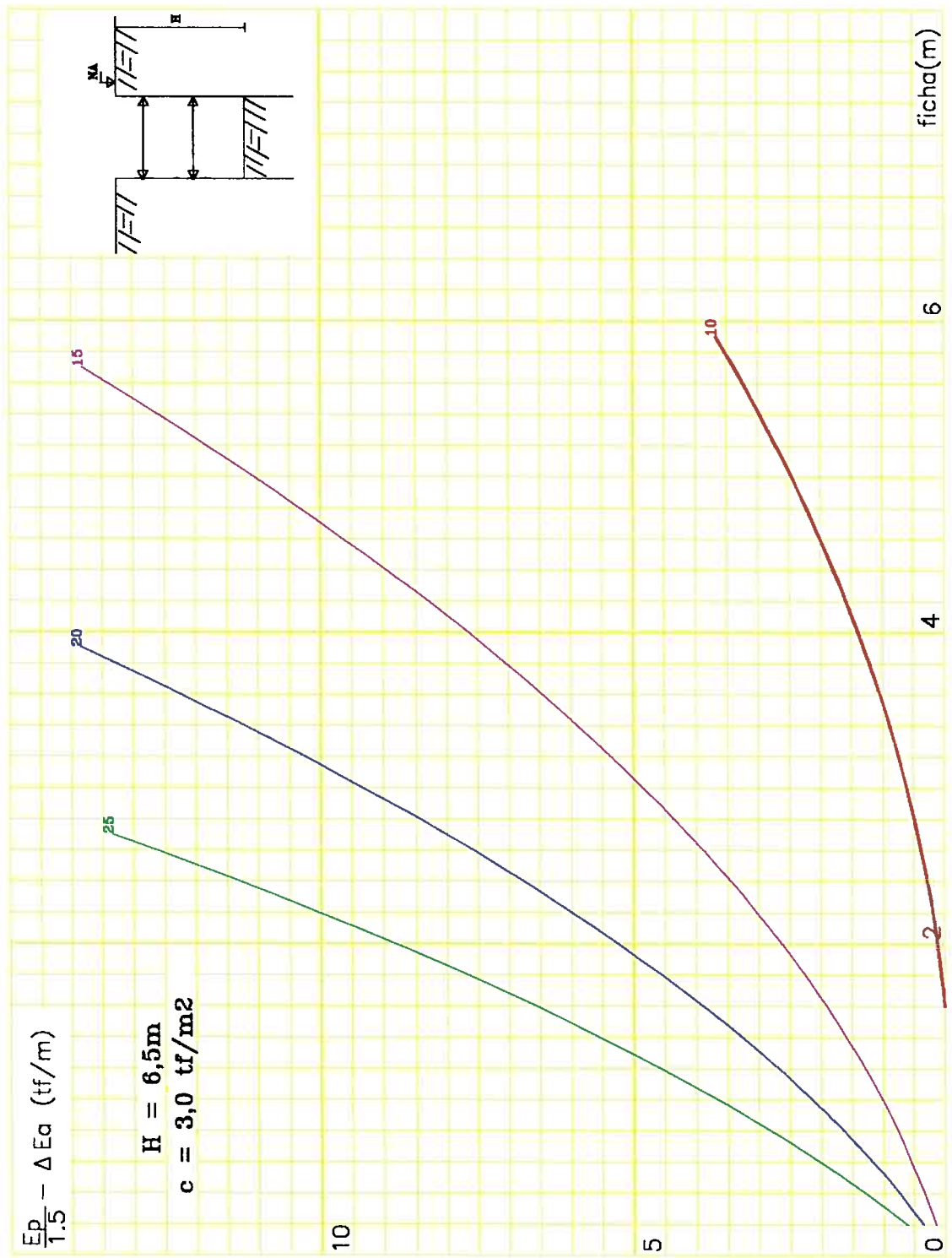


Fig. II.28- Ábaco tipo ES2b

H = 7,5 m

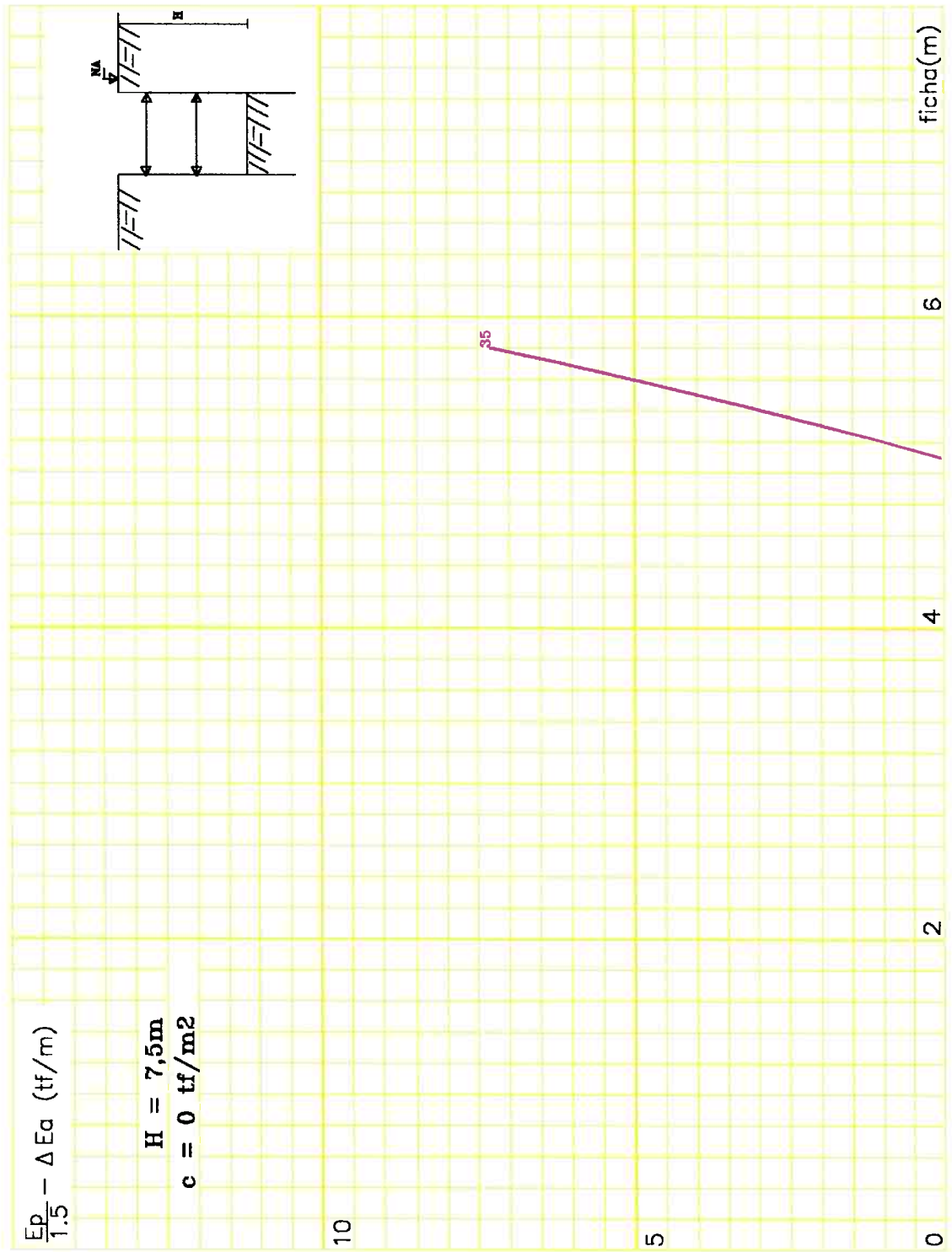


Fig. II.29- Ábaco tipo ES2b

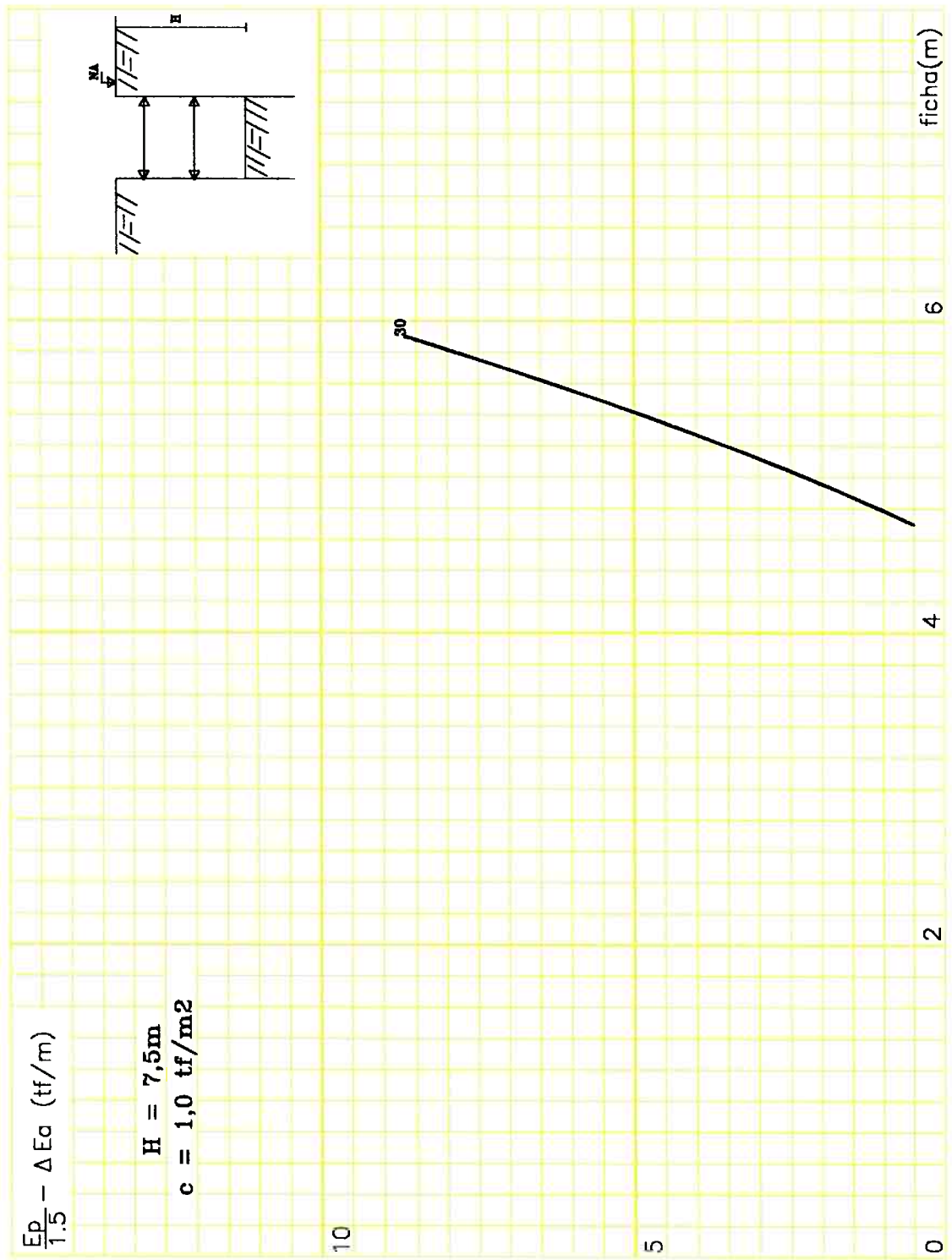


Fig. II.30- Ábaco tipo ES2b

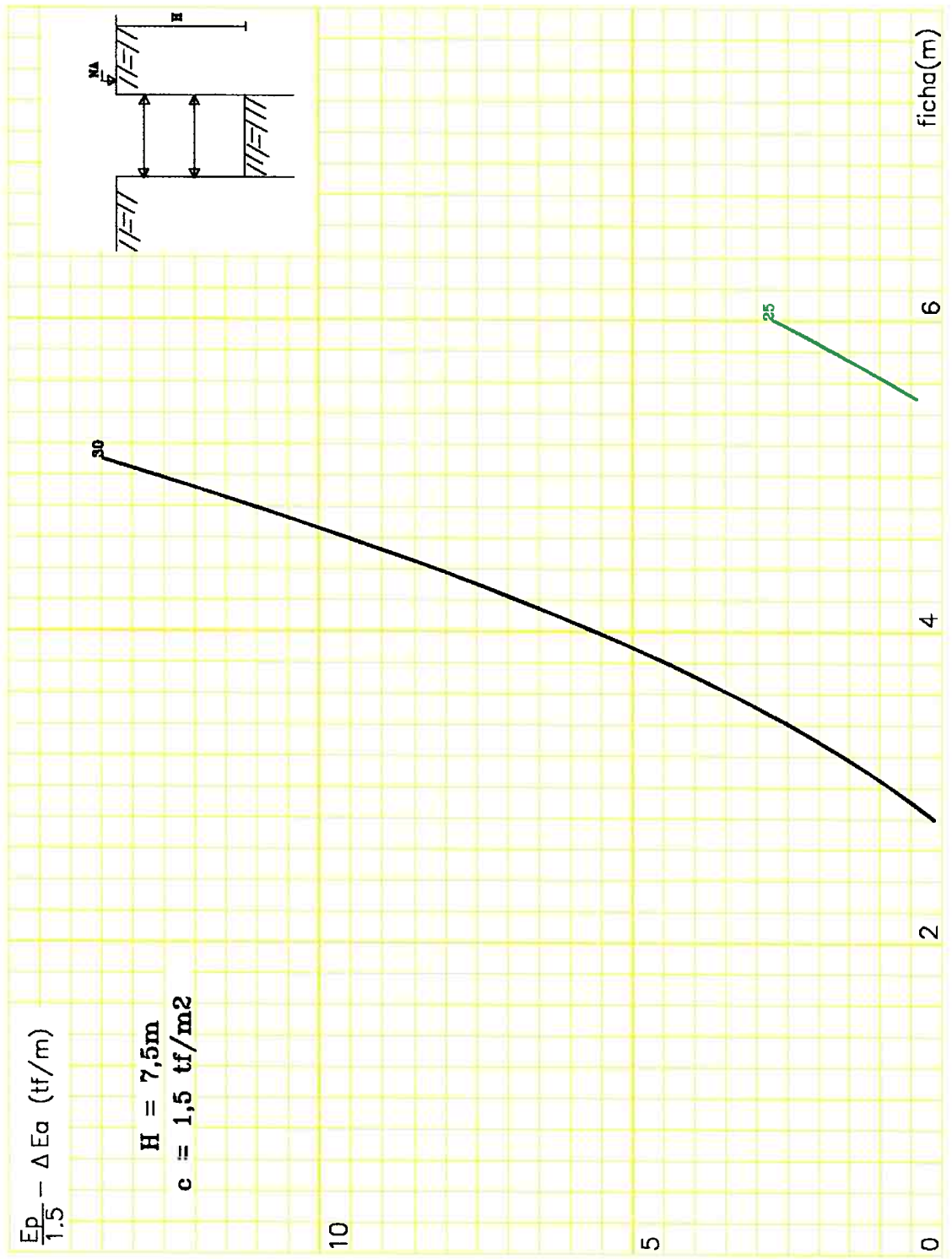


Fig. II.31- Ábaco tipo ES2b

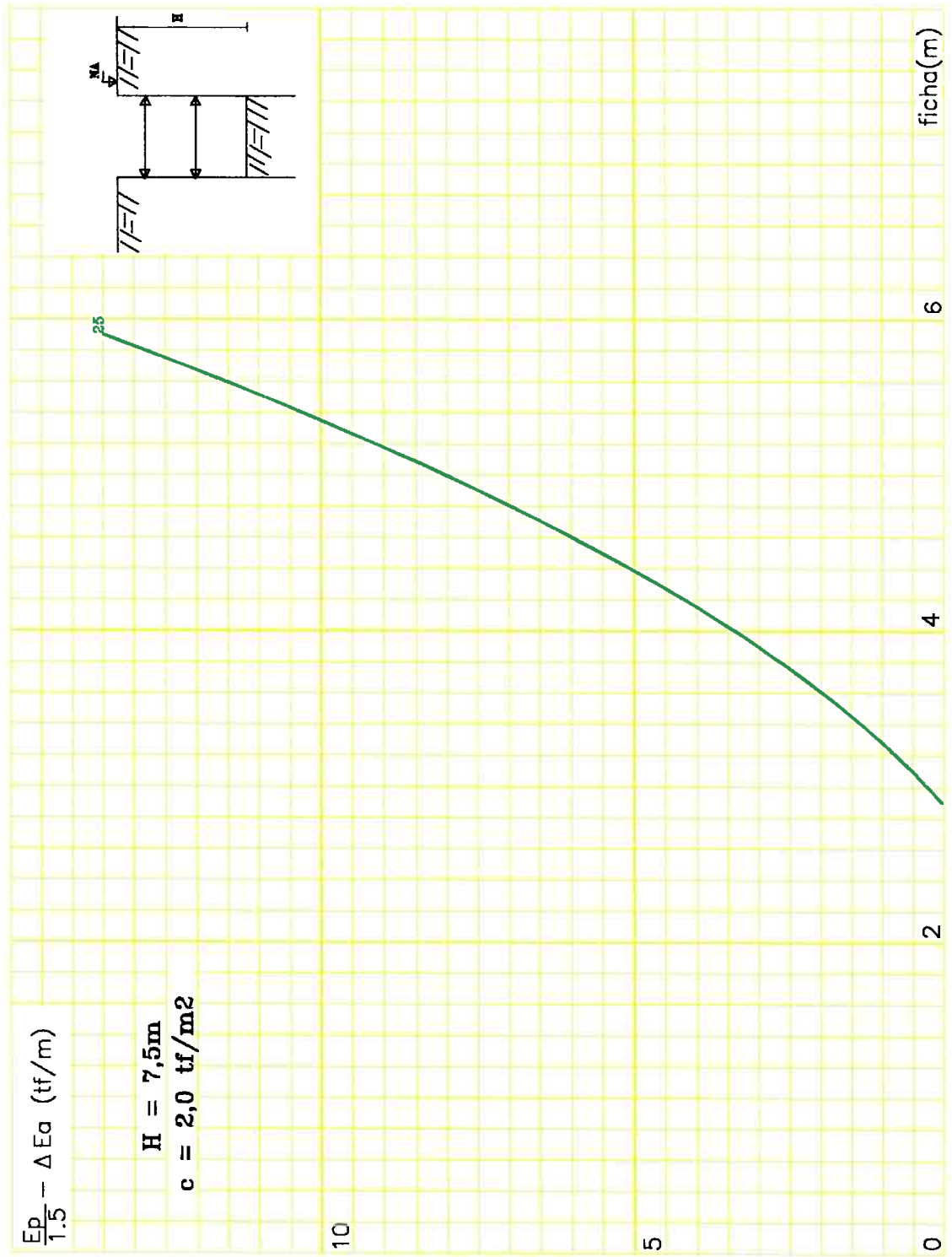


Fig. II.32- Ábaco tipo ES2b

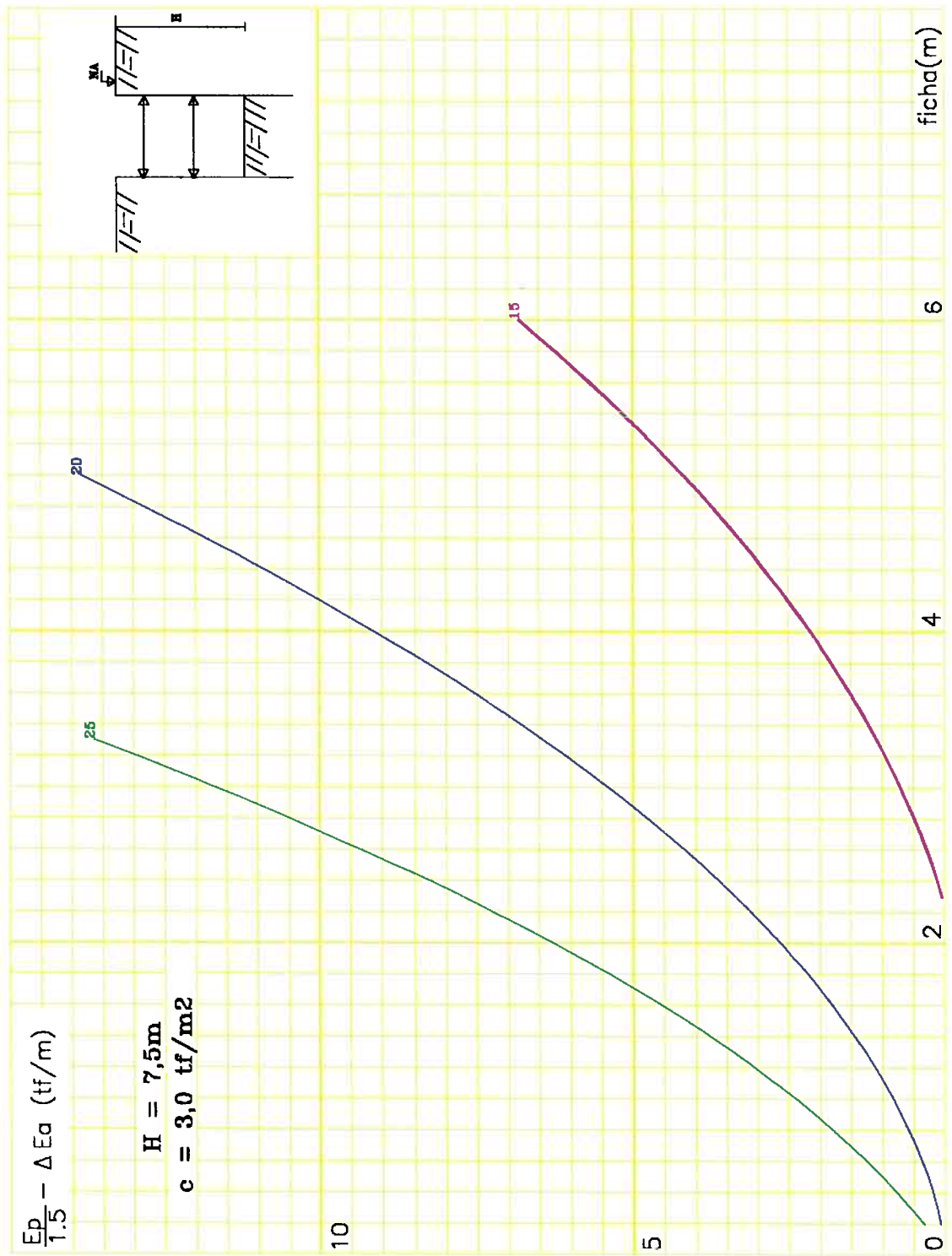


Fig. II.33- Ábaco tipo ES2b

H = 8,5 m

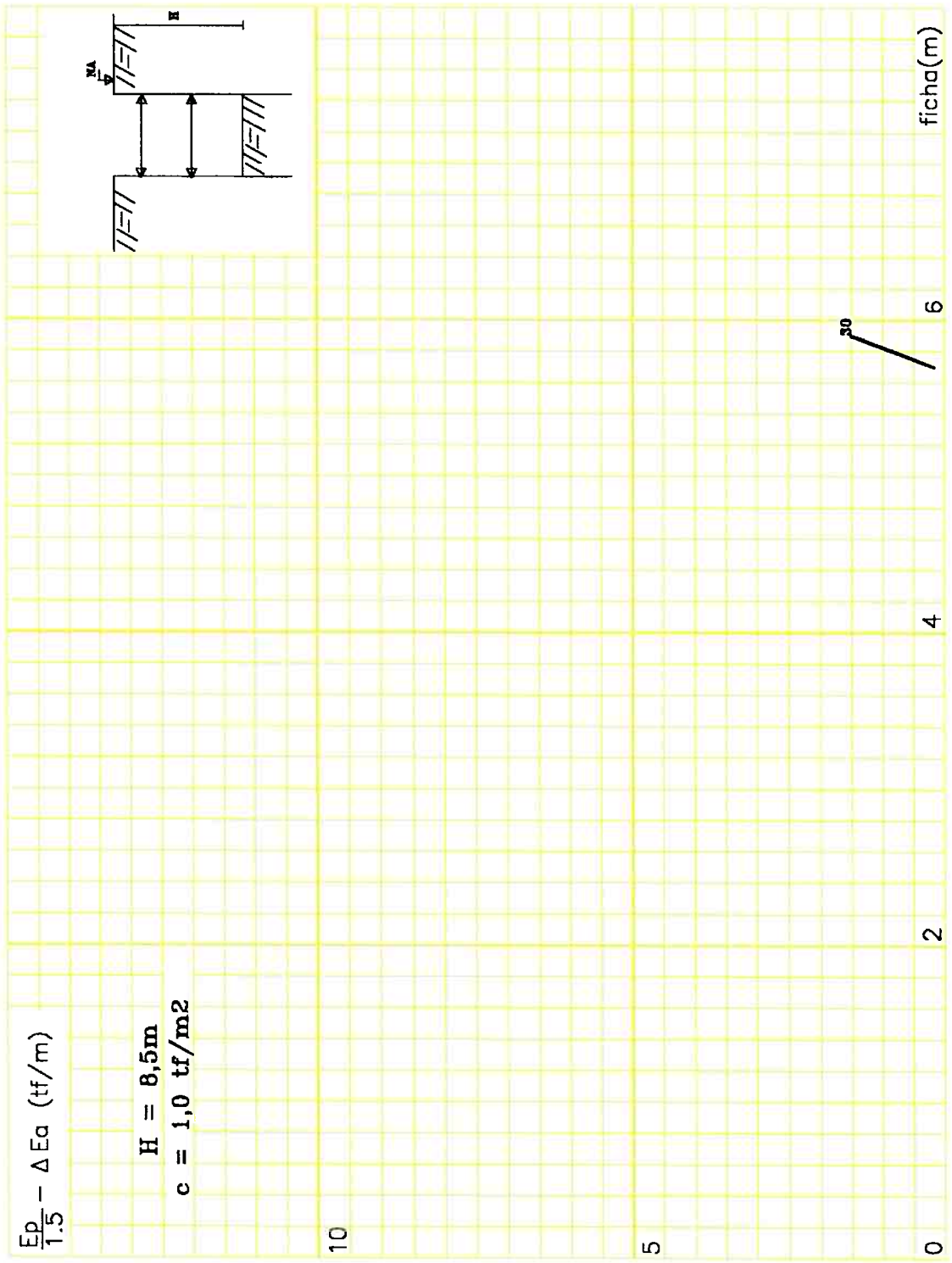


Fig. II.34- Ábaco tipo ES2b

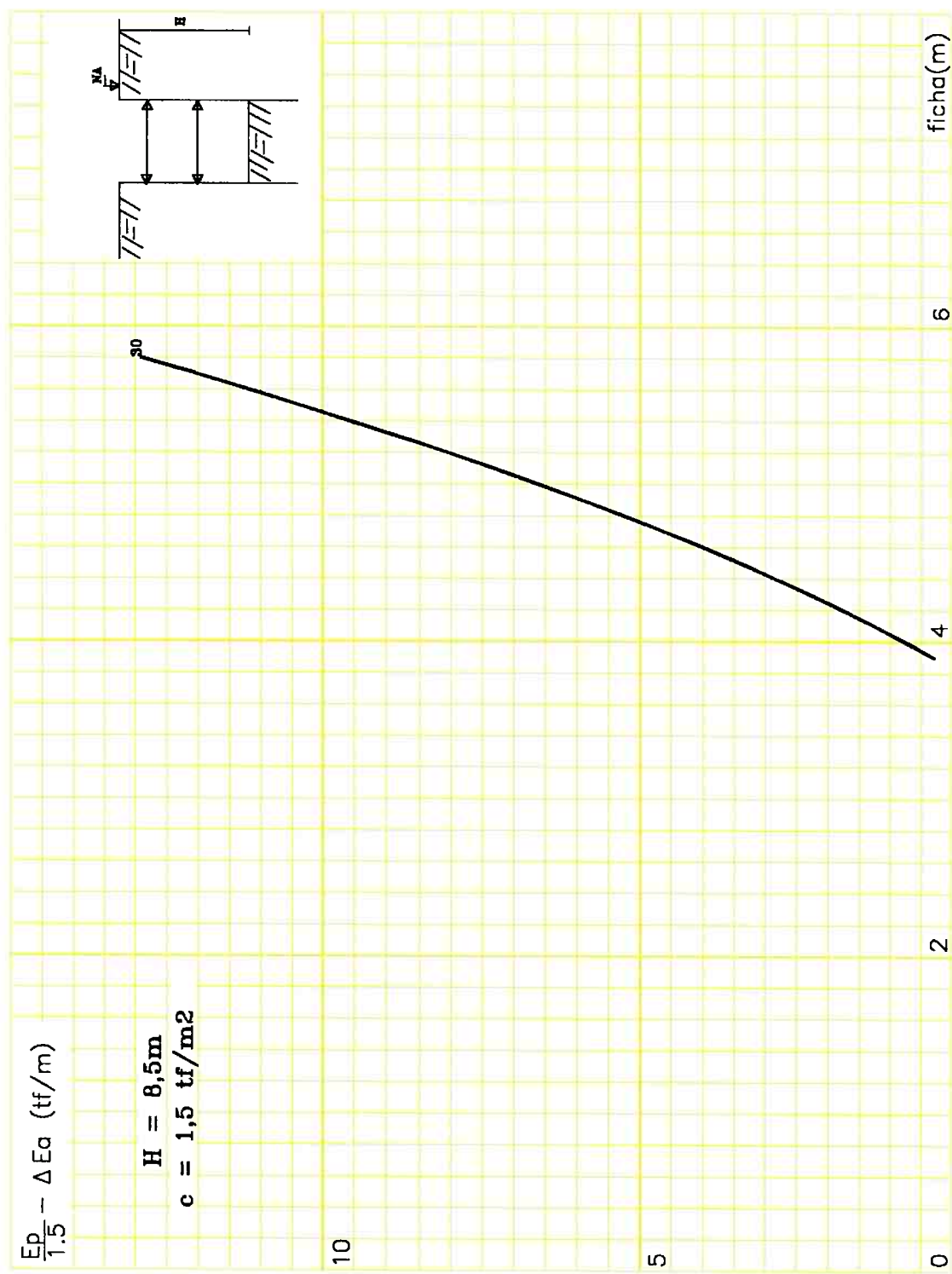


Fig. II.35- Ábaco tipo ES2b

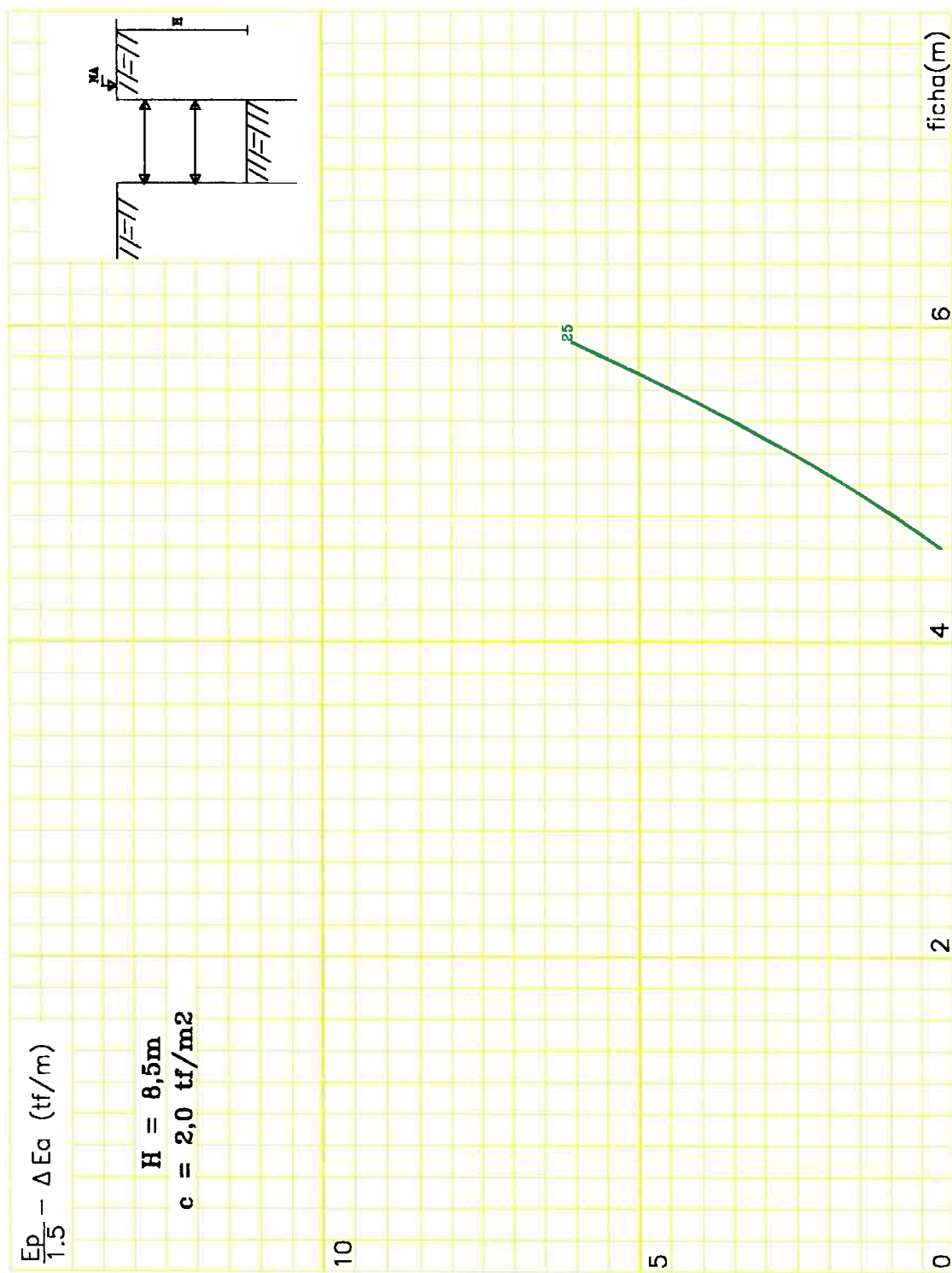


Fig. II.36- Ábaco tipo ES2b

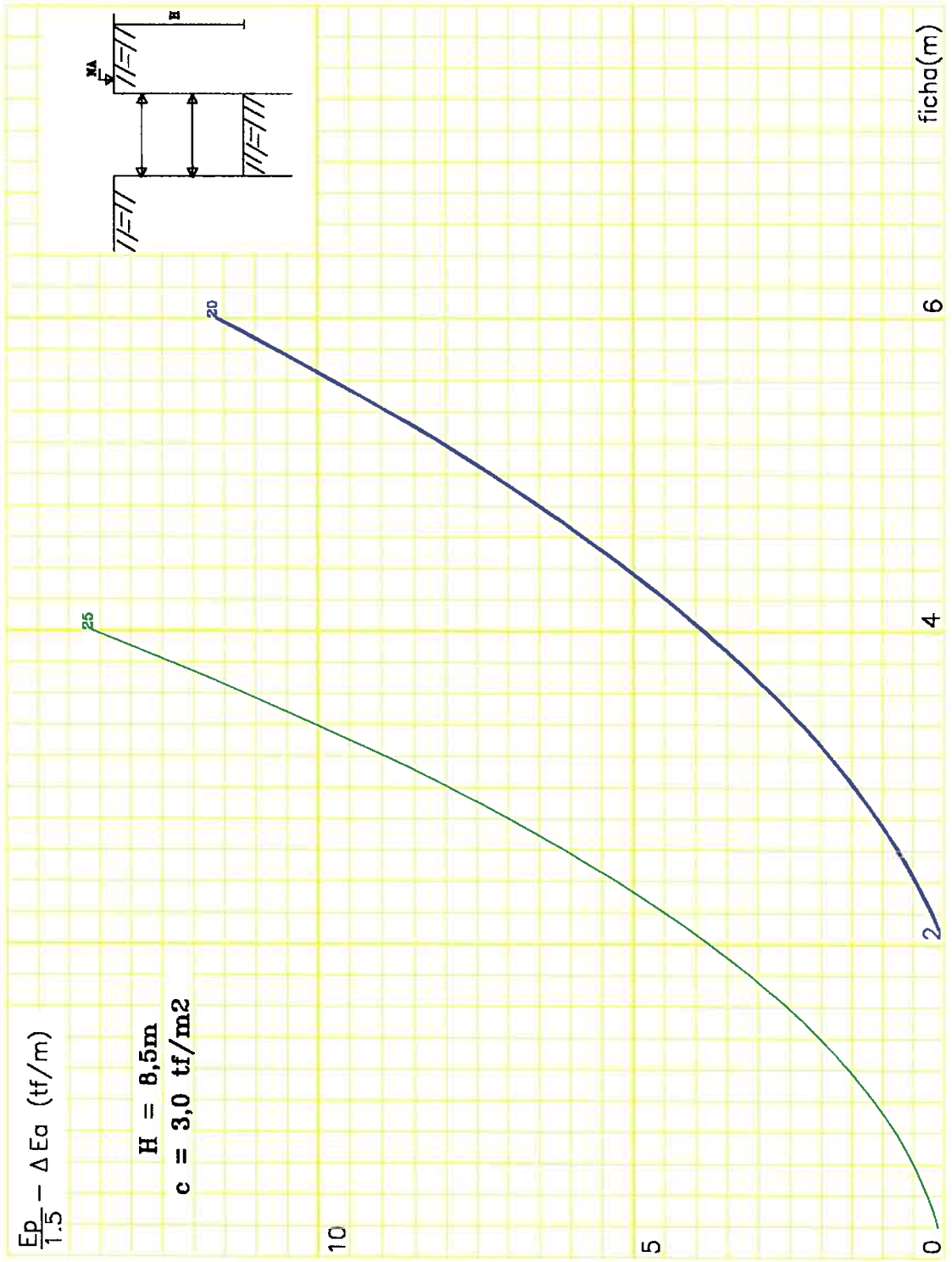


Fig. II.37- Ábaco tipo ES2b

**NÍVEL DE ÁGUA
À METADE DA ALTURA
DE ESCAVAÇÃO**

H = 4,5 m

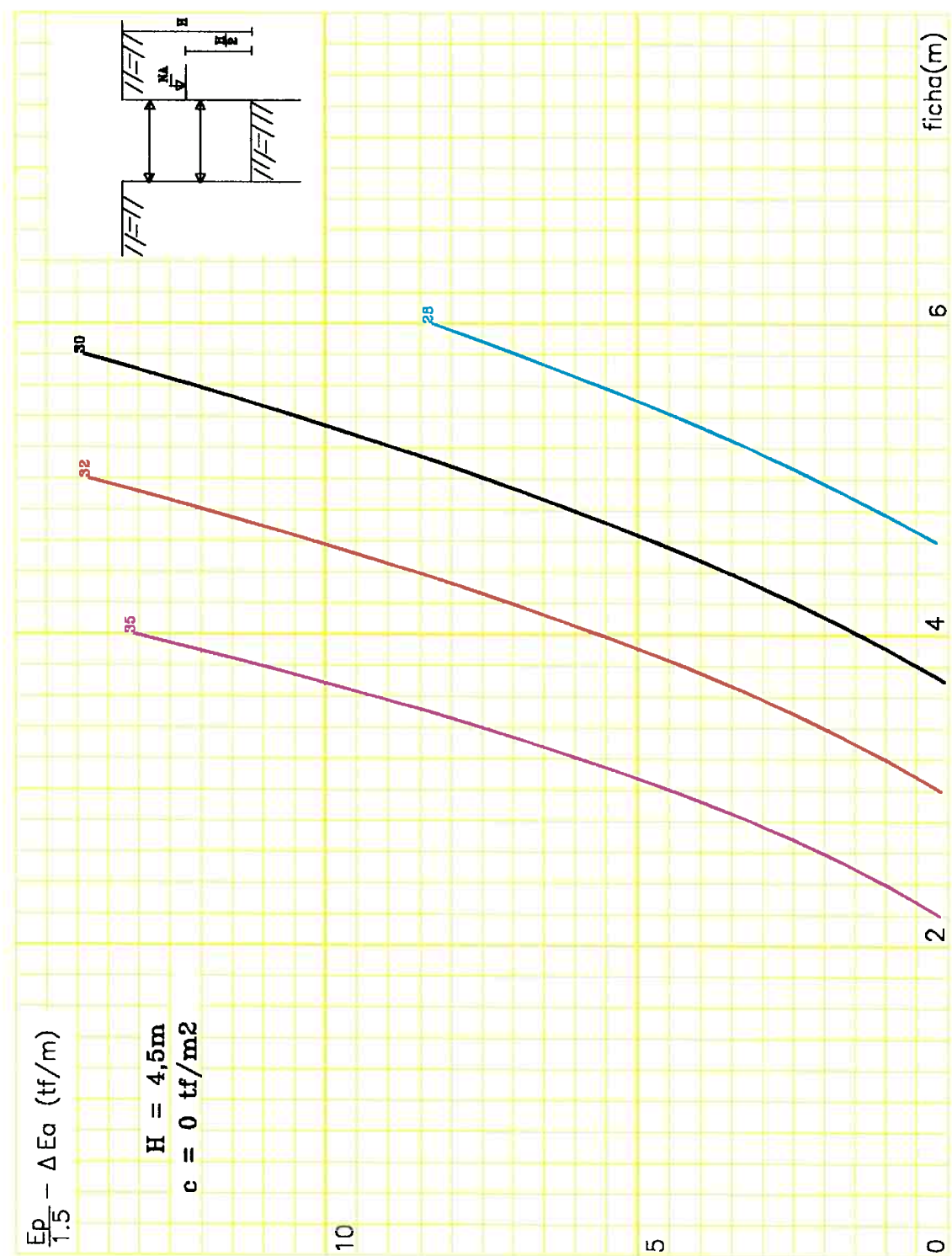


Fig. II.38- Ábaco tipo ES2b

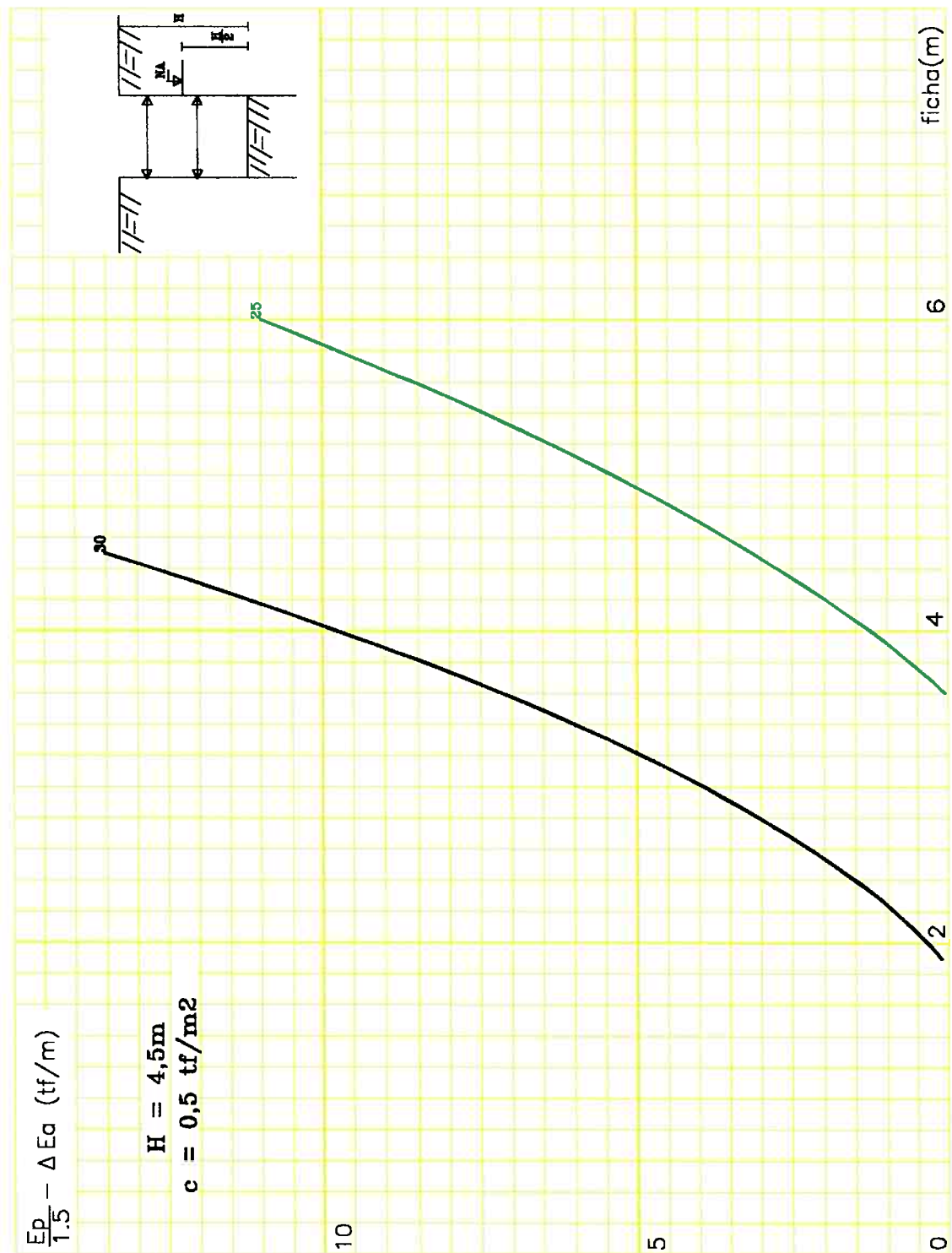


Fig. II.39- Ábaco tipo ES2b

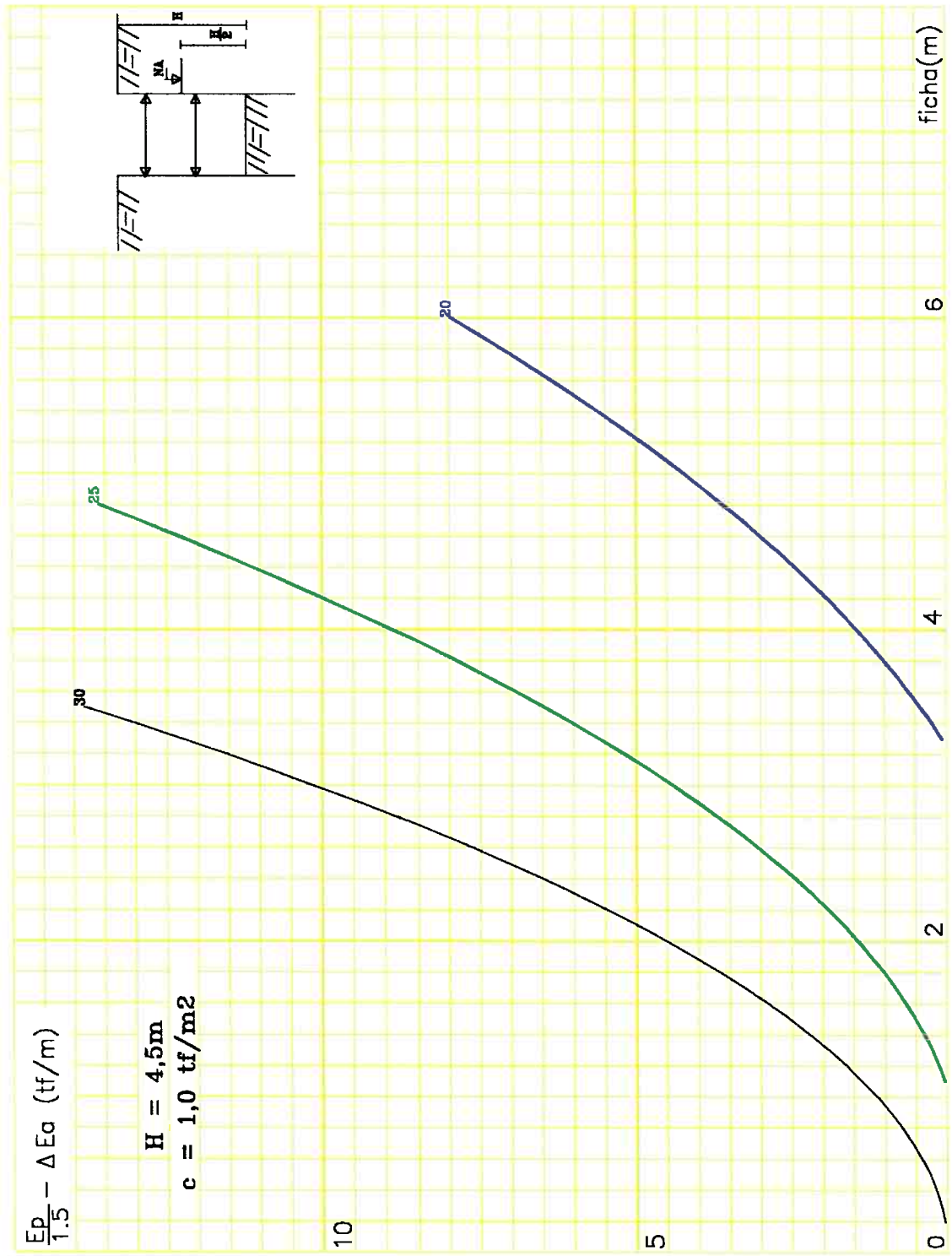


Fig. II.40- Ábaco tipo ES2b

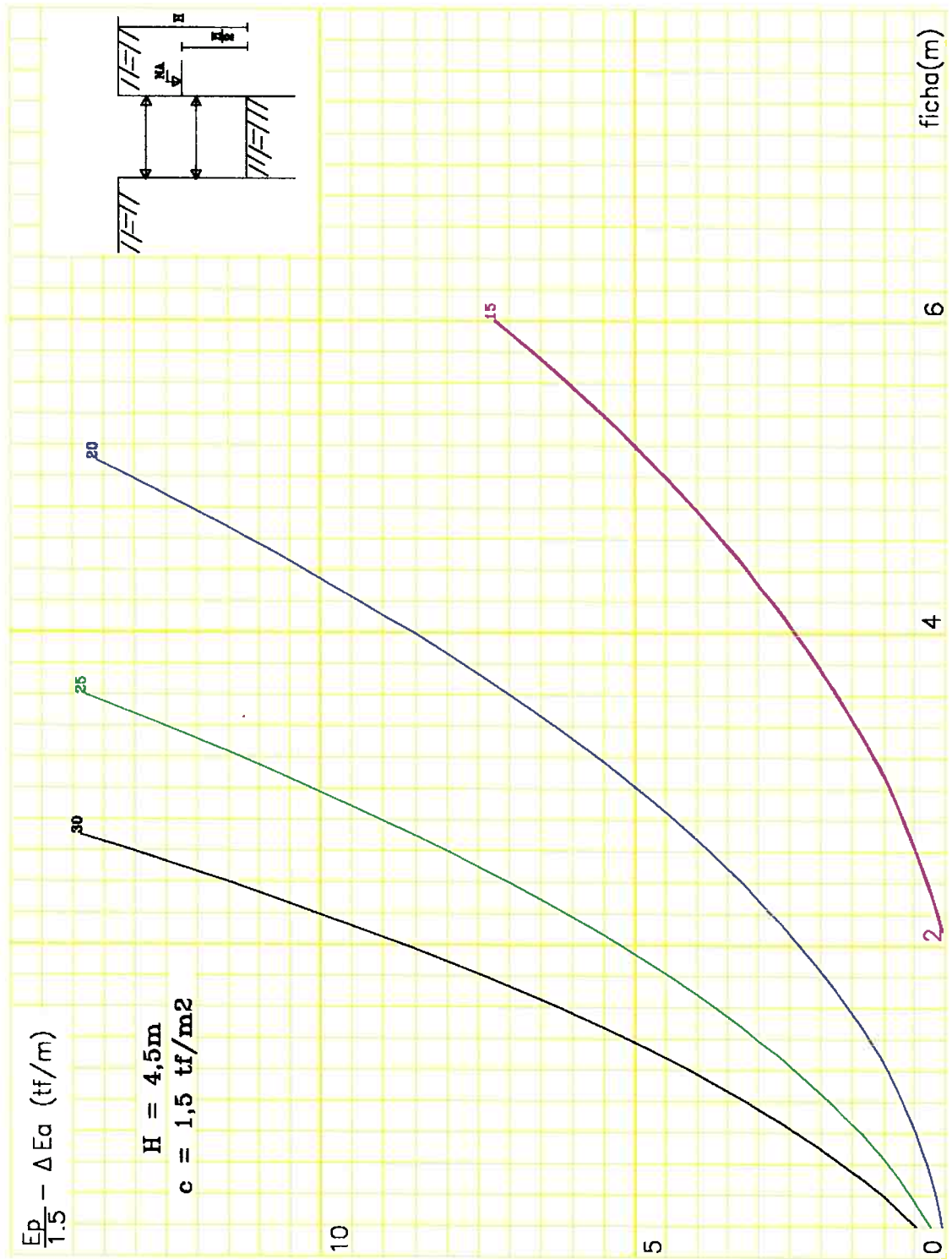


Fig. II.41- Ábaco tipo ES2b

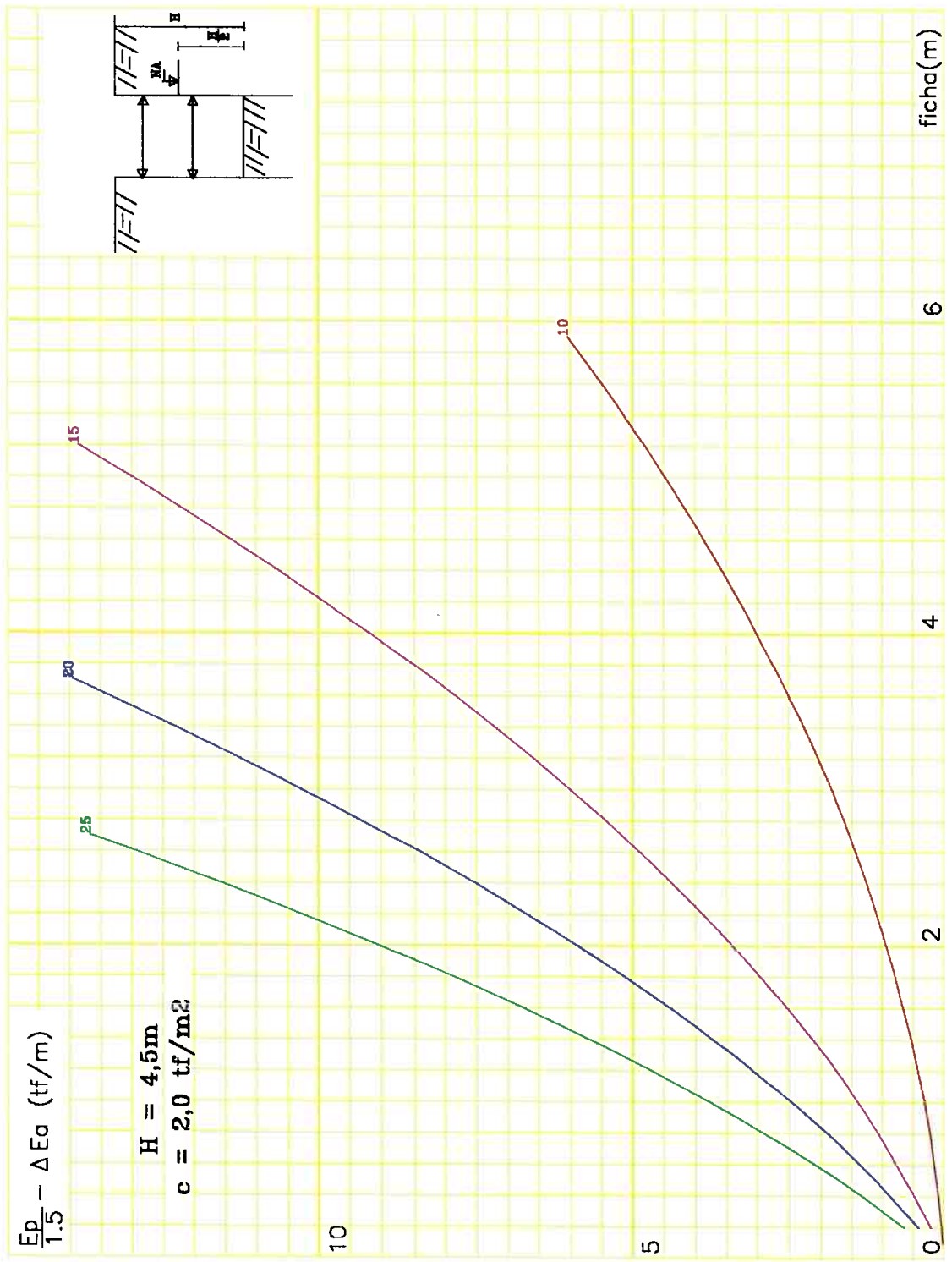


Fig. II.42- Ábaco tipo ES2b

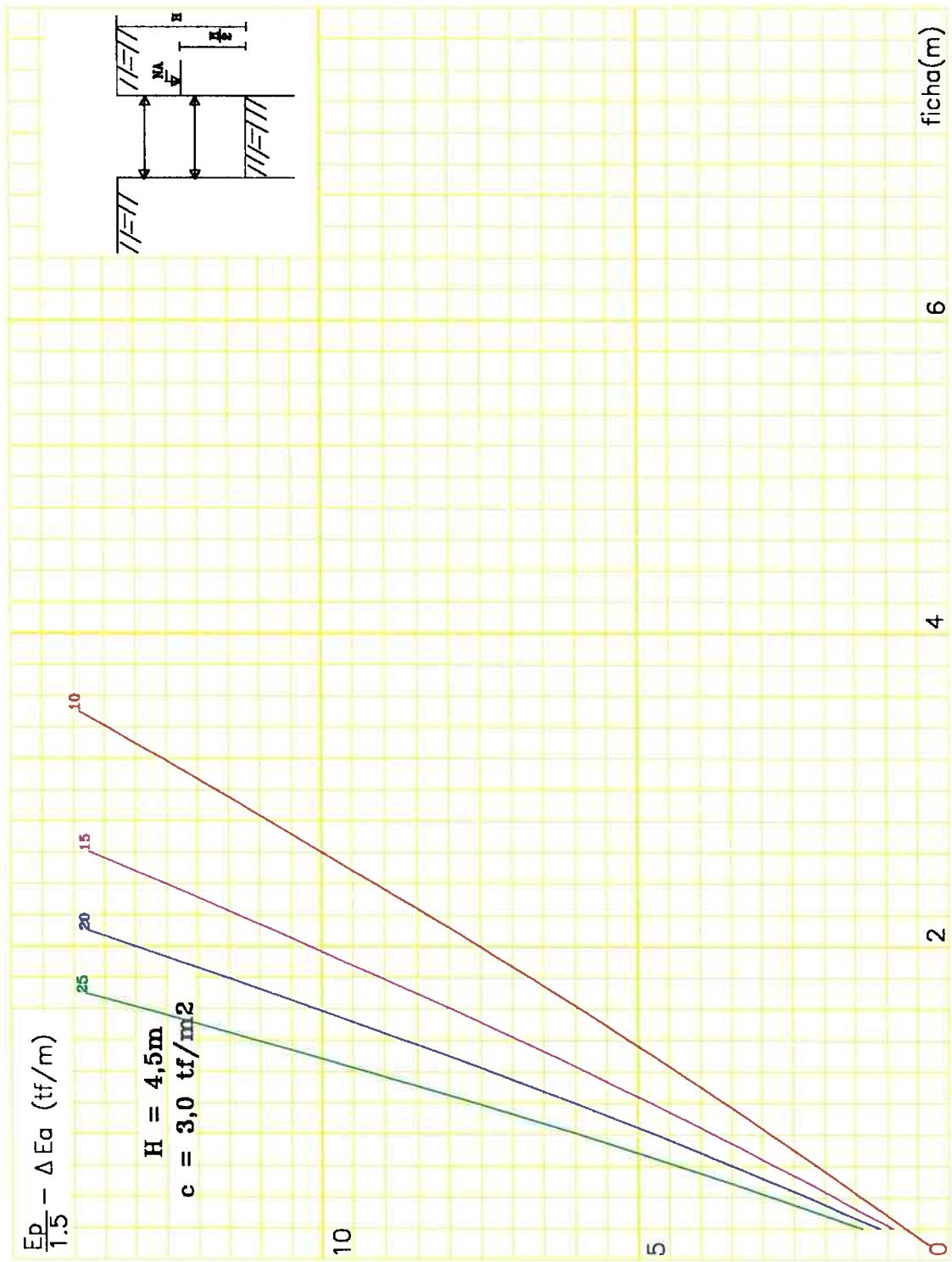


Fig. II.43- Ábaco tipo ES2b

H = 5,5 m

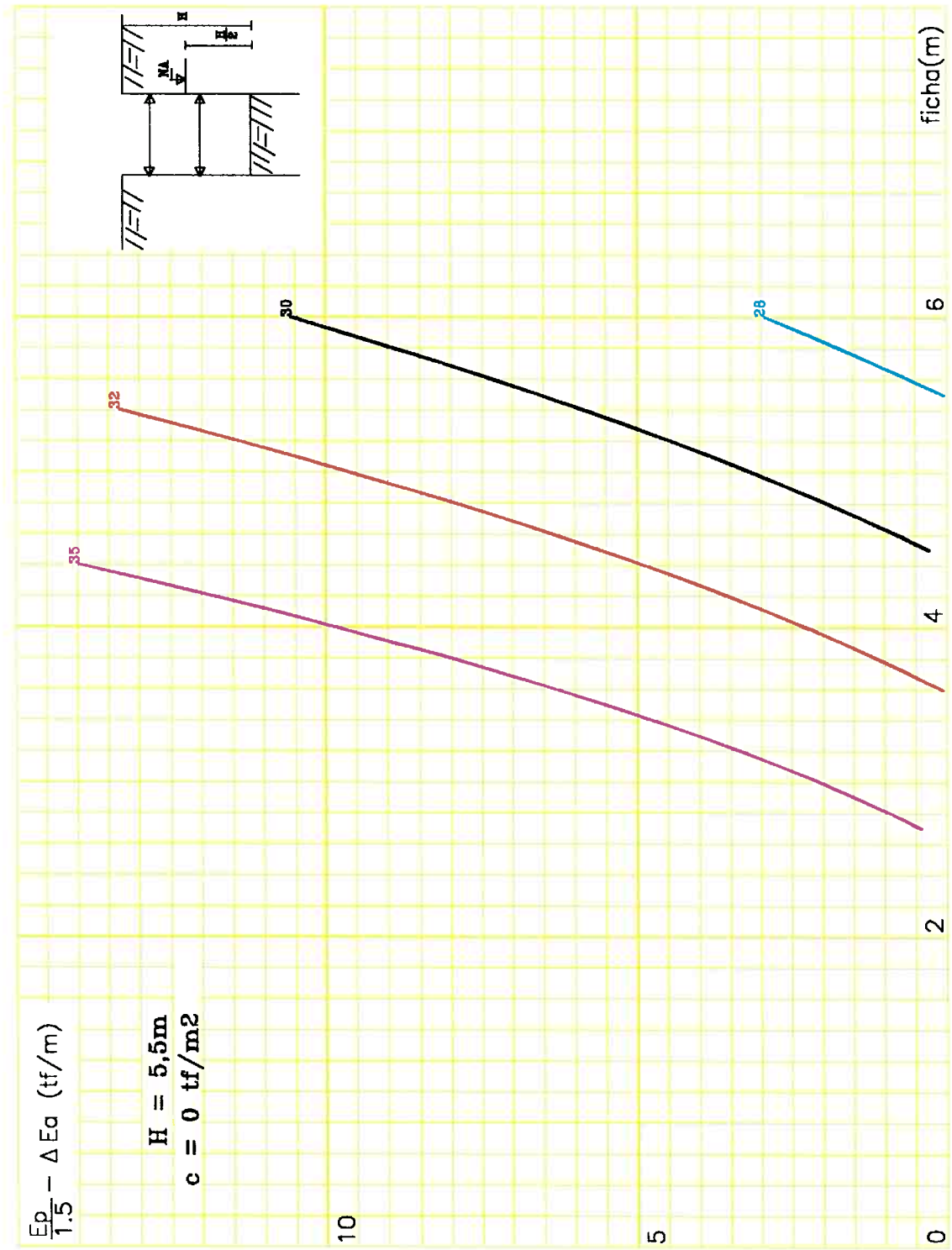


Fig. II.44- Ábaco tipo ES2b

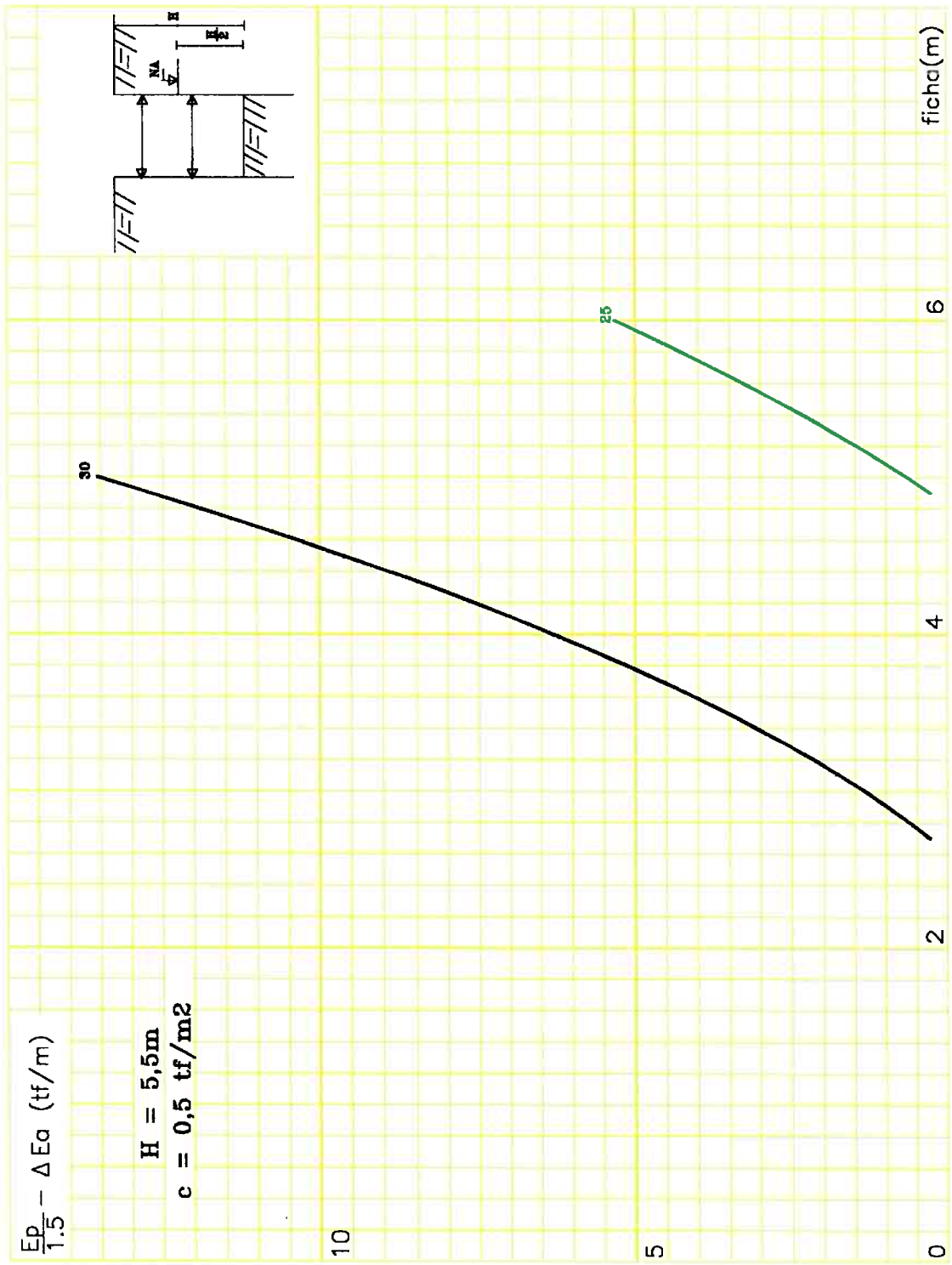


Fig. II.45- Ábaco tipo ES2b

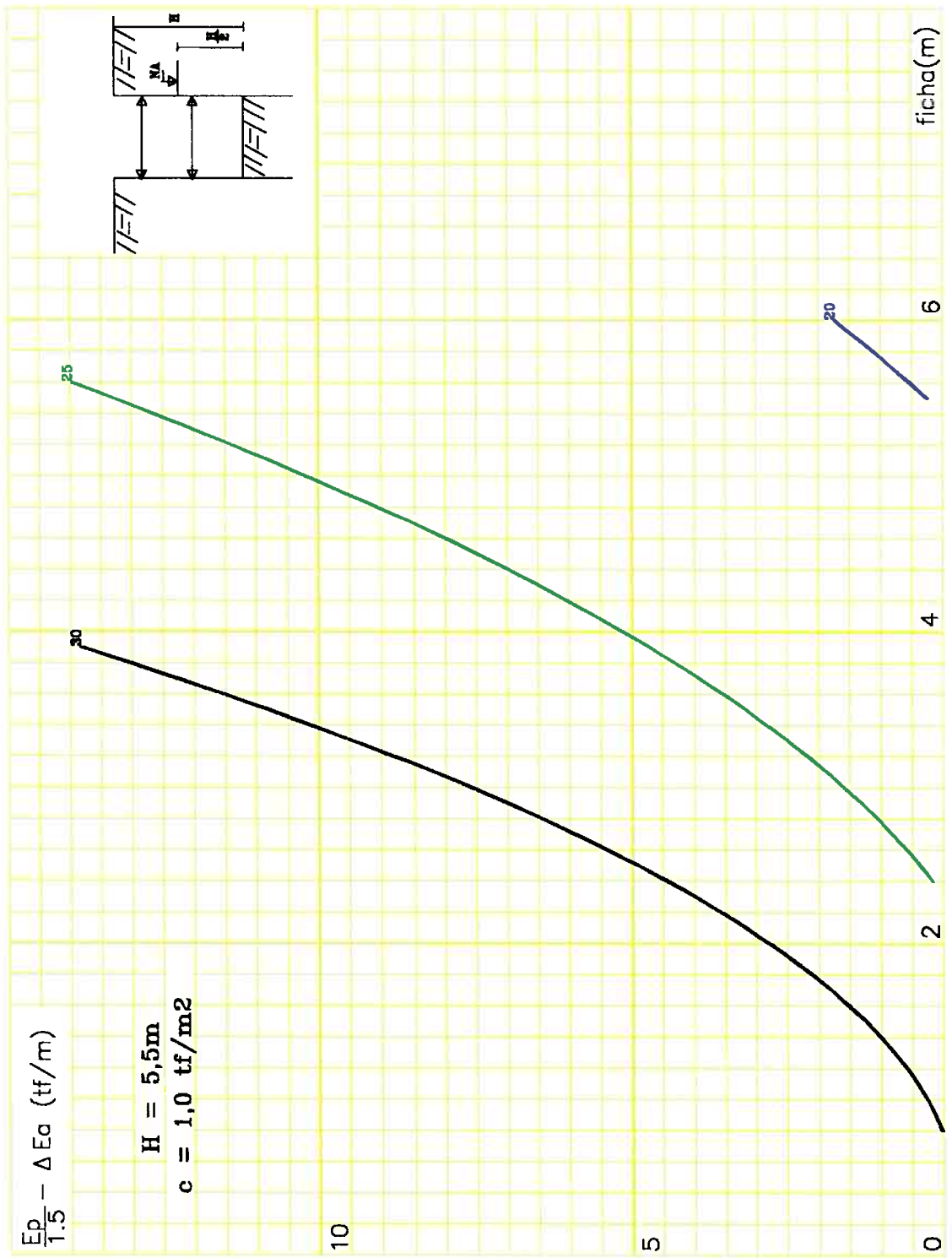


Fig. II.46- Ábaco tipo ES2b

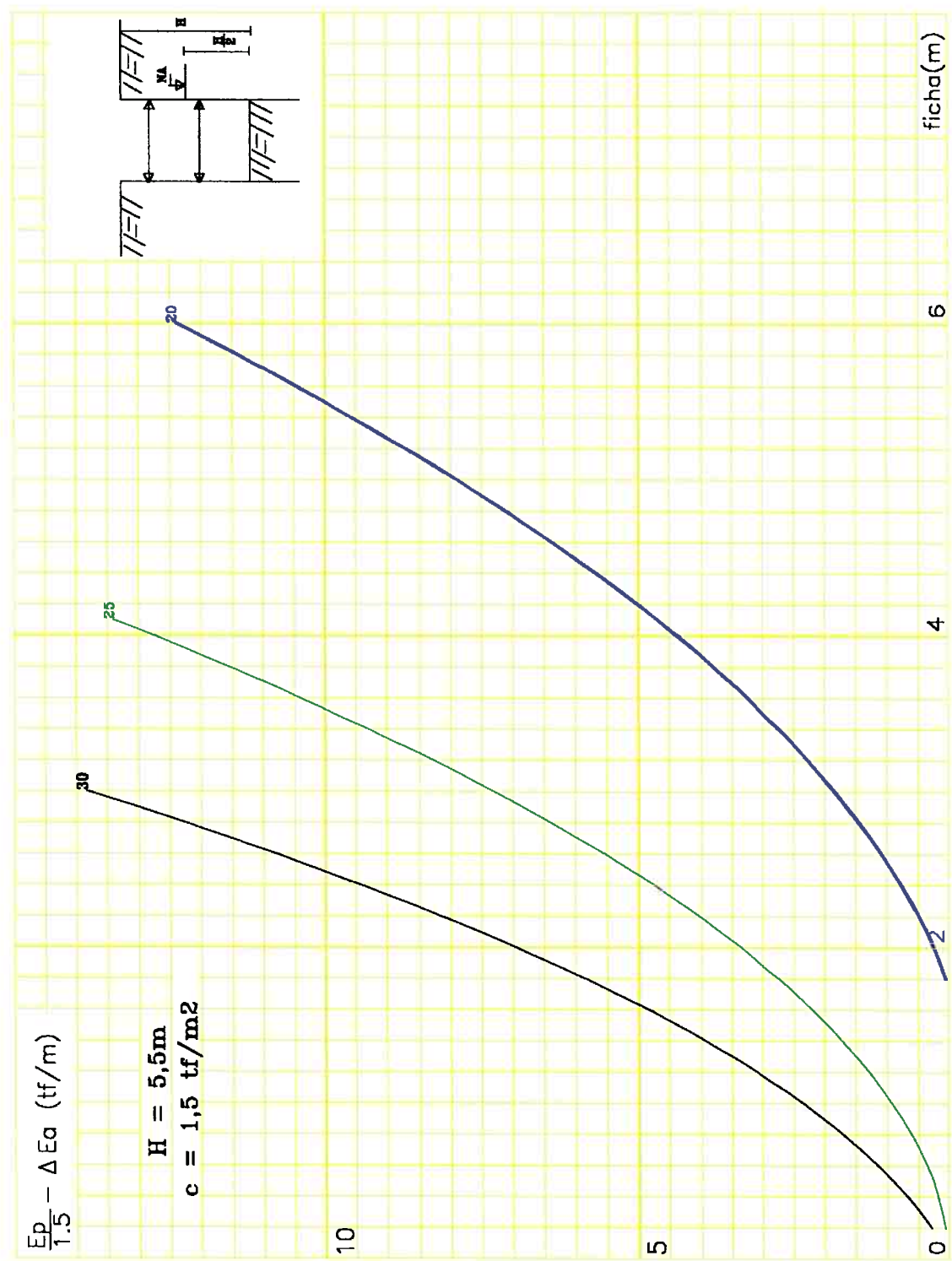


Fig. II.47- Ábaco tipo ES2b

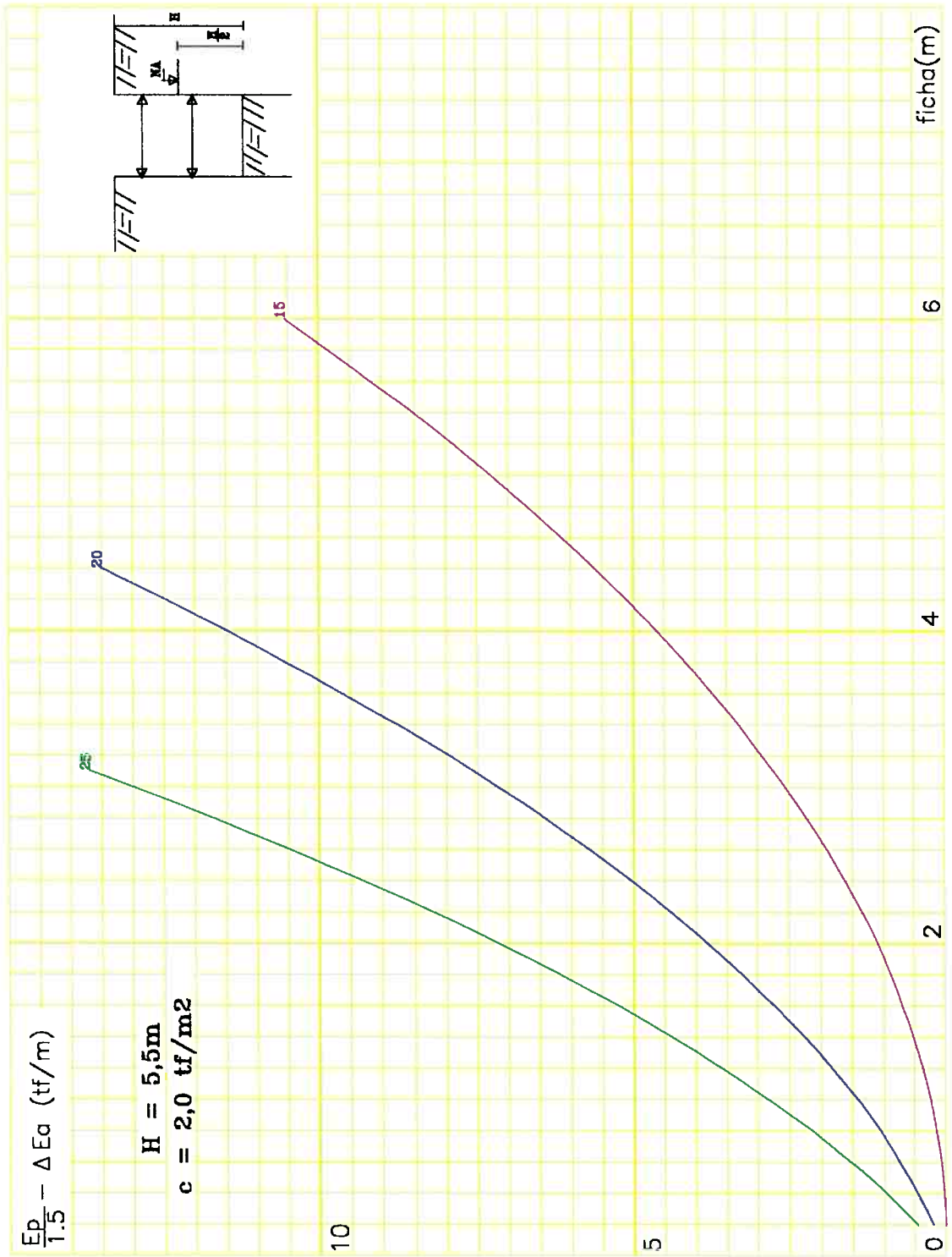


Fig. II.48- Ábaco tipo ES2b

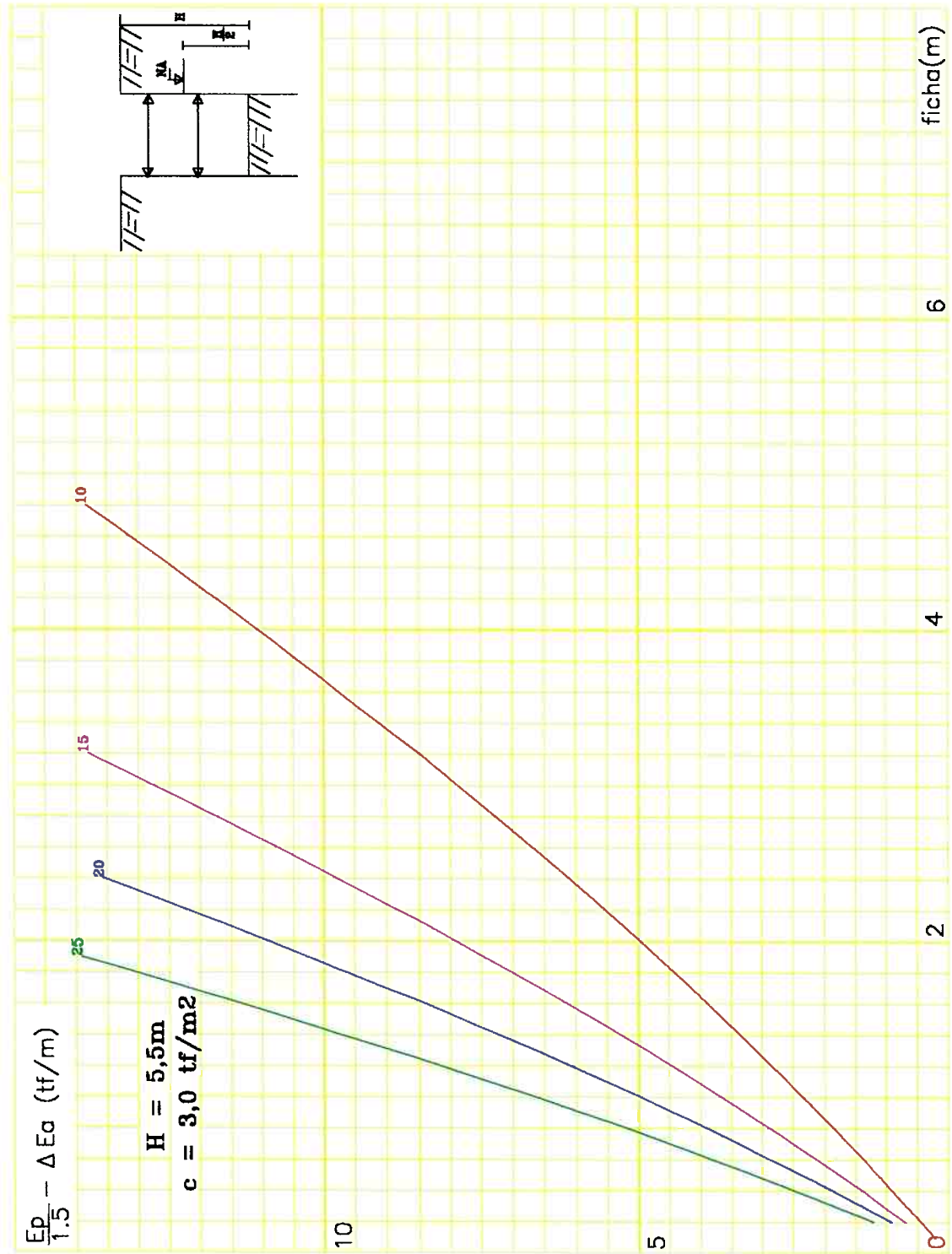


Fig. II.49- Ábaco tipo ES2b

H = 6,5 m

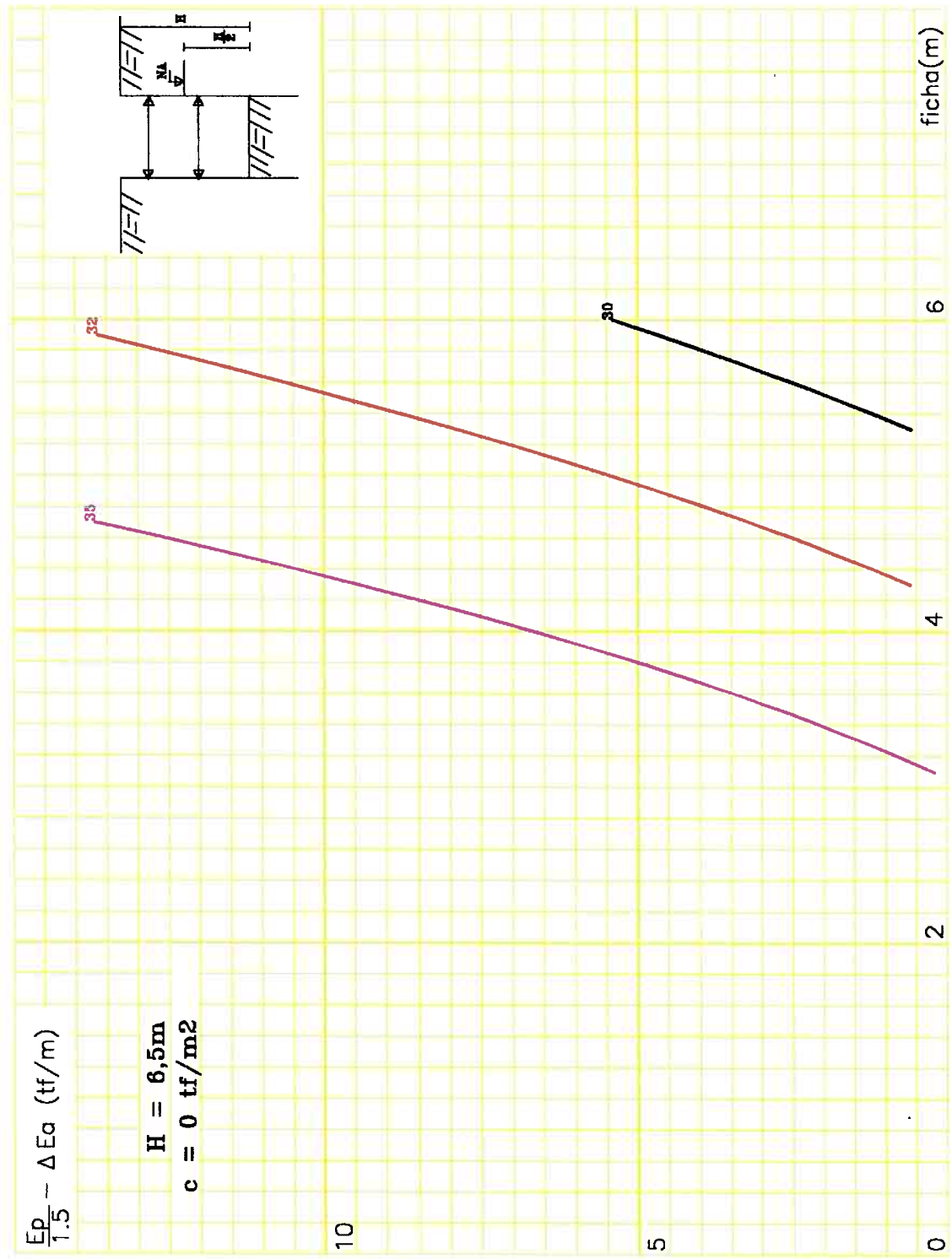


Fig. II.50- Ábaco tipo ES2b

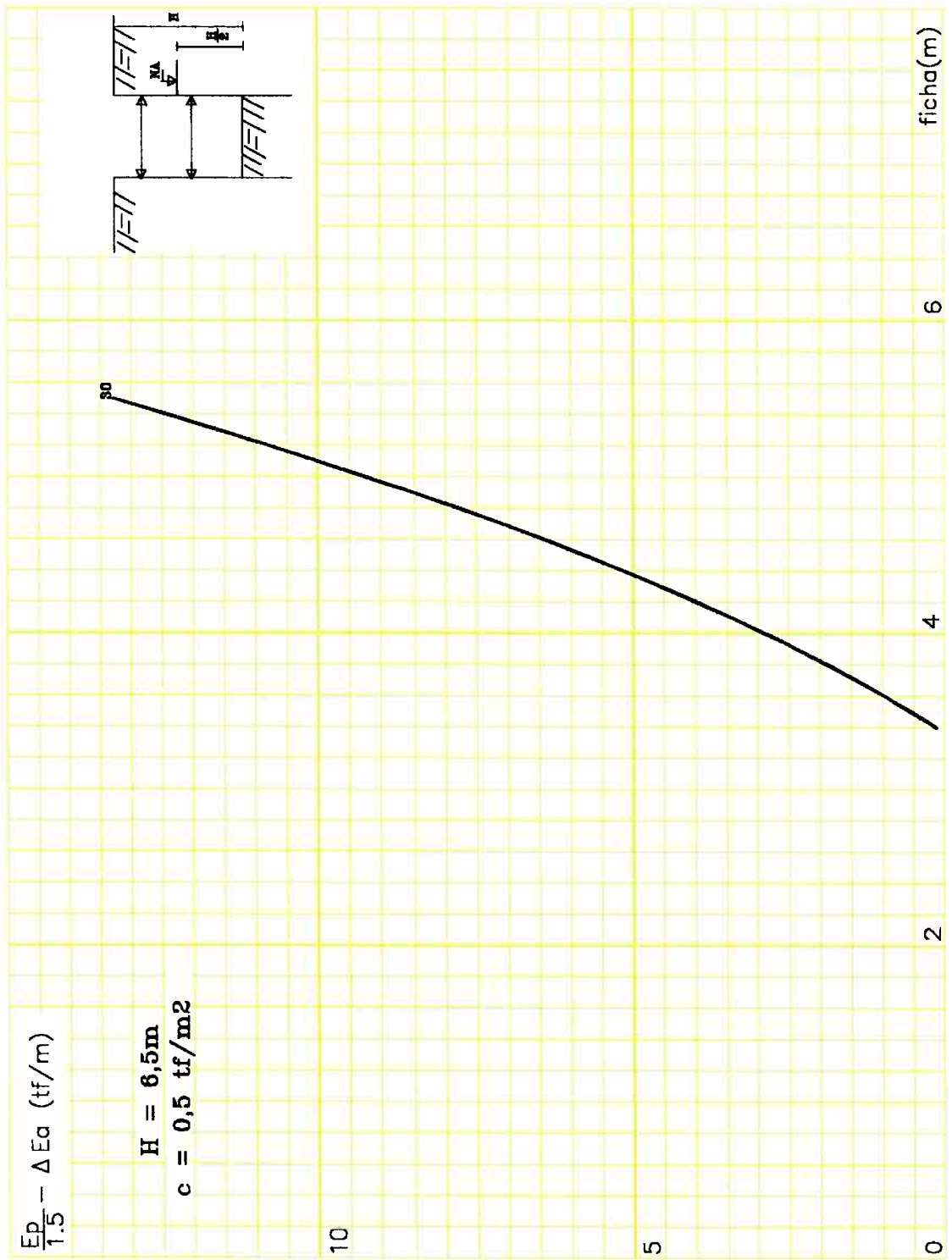


Fig. II.51- Ábaco tipo ES2b

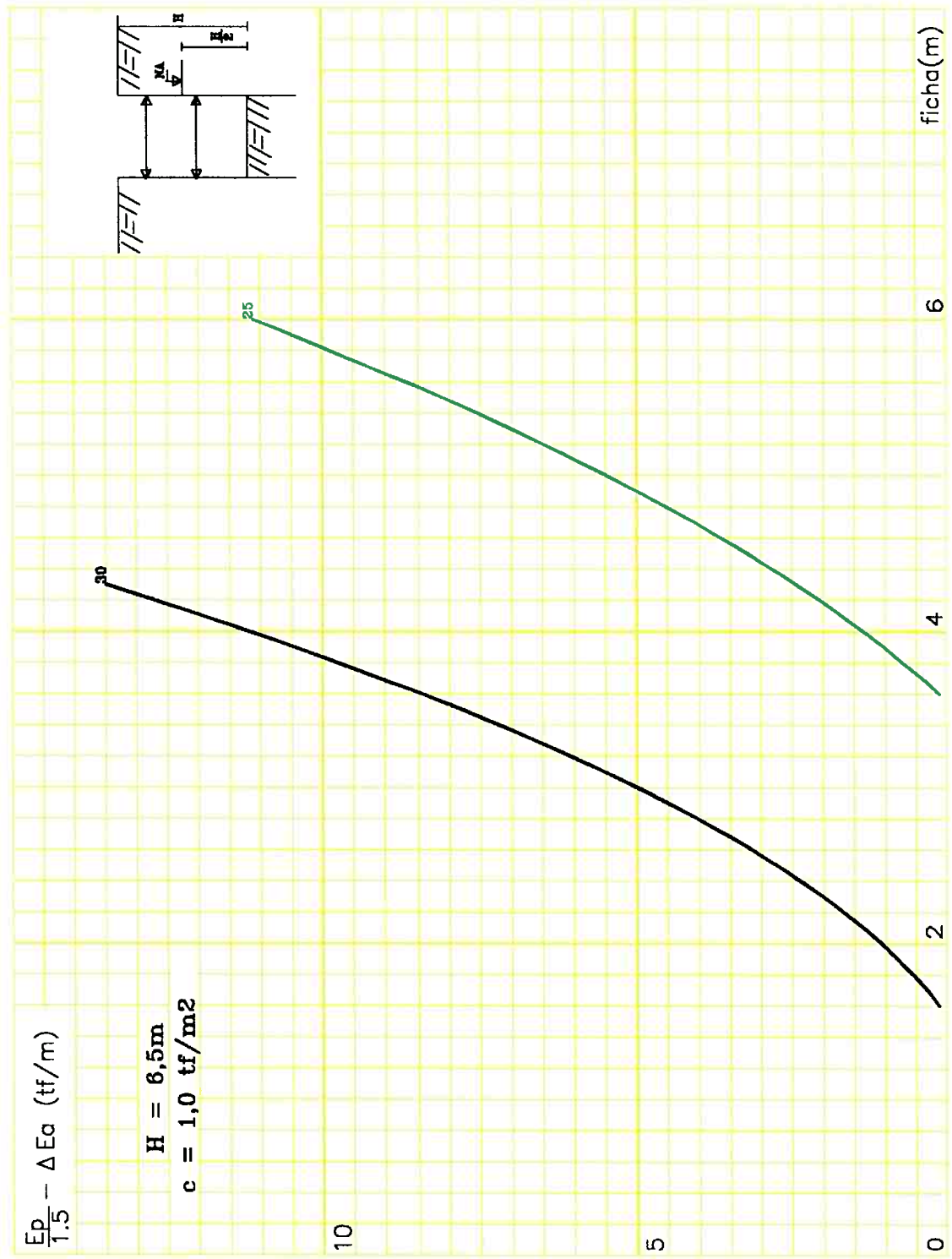


Fig. II.52- Ábaco tipo ES2b

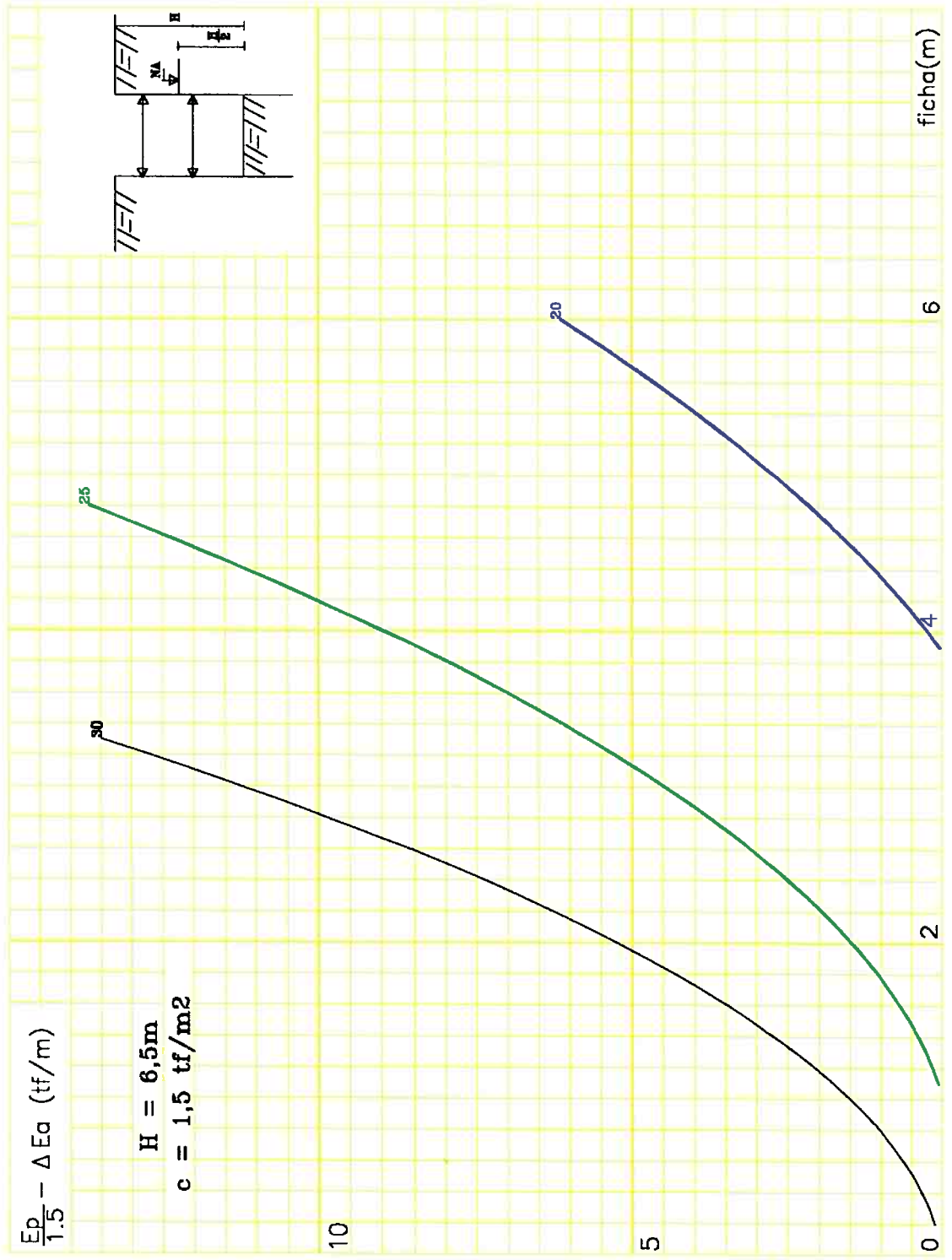


Fig. II.53- Ábaco tipo ES2b

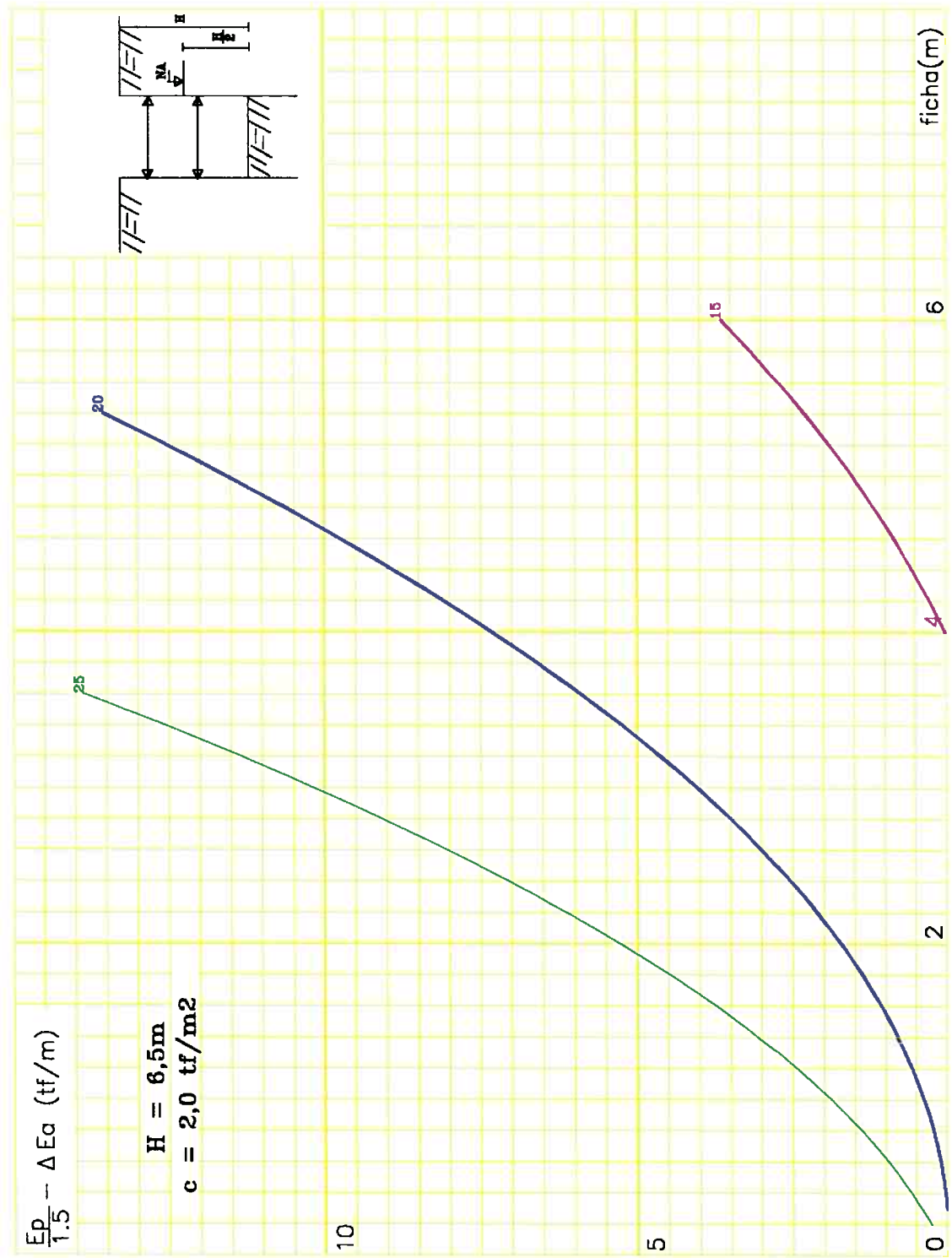


Fig. II.54- Ábaco tipo ES2b

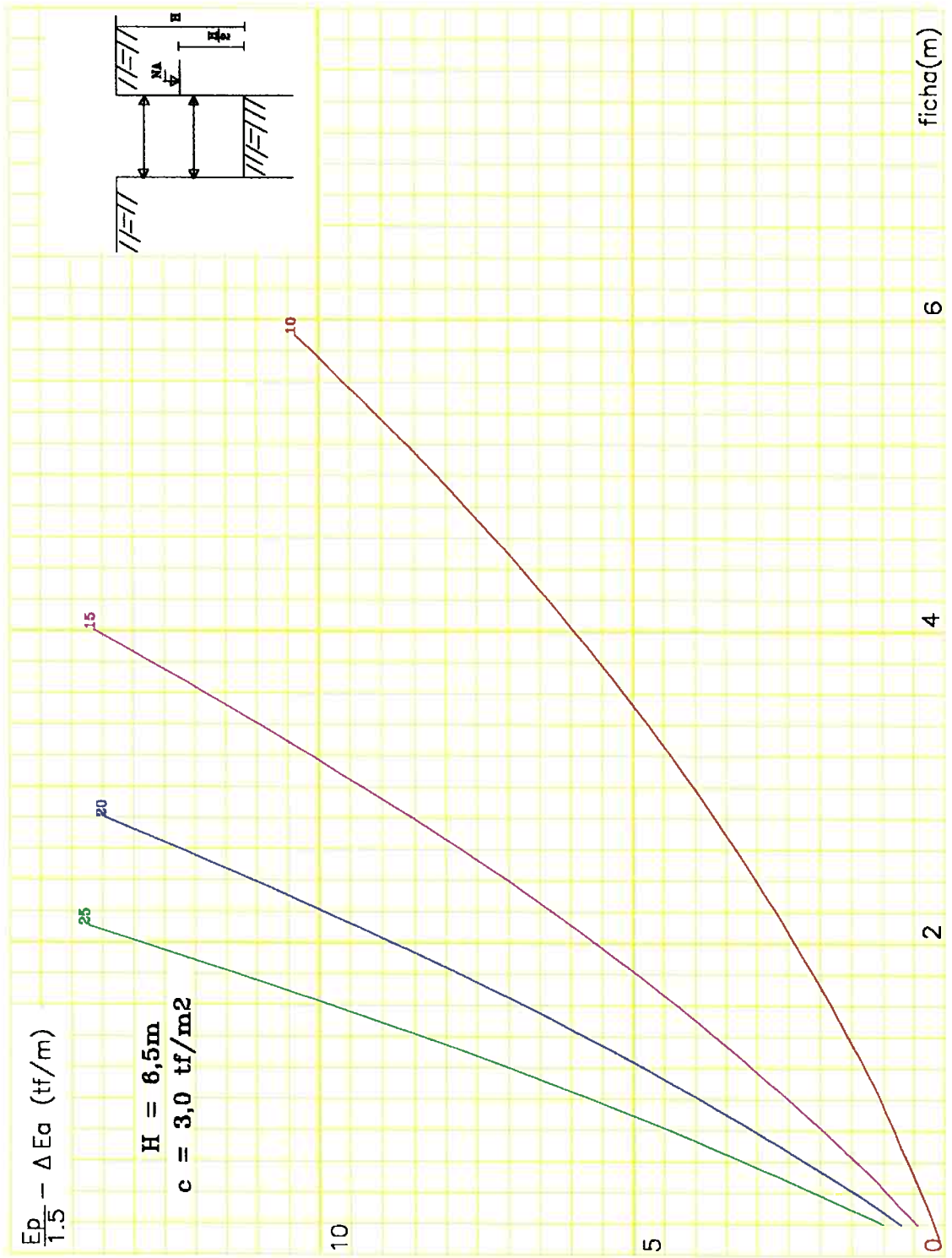


Fig. II.55- Ábaco tipo ES2b

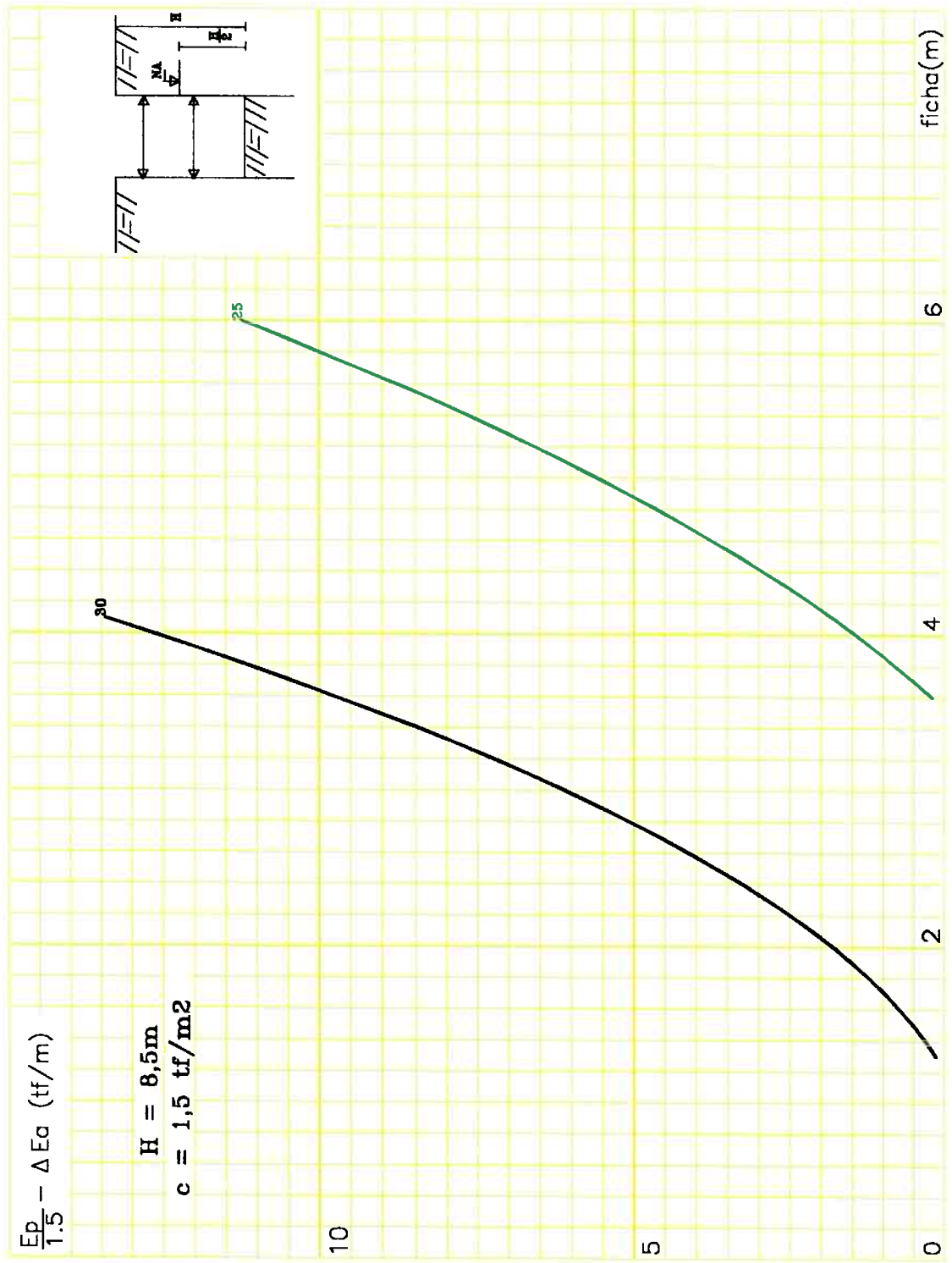


Fig. II.65- Ábaco tipo ES2b

H = 7,5 m

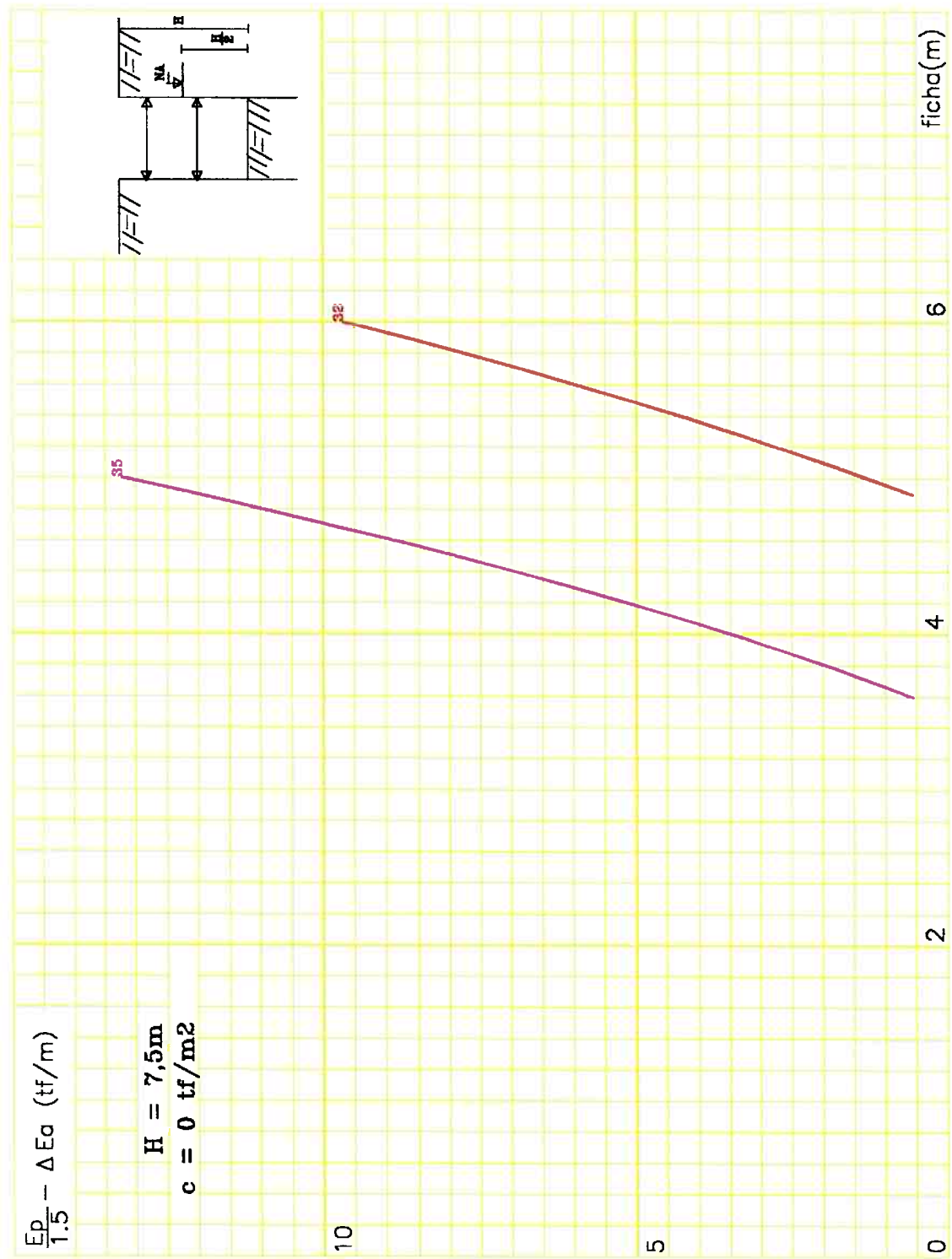


Fig. II.56- Ábaco tipo ES2b

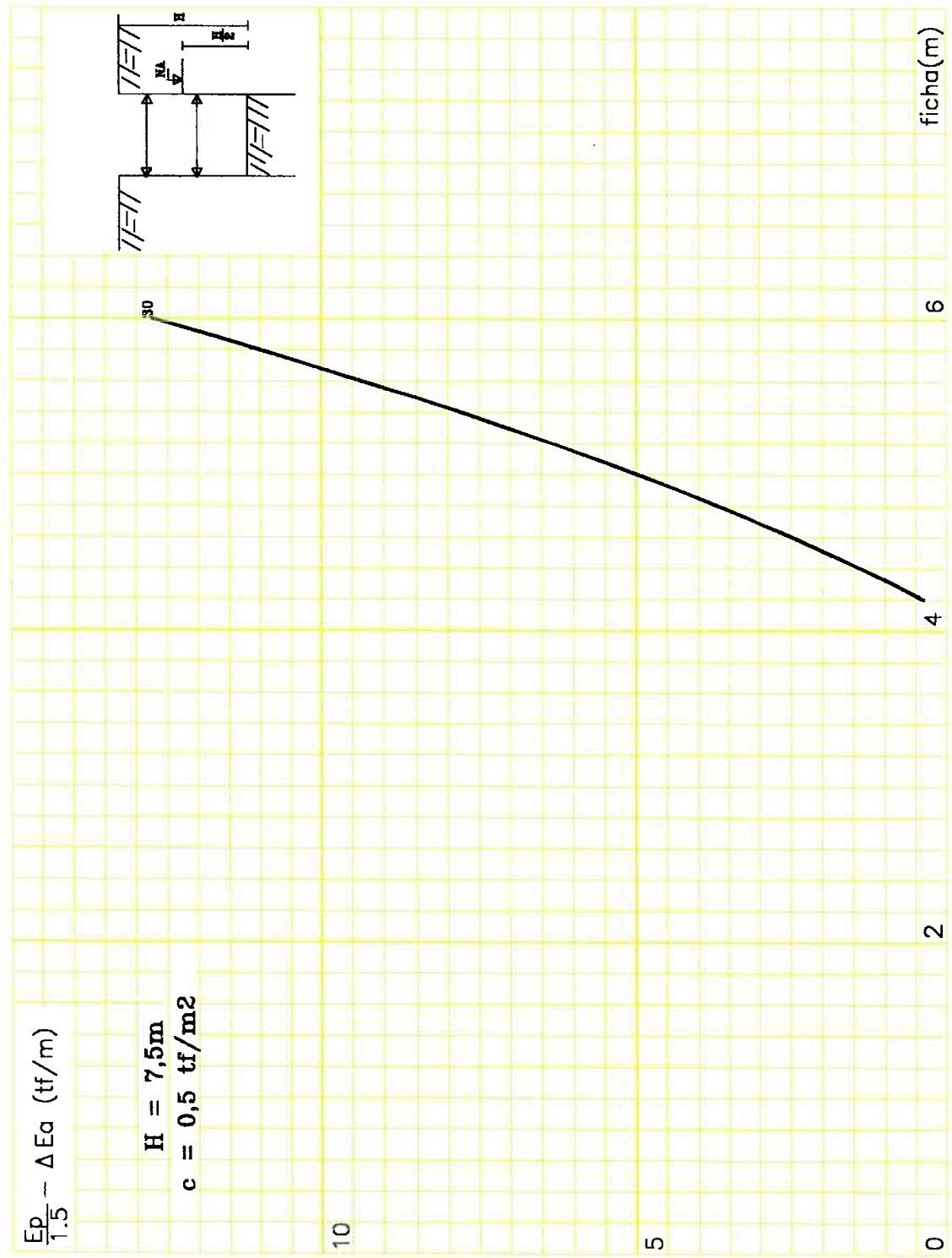


Fig. II.57- Ábaco tipo ES2b

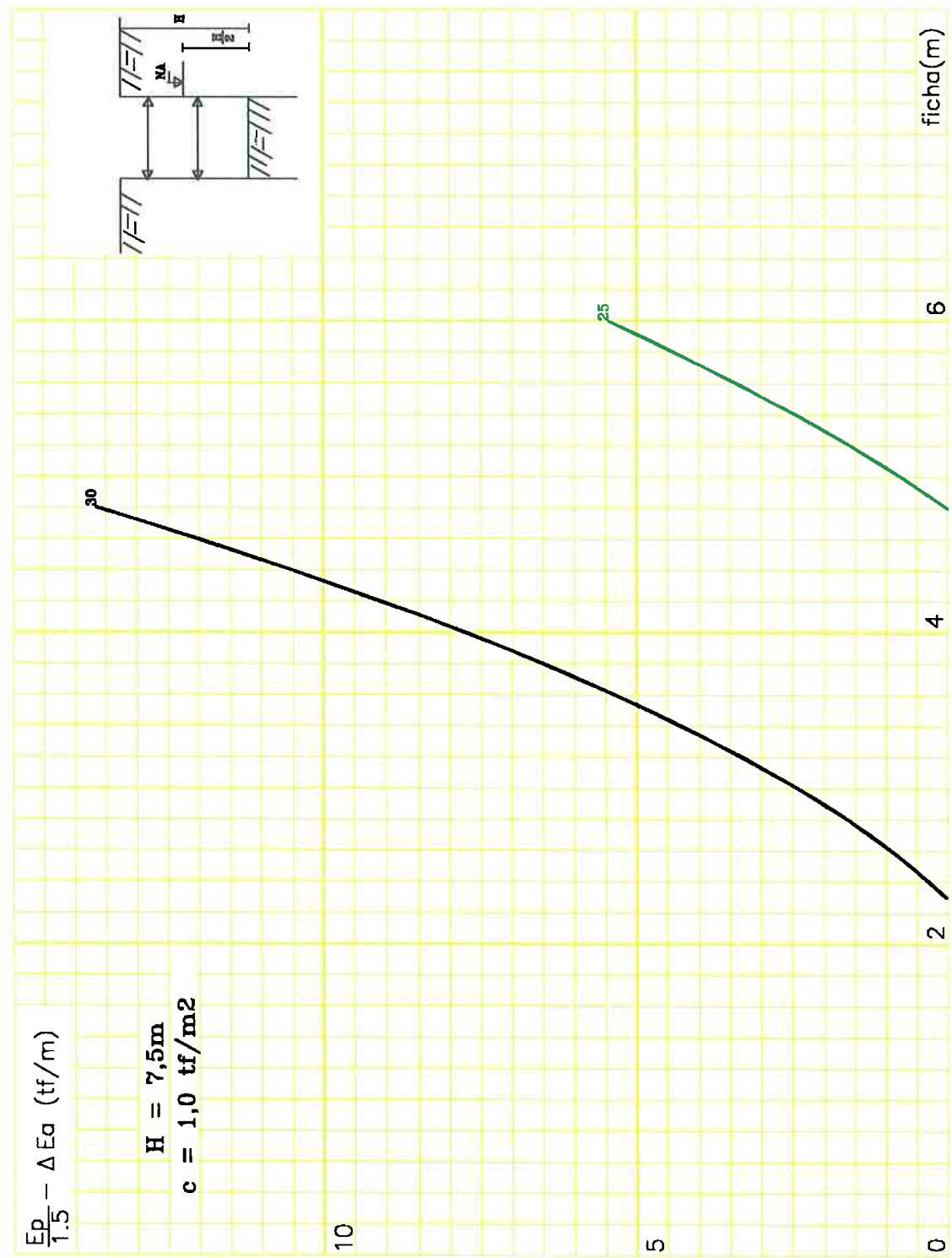


Fig. II.58- Ábaco tipo ES2b

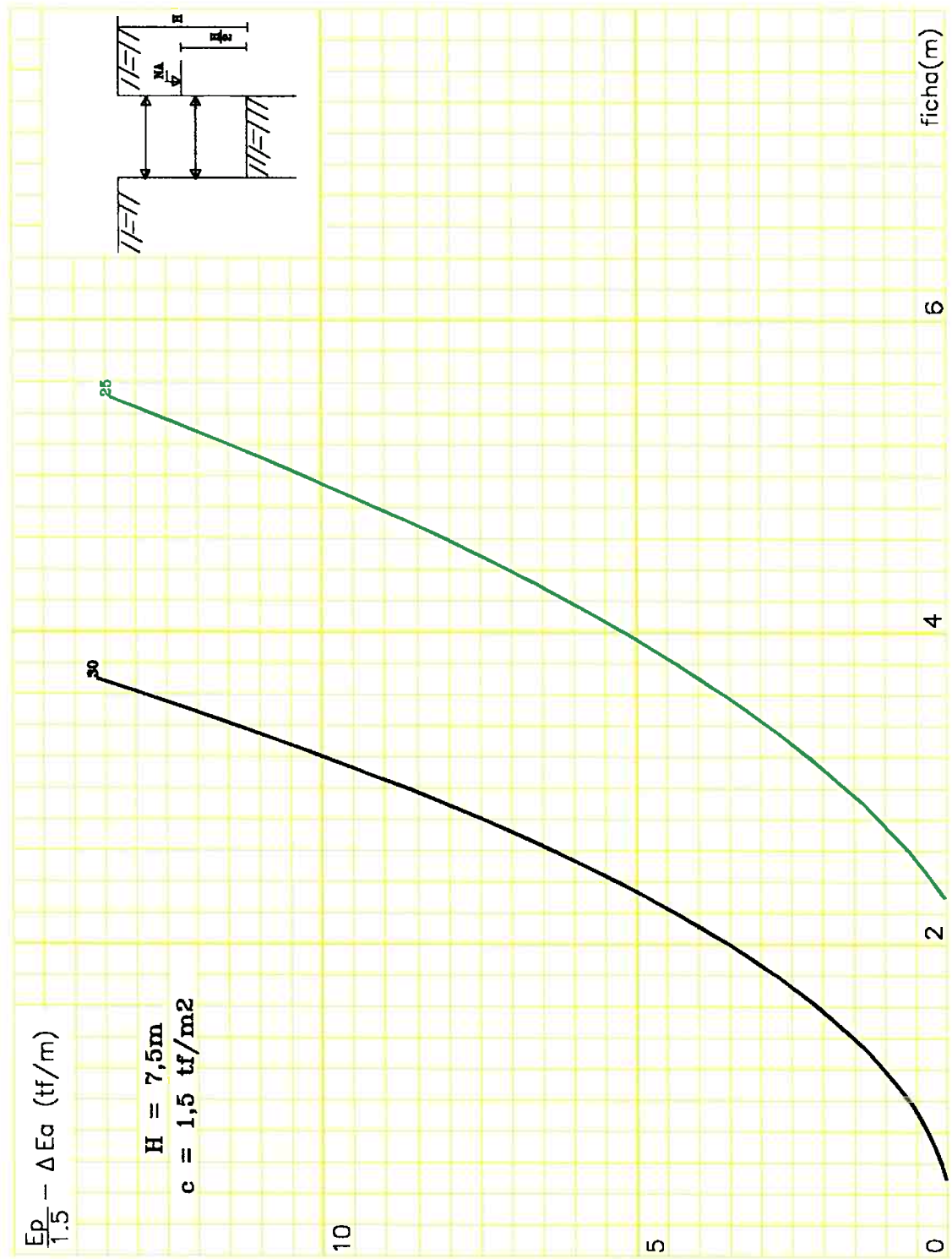


Fig. II.59- Ábaco tipo ES2b

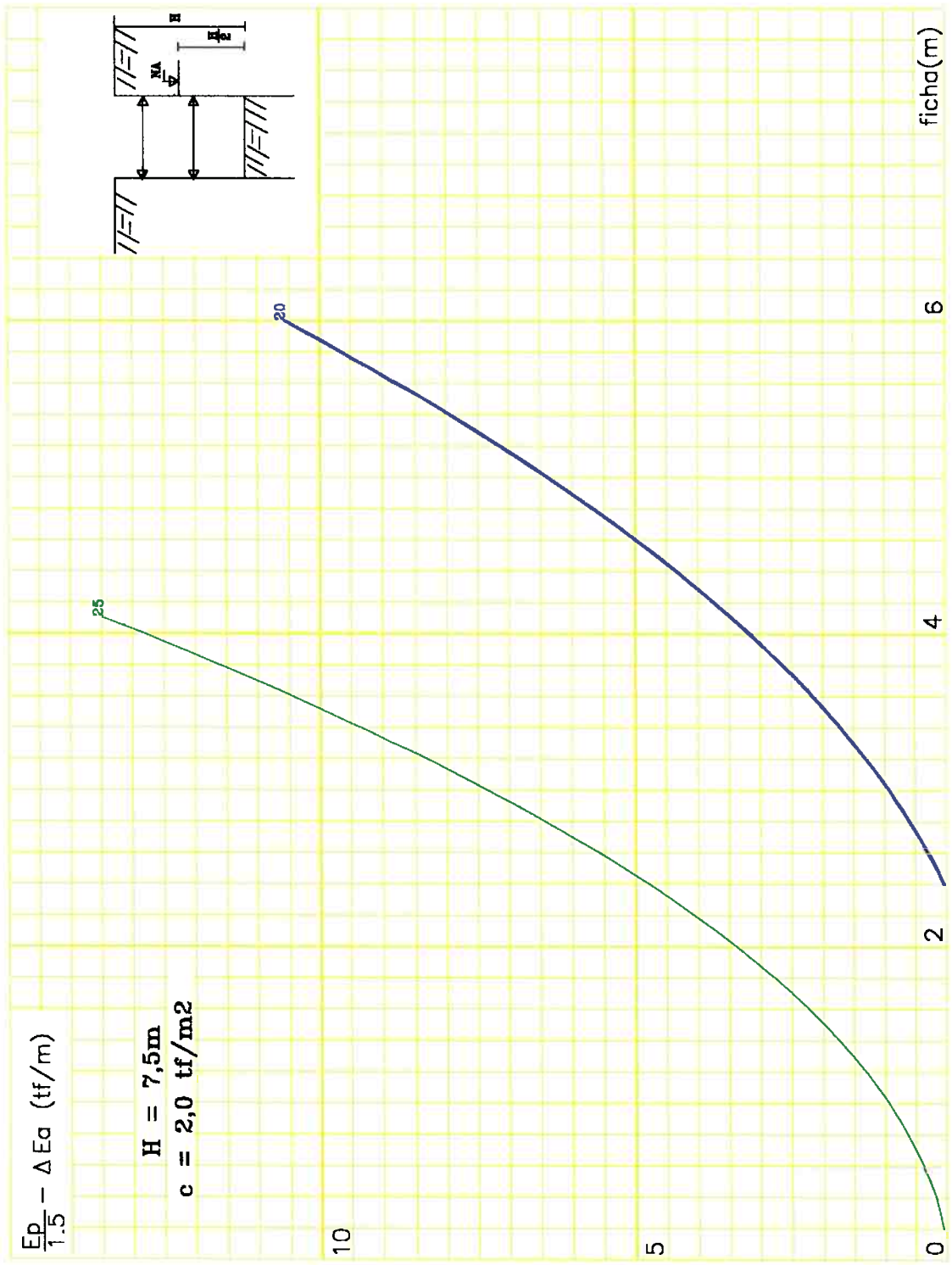


Fig. II.60- Ábaco tipo ES2b

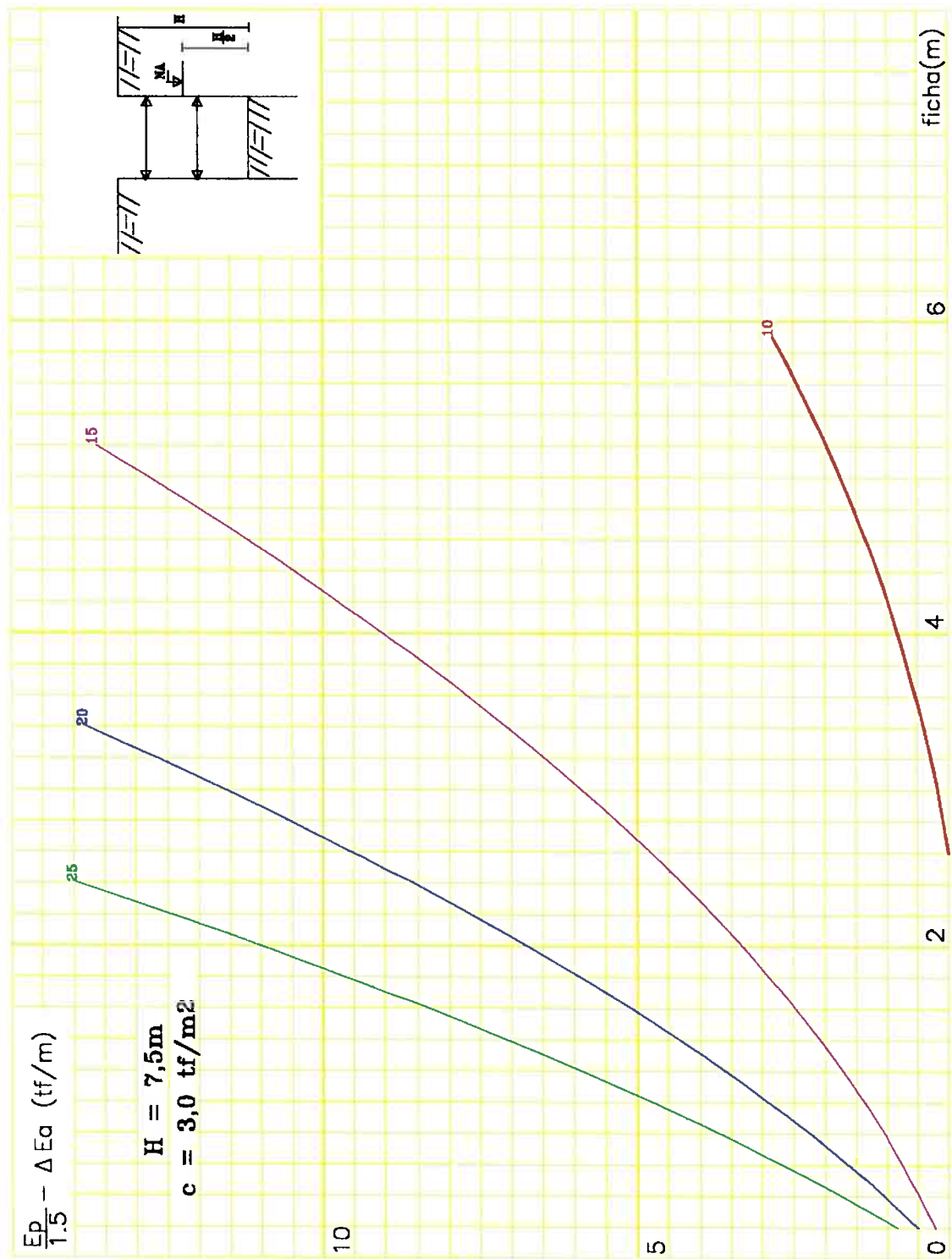


Fig. II.61- Ábaco tipo ES2b

H = 8,5 m

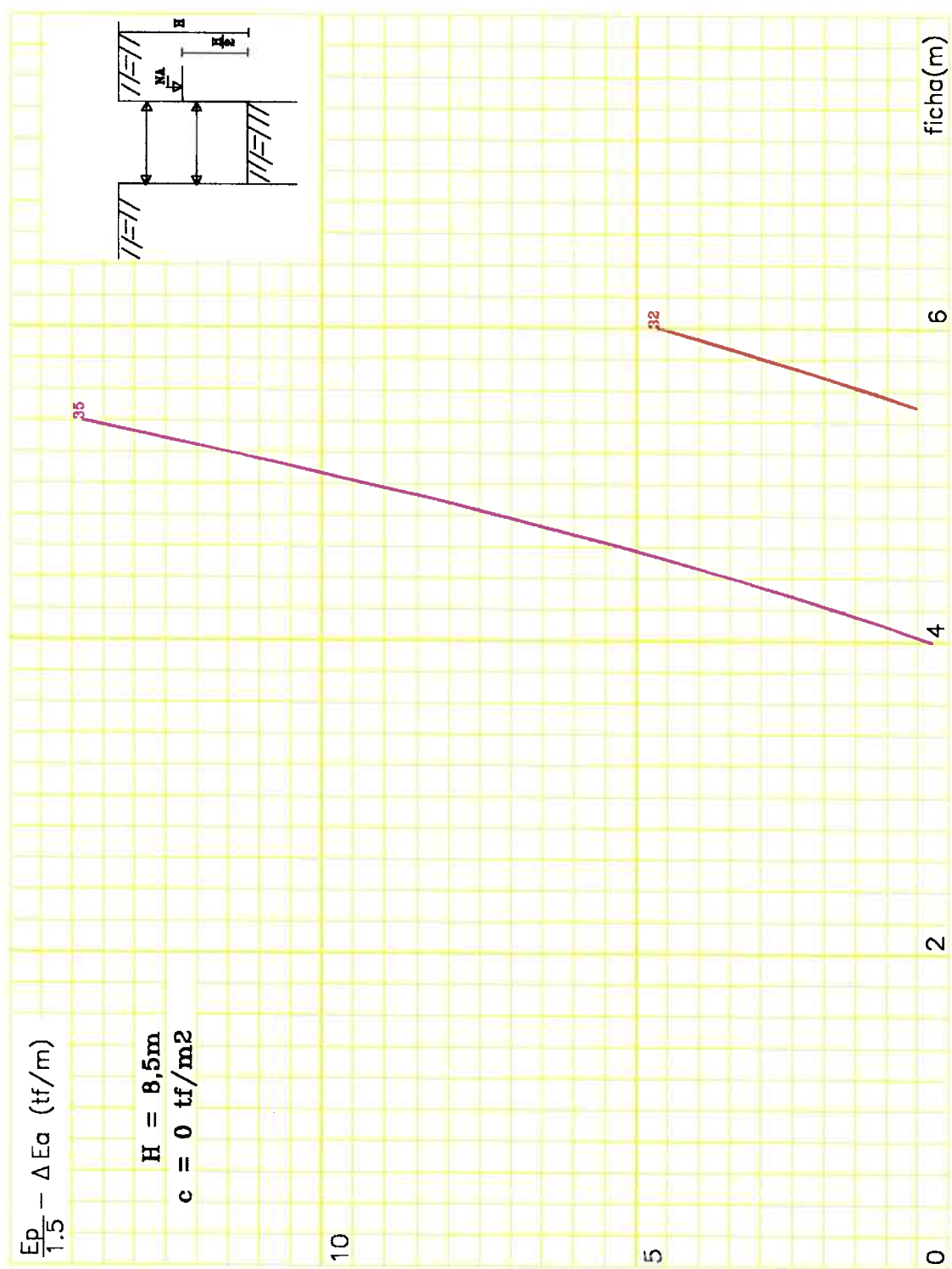


Fig. II.62- Ábaco tipo ES2b

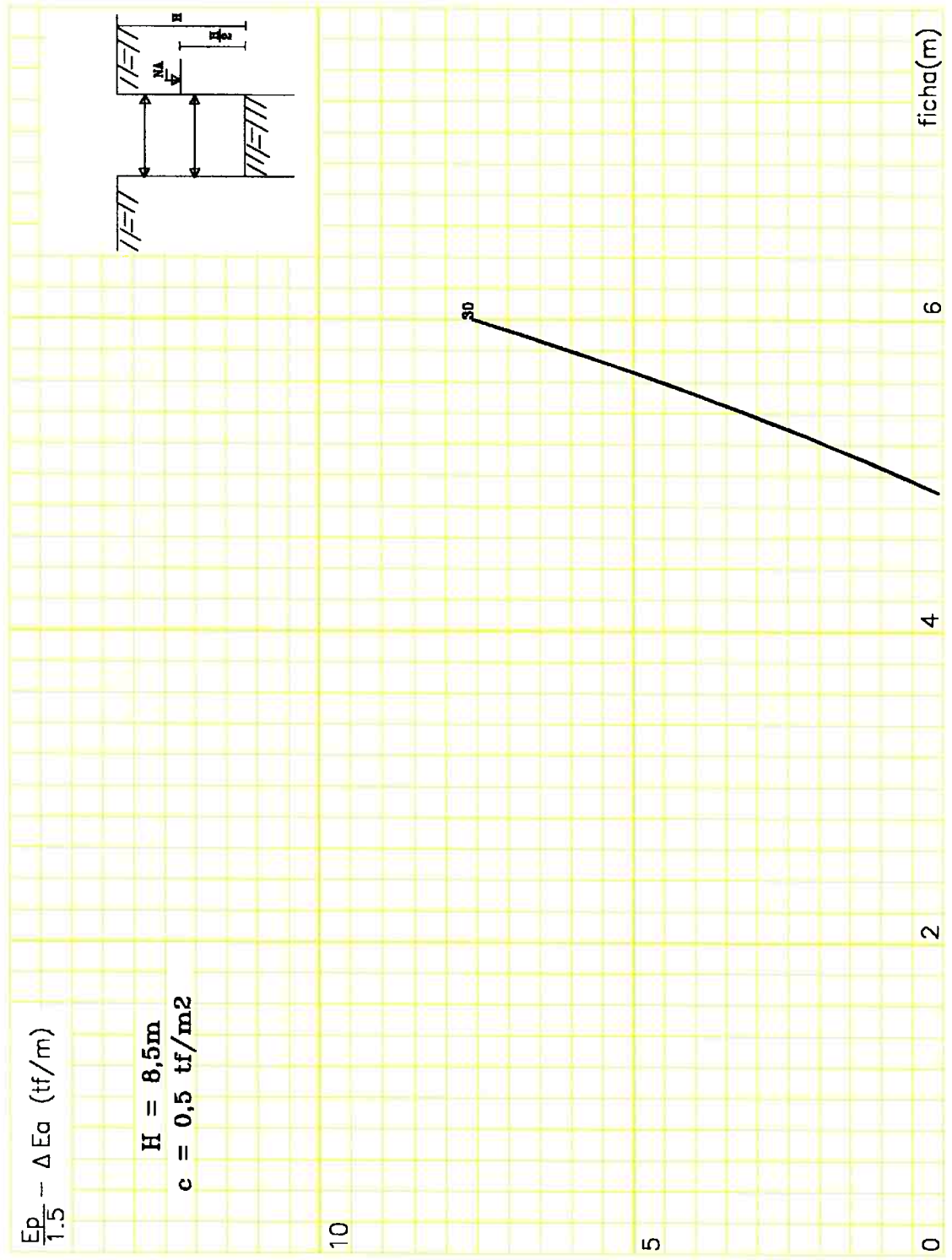


Fig. II.63- Ábaco tipo ES2b

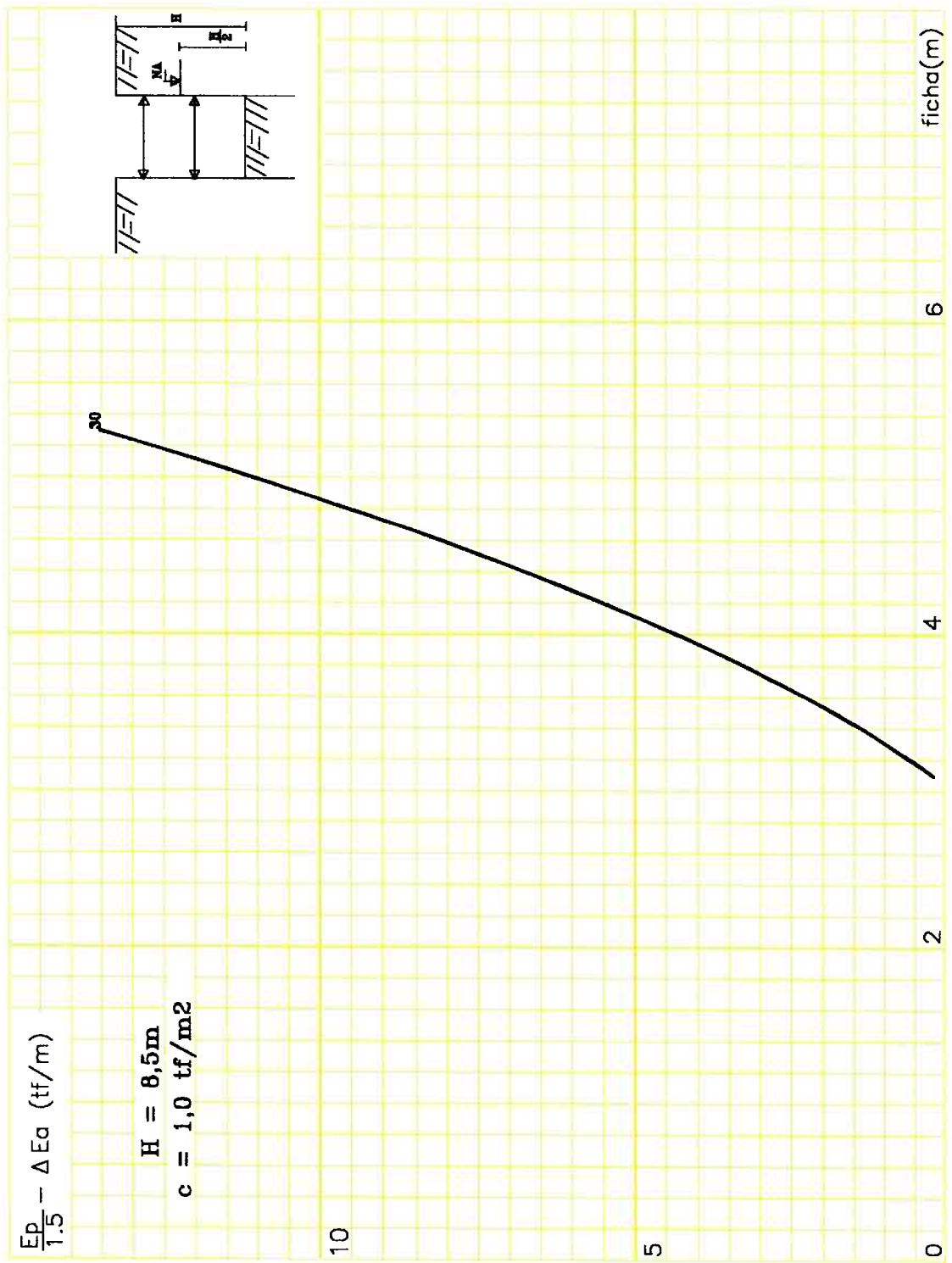


Fig. II.64- Ábaco tipo ES2b

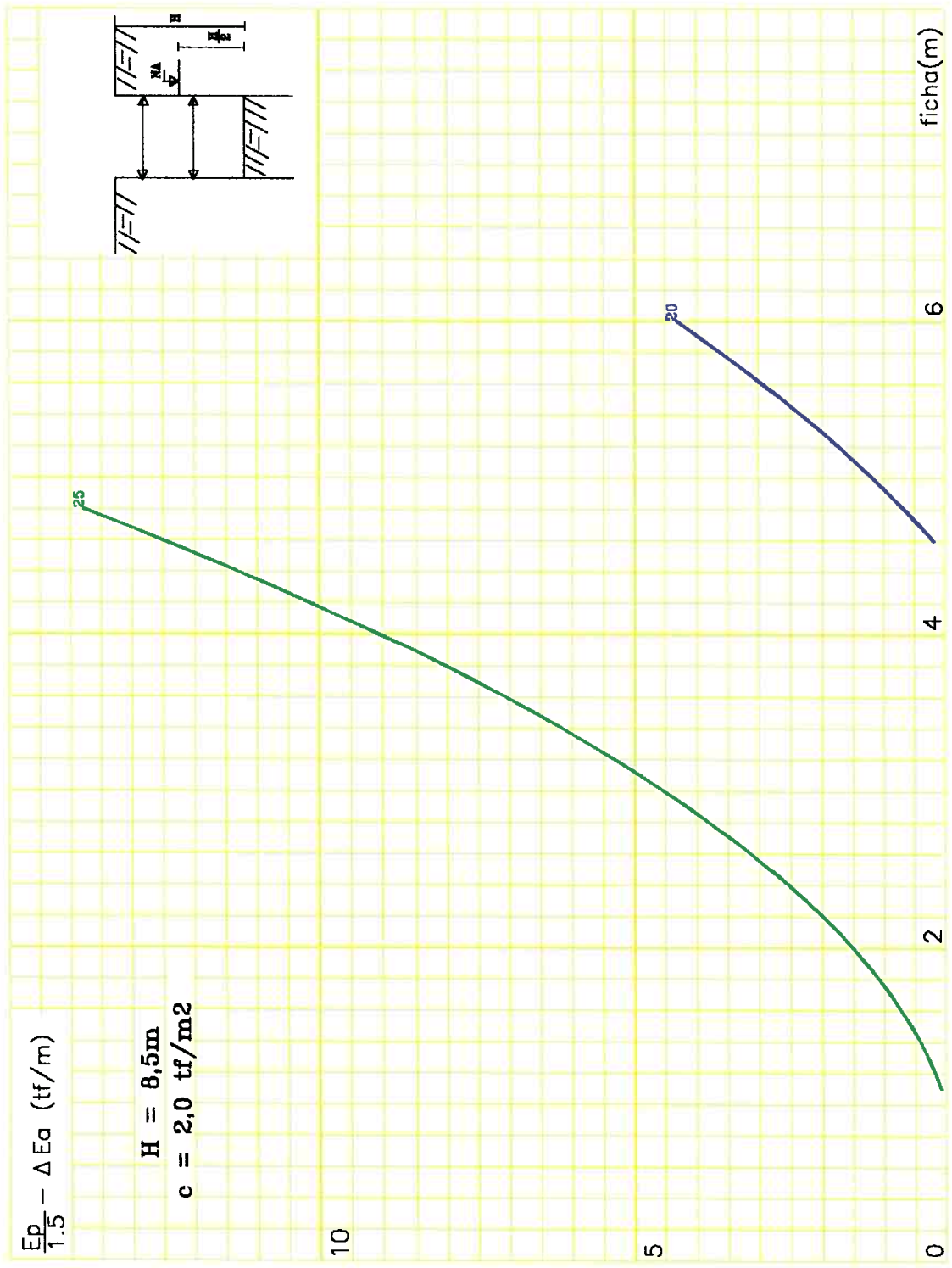


Fig. II.66- Ábaco tipo ES2b

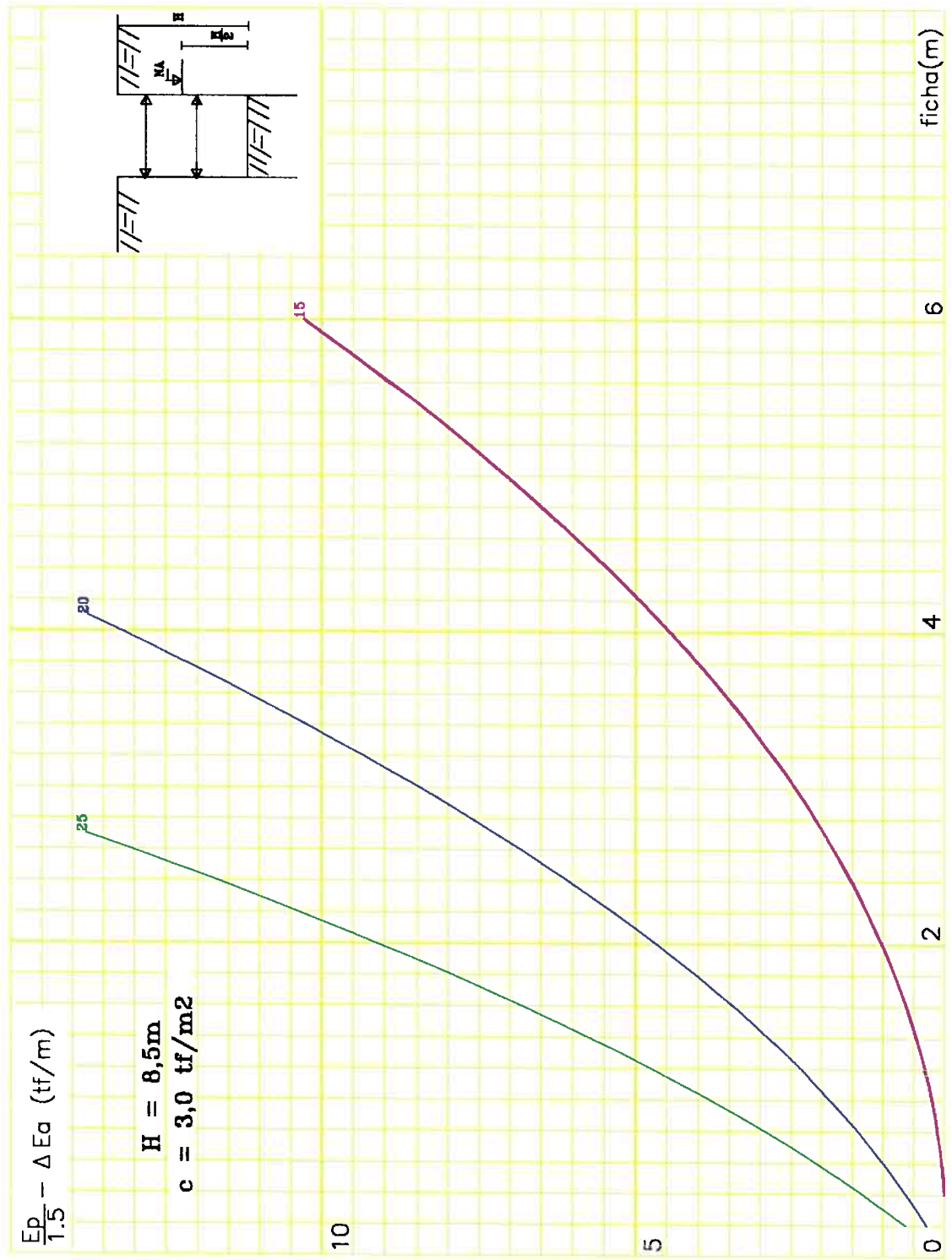


Fig. II.67- Ábaco tipo ES2b

**NÍVEL DE ÁGUA
NO FUNDO DA ESCAVAÇÃO**

H = 4,5 m

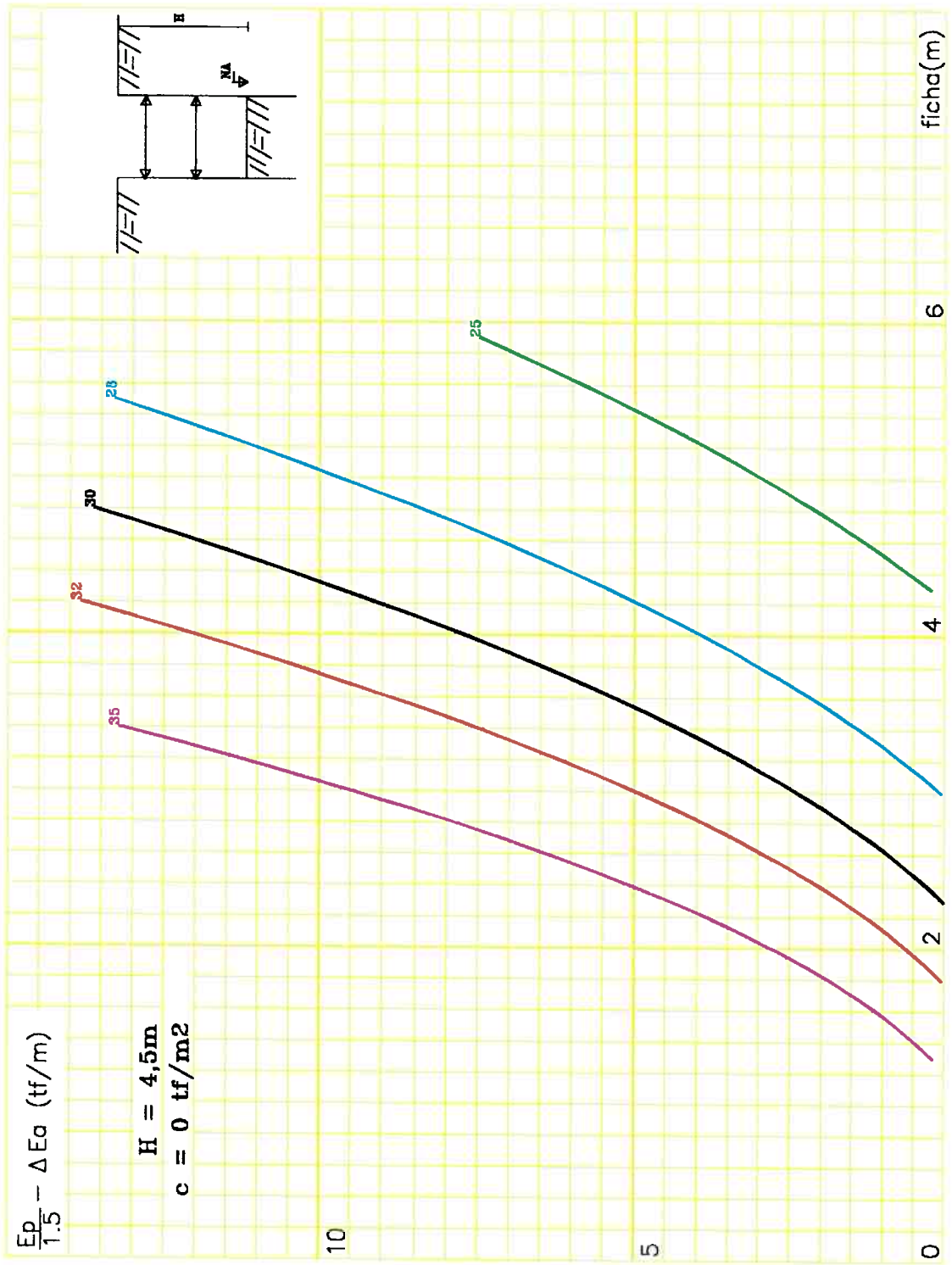


Fig. II.68- Ábaco tipo ES2b

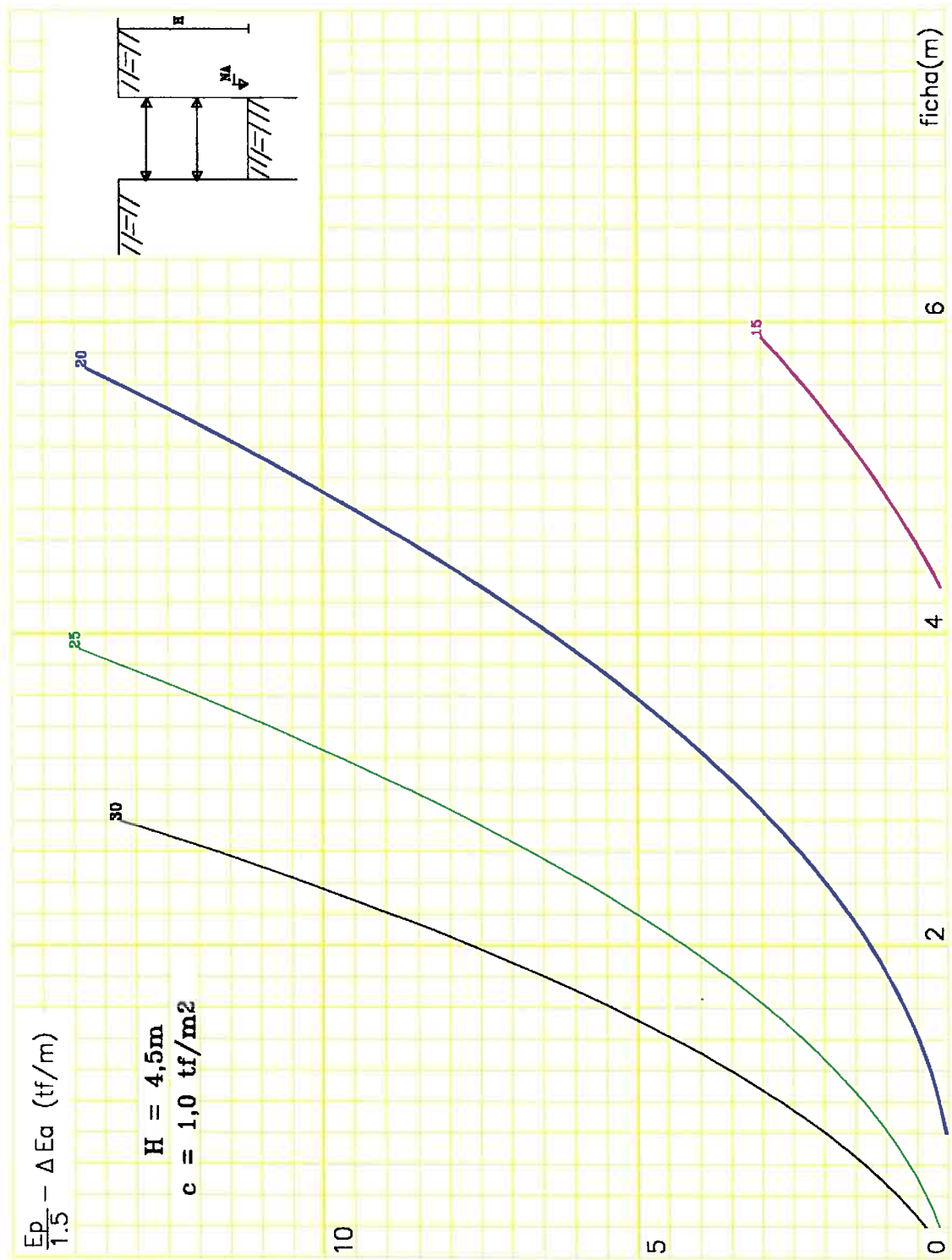


Fig. II.70- Ábaco tipo ES2b

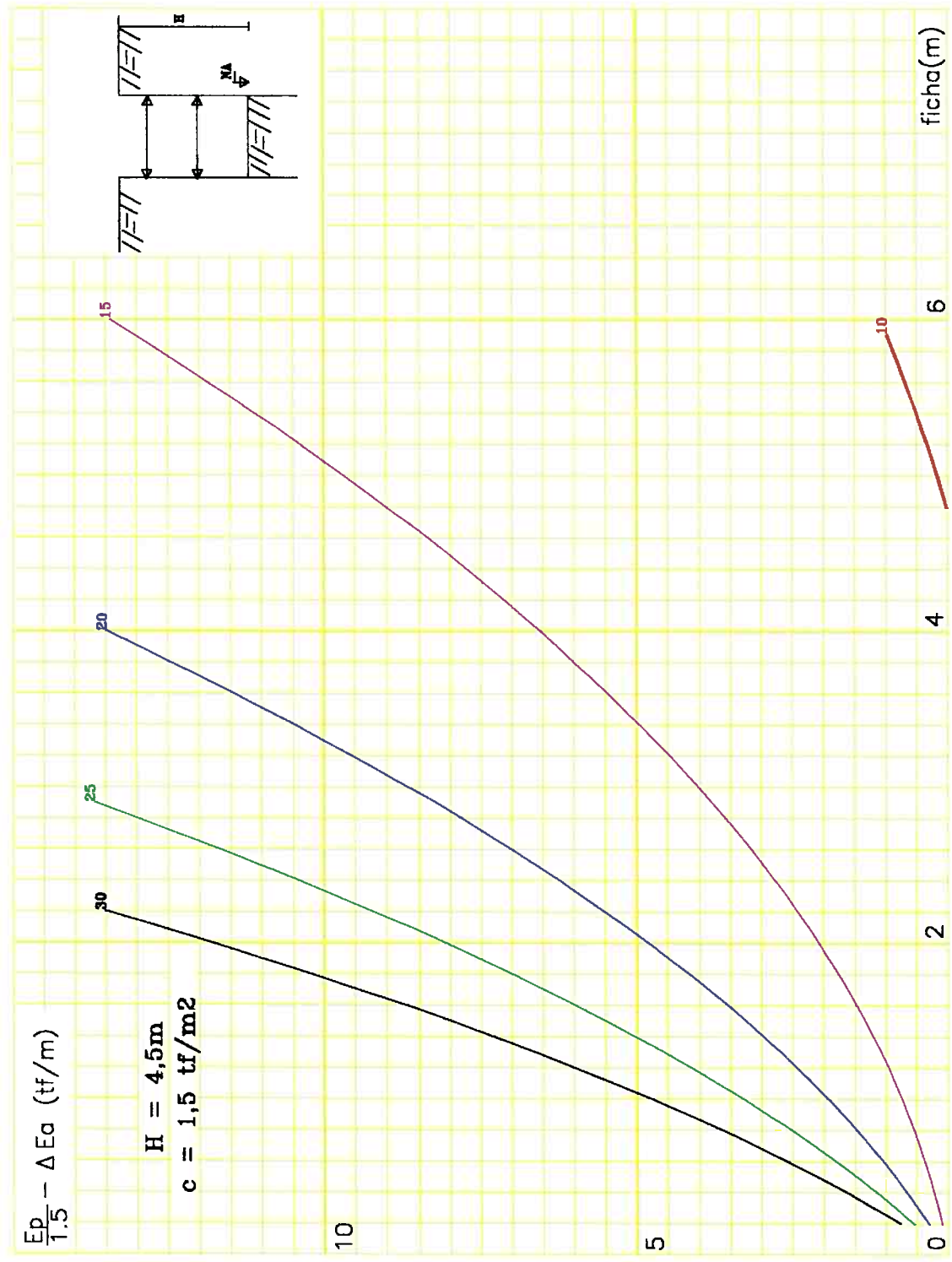


Fig. II.71- Ábaco tipo ES2b

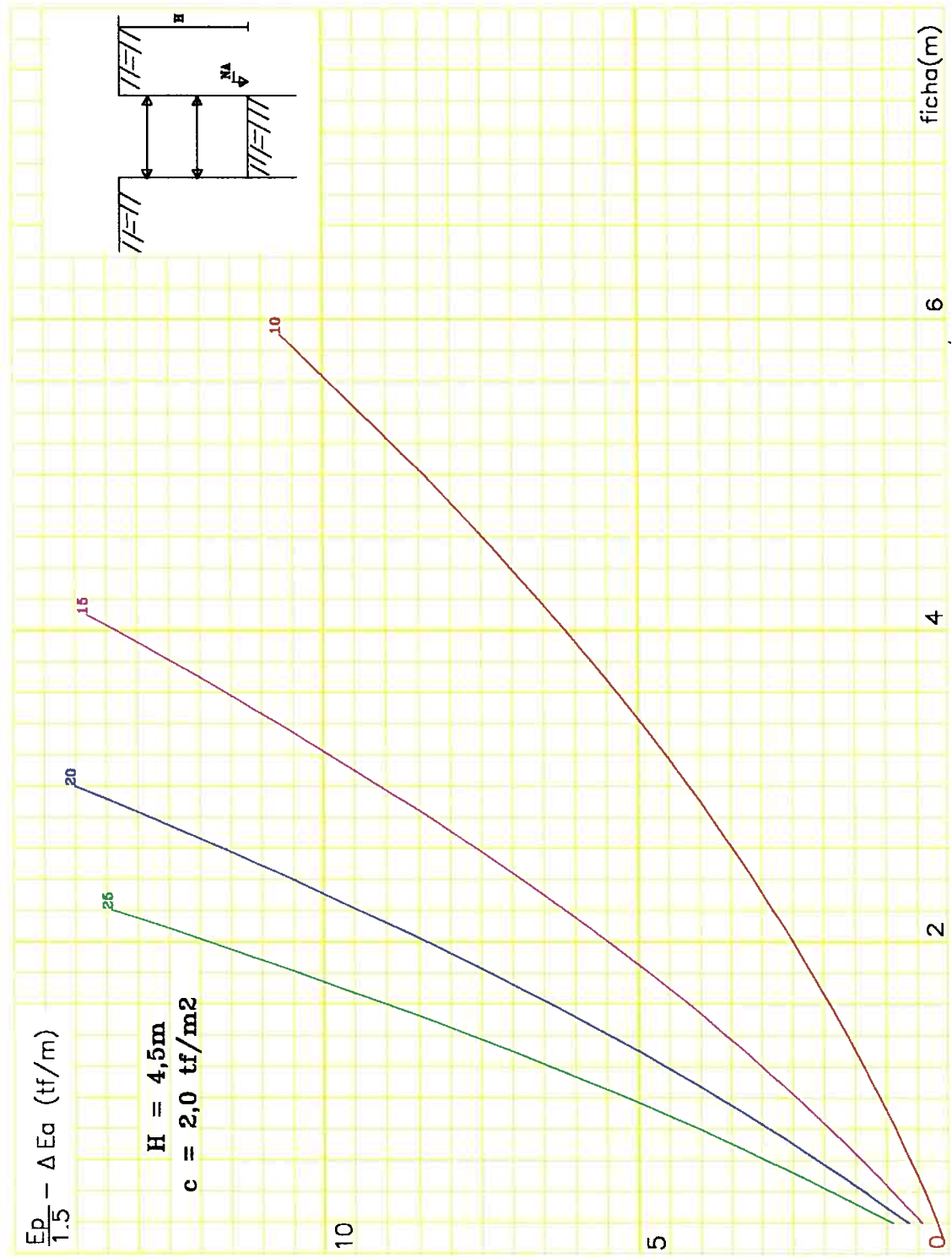


Fig. II.72- Ábaco tipo ES2b

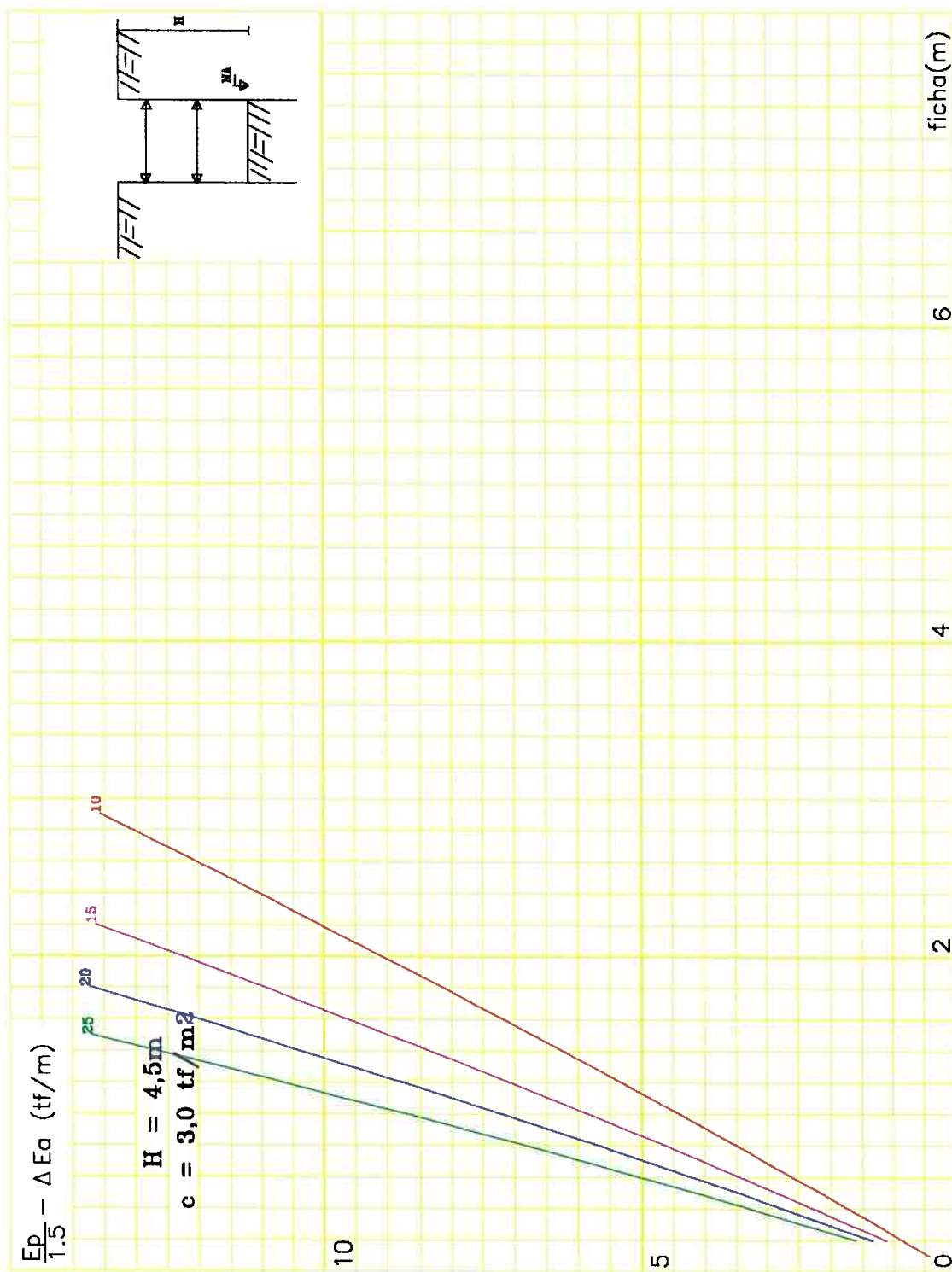


Fig. II.73- Ábaco tipo ES2b

H = 5,5 m

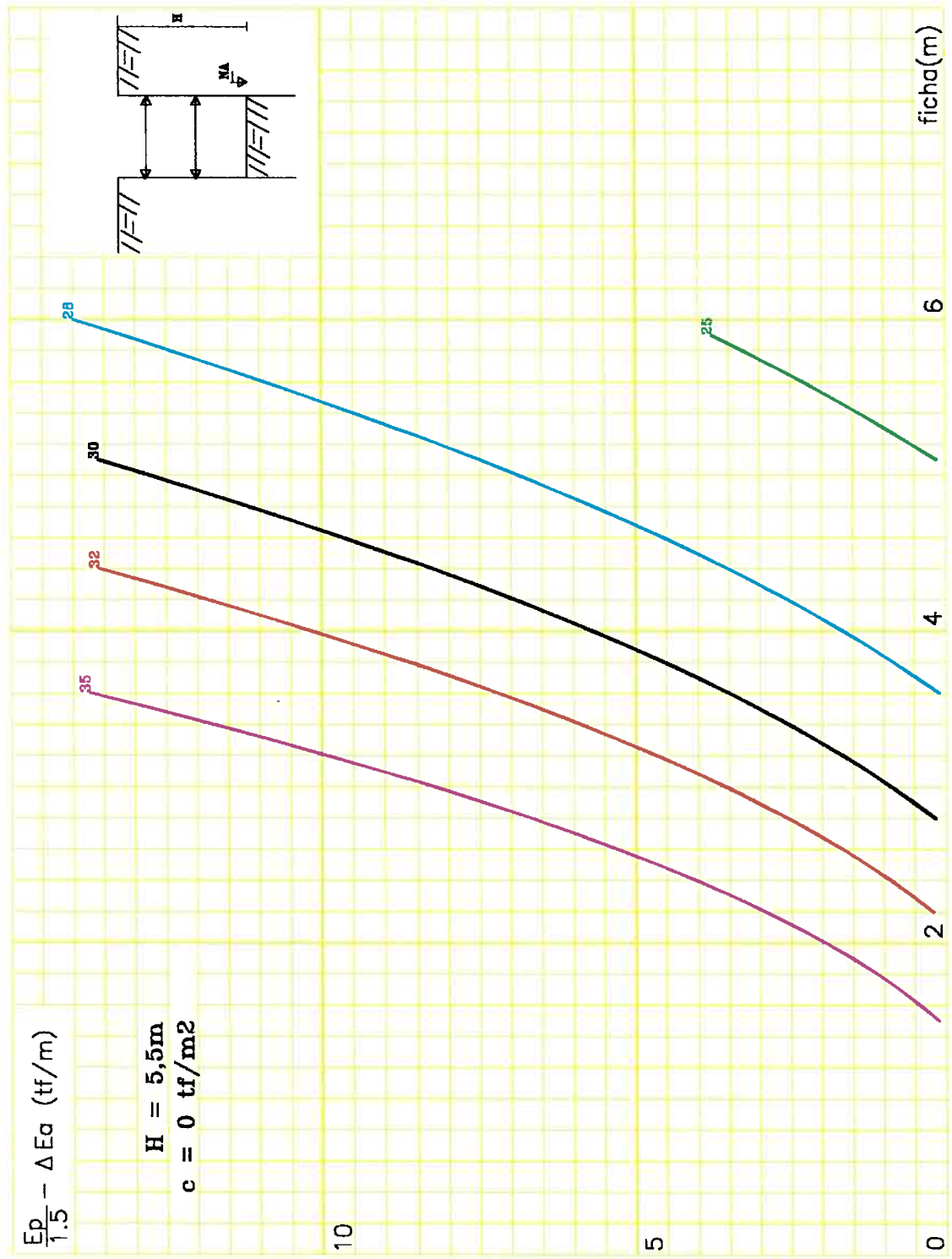


Fig. II.74- Ábaco tipo ES2b

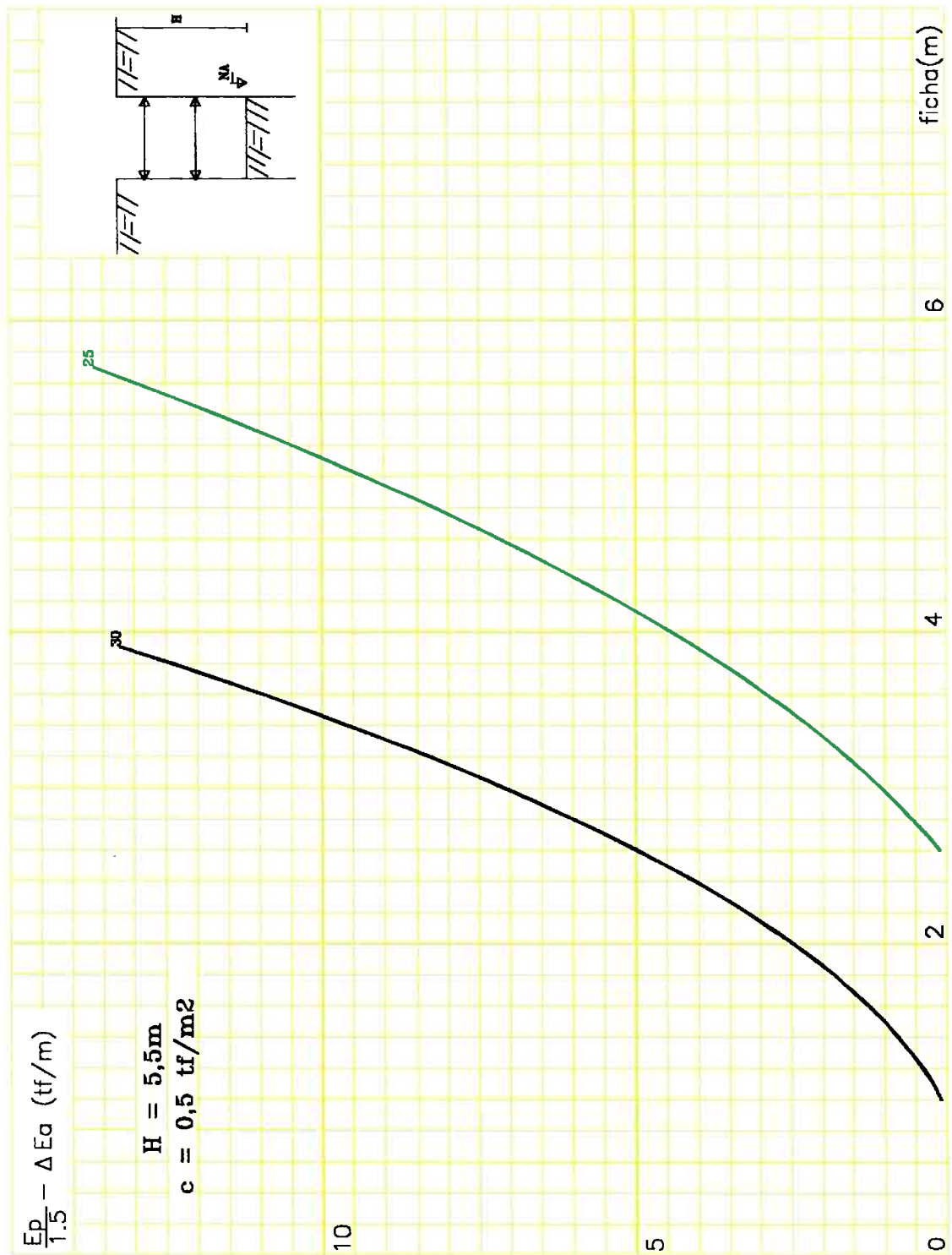


Fig. II.75- Ábaco tipo ES2b

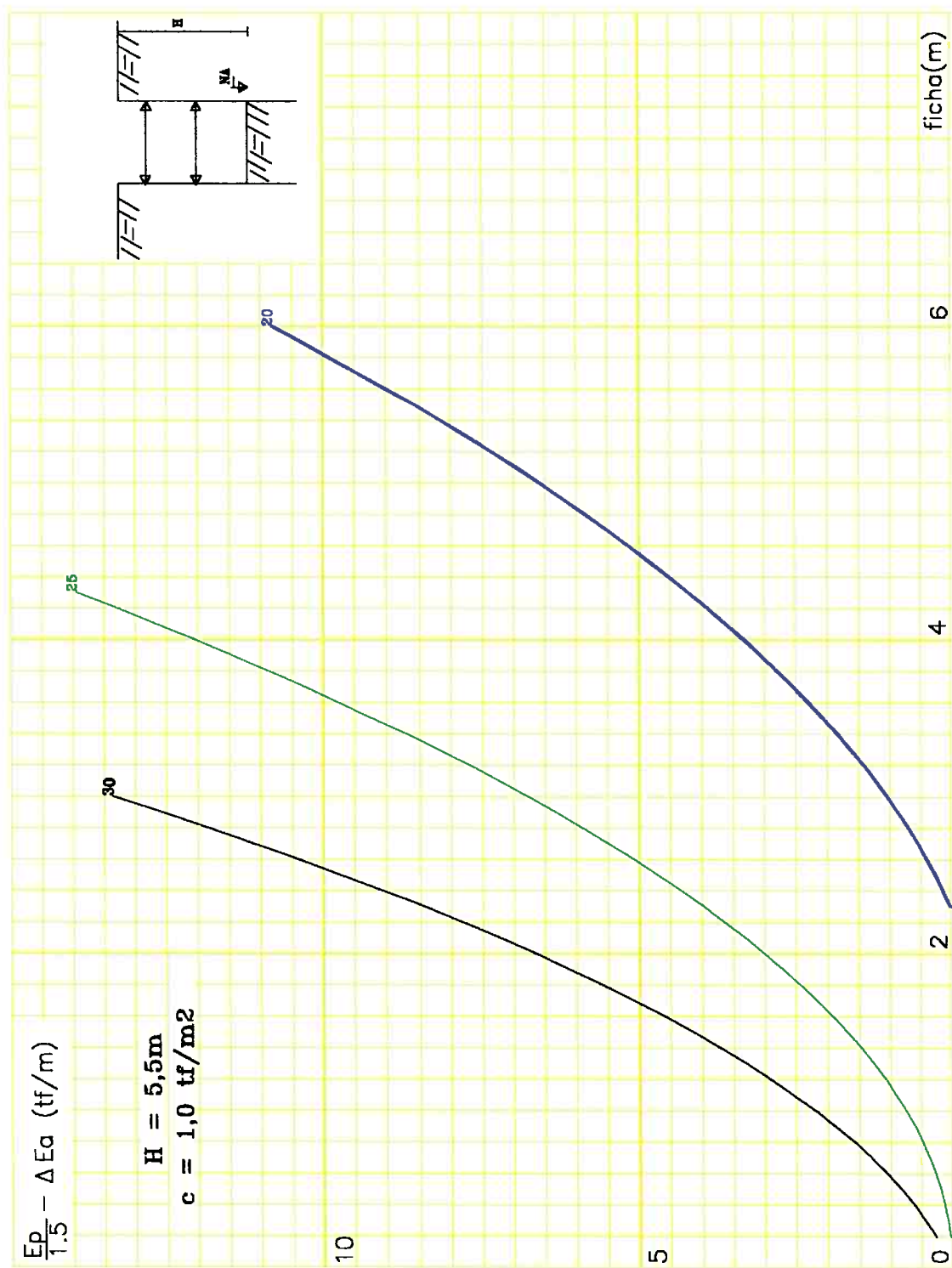


Fig. II.76- Ábaco tipo ES2b

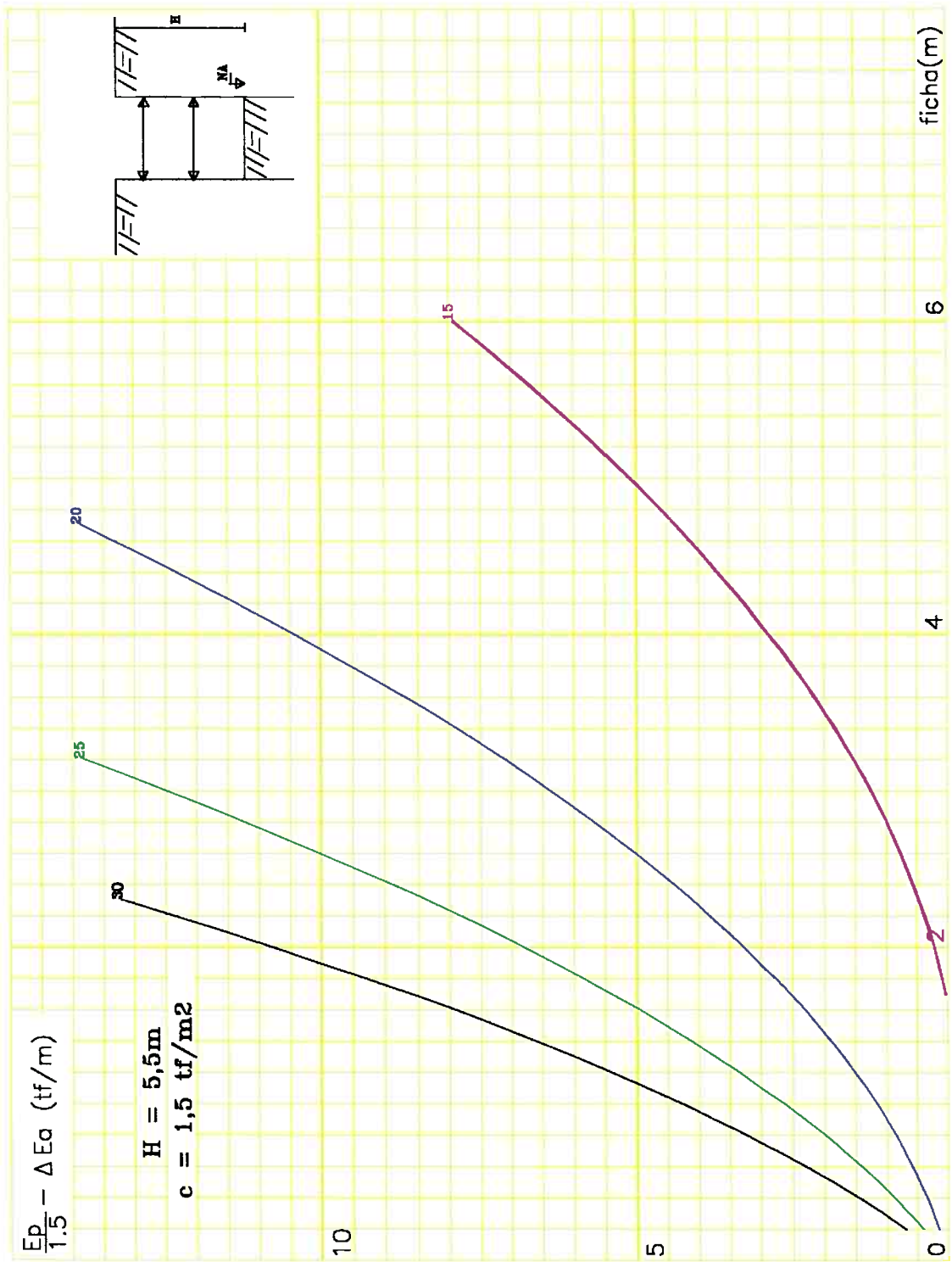


Fig. II.77- Ábaco tipo ES2b

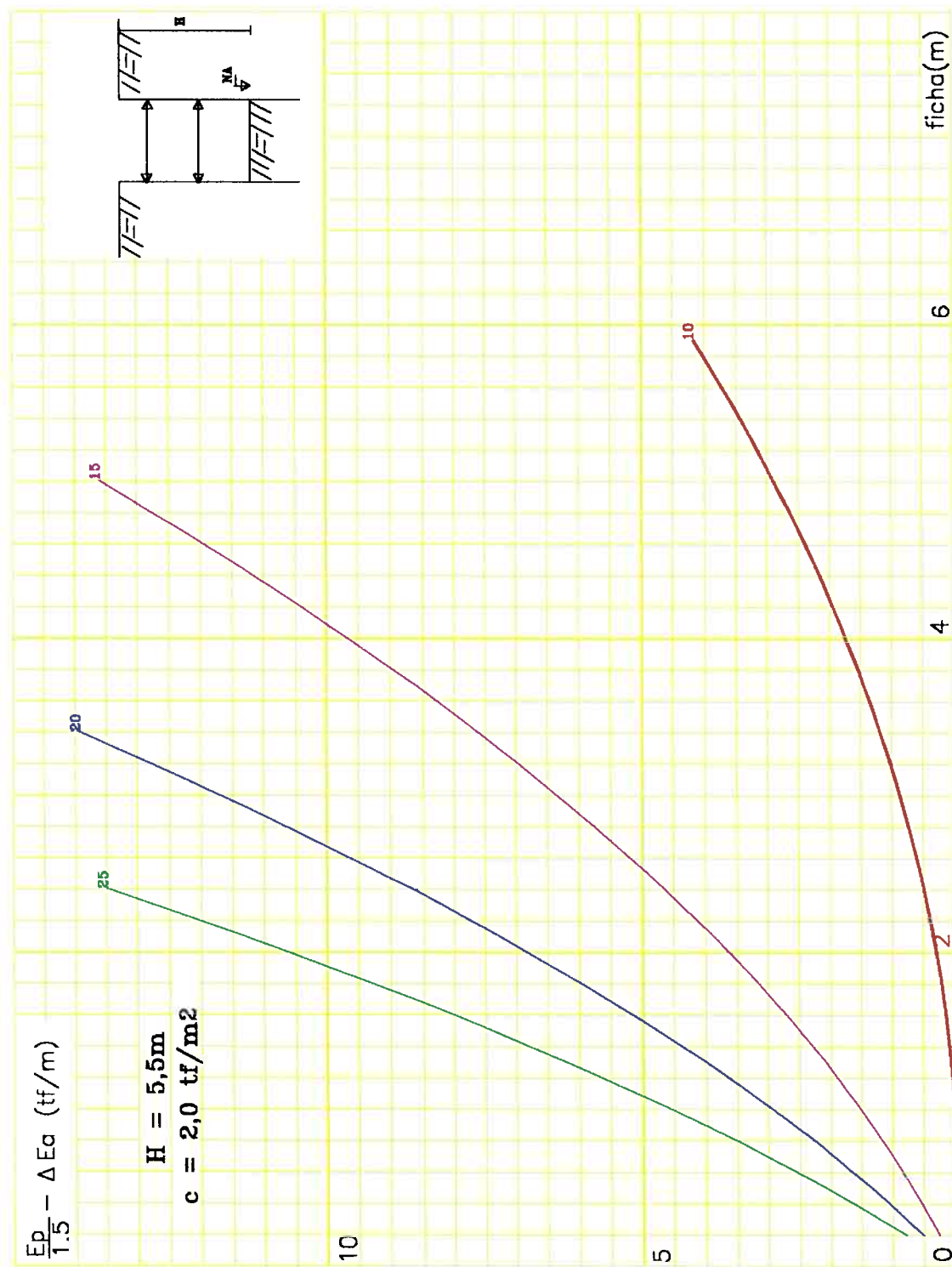


Fig. II.78- Ábaco tipo ES2b

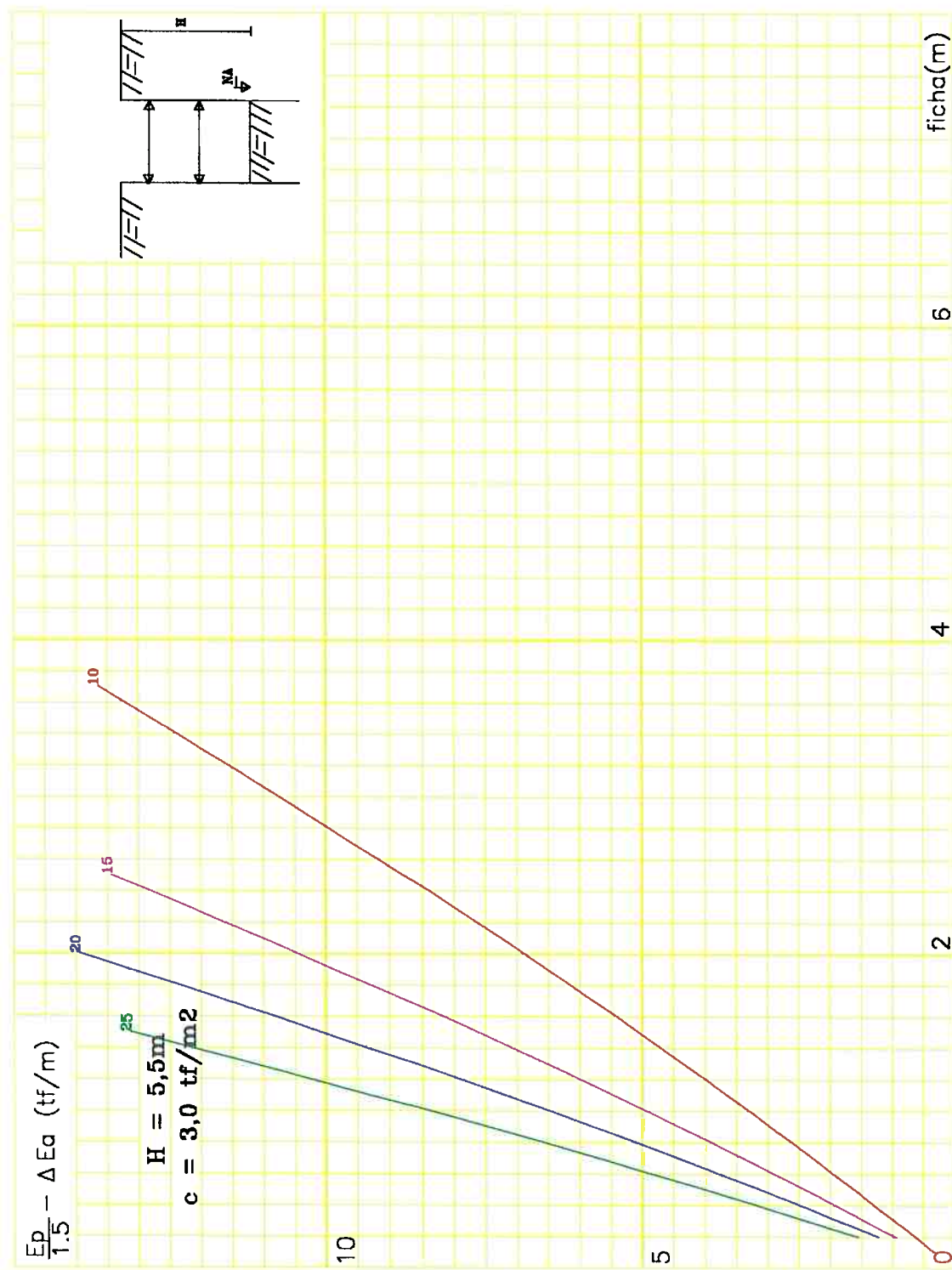


Fig. II.79- Ábaco tipo ES2b

H = 6,5 m

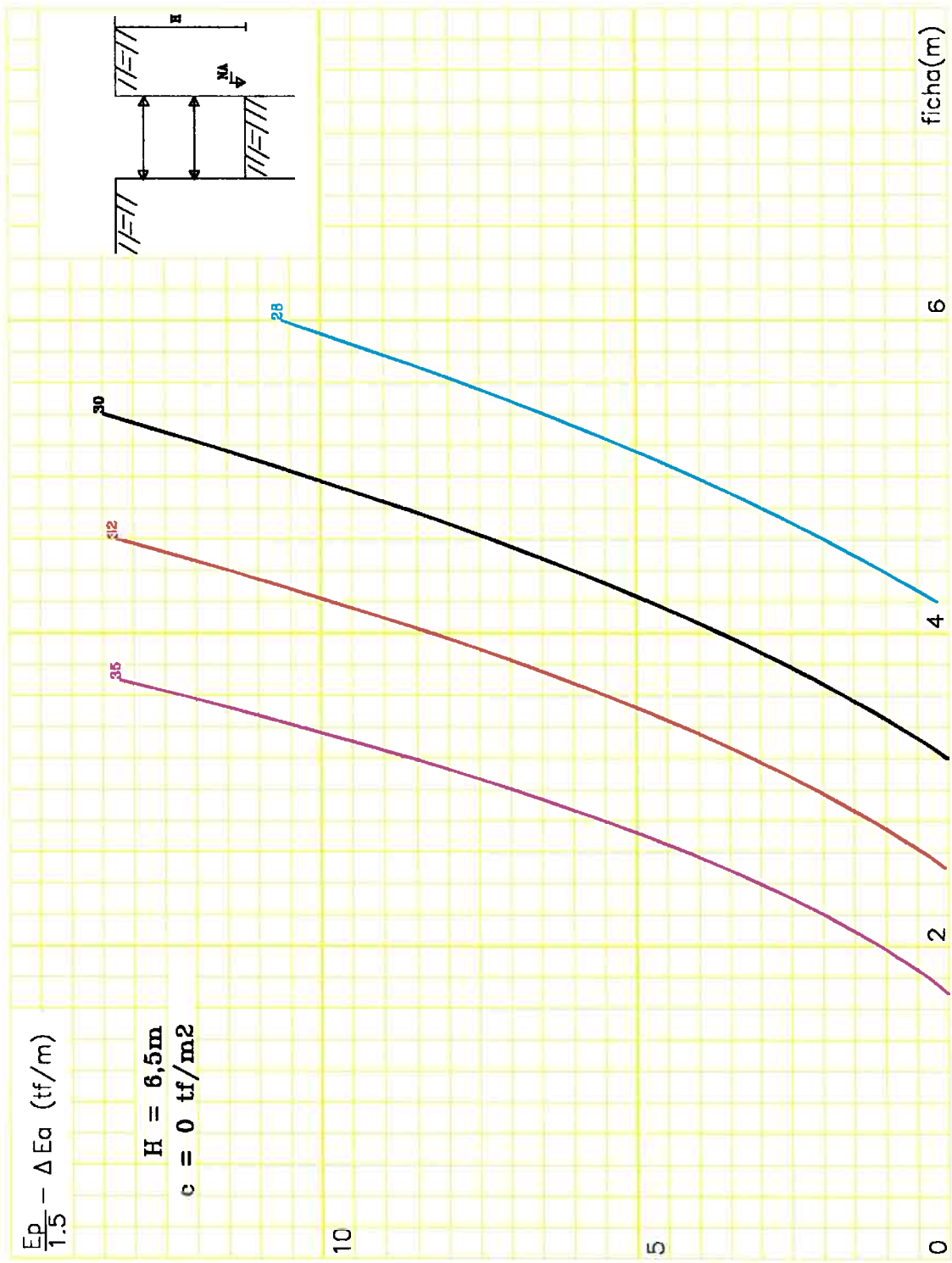


Fig. II.80- Ábaco tipo ES2b

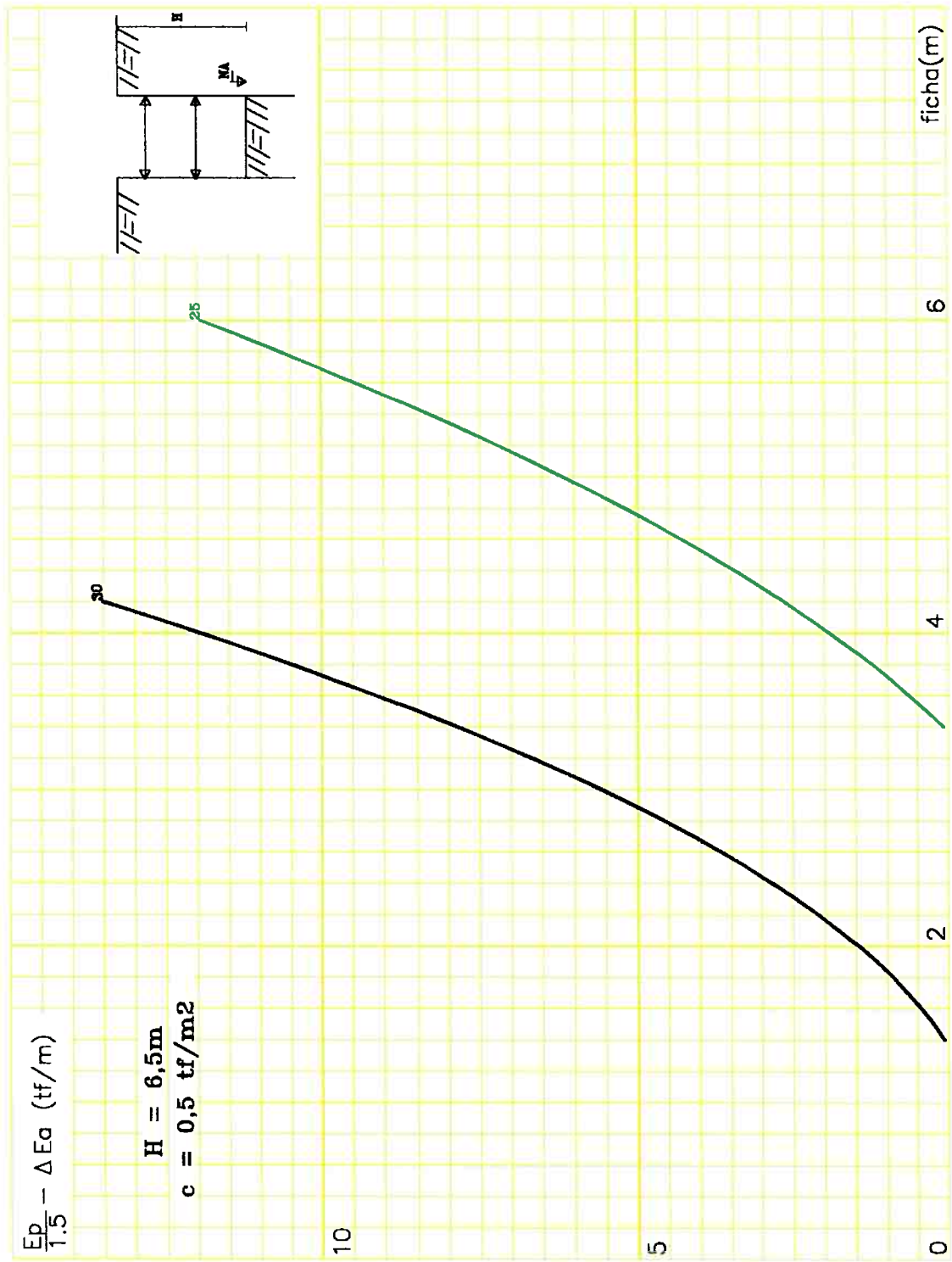


Fig. II.81- Ábaco tipo ES2b

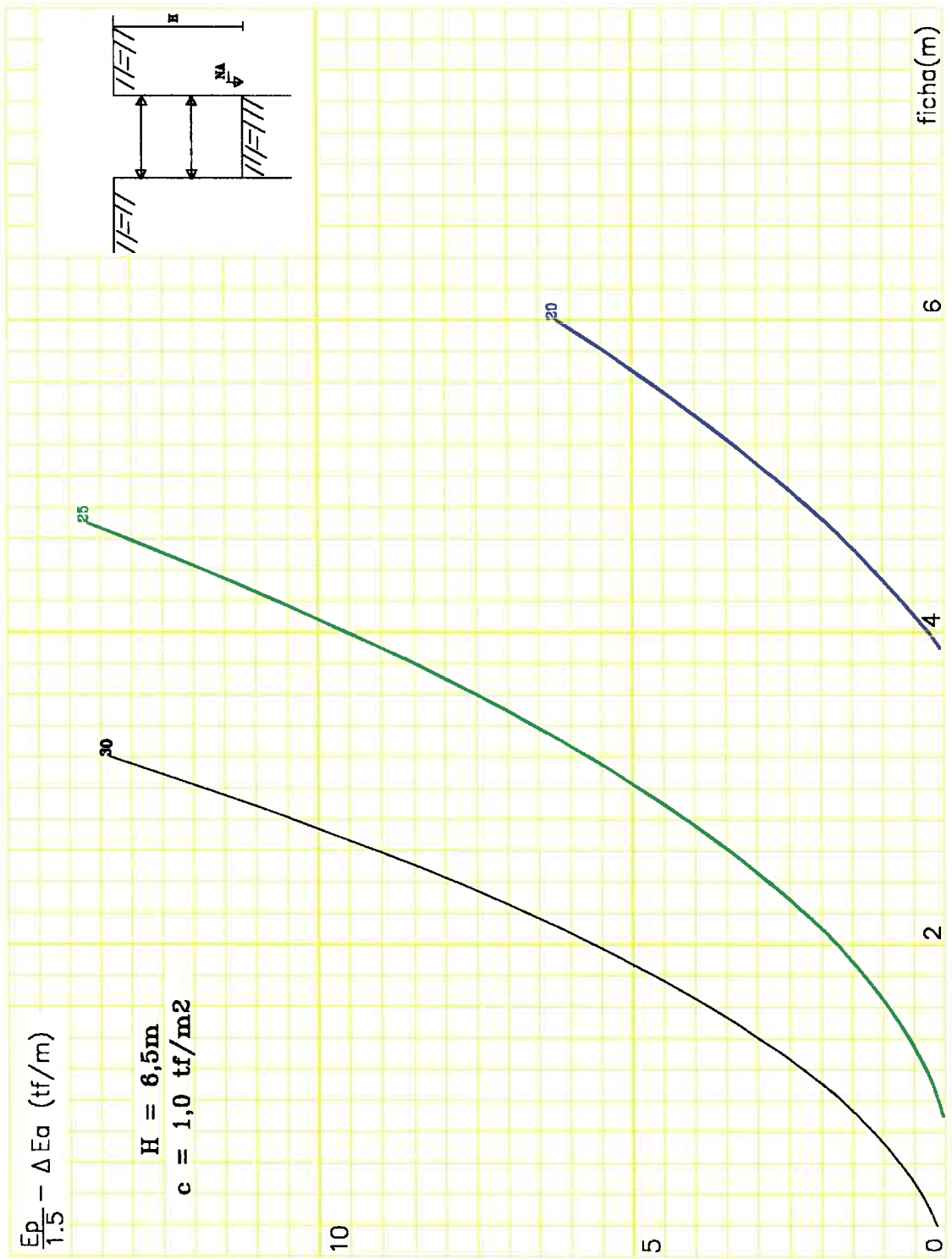


Fig. II.82- Ábaco tipo ES2b

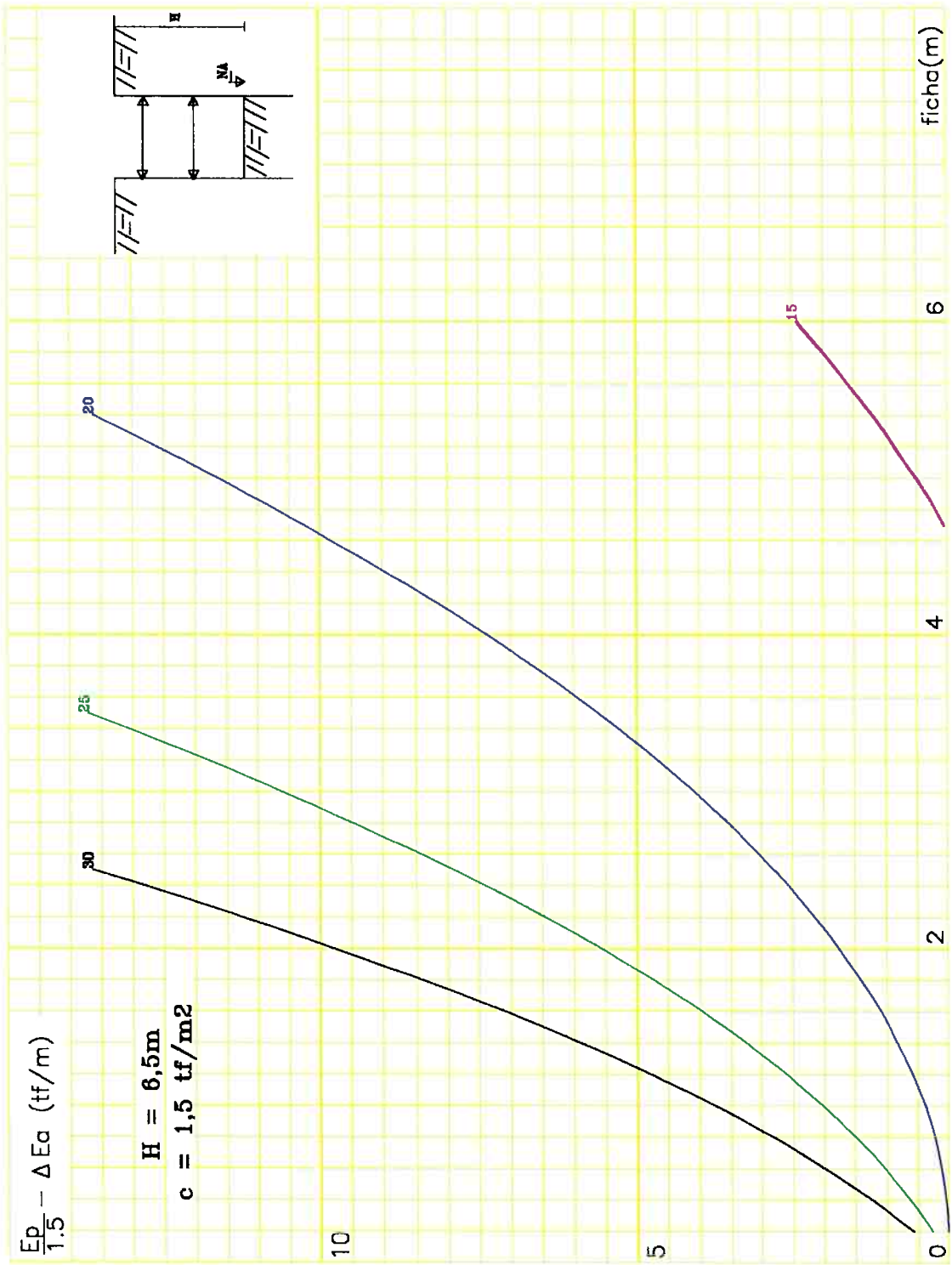


Fig. II.83- Ábaco tipo ES2b

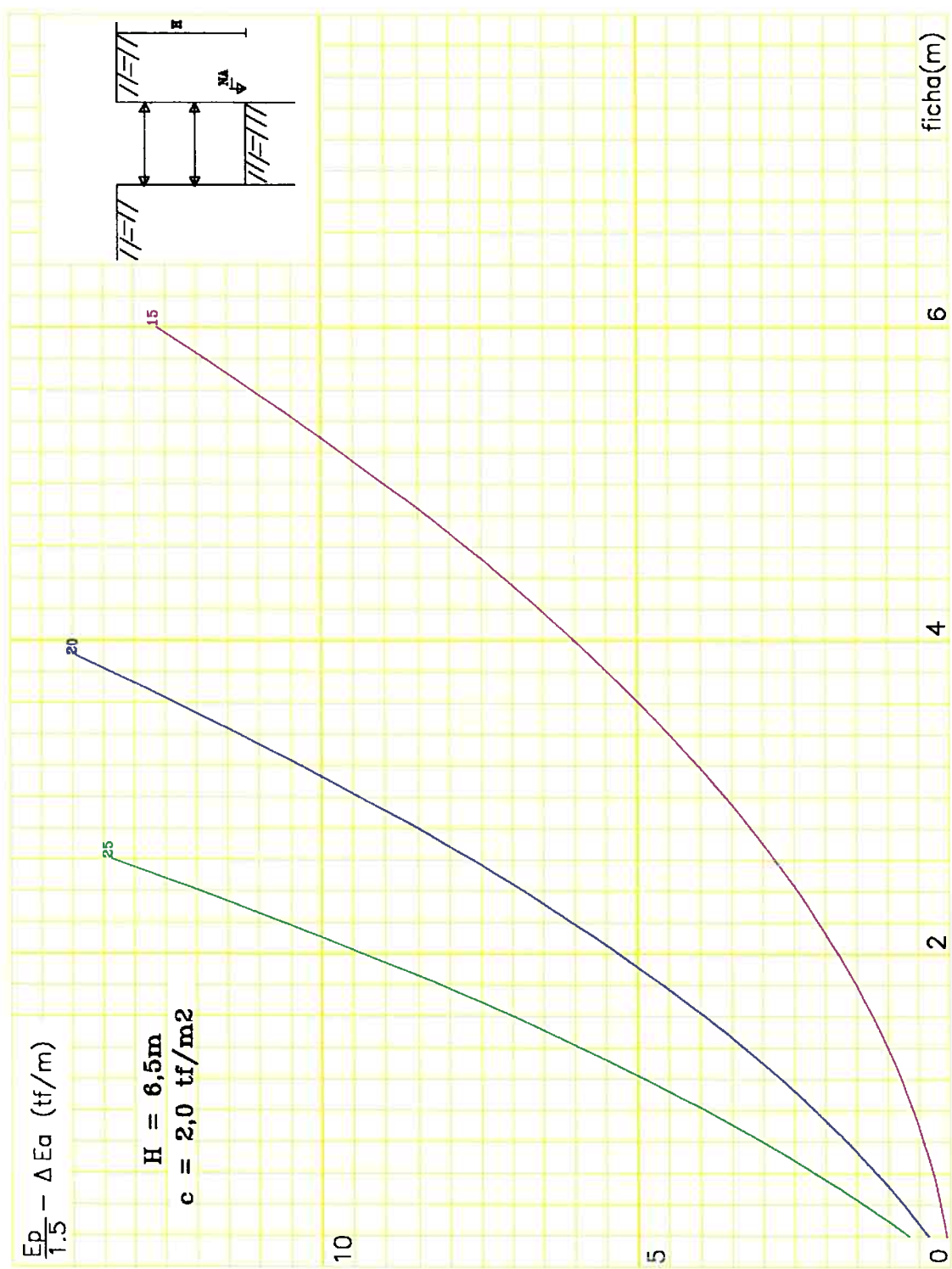


Fig. II.84- Ábaco tipo ES2b

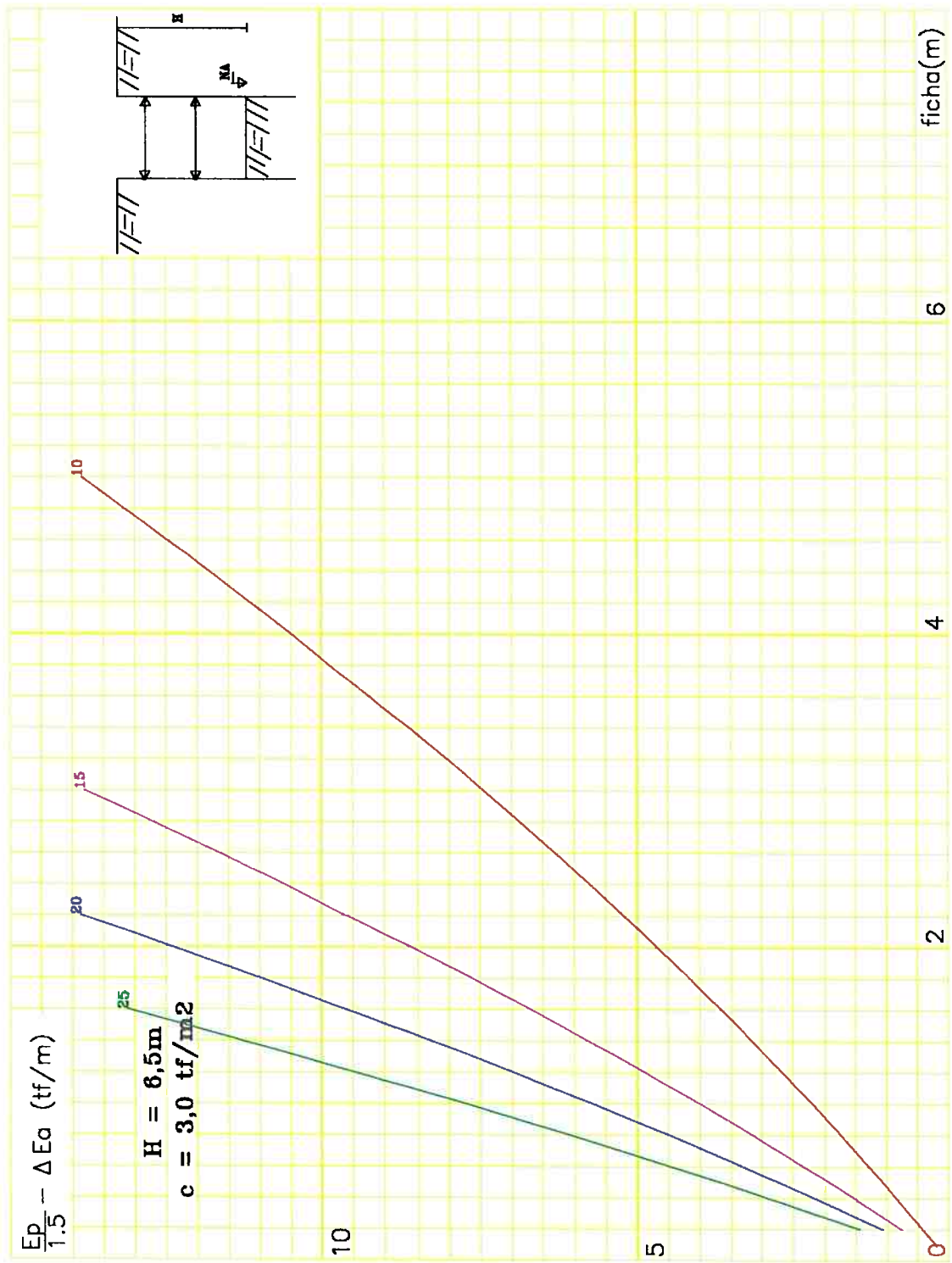


Fig. II.85- Ábaco tipo ES2b

H = 7,5 m

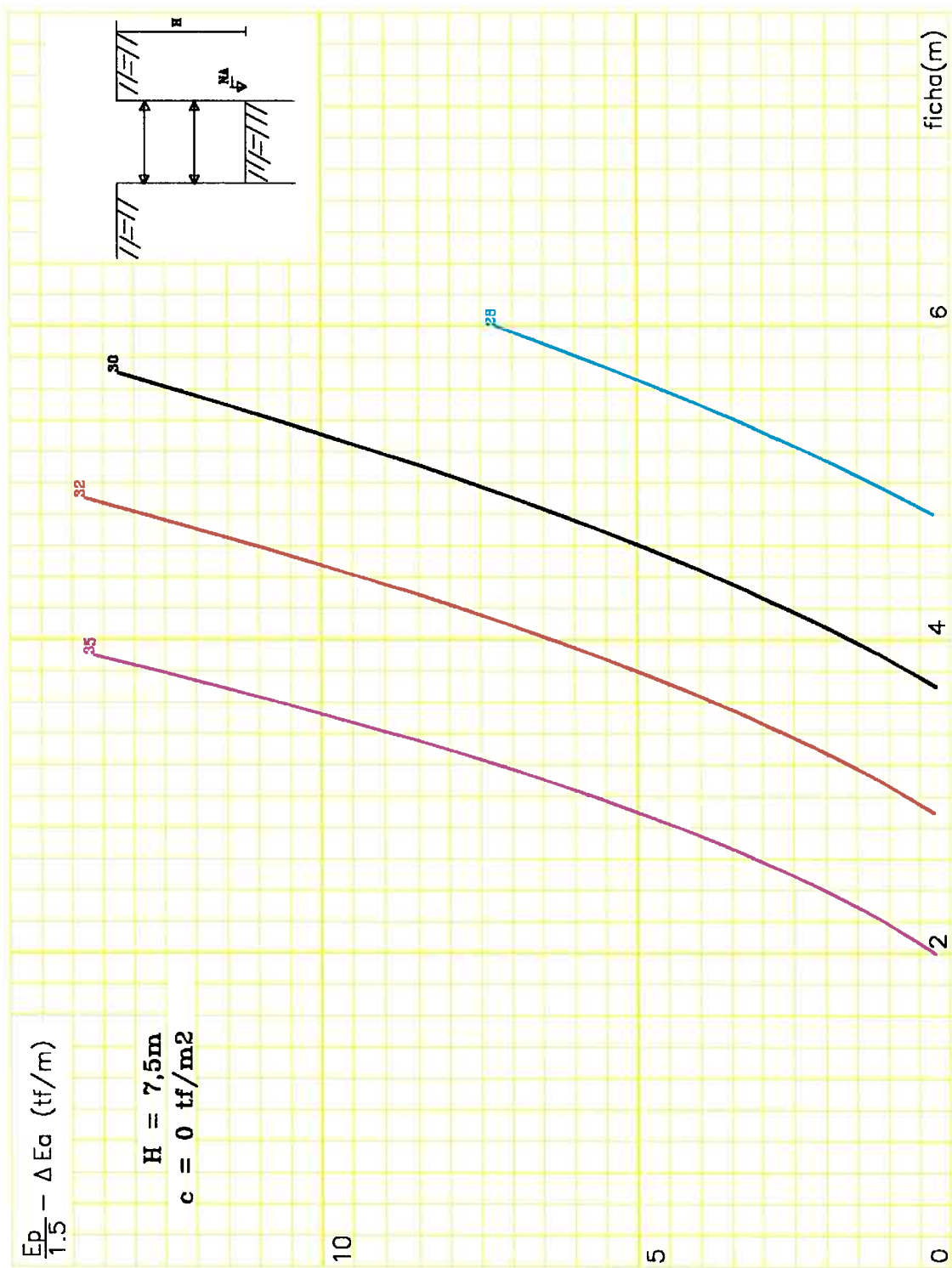


Fig. II.86- Ábaco tipo ES2b

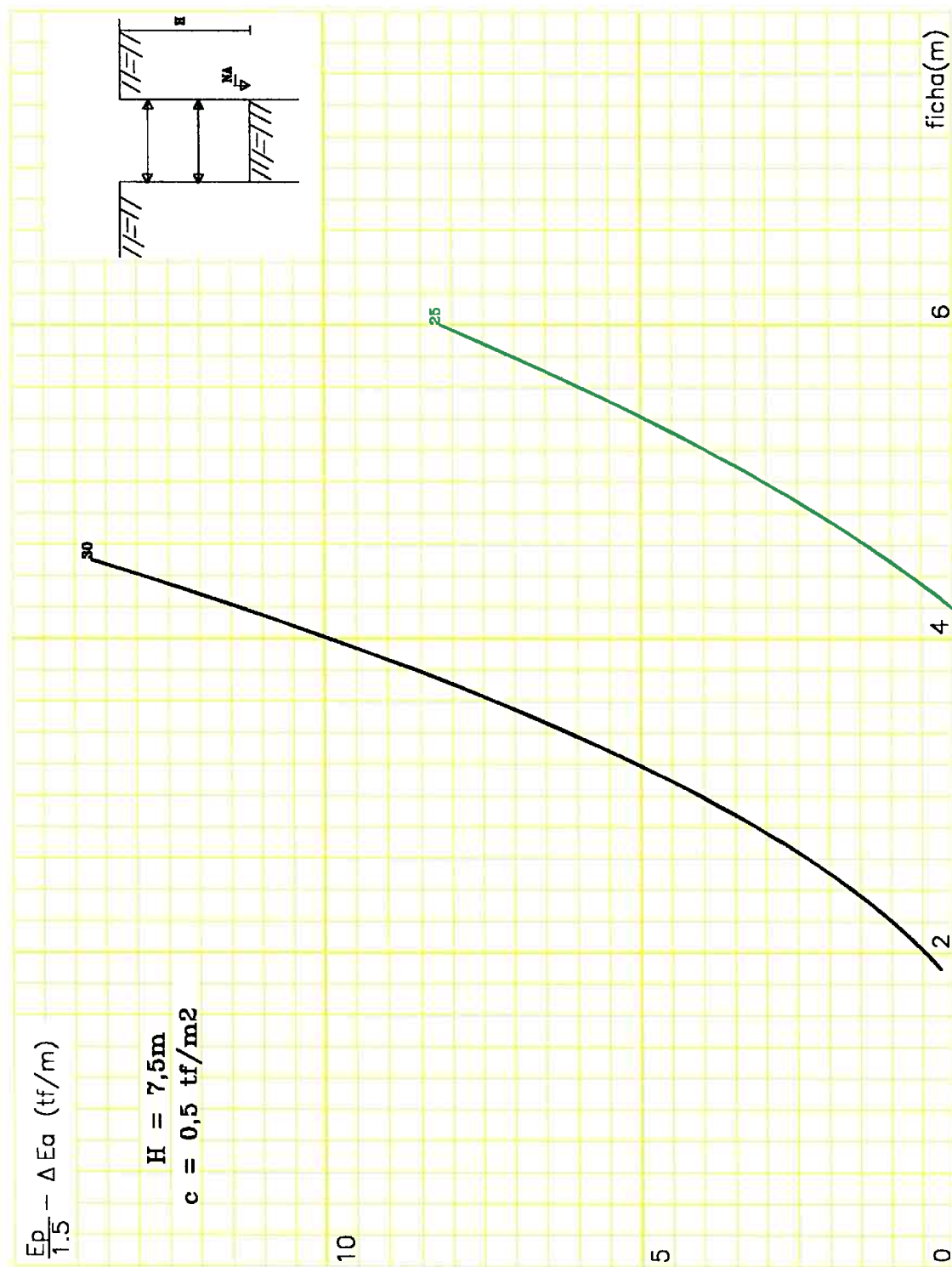


Fig. II.87- Ábaco tipo ES2b

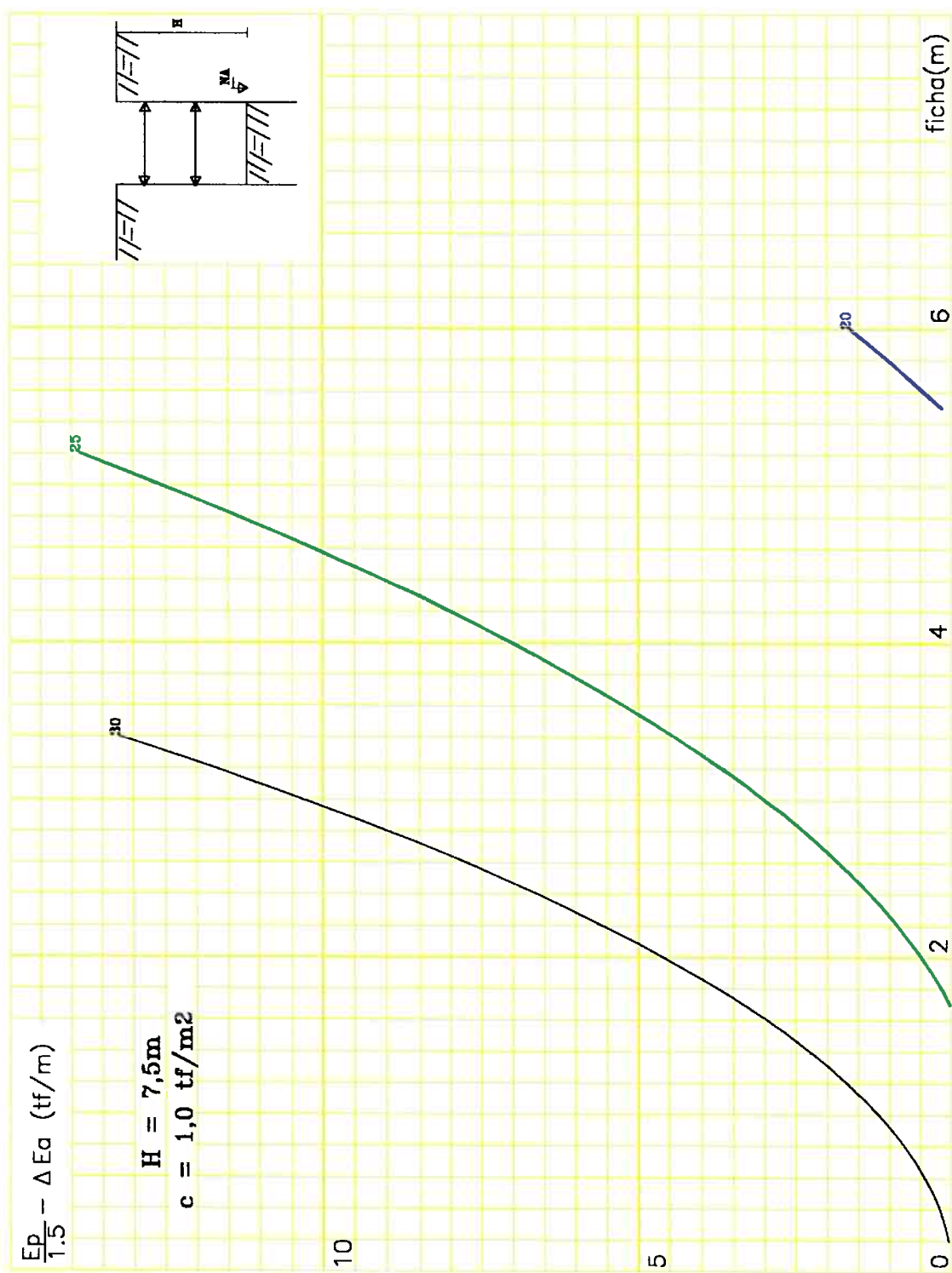


Fig. II.88- Ábaco tipo ES2b

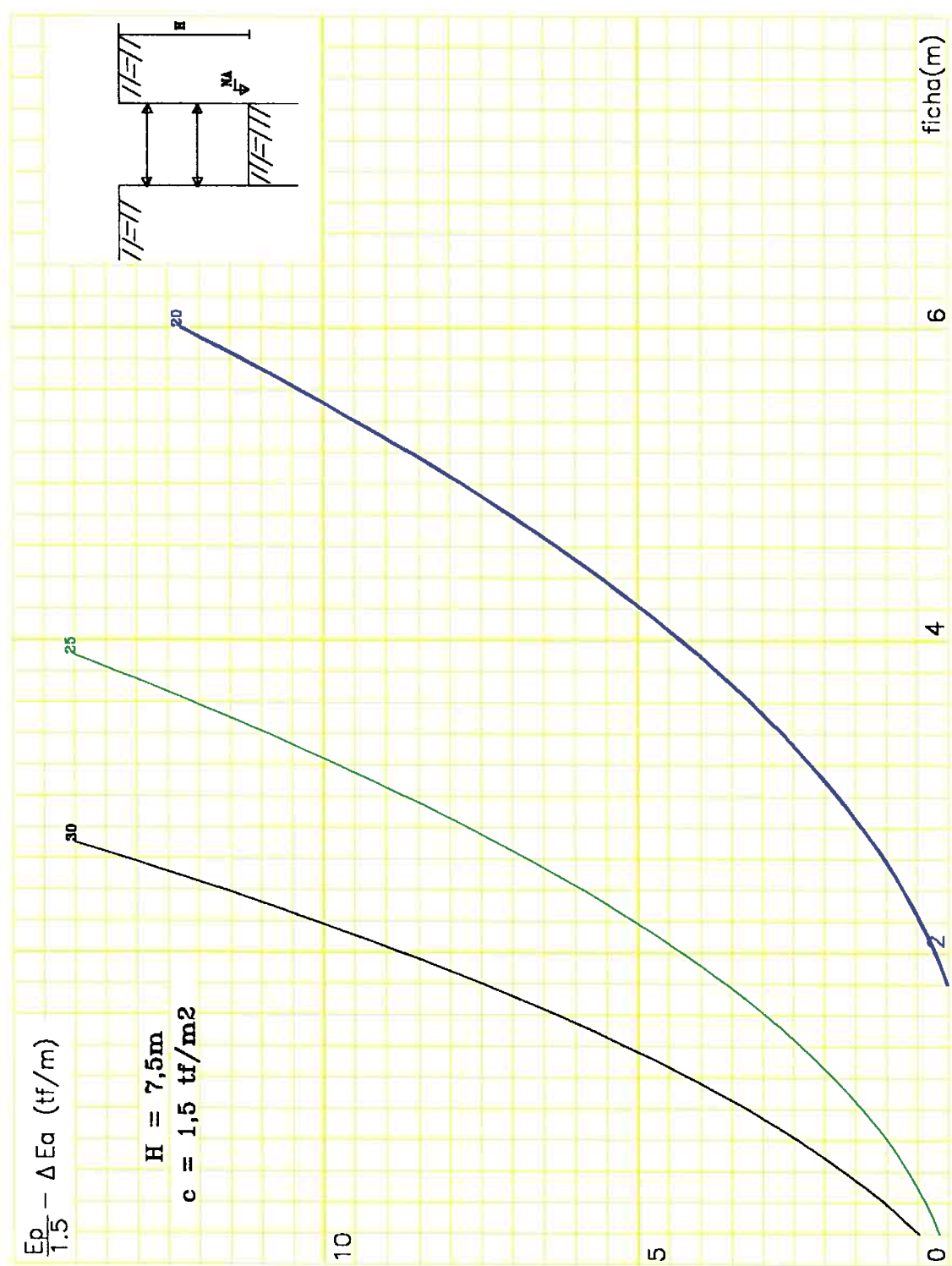


Fig. II.89- Ábaco tipo ES2b

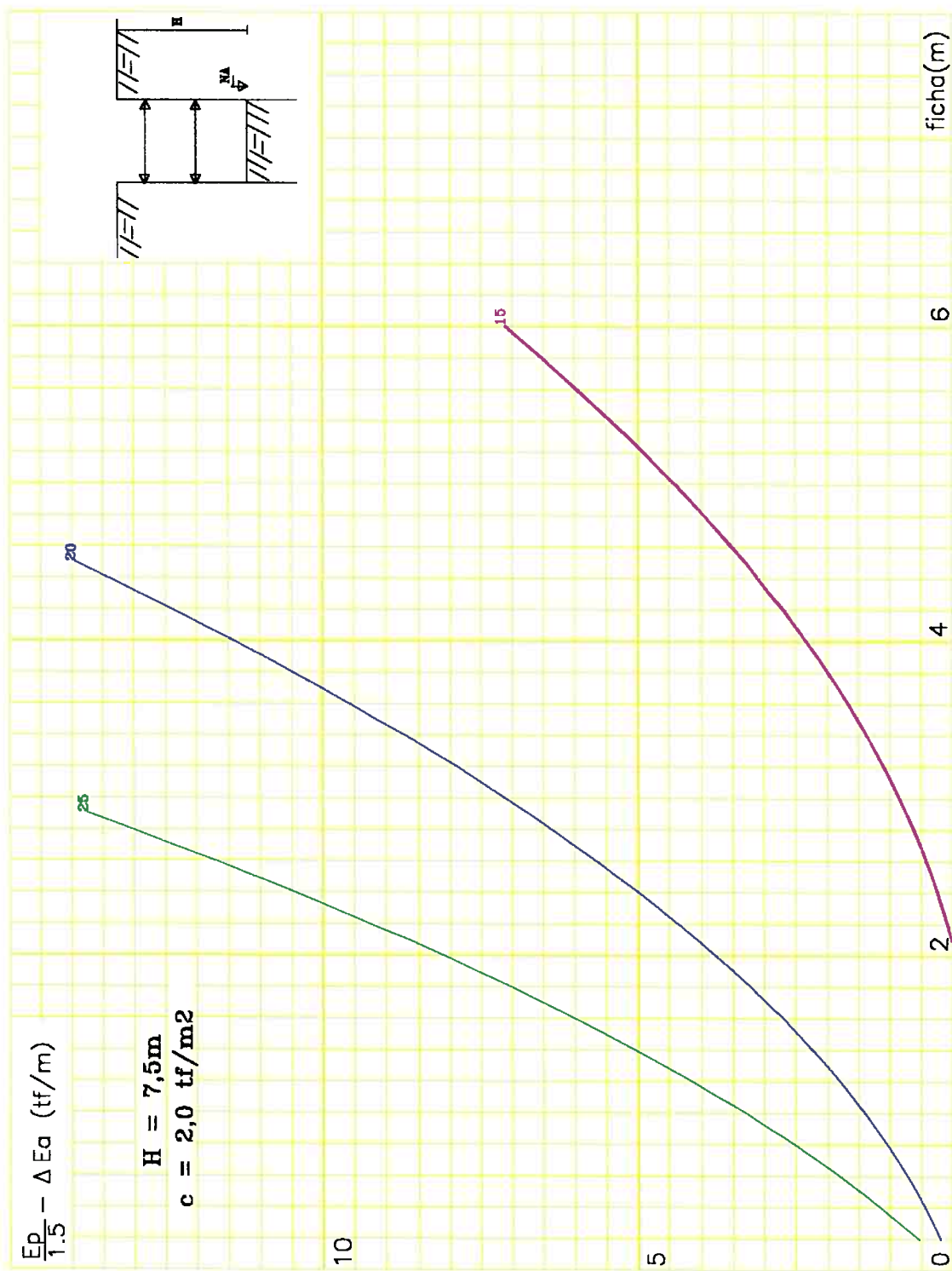


Fig. II.90- Ábaco tipo ES2b

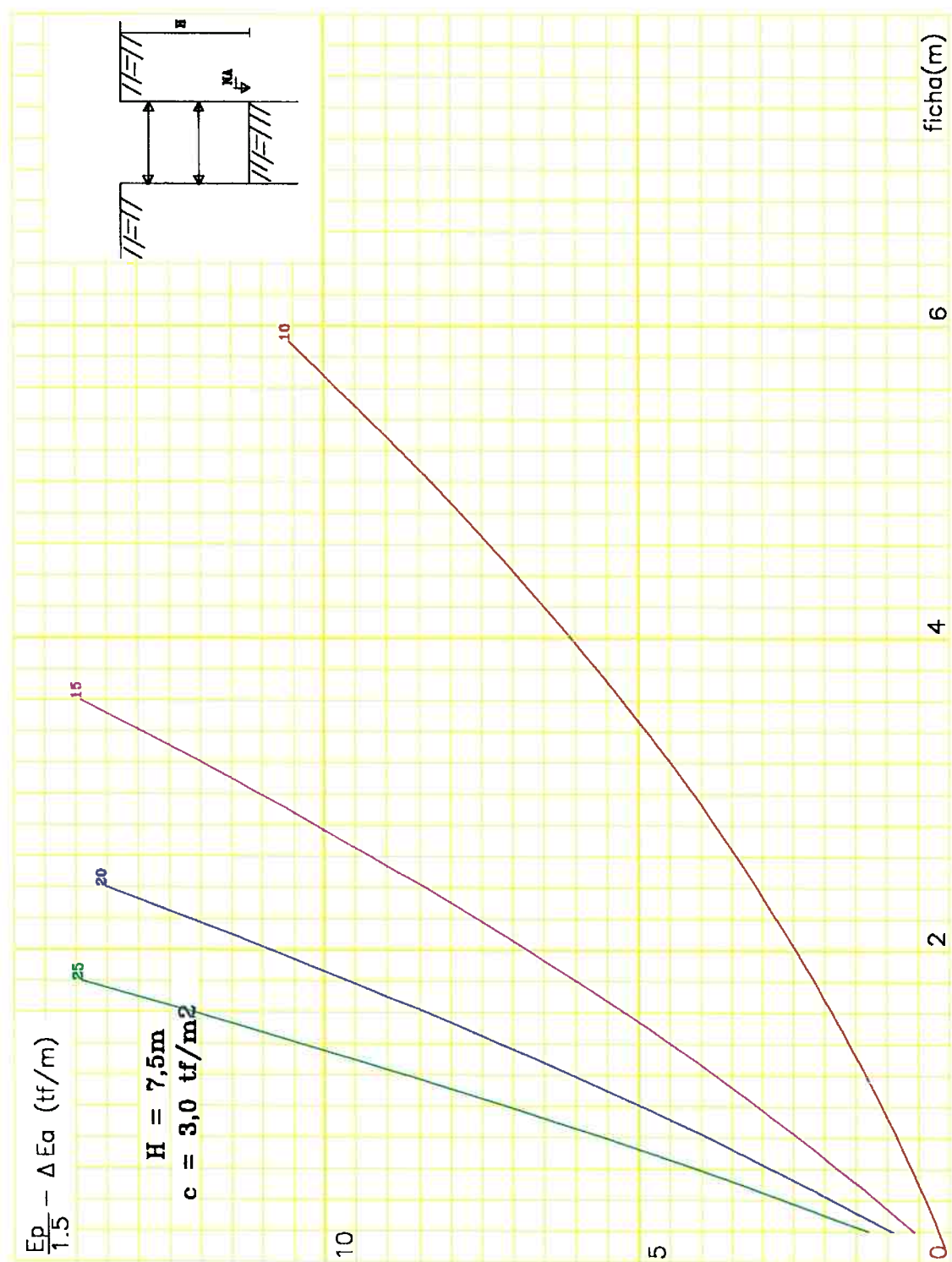


Fig. II.91- Ábaco tipo ES2b

H = 8,5 m

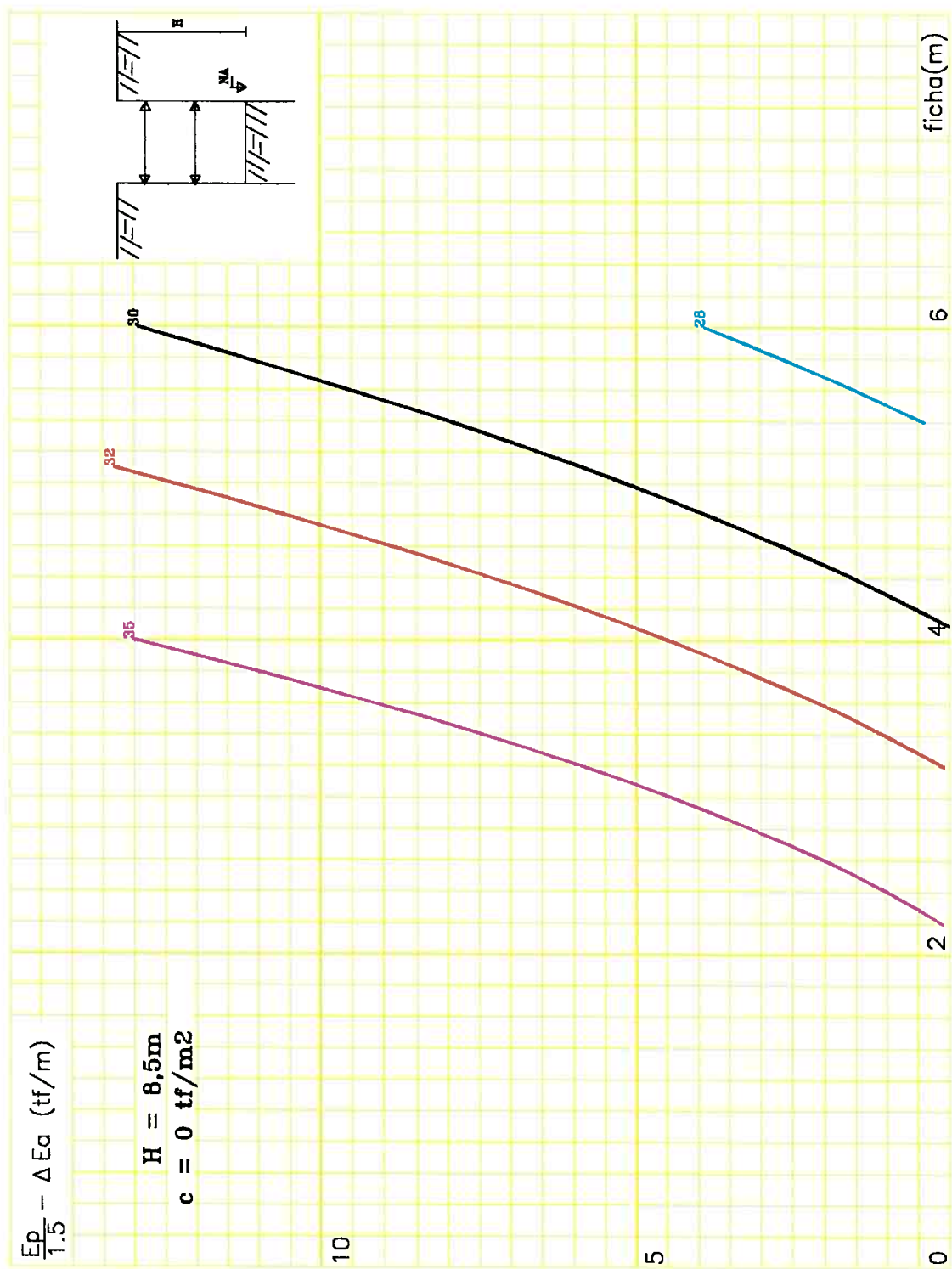


Fig. II.92- Ábaco tipo ES2b

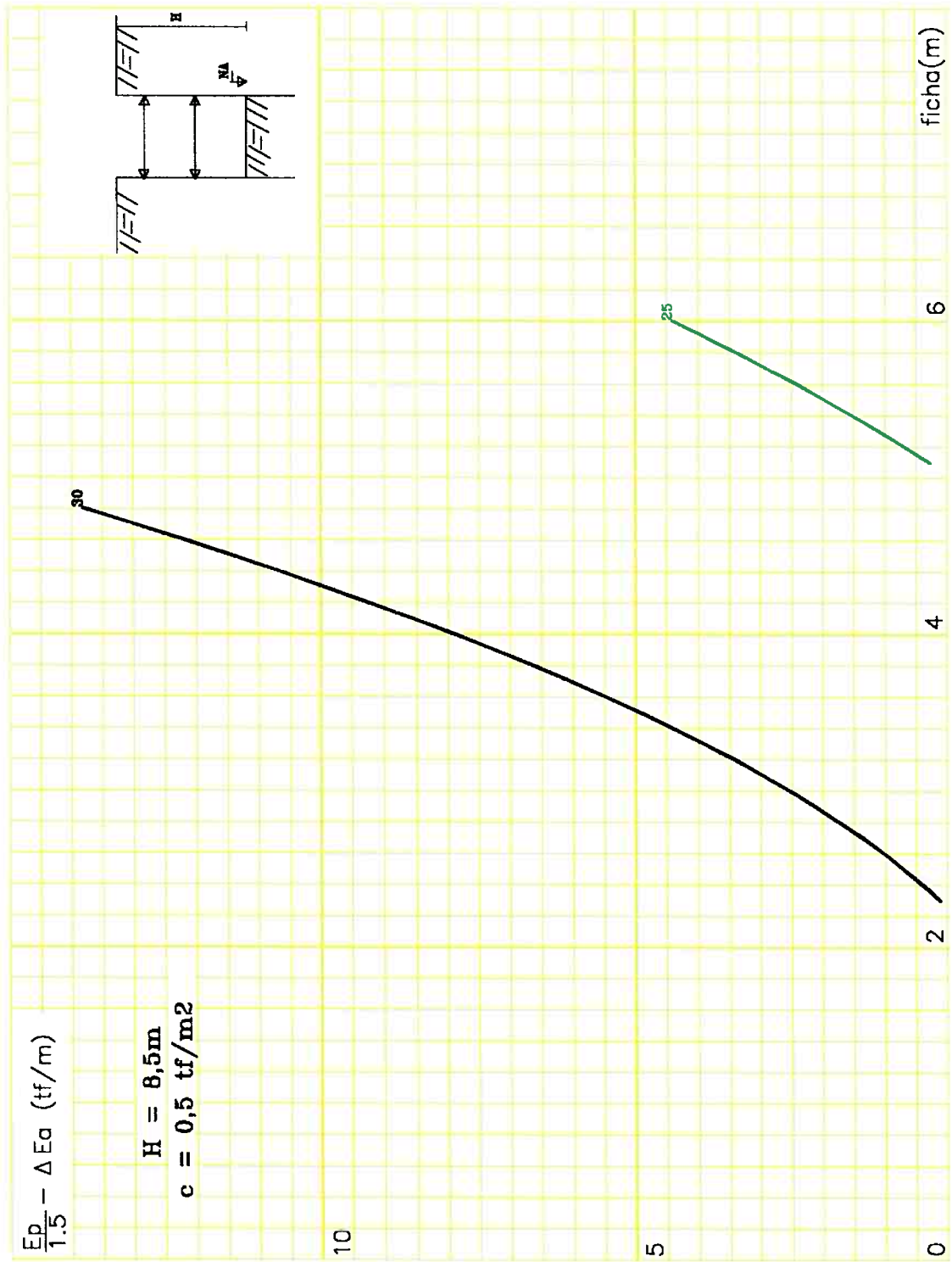


Fig. II.93- Ábaco tipo ES2b

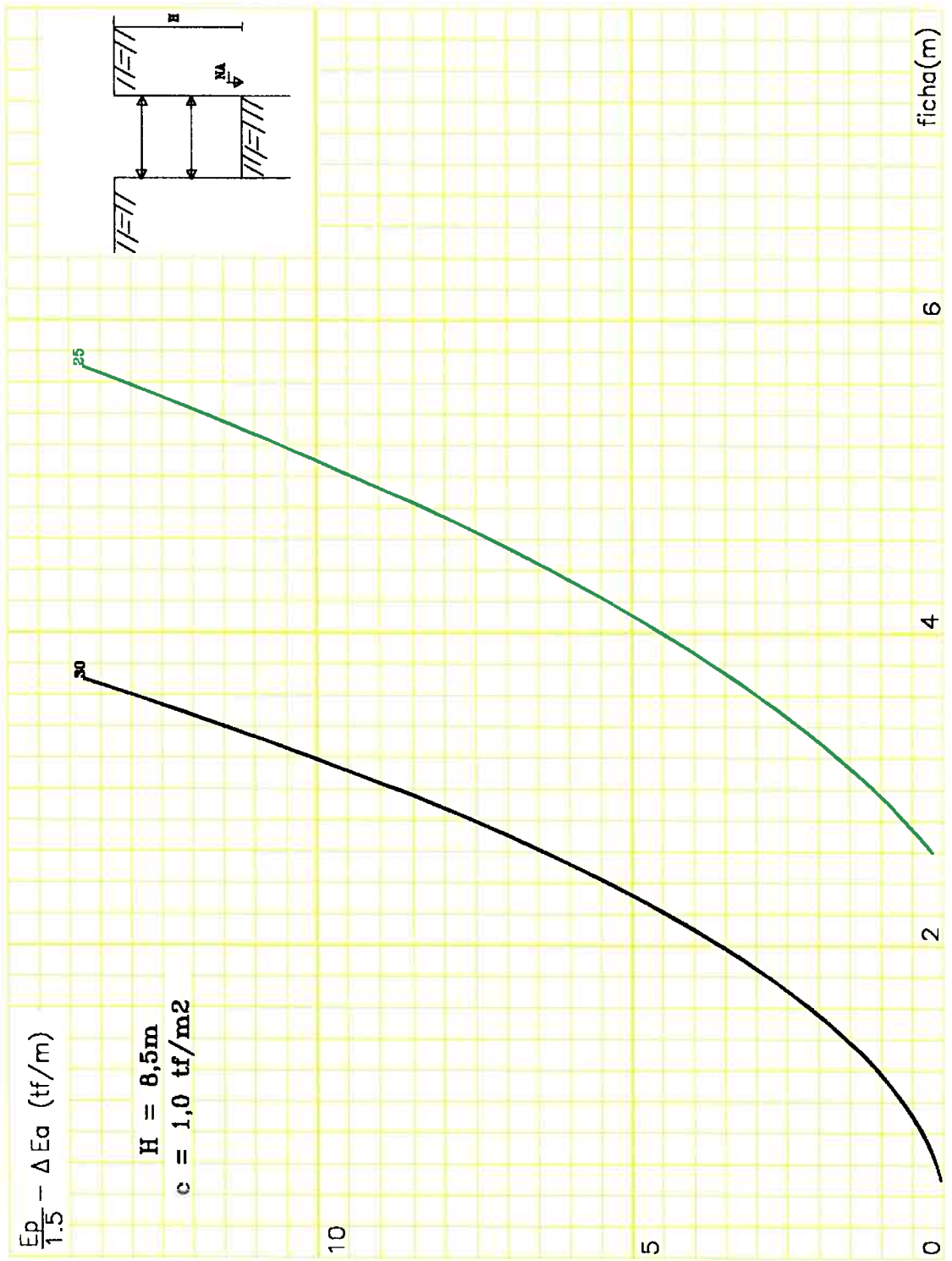


Fig. II.94- Ábaco tipo ES2b

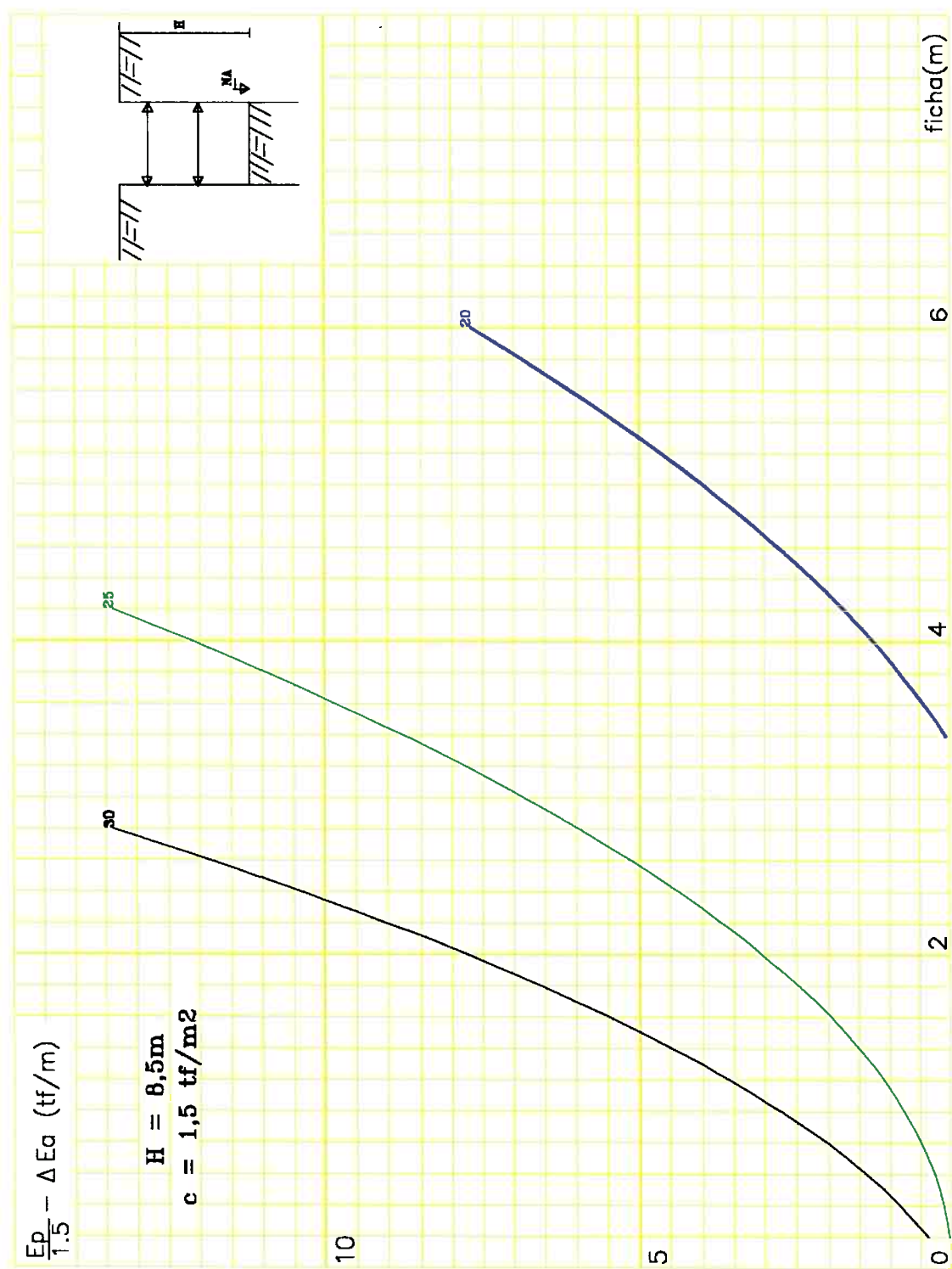


Fig. II.95- Ábaco tipo ES2b

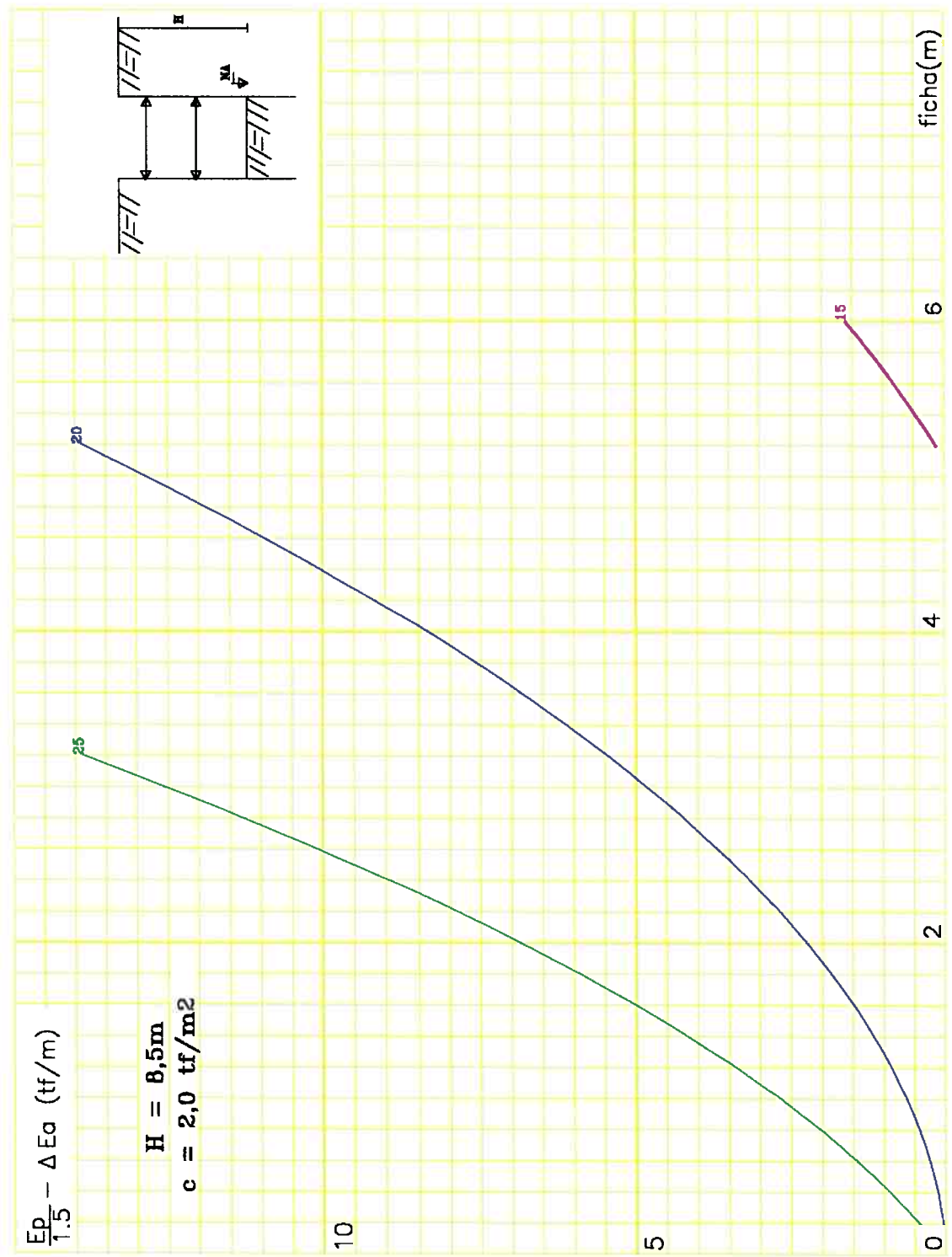


Fig. II.96- Ábaco tipo ES2b

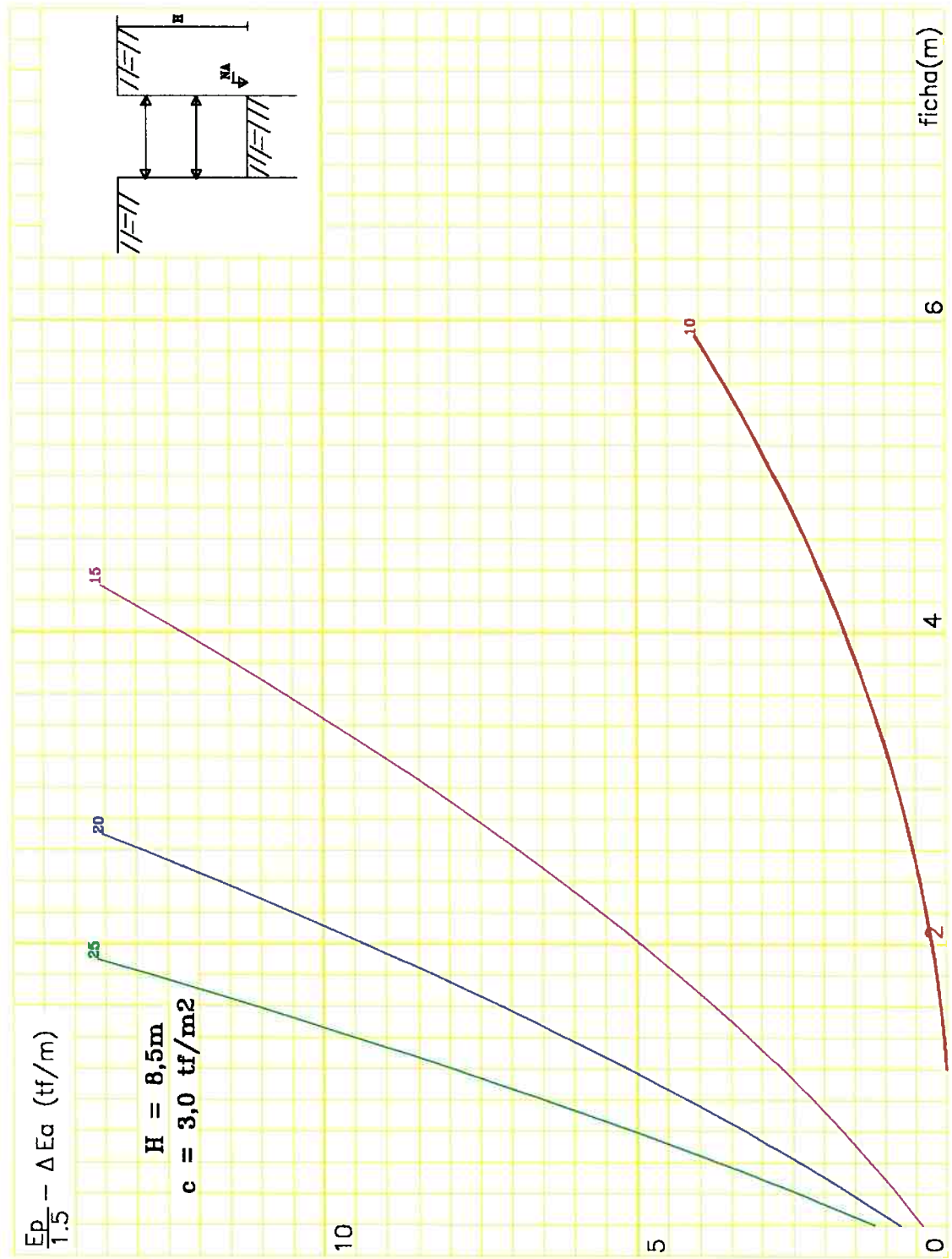


Fig. II.97- Ábaco tipo ES2b

**NÍVEL DE ÁGUA
ABAIXO DA FICHA**

H = 4,5 m

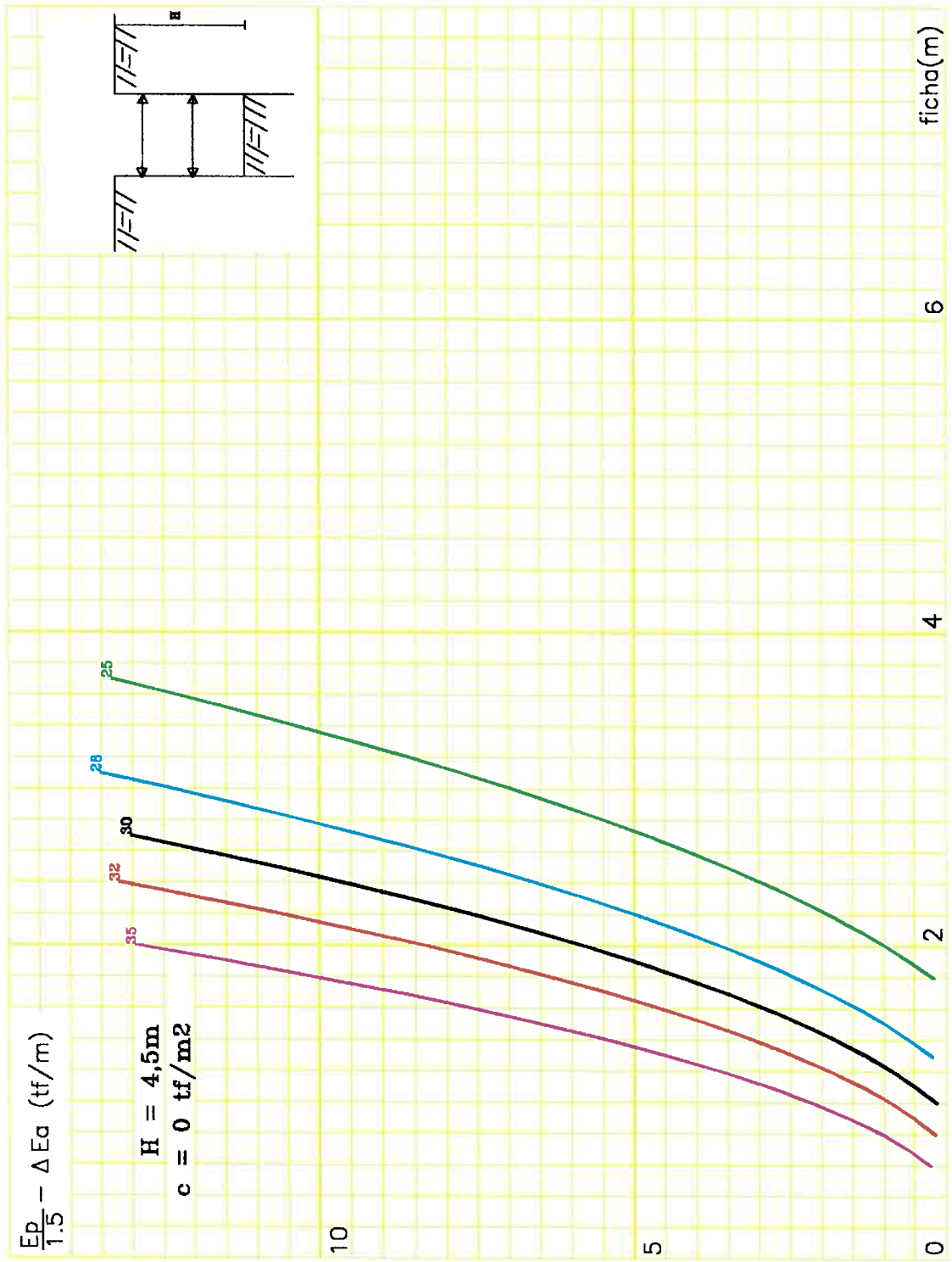


Fig. II.98- Ábaco tipo ES2b

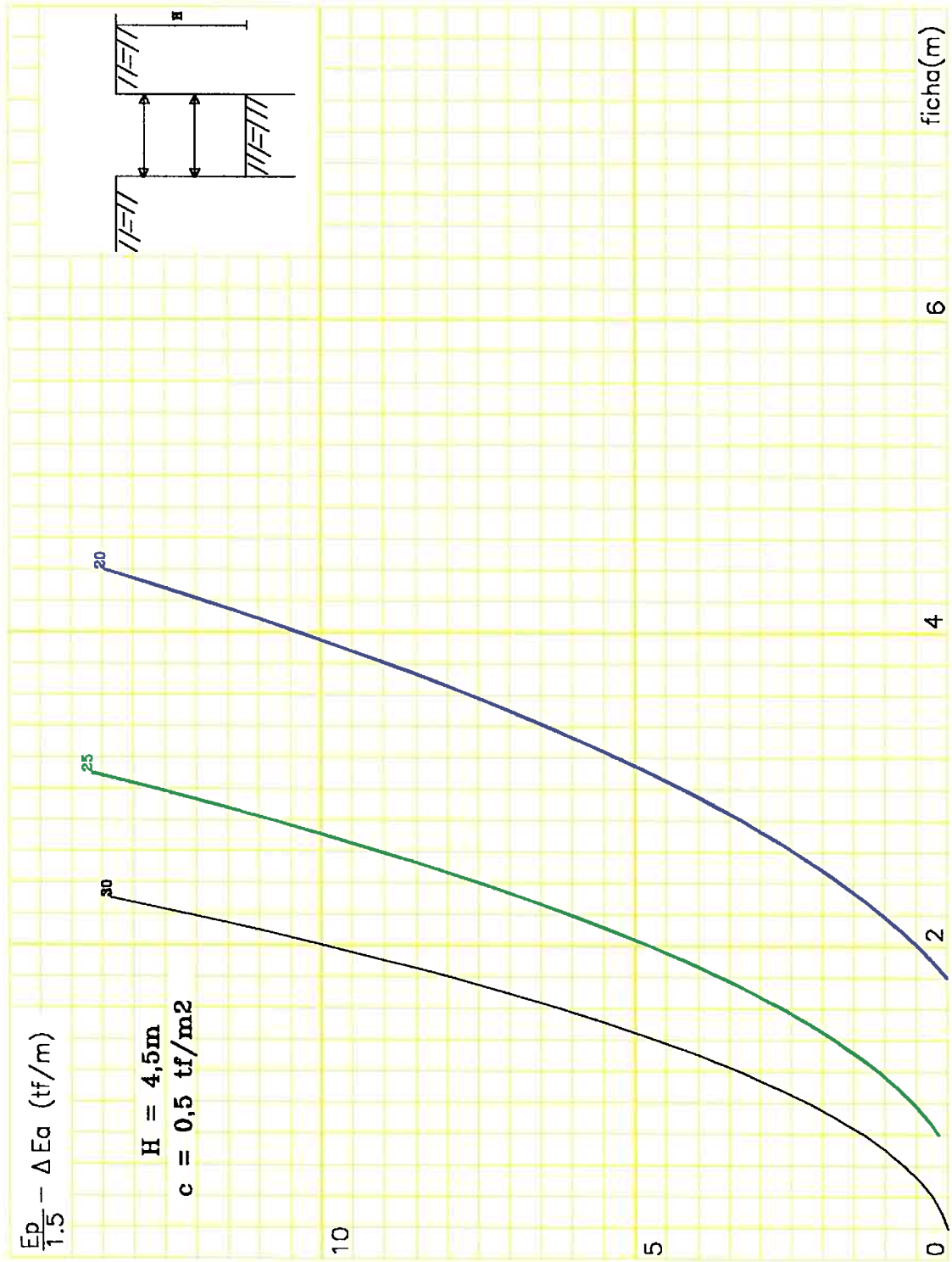


Fig. II.99- Ábaco tipo ES2b

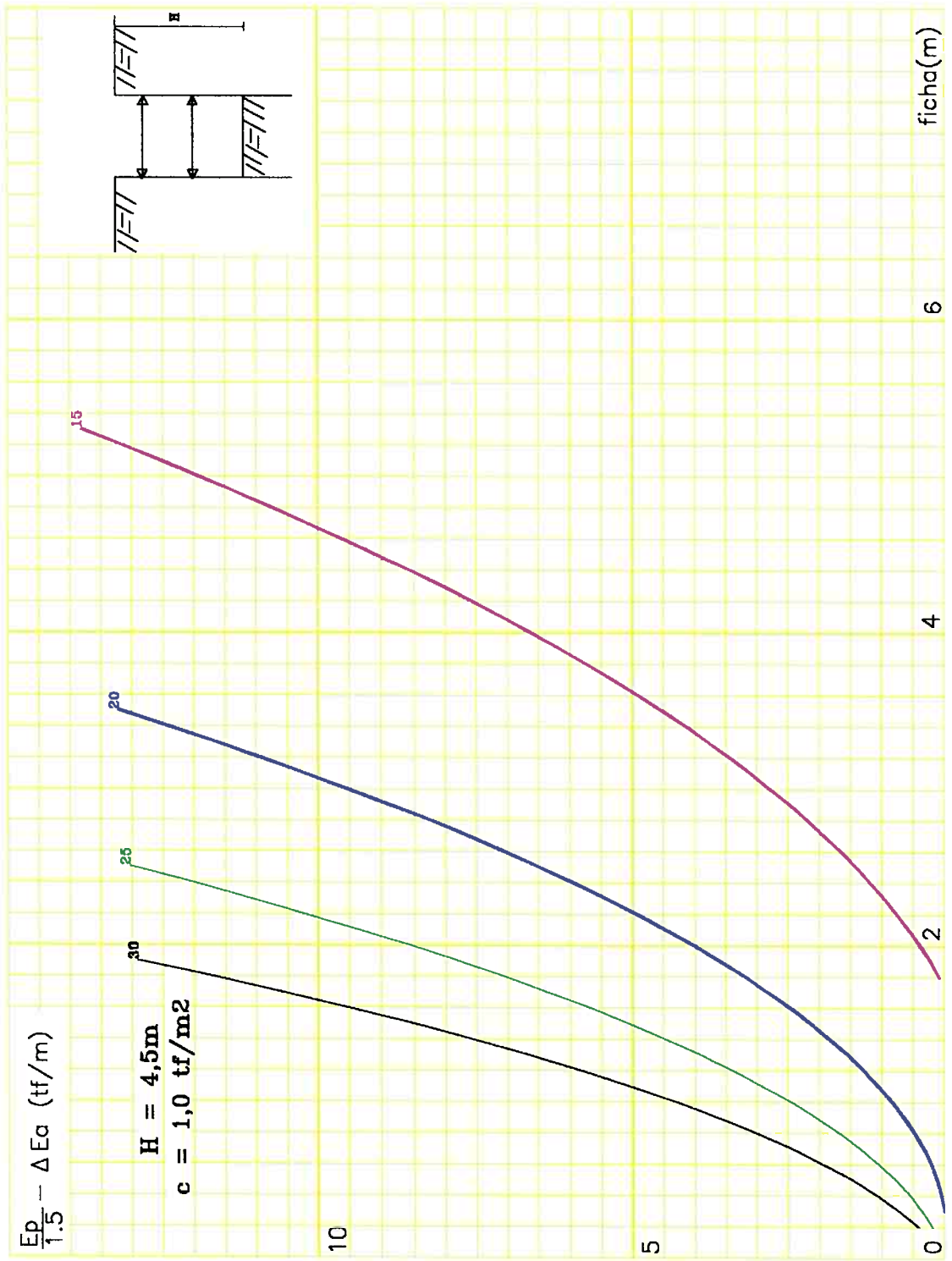


Fig. II.100- Ábaco tipo ES2b

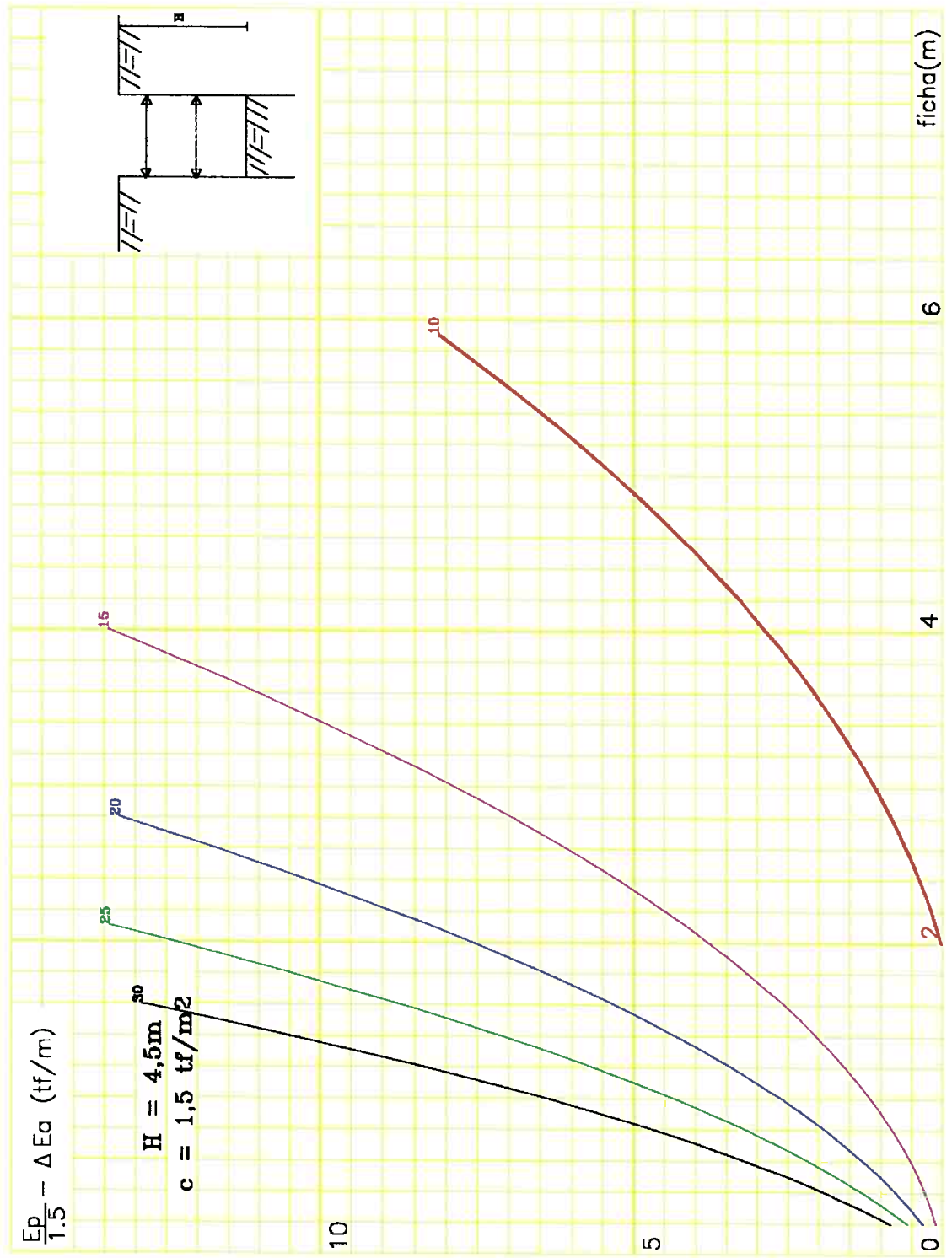


Fig. II.101- Ábaco tipo ES2b

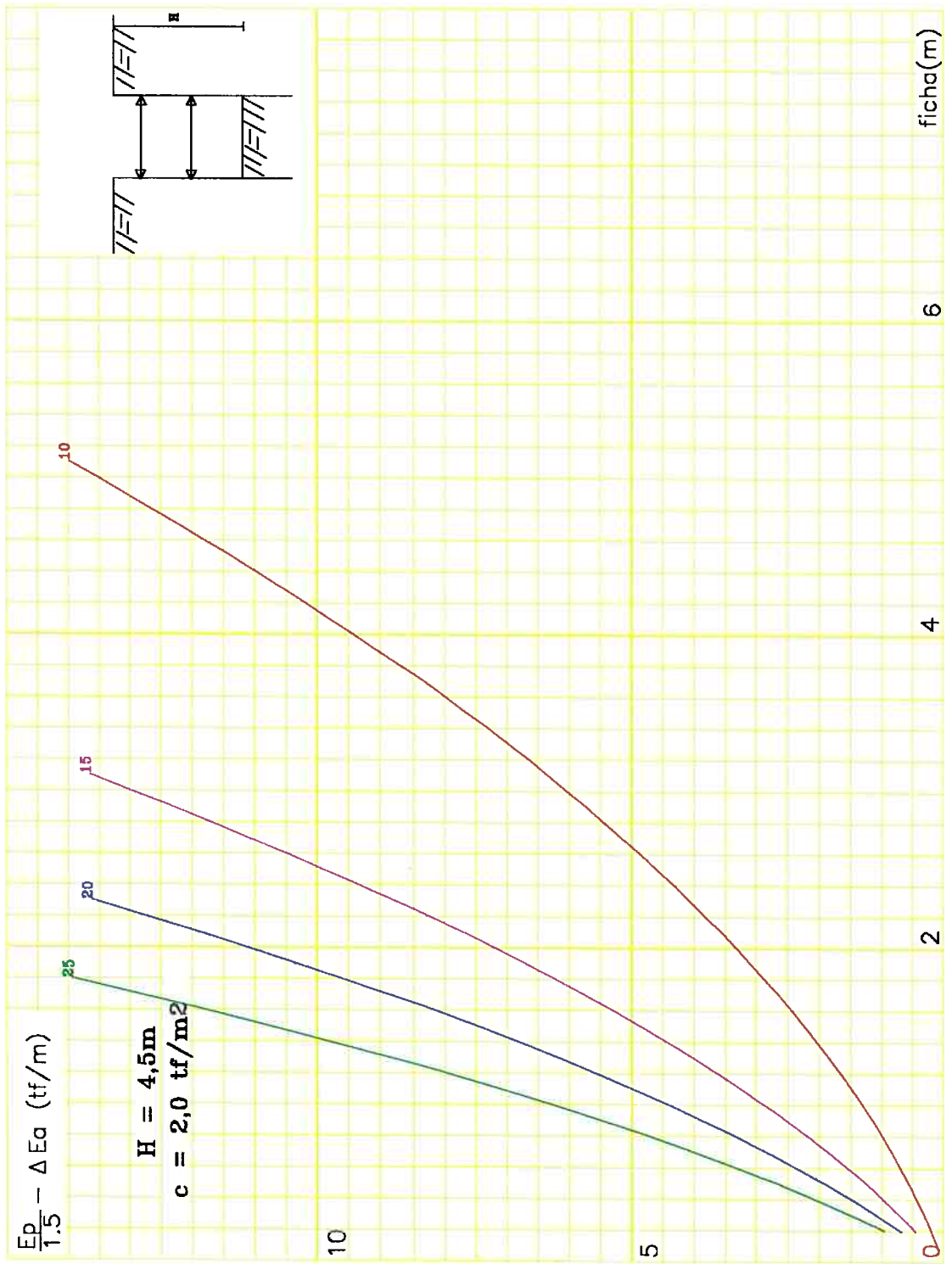


Fig. II.102- Ábaco tipo ES2b

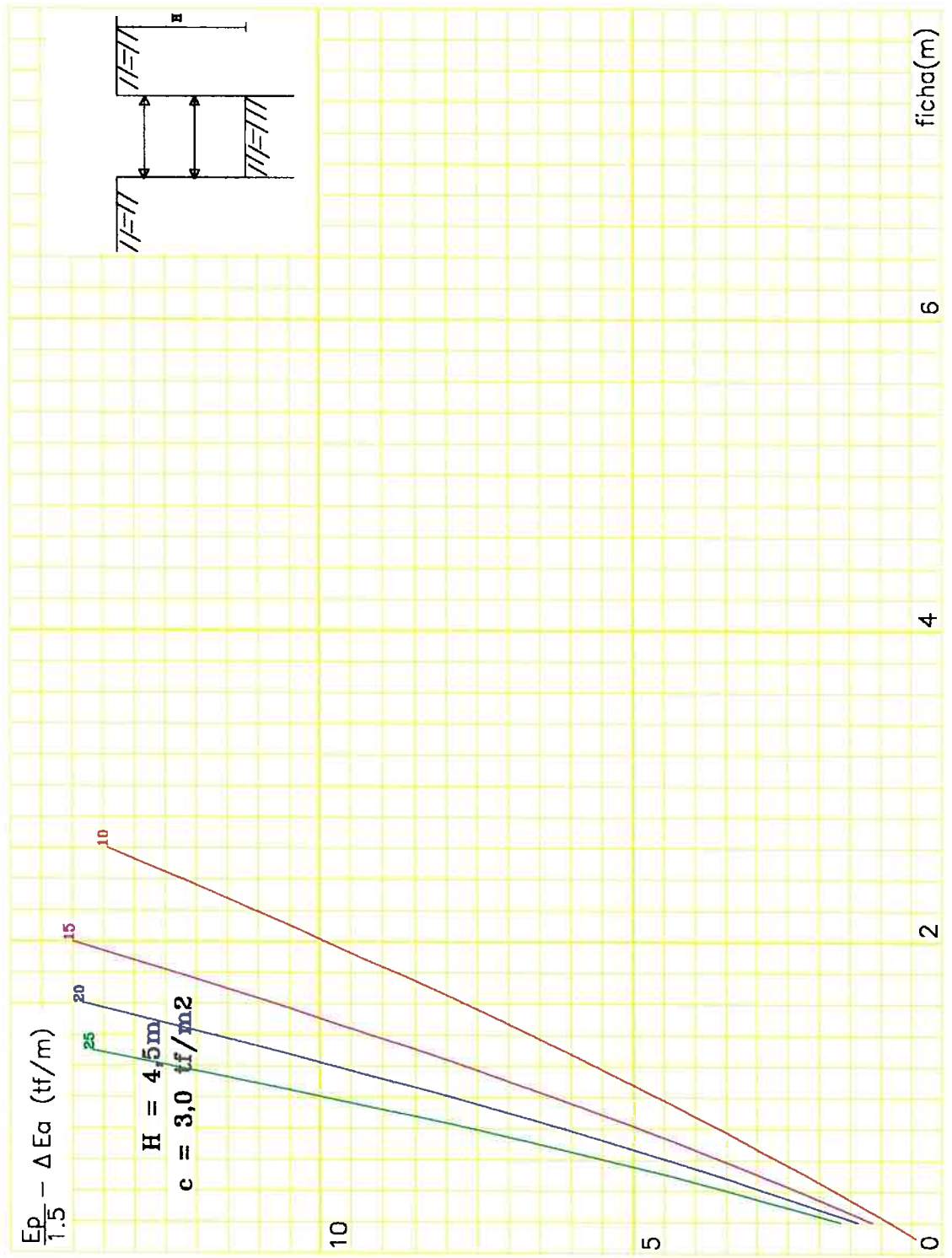


Fig. II.103- Ábaco tipo ES2b

H = 5,5 m

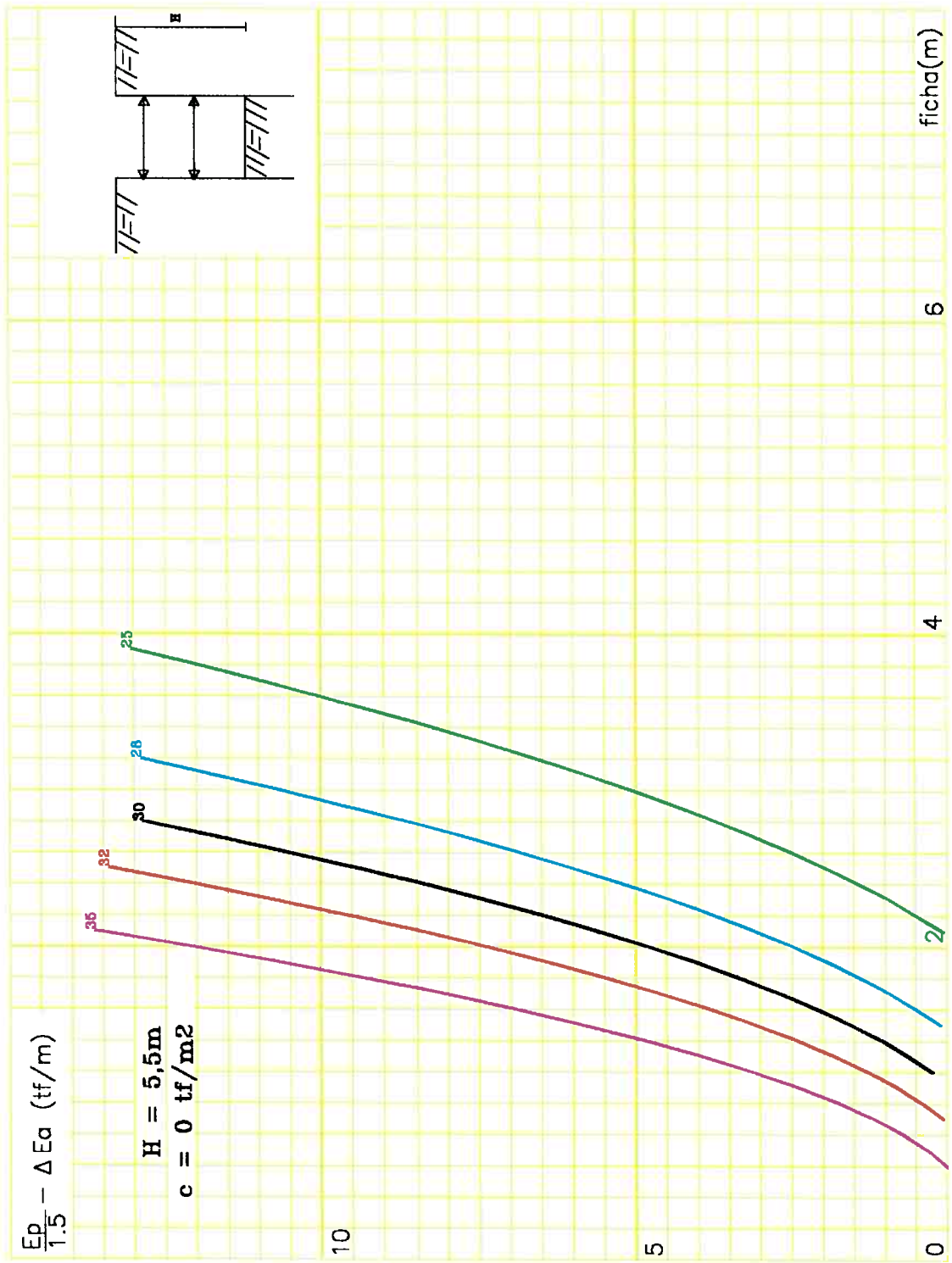


Fig. II.104- Ábaco tipo ES2b

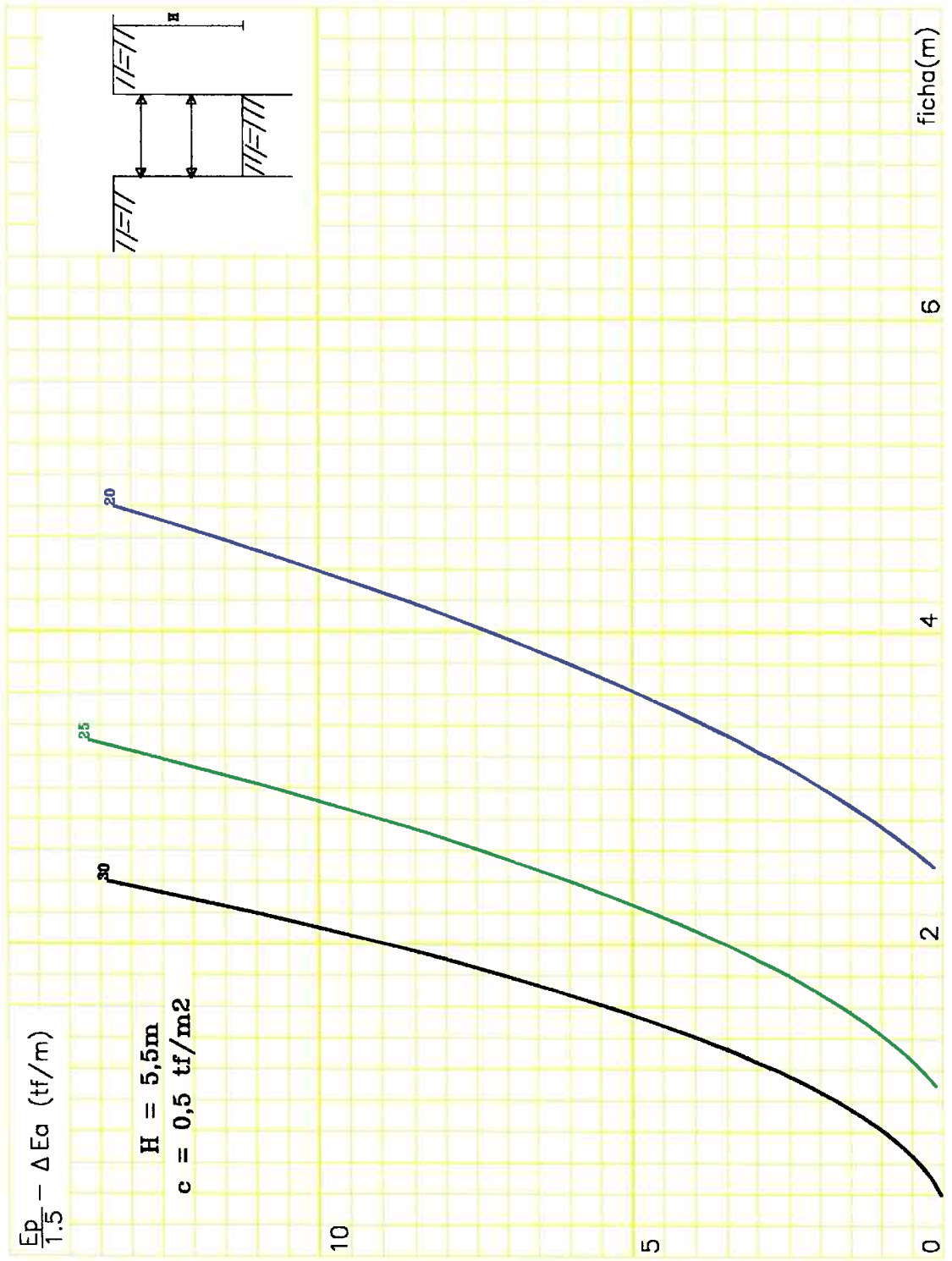


Fig. II.105- Ábaco tipo ES2b

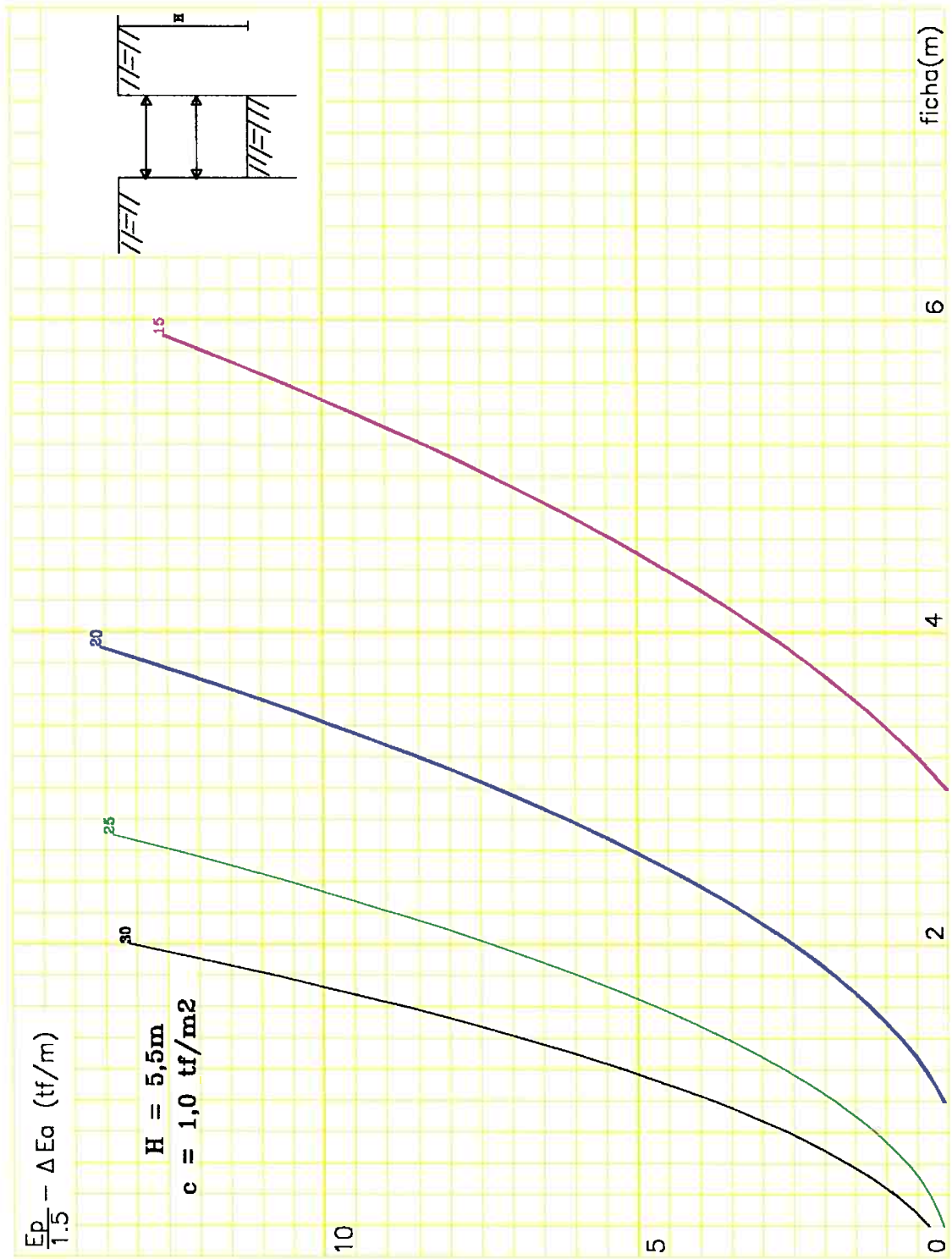


Fig. II.106- Ábaco tipo ES2b

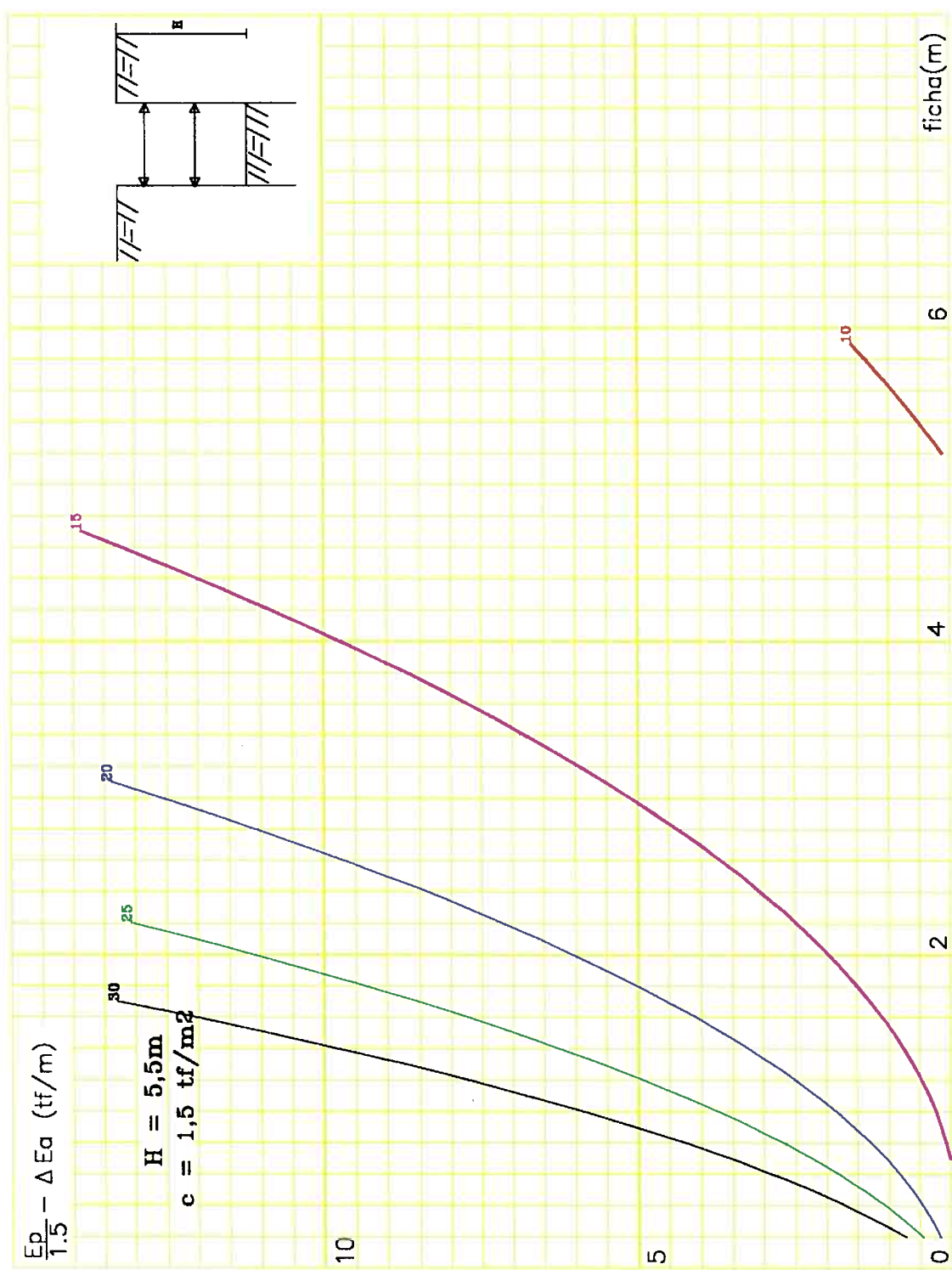


Fig. II.107- Ábaco tipo ES2b

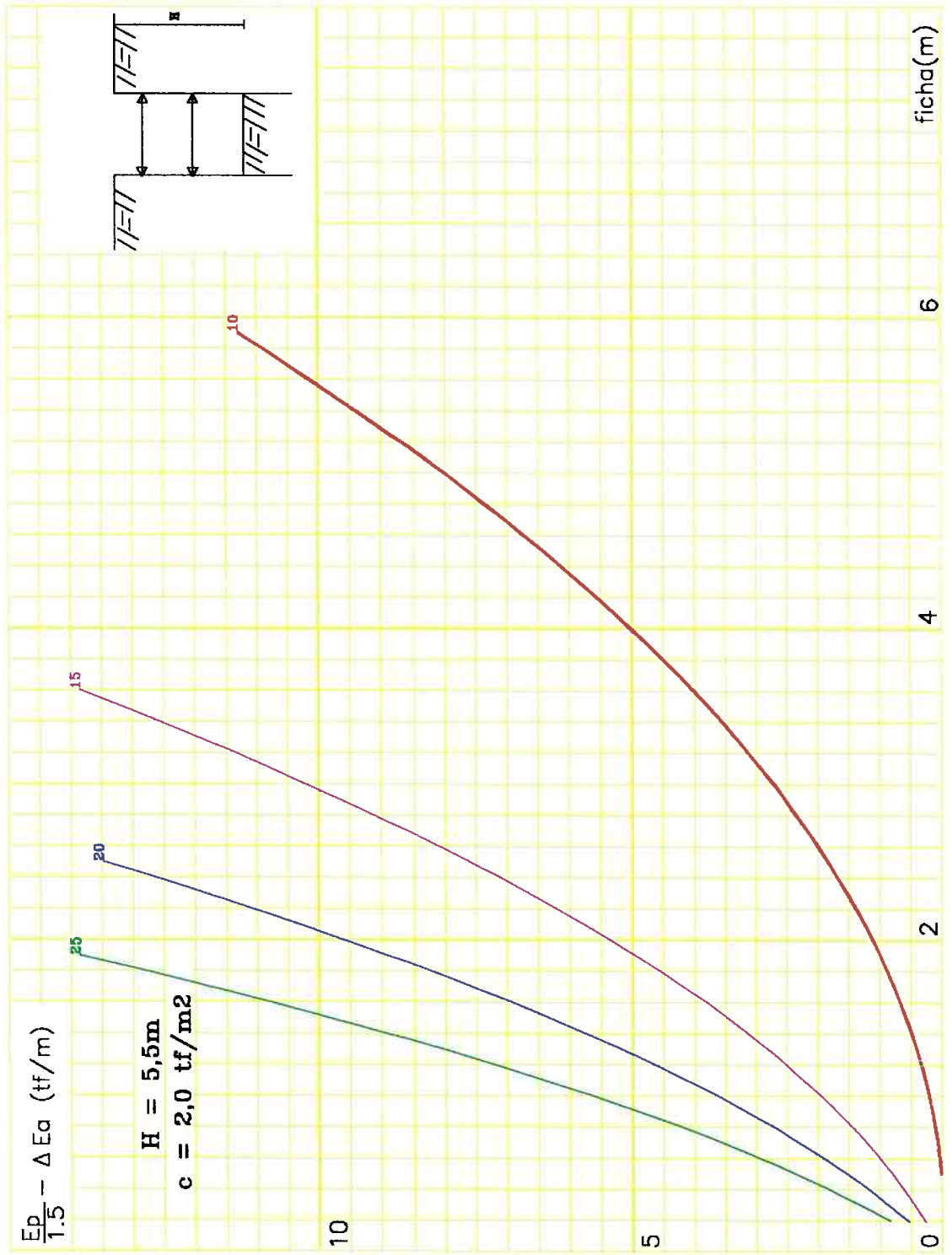


Fig. II.108- Ábaco tipo ES2b

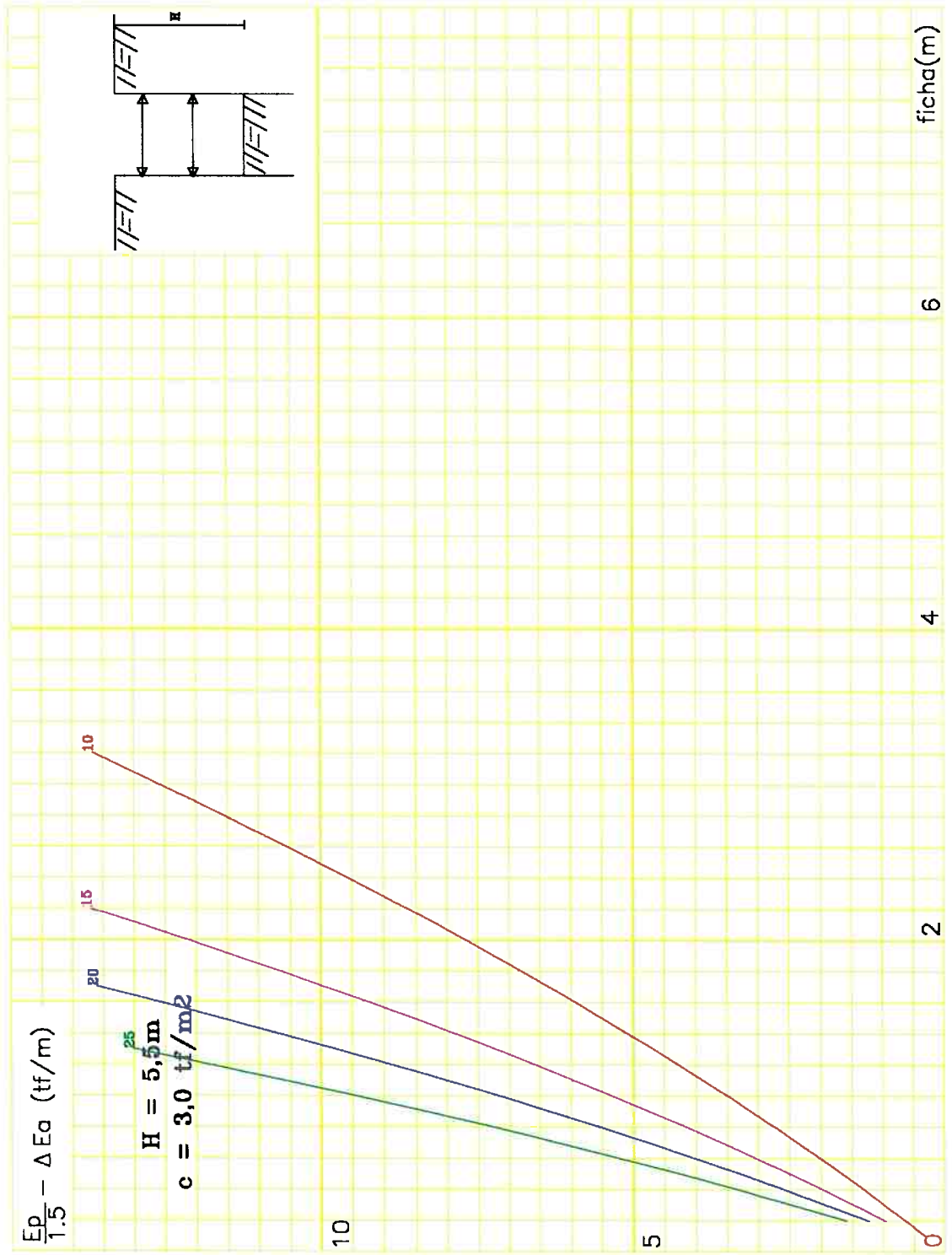


Fig. II.109- Ábaco tipo ES2b

H = 6,5 m

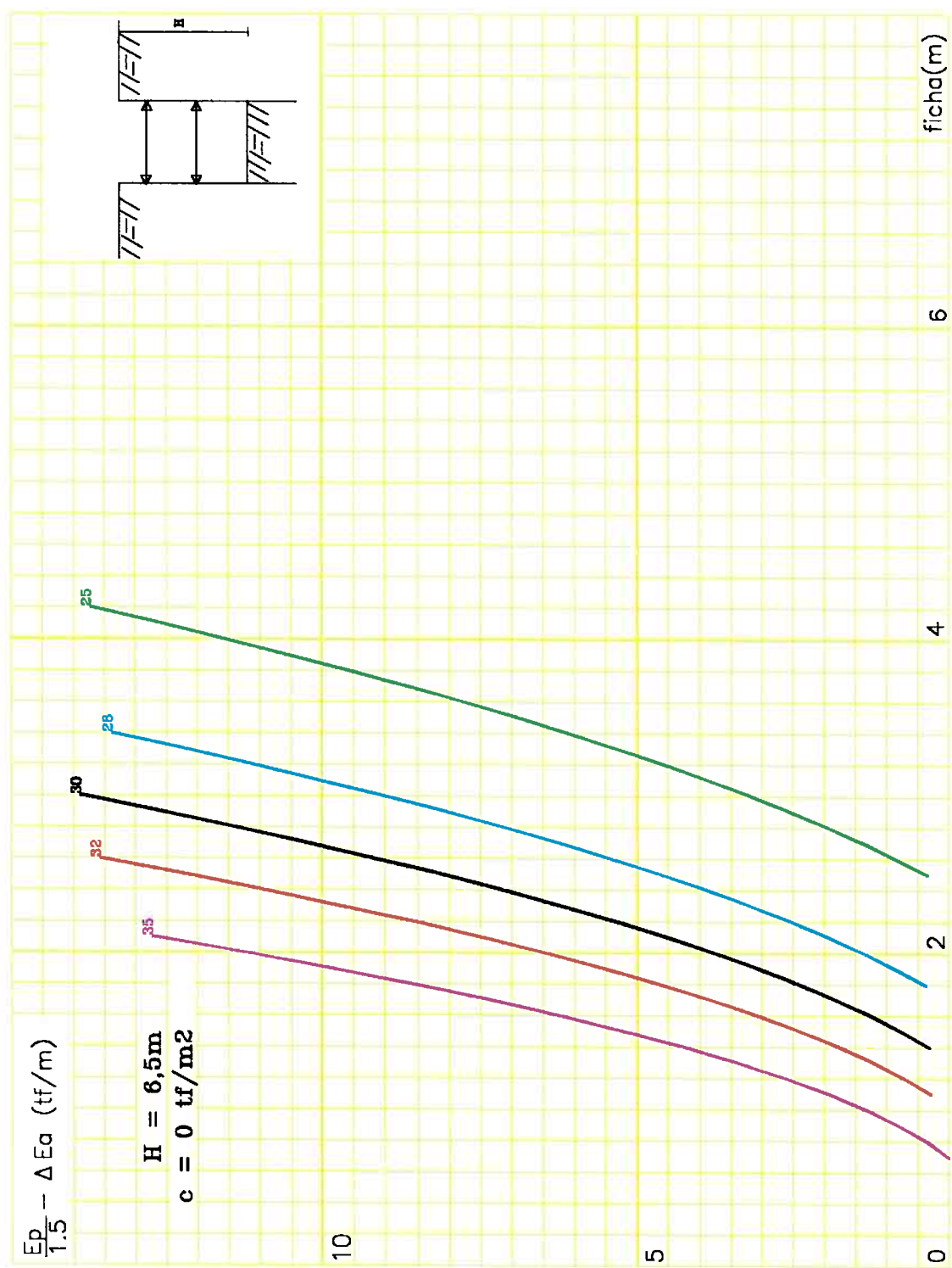


Fig. II.110- Ábaco tipo ES2b

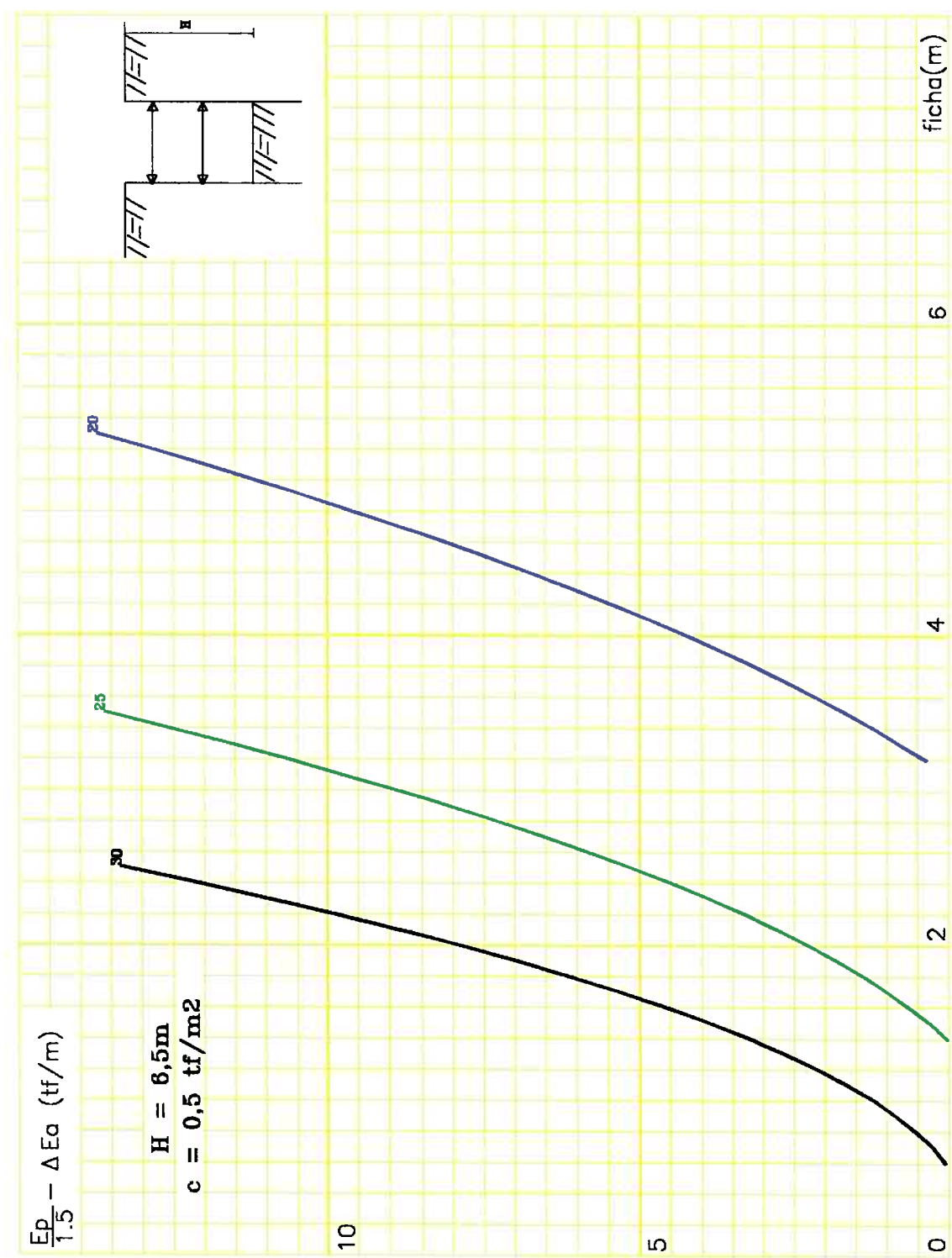


Fig. II.111- Ábaco tipo ES2b

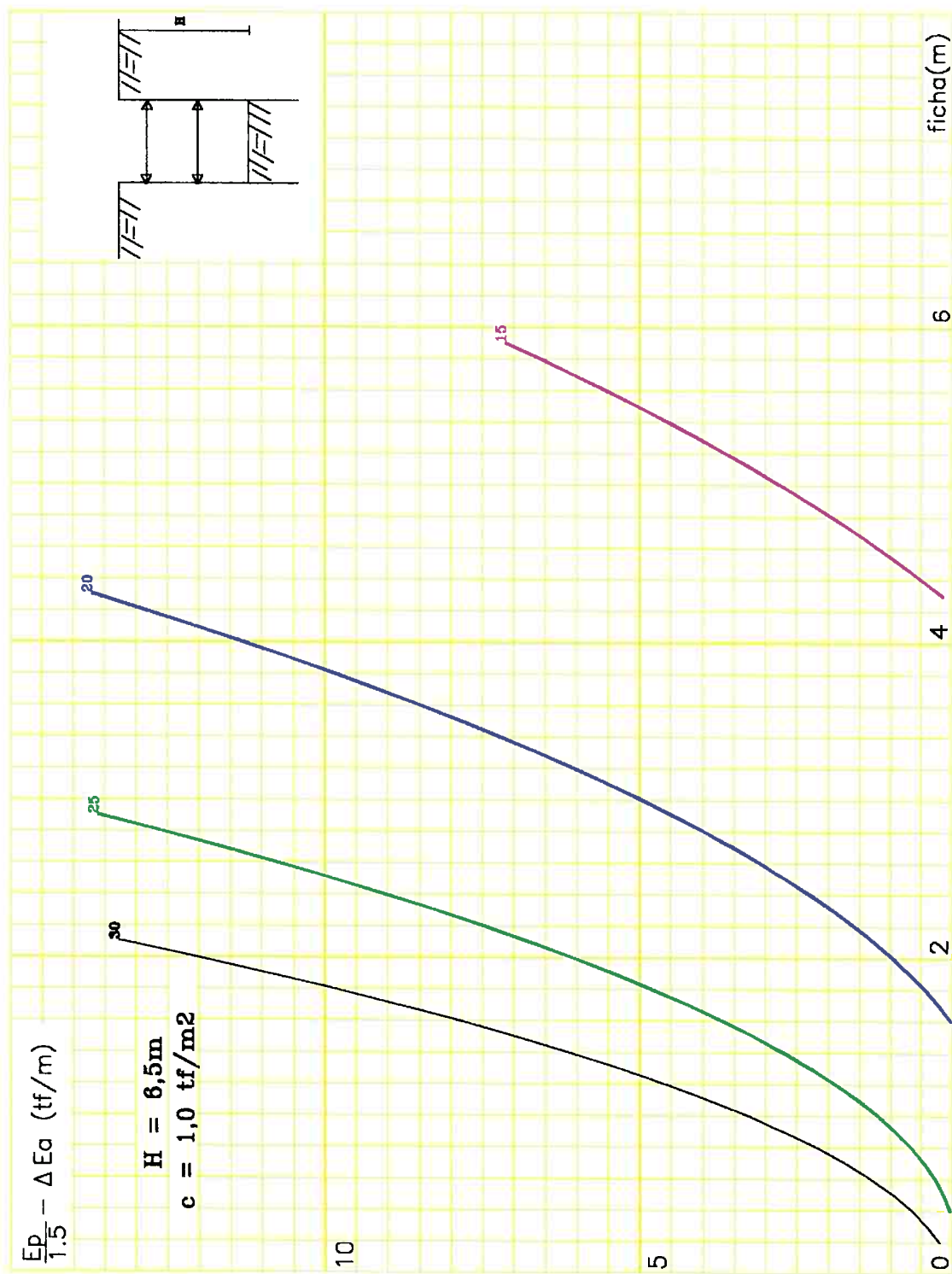


Fig. II.112- Ábaco tipo ES2b

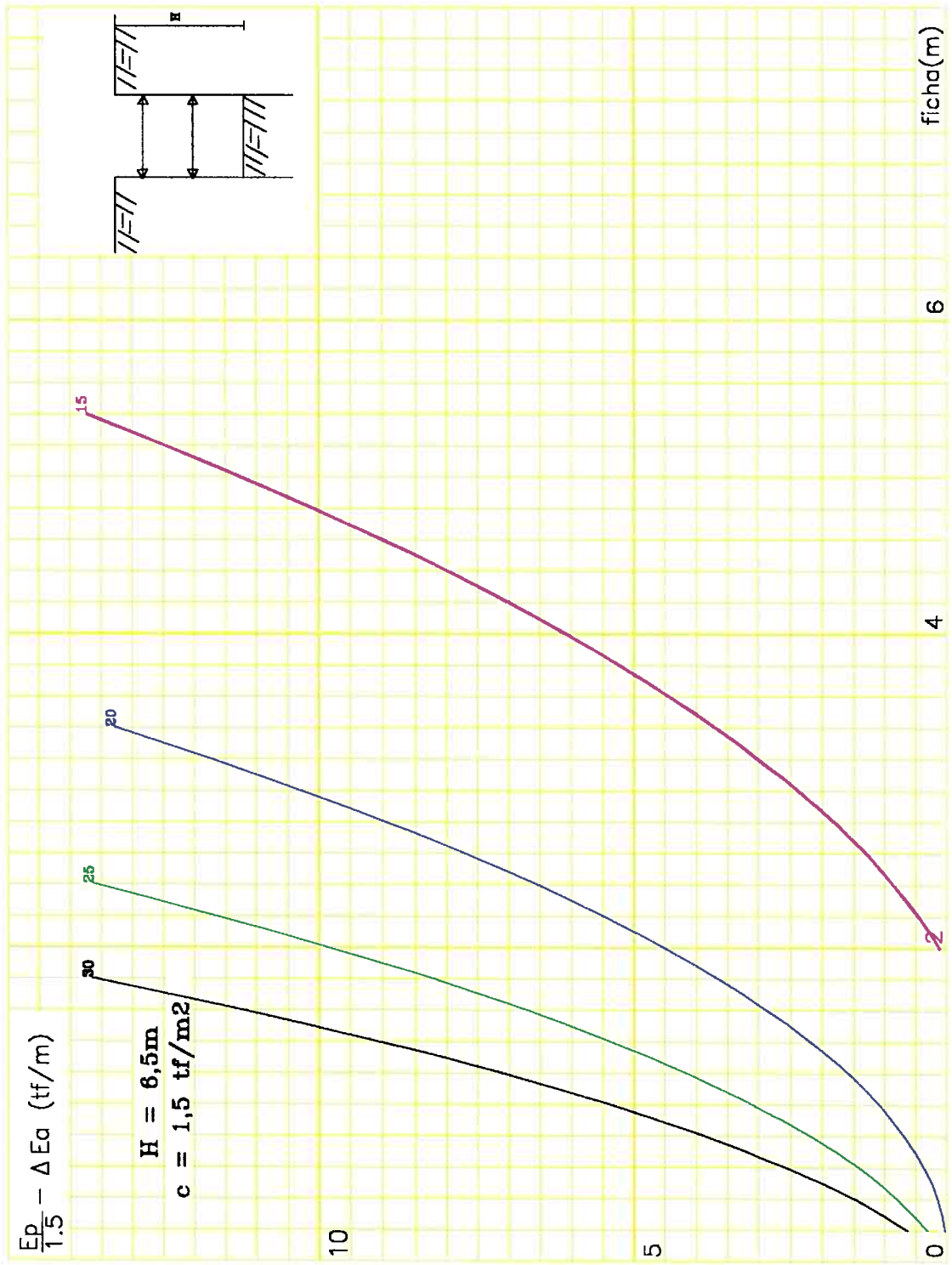


Fig. II.113- Ábaco tipo ES2b

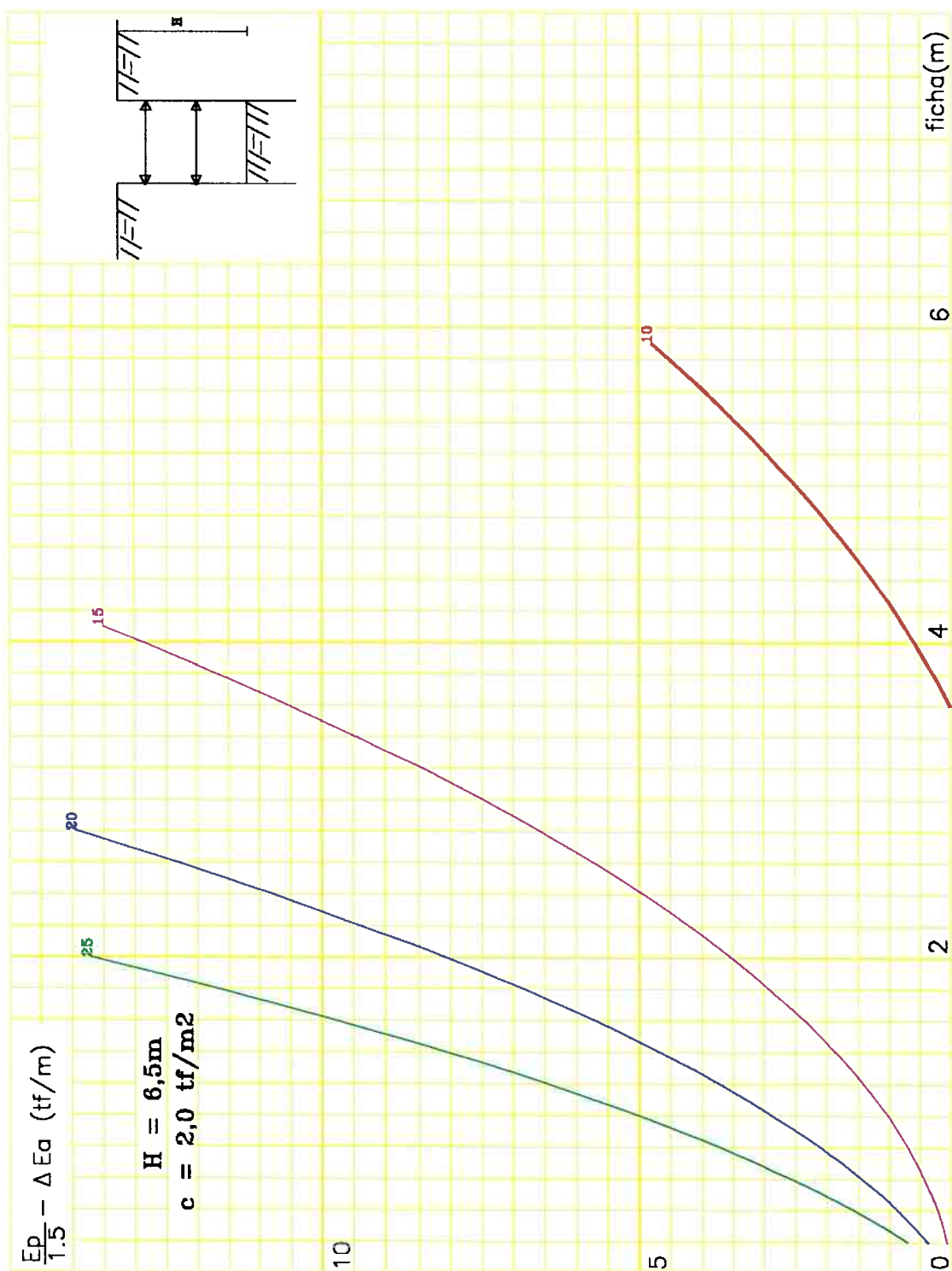


Fig. II.114- Ábaco tipo ES2b

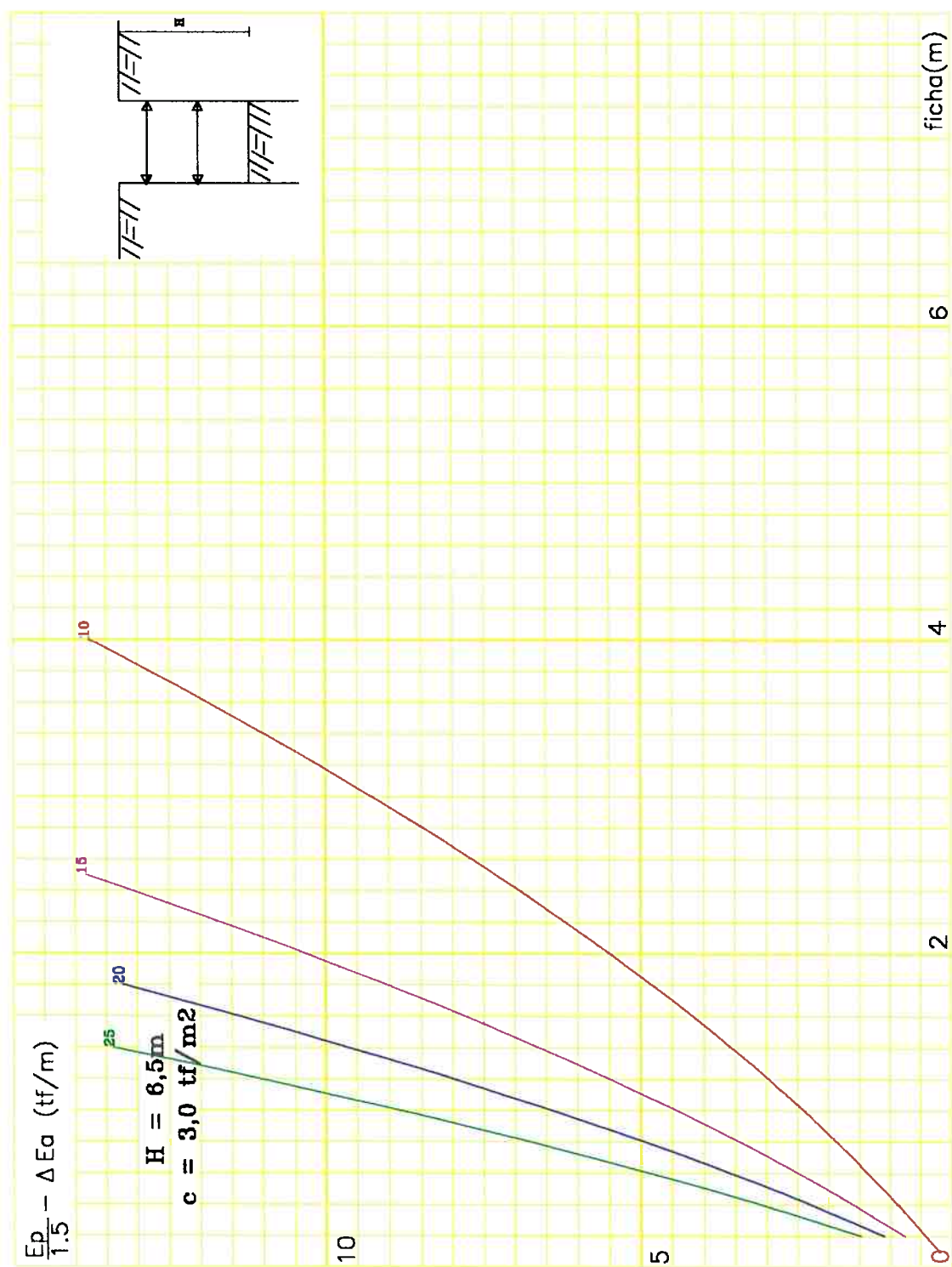


Fig. II.115- Ábaco tipo ES2b

H = 7,5 m

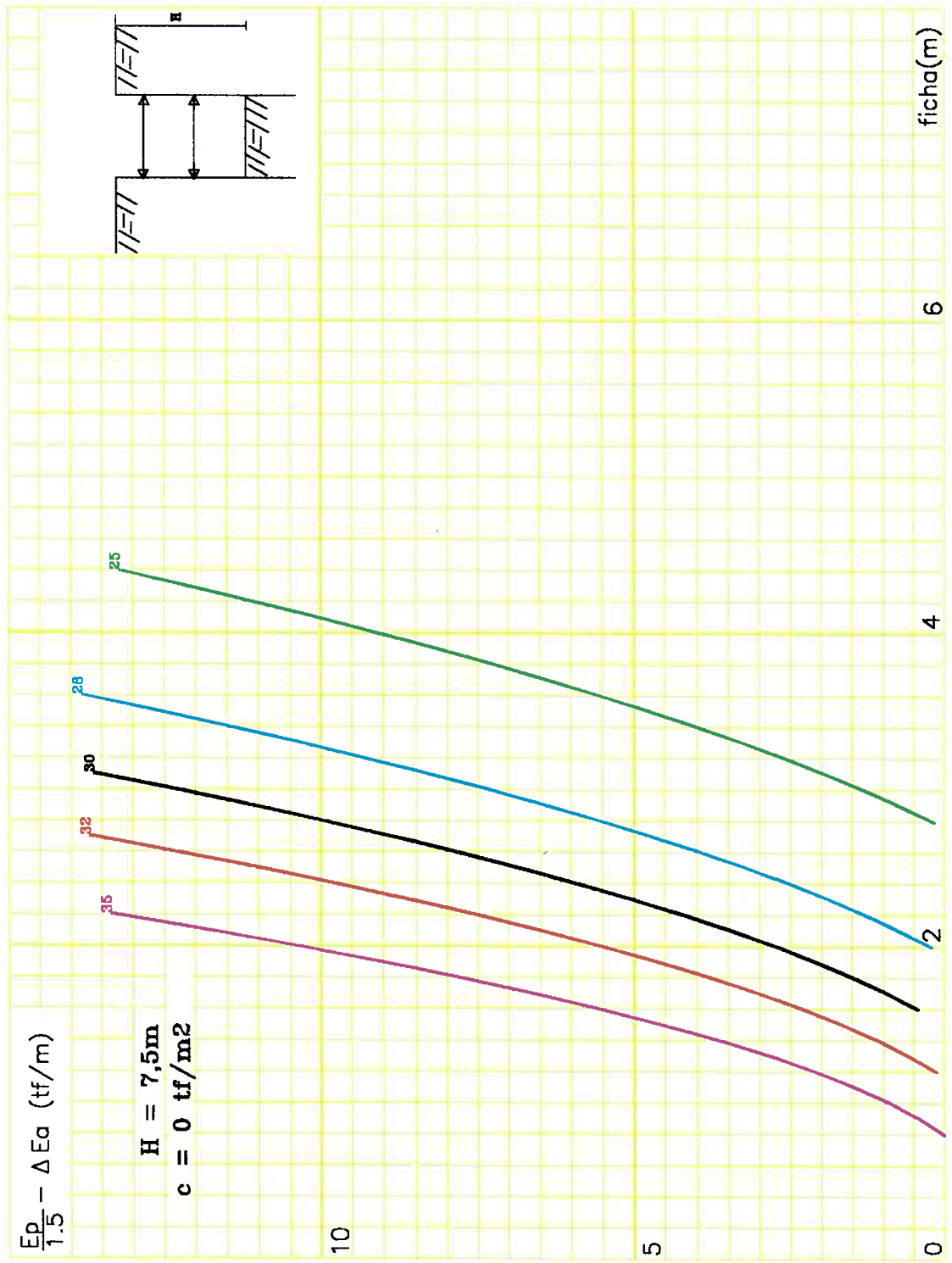


Fig. II.116- Ábaco tipo ES2b

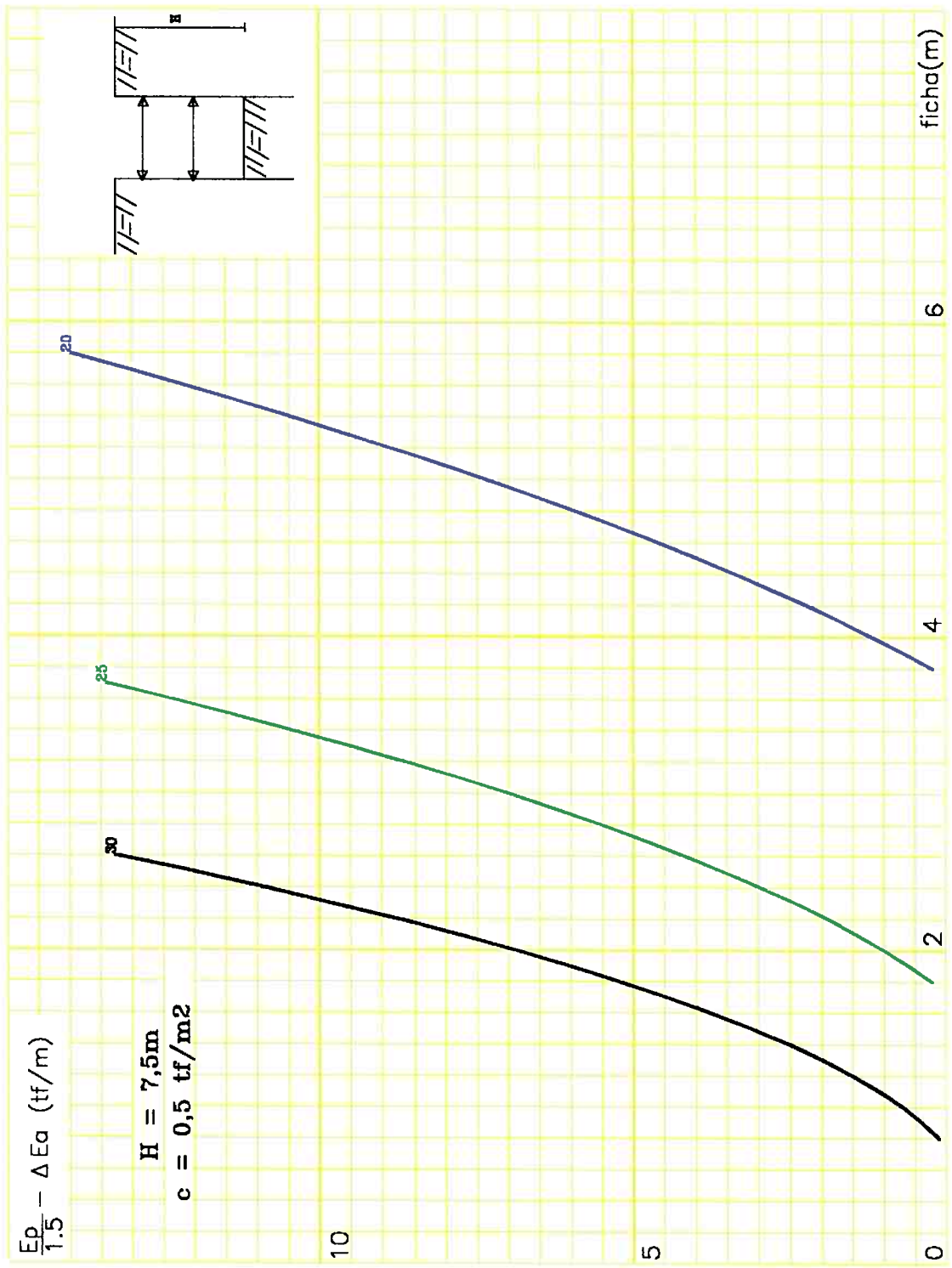


Fig. II.117- Ábaco tipo ES2b

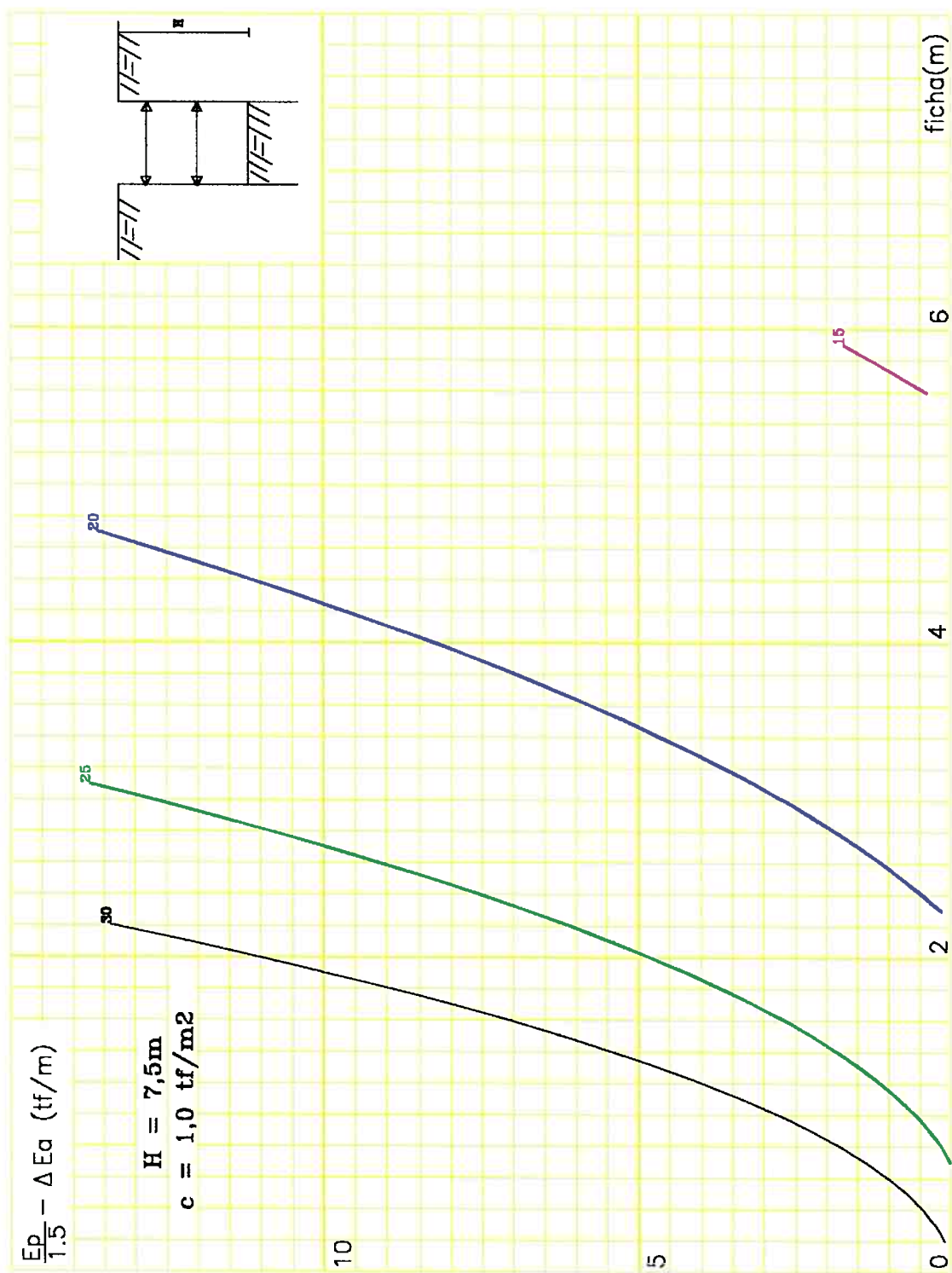


Fig. II.118- Ábaco tipo ES2b

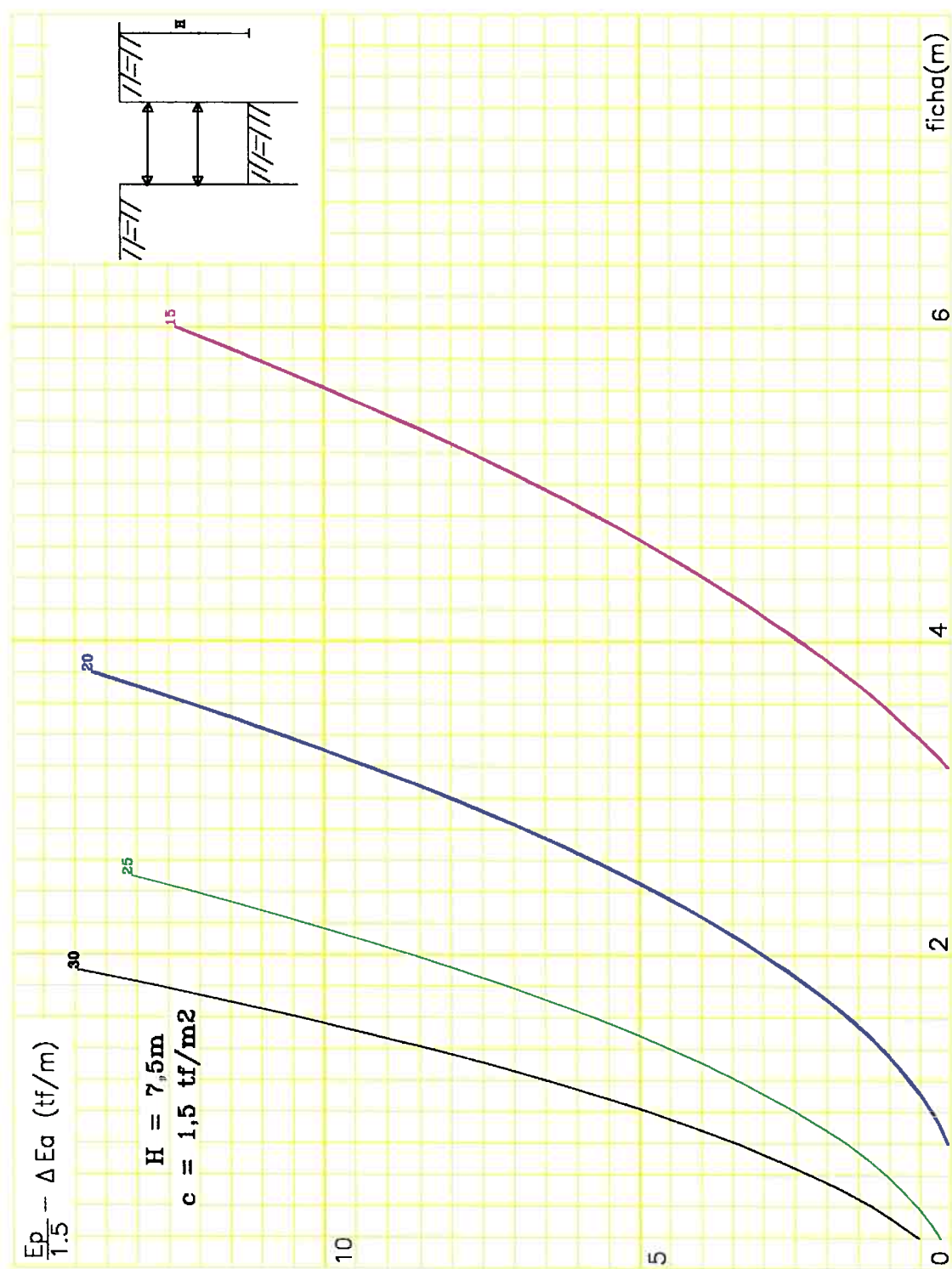


Fig. II.119- Ábaco tipo ES2b

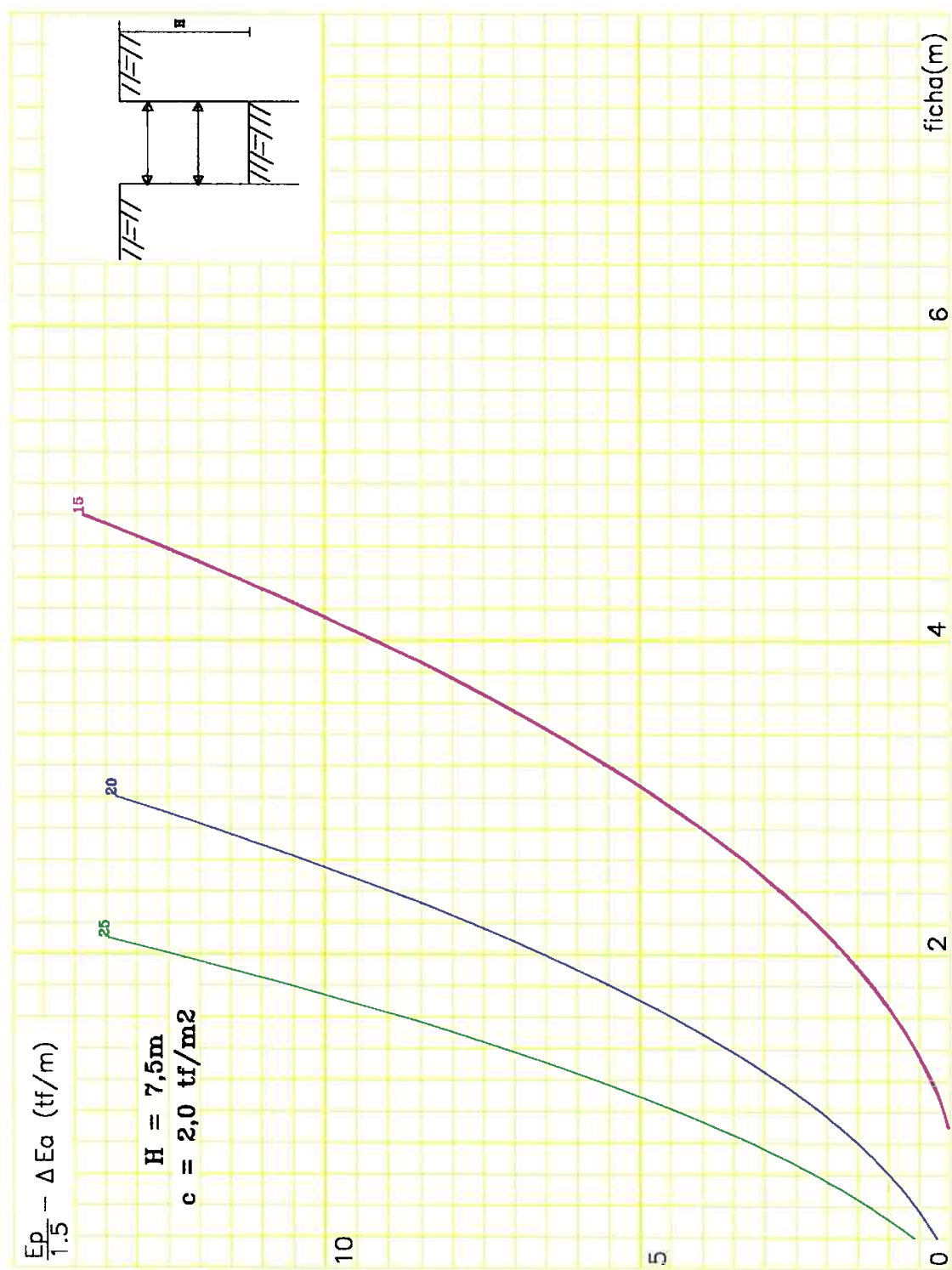


Fig. II.120- Ábaco tipo ES2b

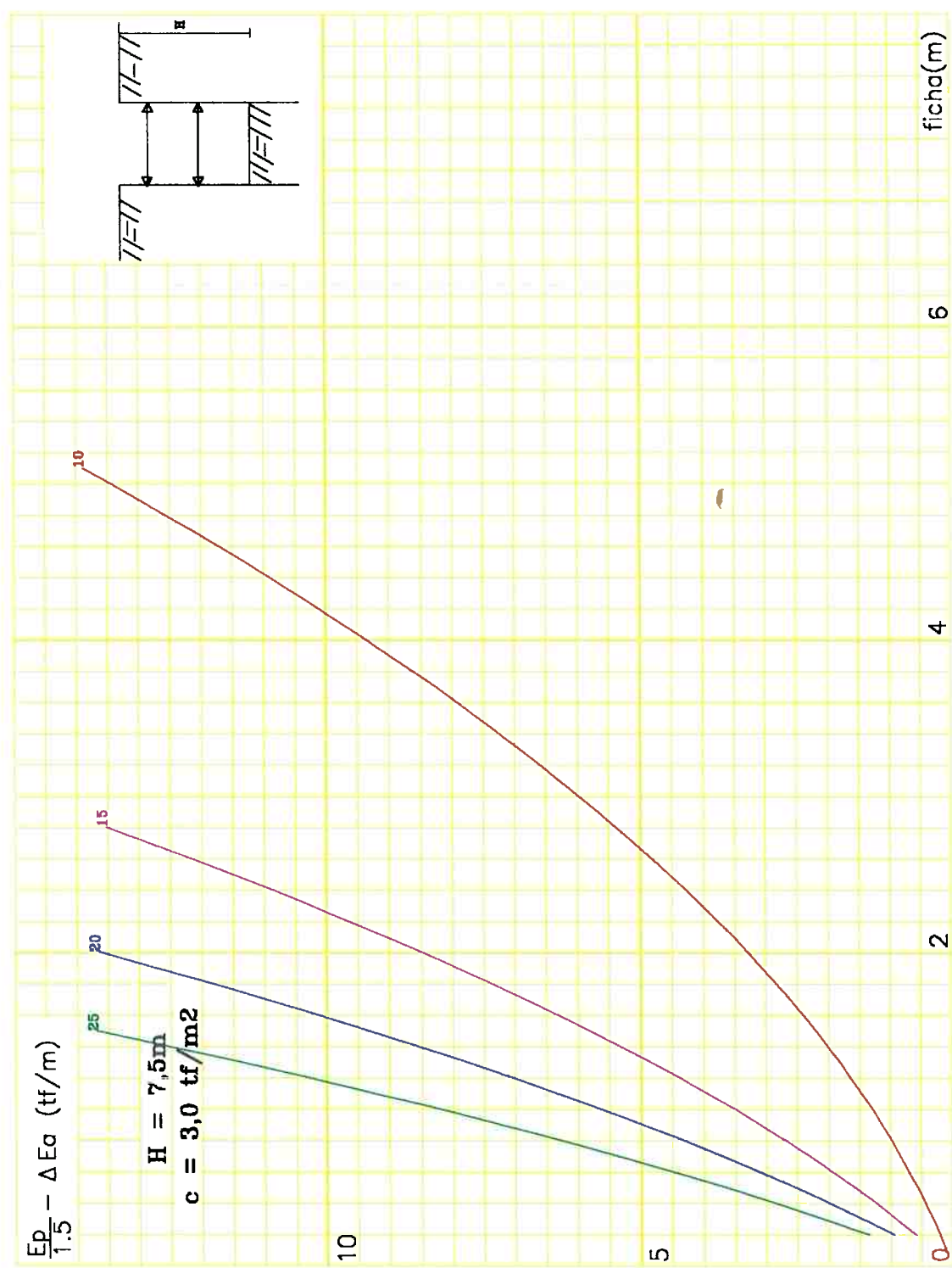


Fig. II.121- Ábaco tipo ES2b

H = 8,5 m

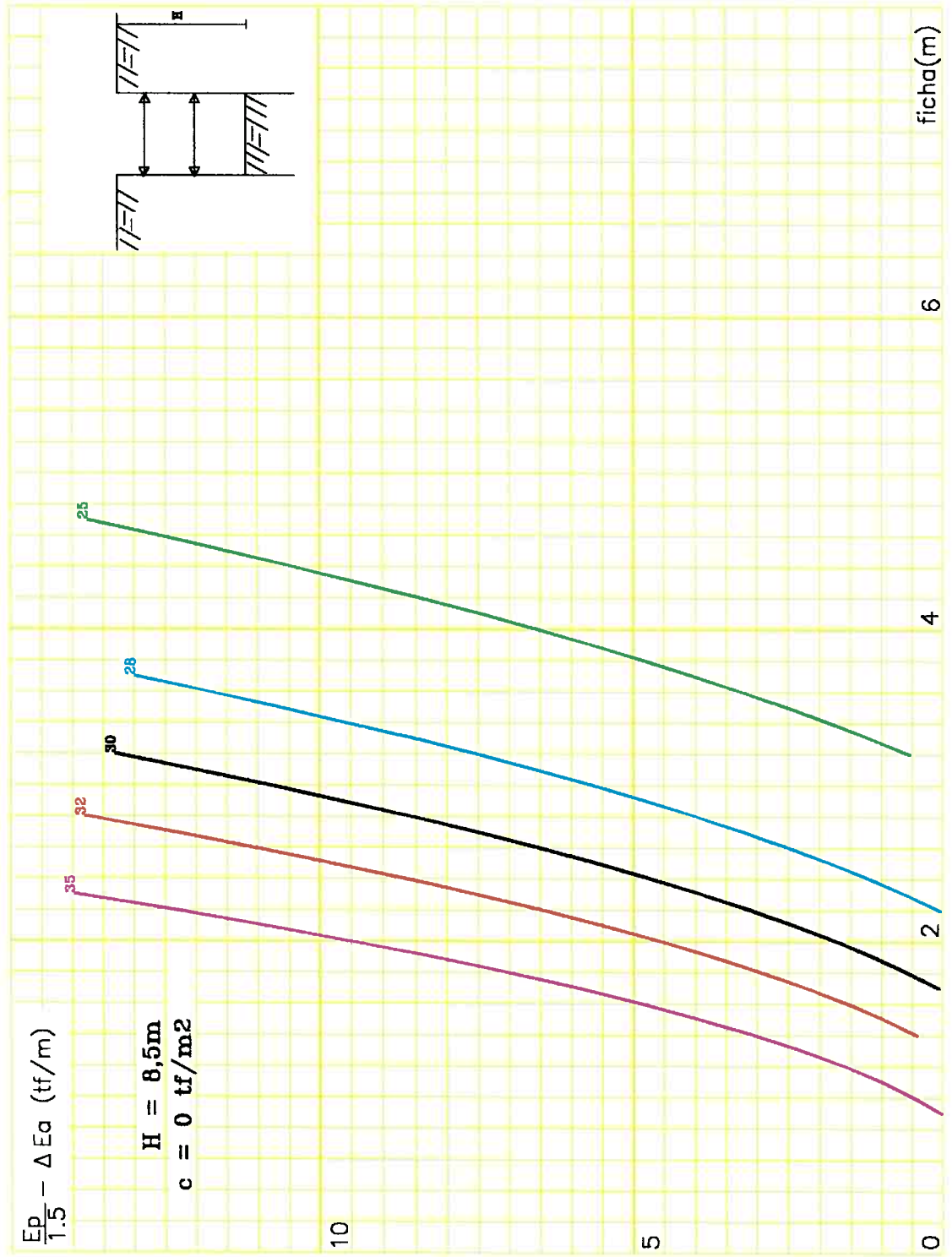


Fig. II.122- Ábaco tipo ES2b

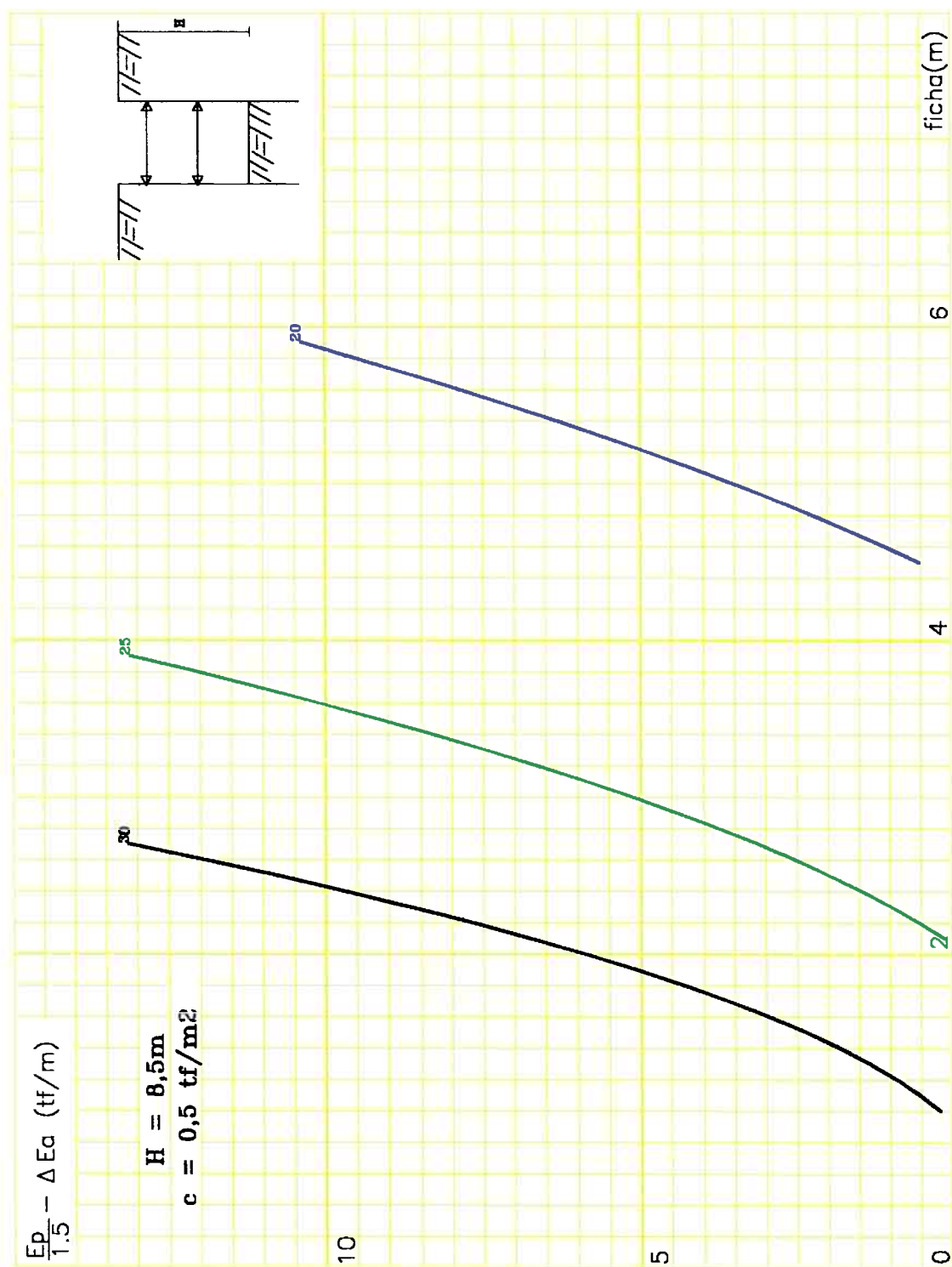


Fig. II.123- Ábaco tipo ES2b

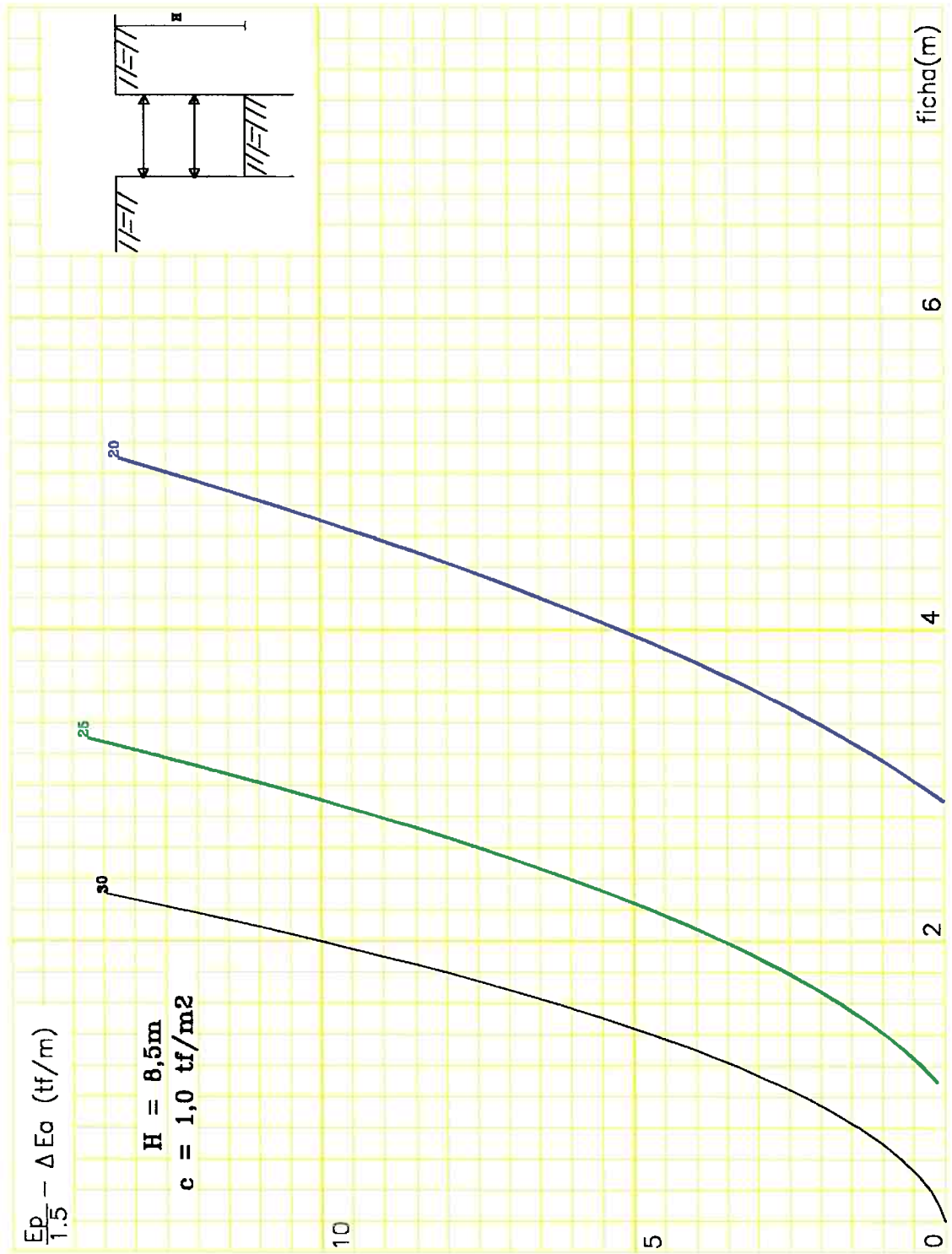


Fig. II.124- Ábaco tipo ES2b

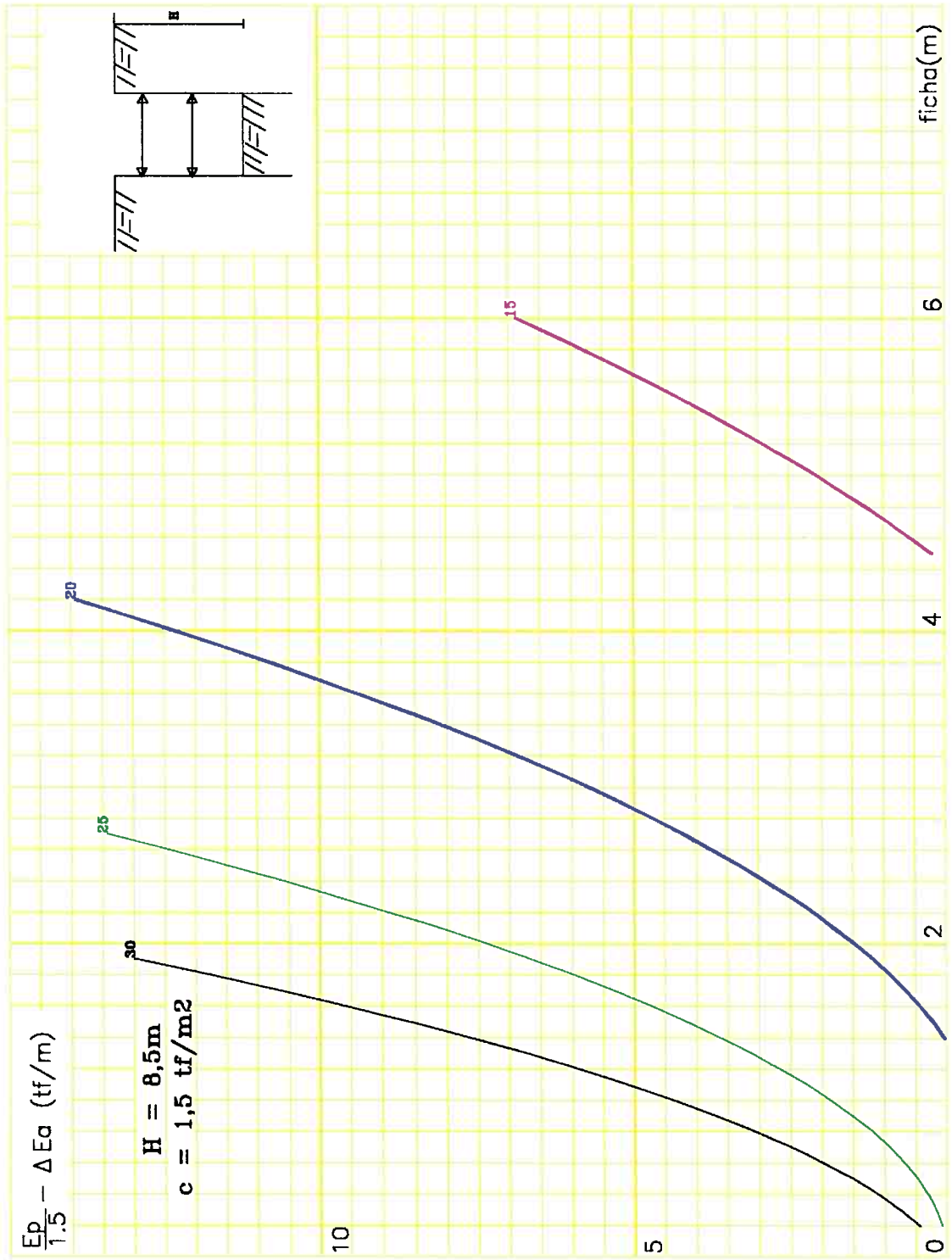


Fig. II.125- Ábaco tipo ES2b

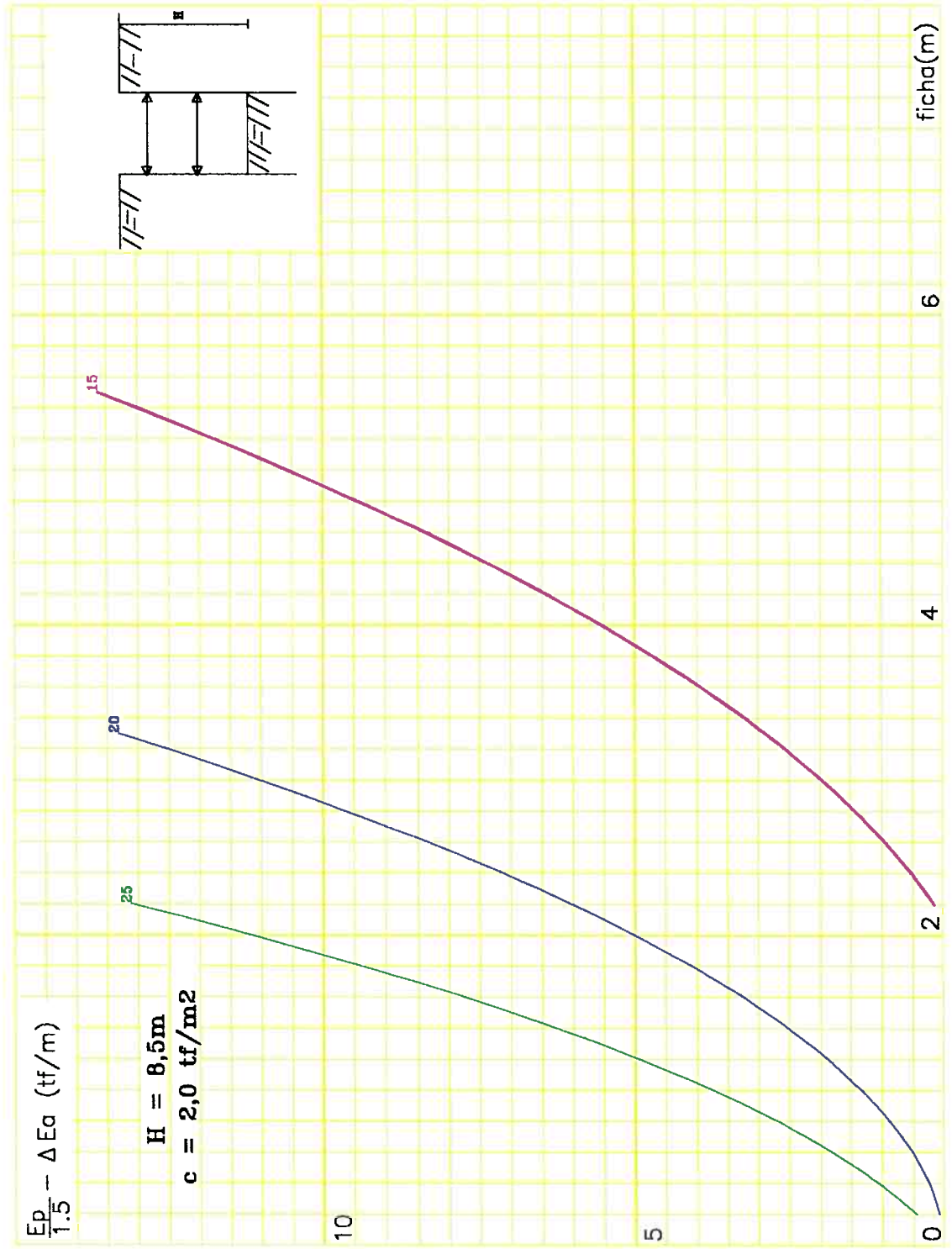


Fig. II.126- Ábaco tipo ES2b

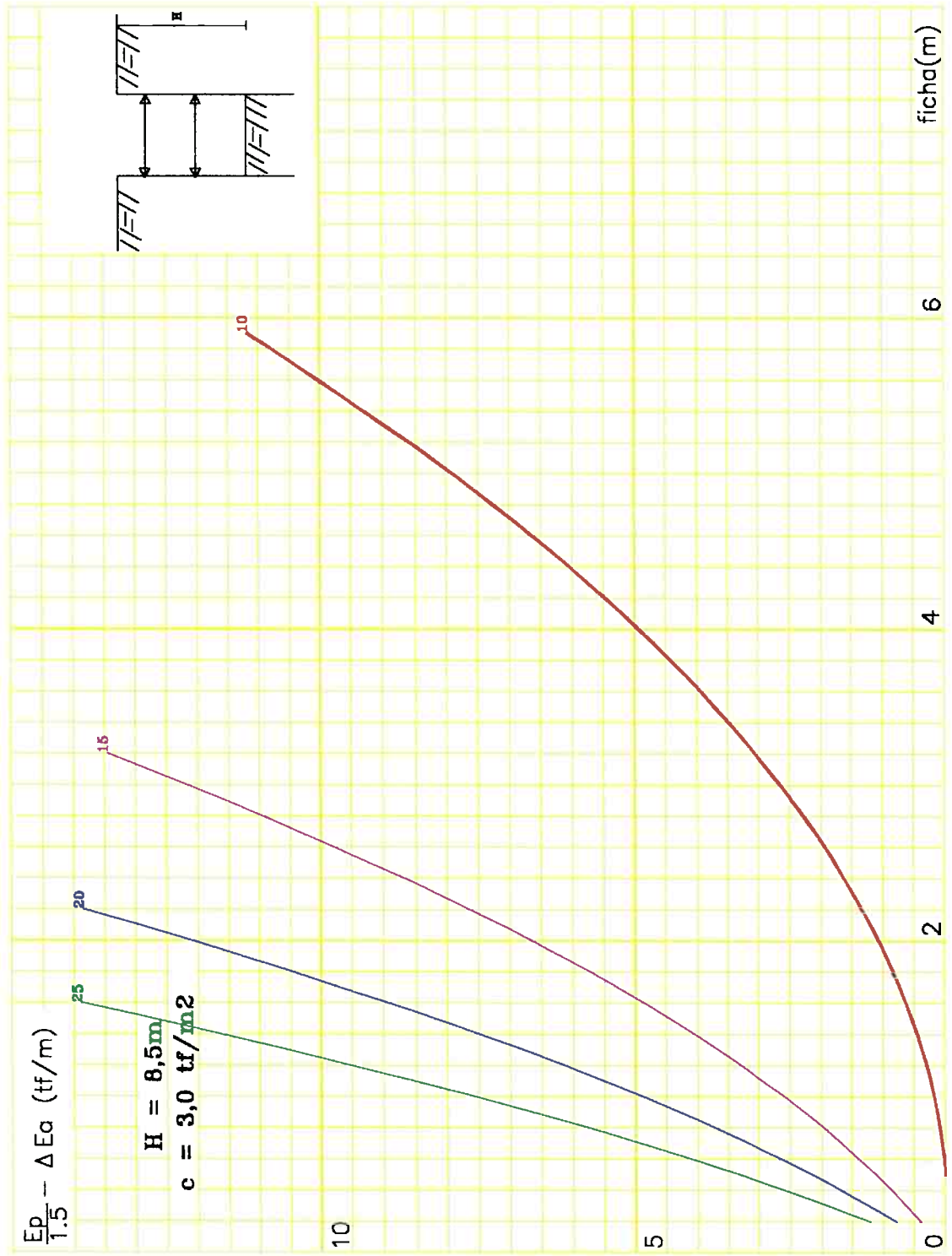


Fig. II.127- Ábaco tipo ES2b

**ÁBACOS PARA O
DIMENSIONAMENTO DOS
ELEMENTOS DE ESCORAMENTO**

**ÁBACO PARA O
DIMENSIONAMENTO DAS
ESTACAS**

ÁBACO DP

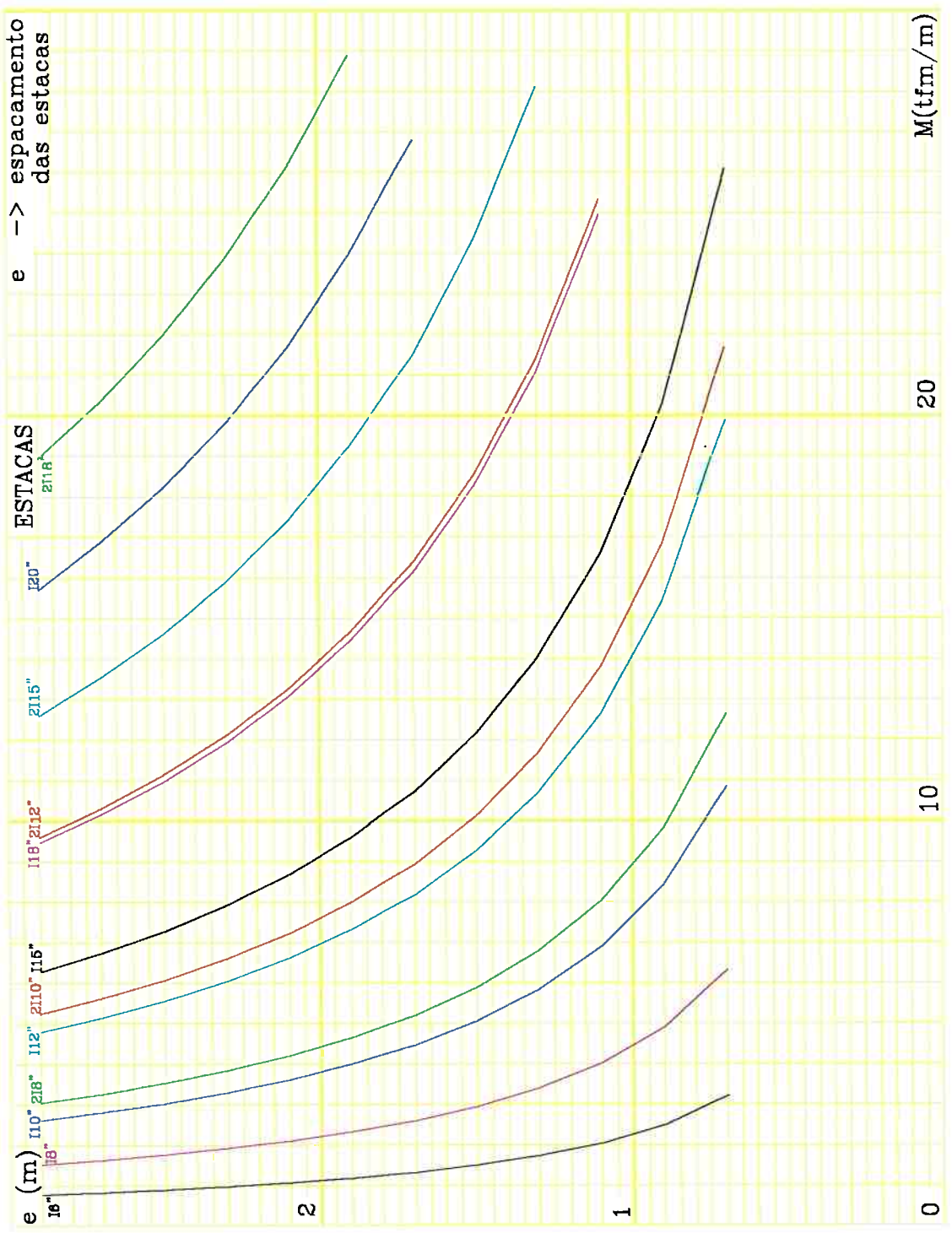


Fig. II.128- Ábaco DP

**ÁBACO PARA O
DIMENSIONAMENTO DAS
LONGARINAS**

ÁBACO DW

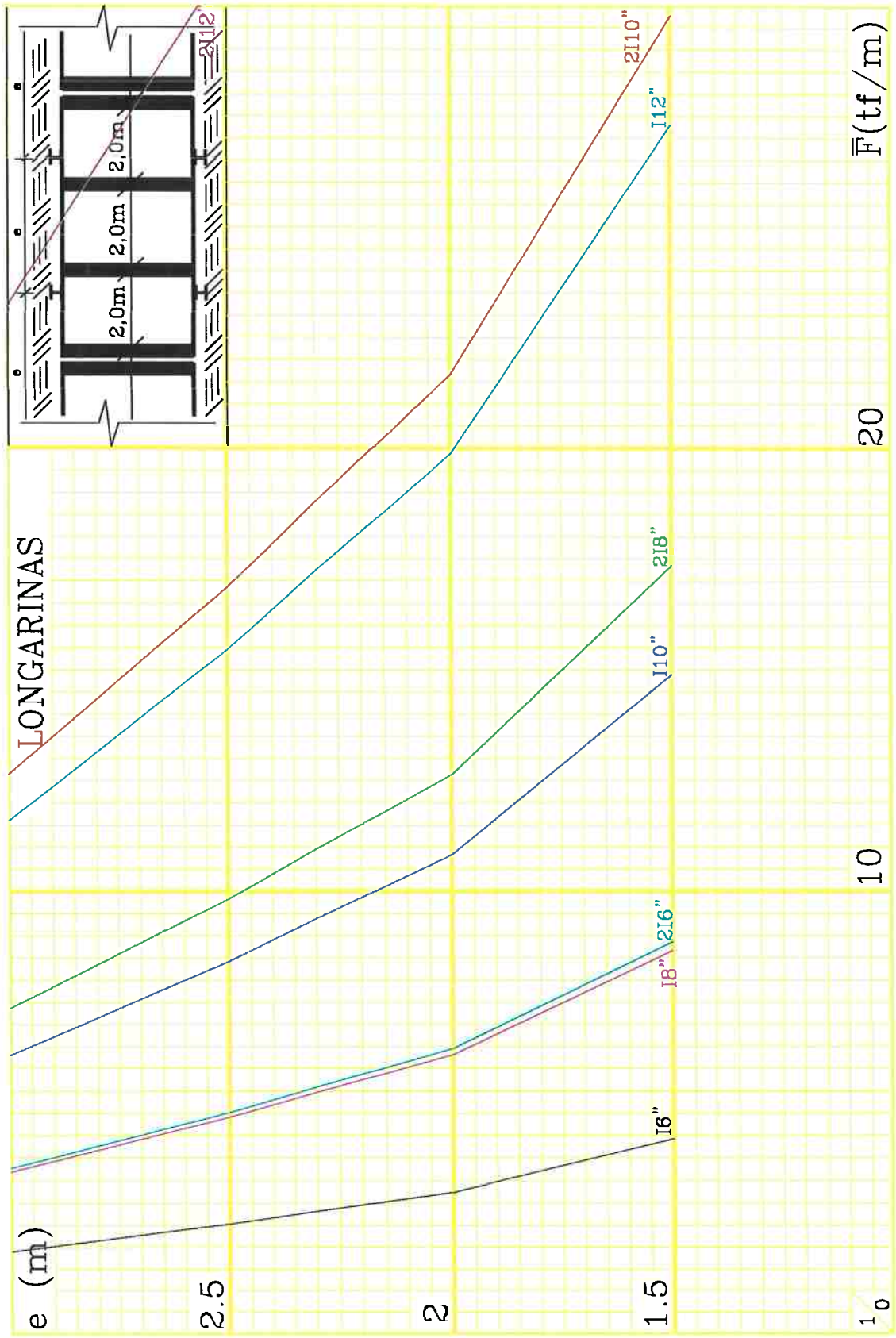


Fig. II.129- Ábaco DW



Fig. II.130- Ábaco DW

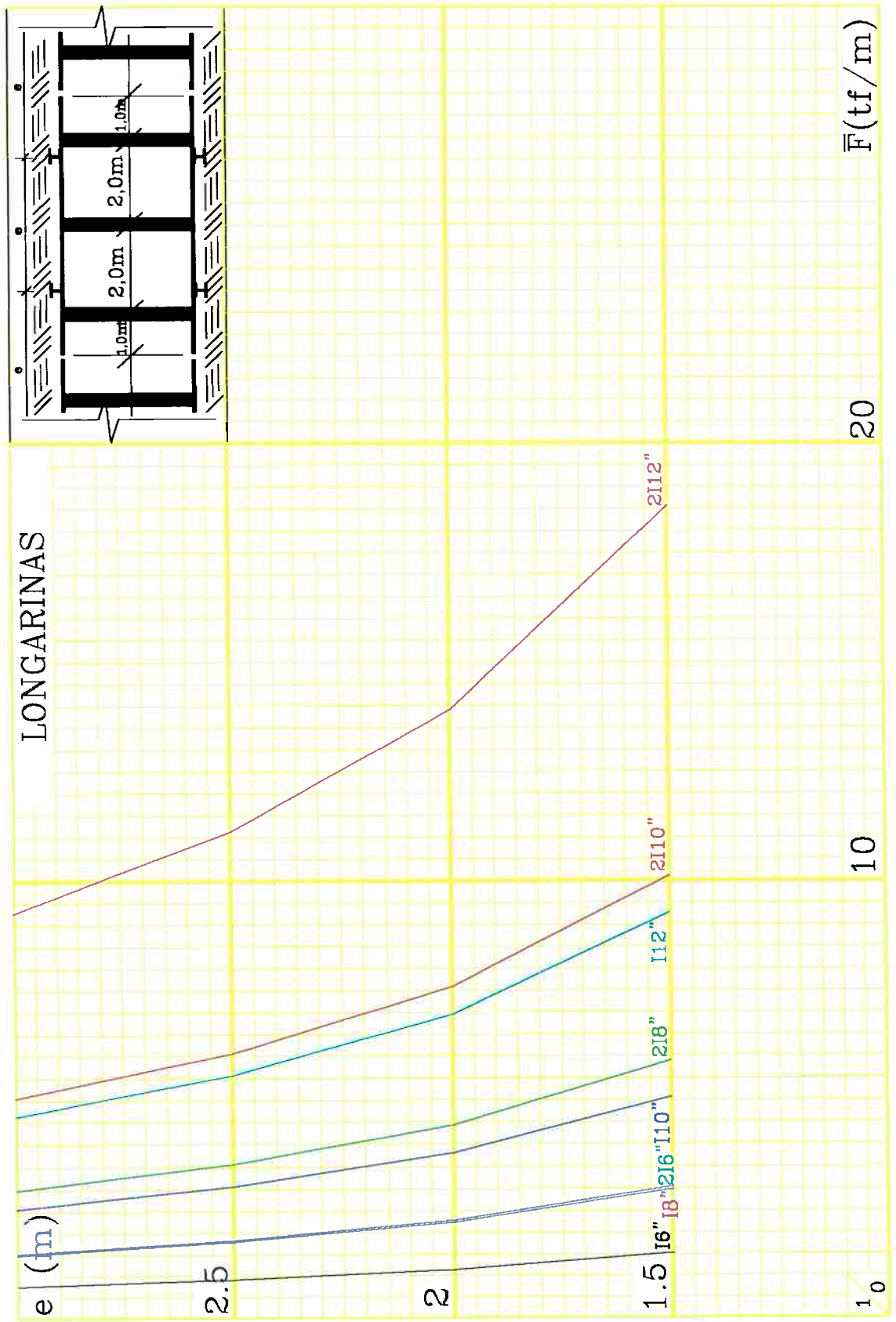


Fig. II.131- Ábaco DW

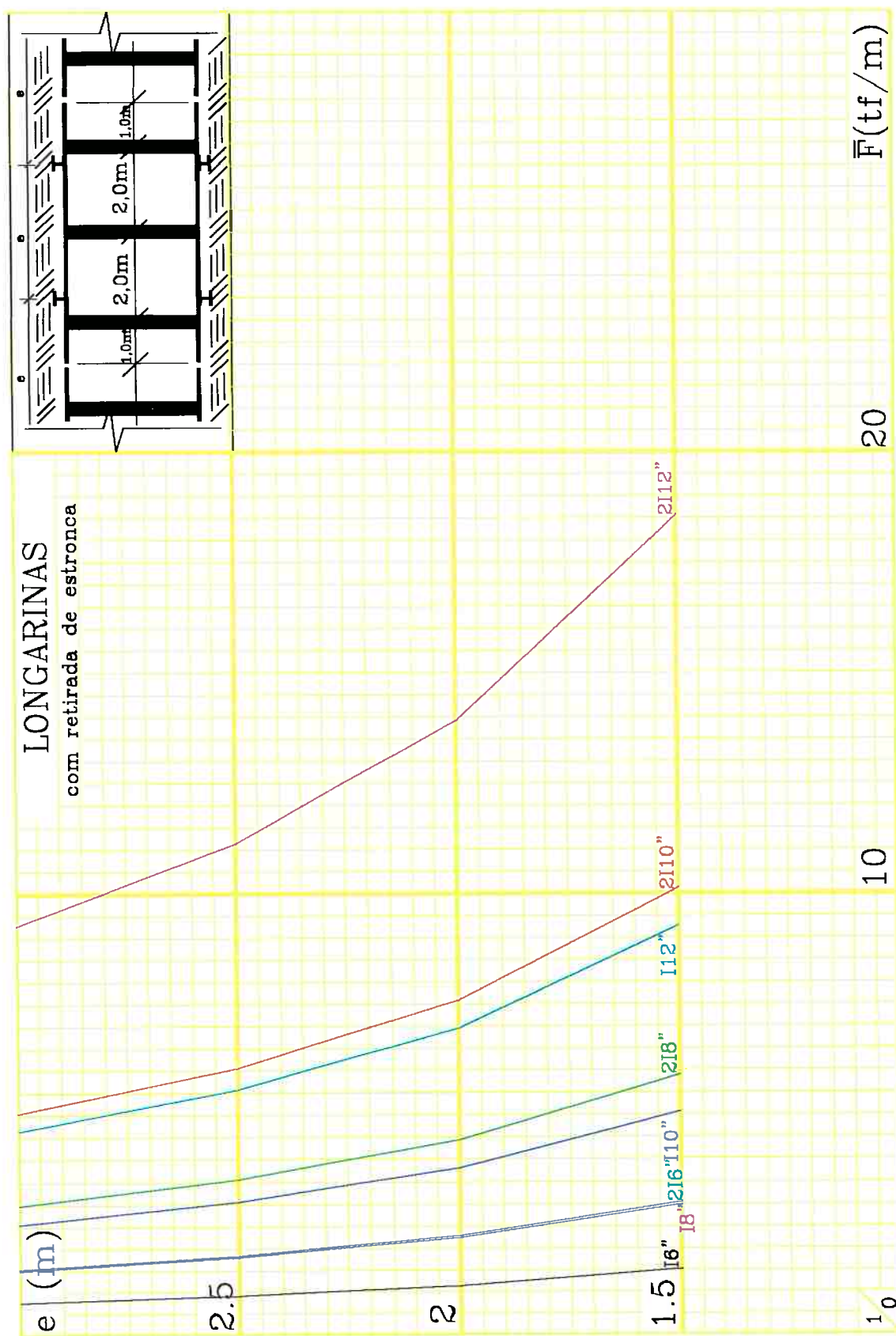


Fig. II.132- Ábaco DW

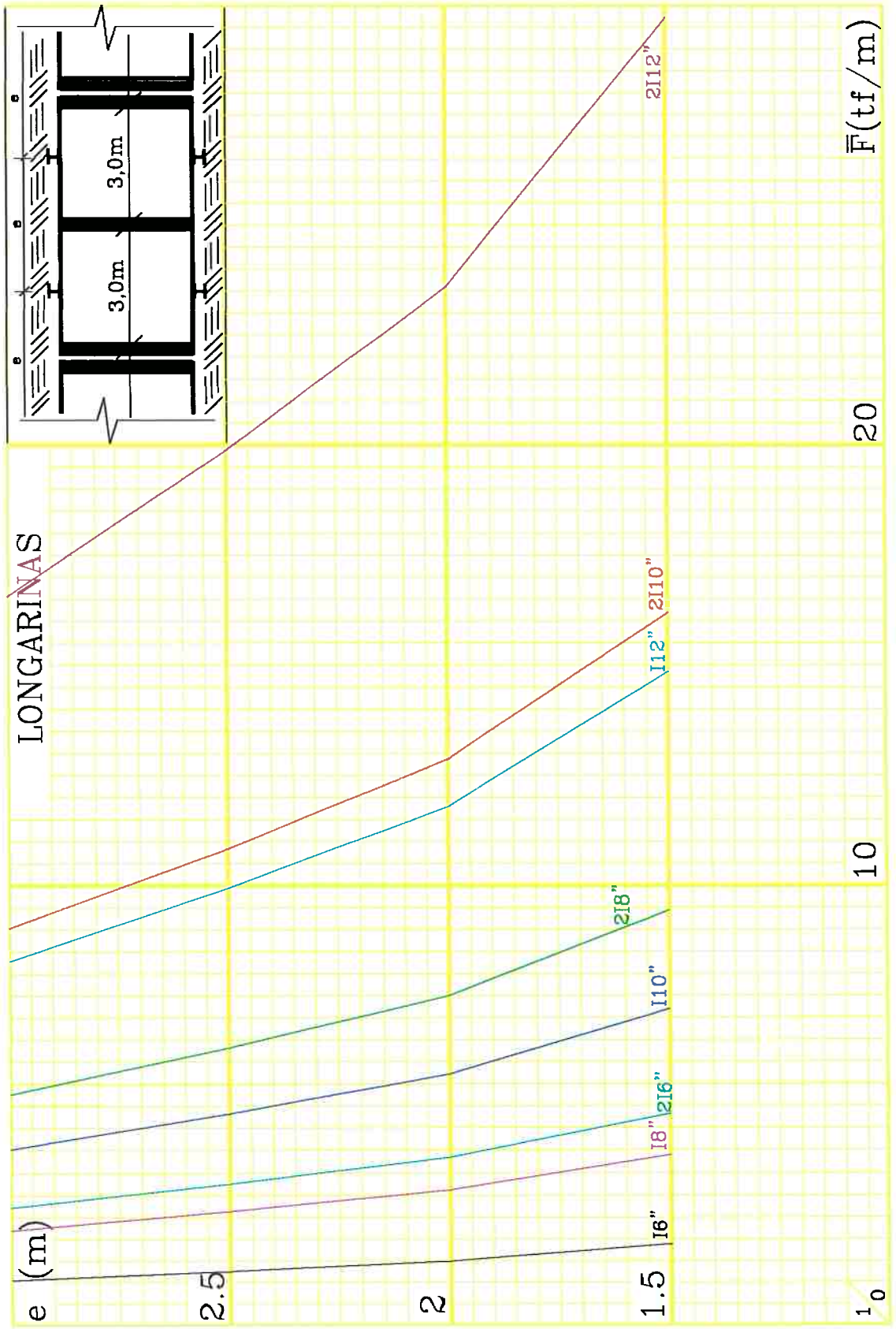


Fig. II.133- Ábaco DW

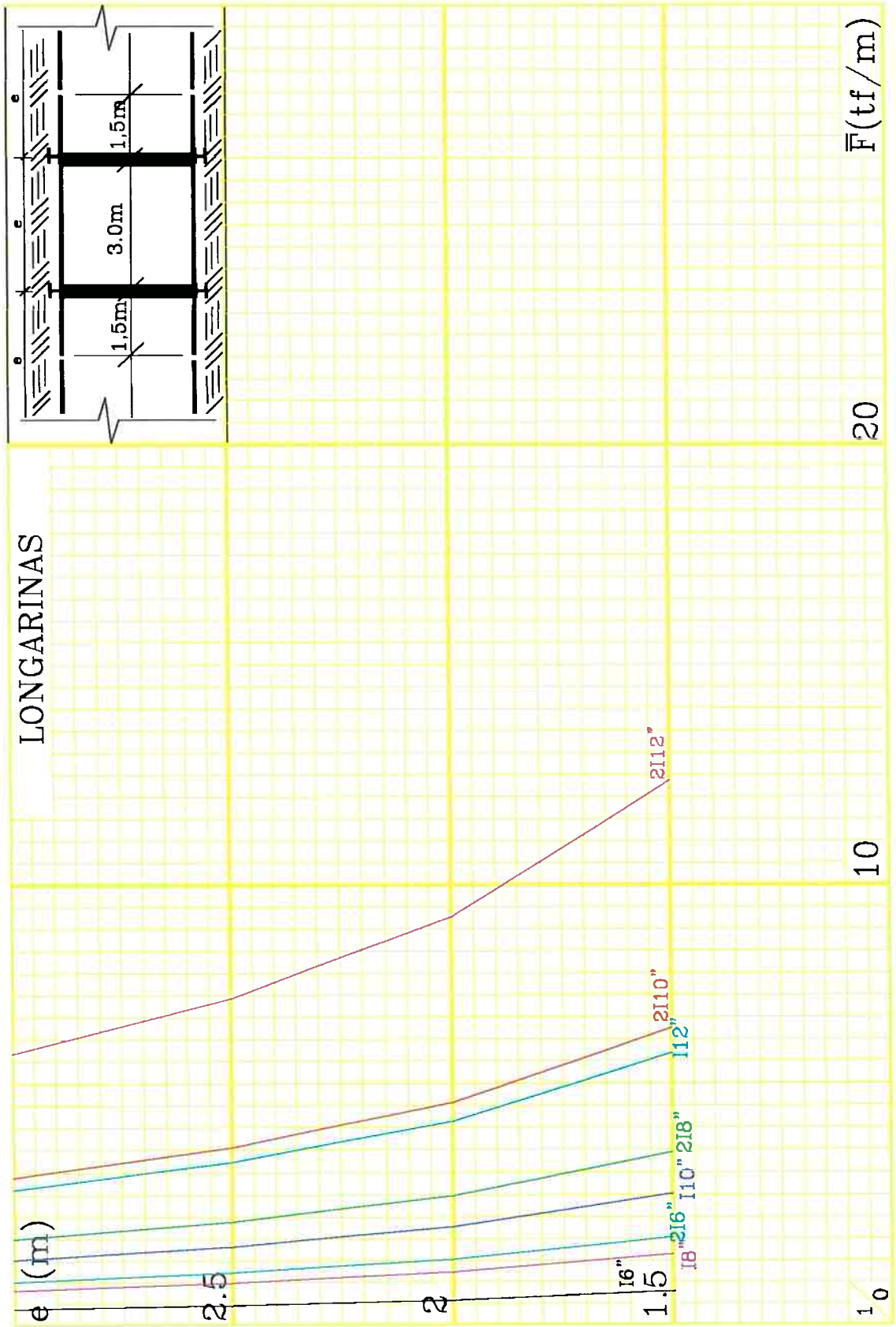


Fig. II.134- Ábaco DW

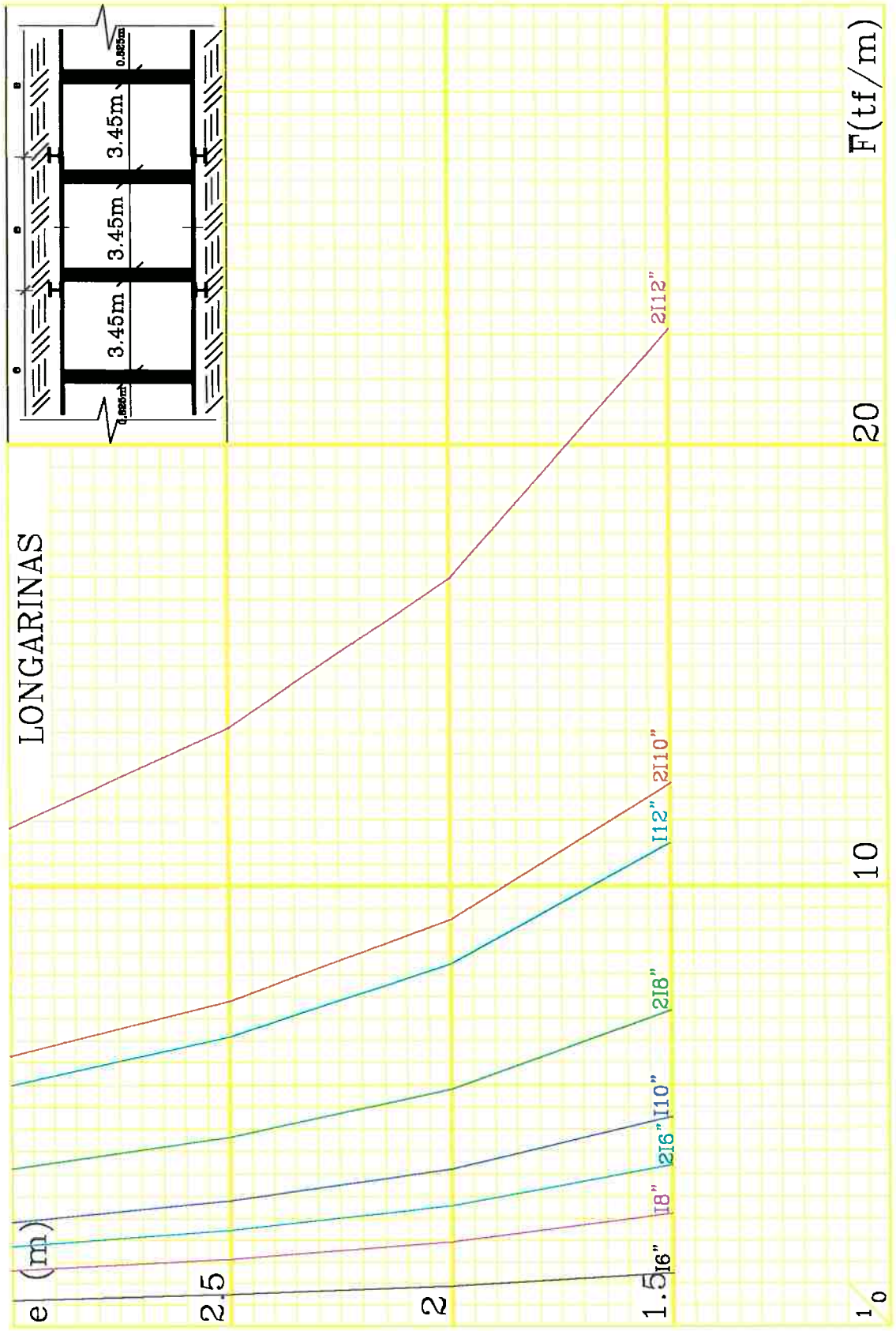


Fig. II.135- Ábaco DW



Fig. II.136- Ábaco DW

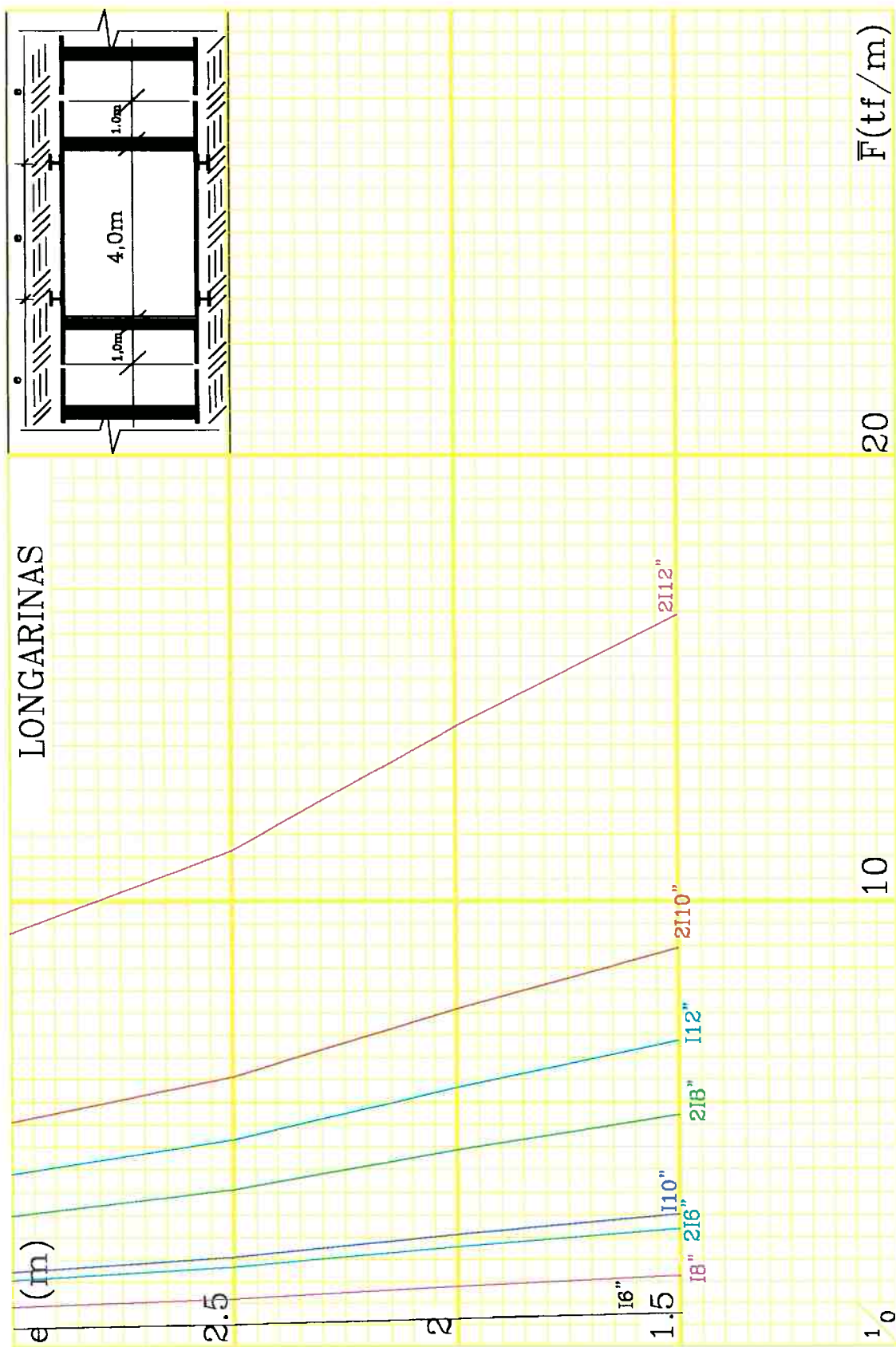


Fig. II.137- Ábaco DW

**ÁBACO PARA O
DIMENSIONAMENTO DAS
ESTRONCAS**

ÁBACO DS

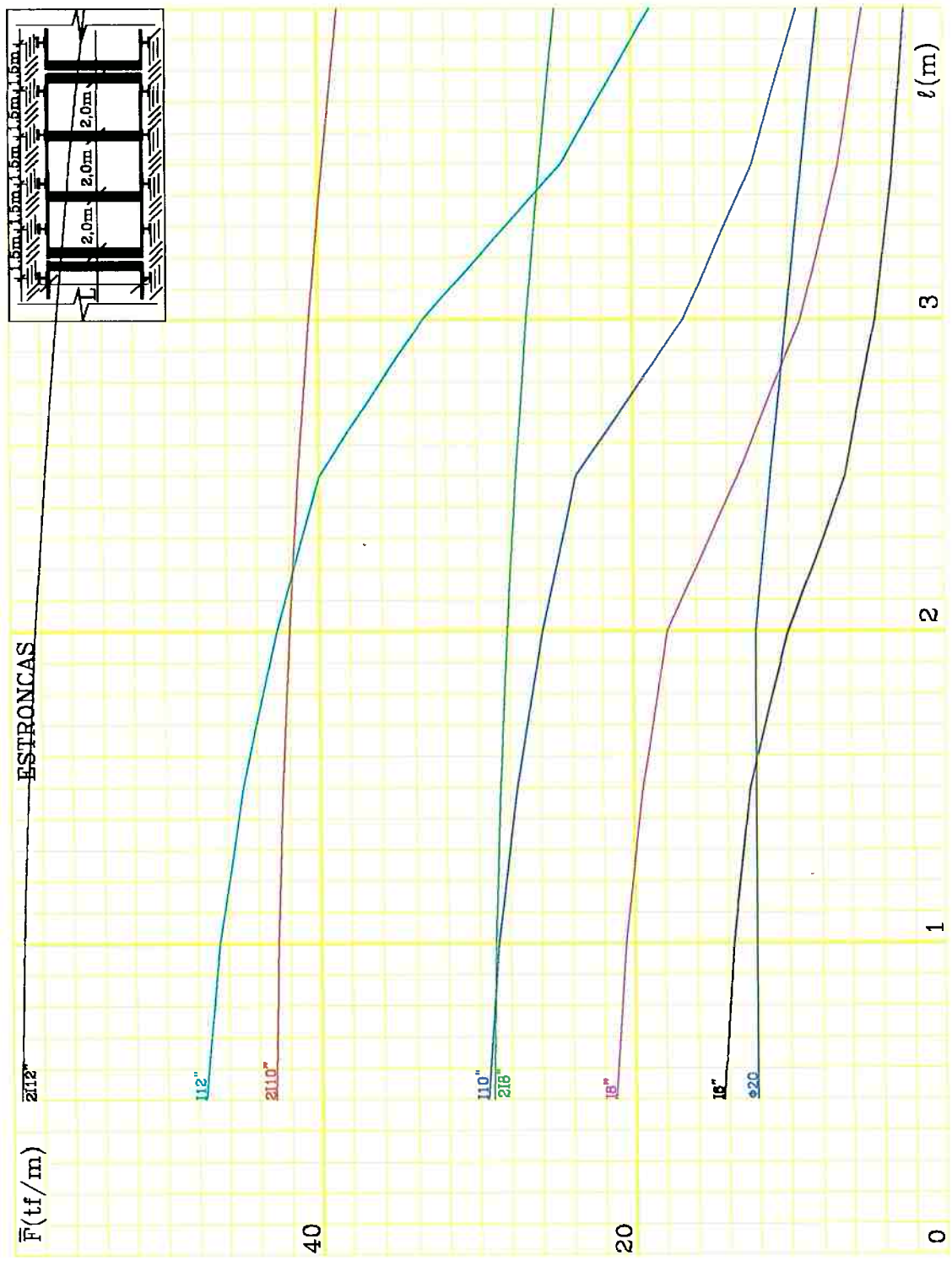


Fig. II.138- Ábaco DS

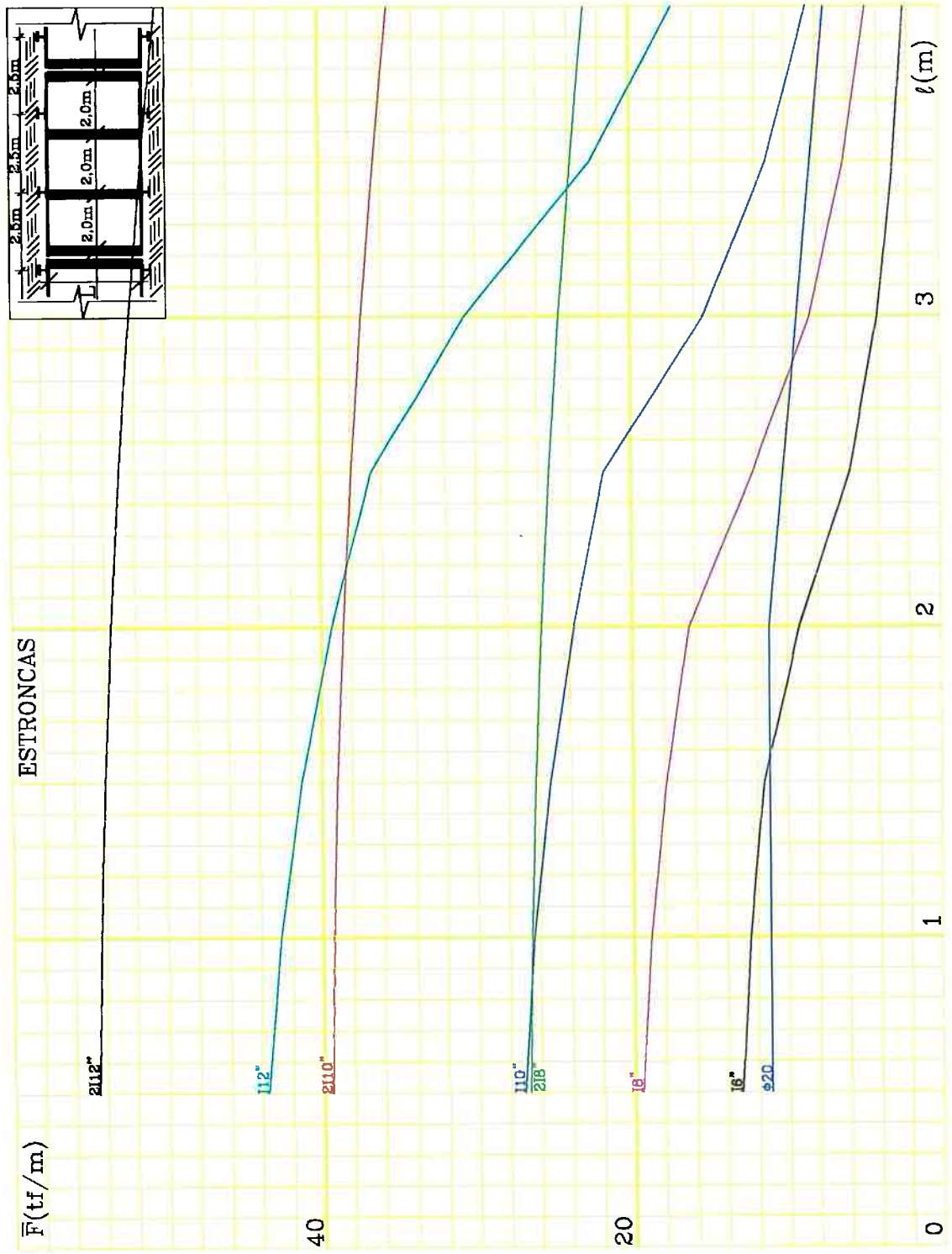


Fig. II.140- Ábaco DS

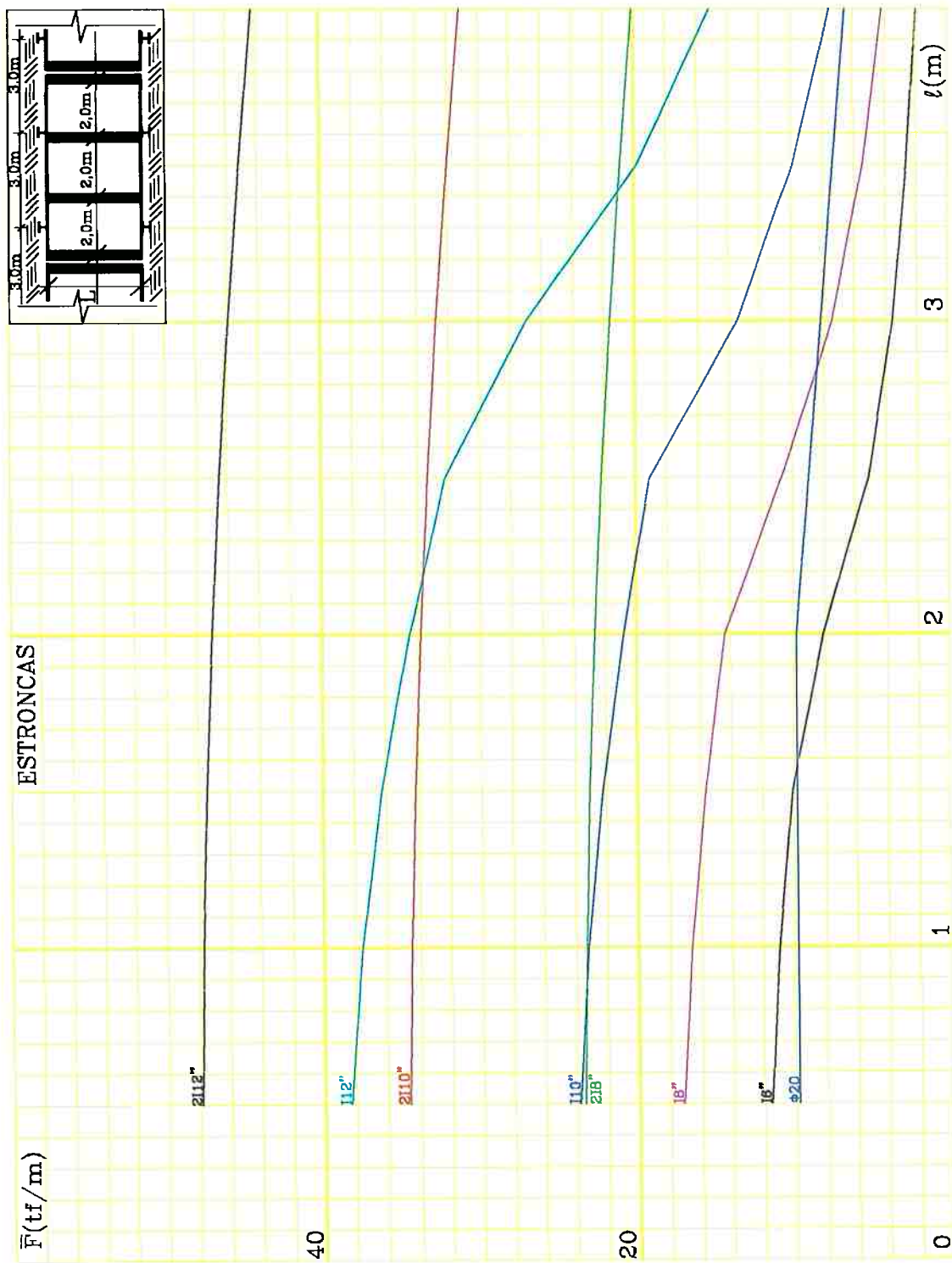


Fig. II.141- Ábaco DS

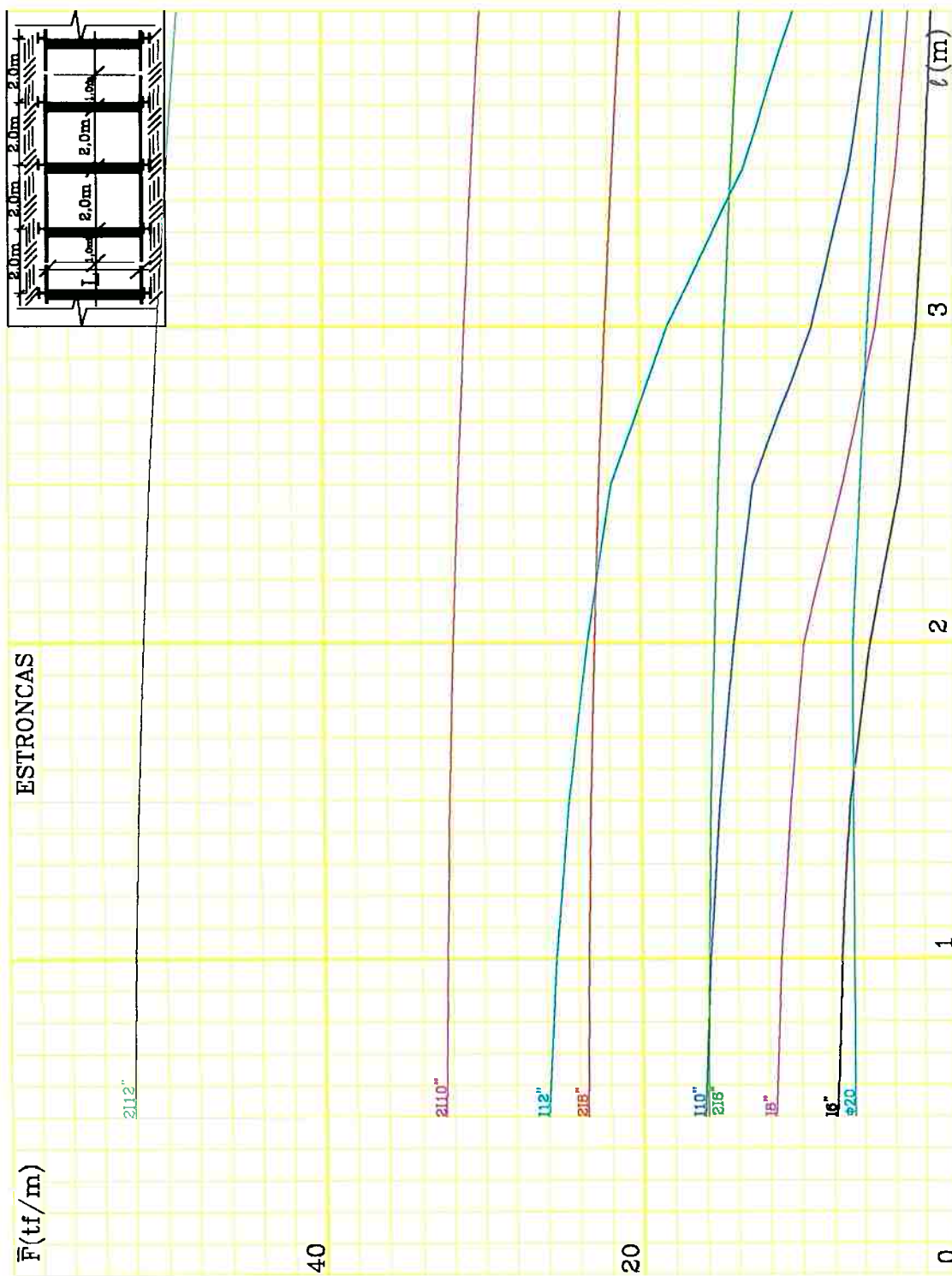


Fig. II.143- Ábaco DS

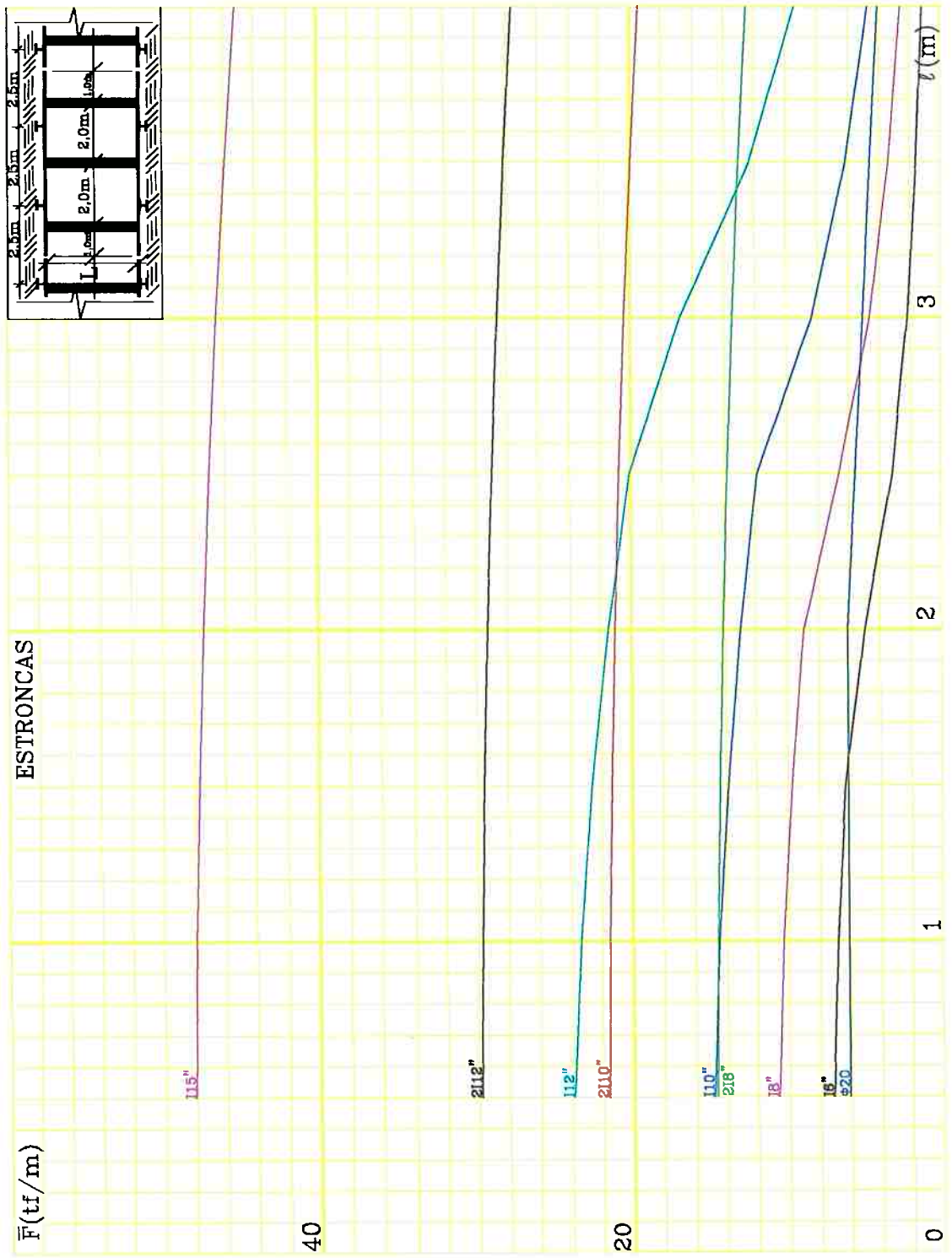


Fig. II.144- Ábaco DS

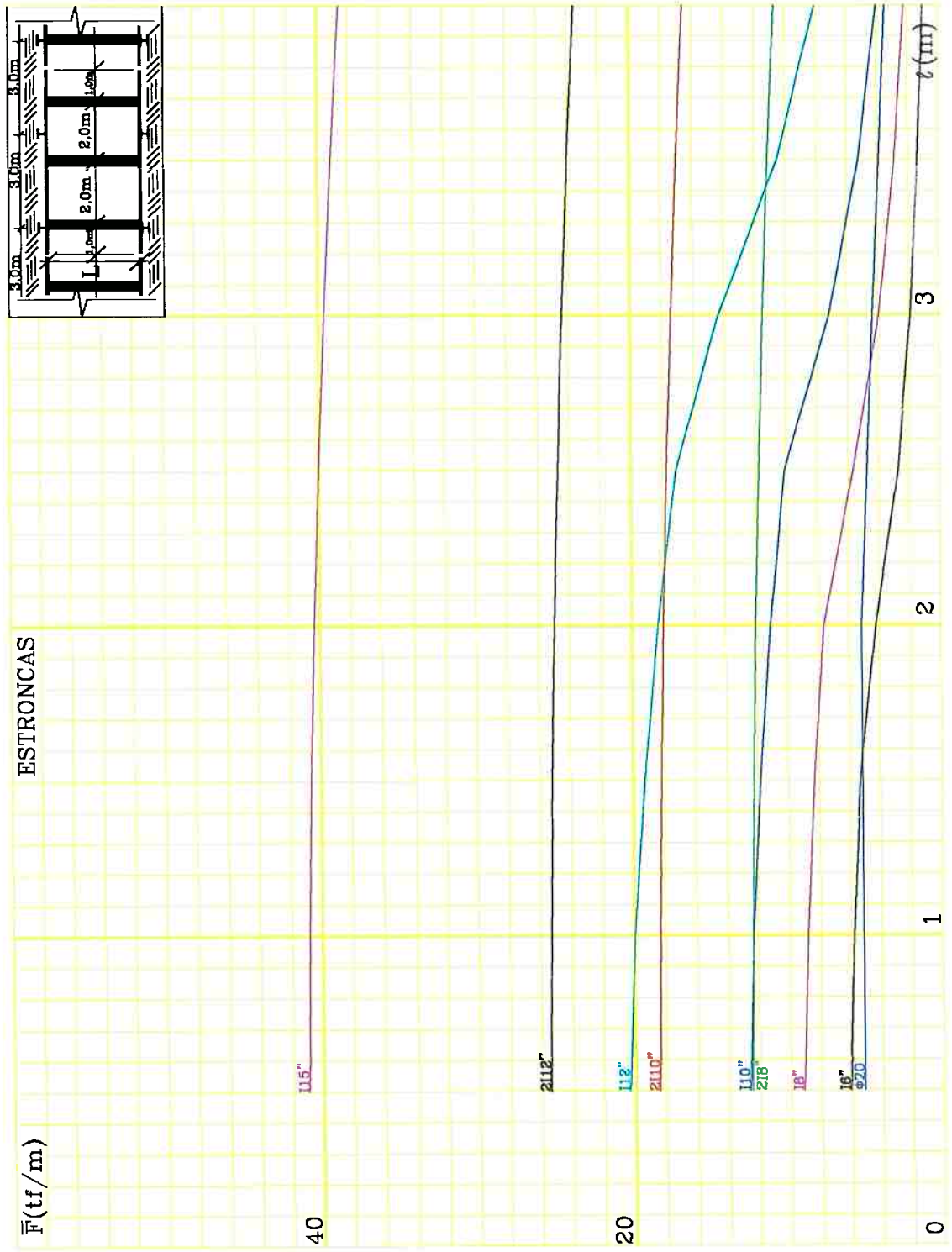


Fig. II.145- Ábaco DS

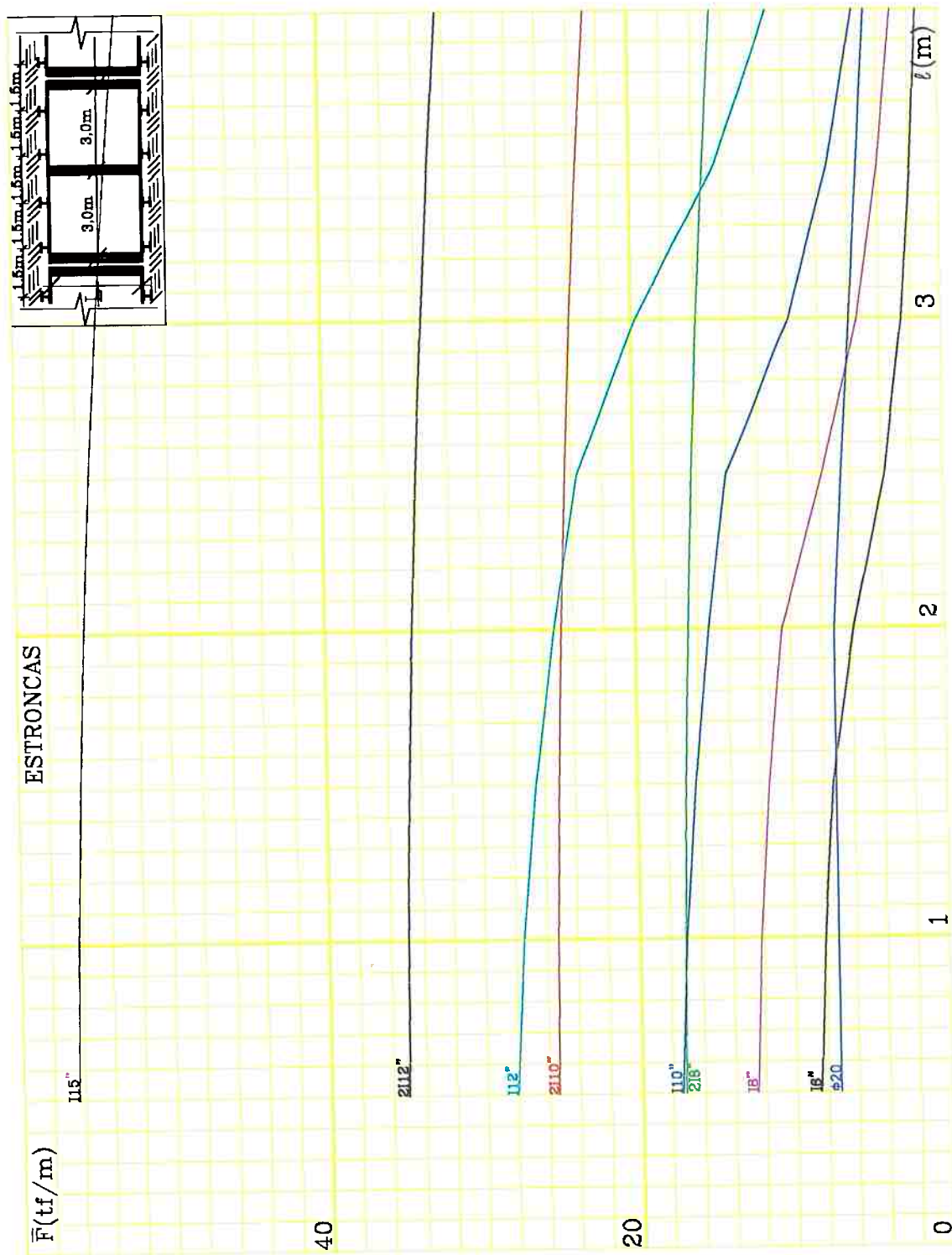


Fig. II.146- Ábaco DS

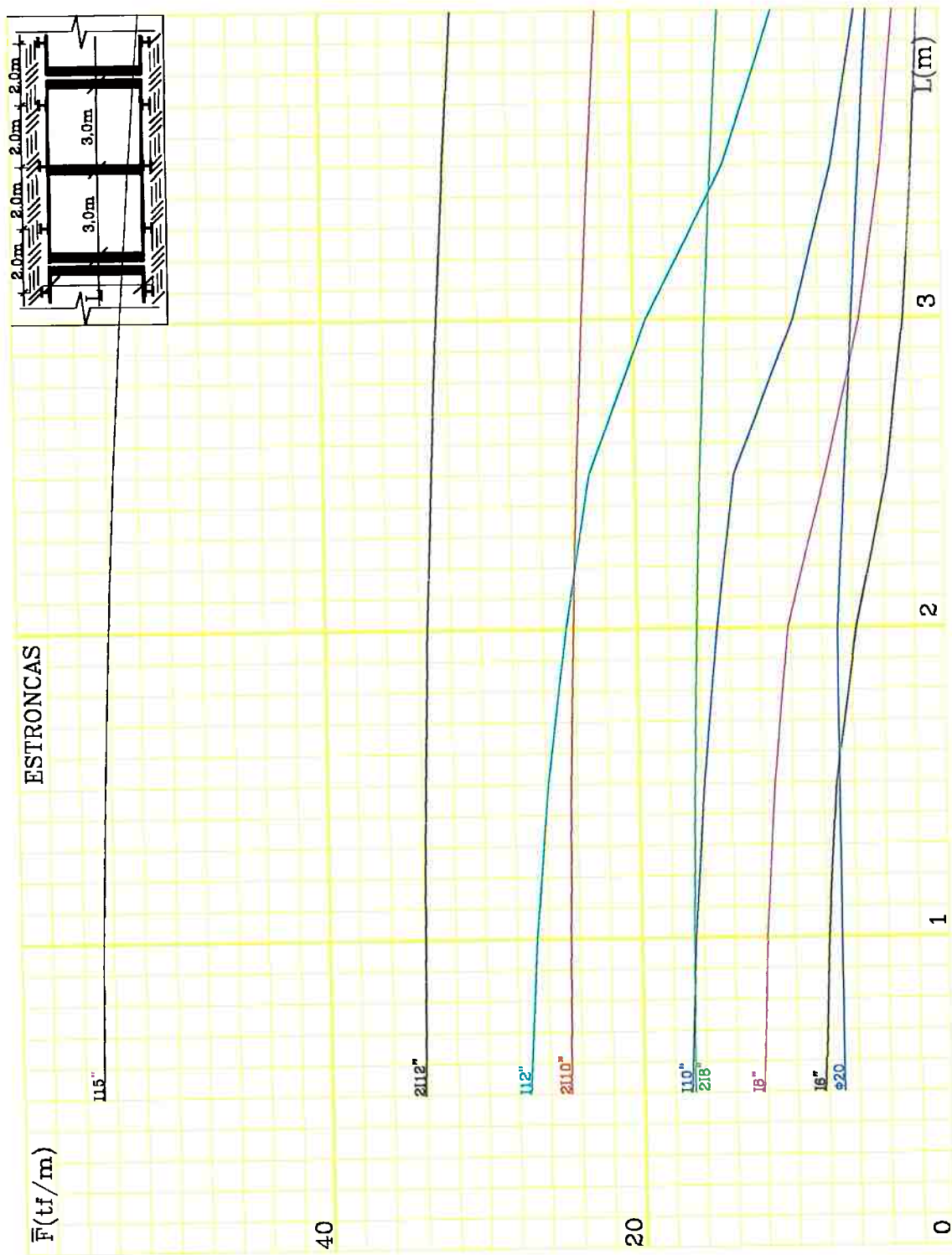


Fig. II.147- Ábaco DS

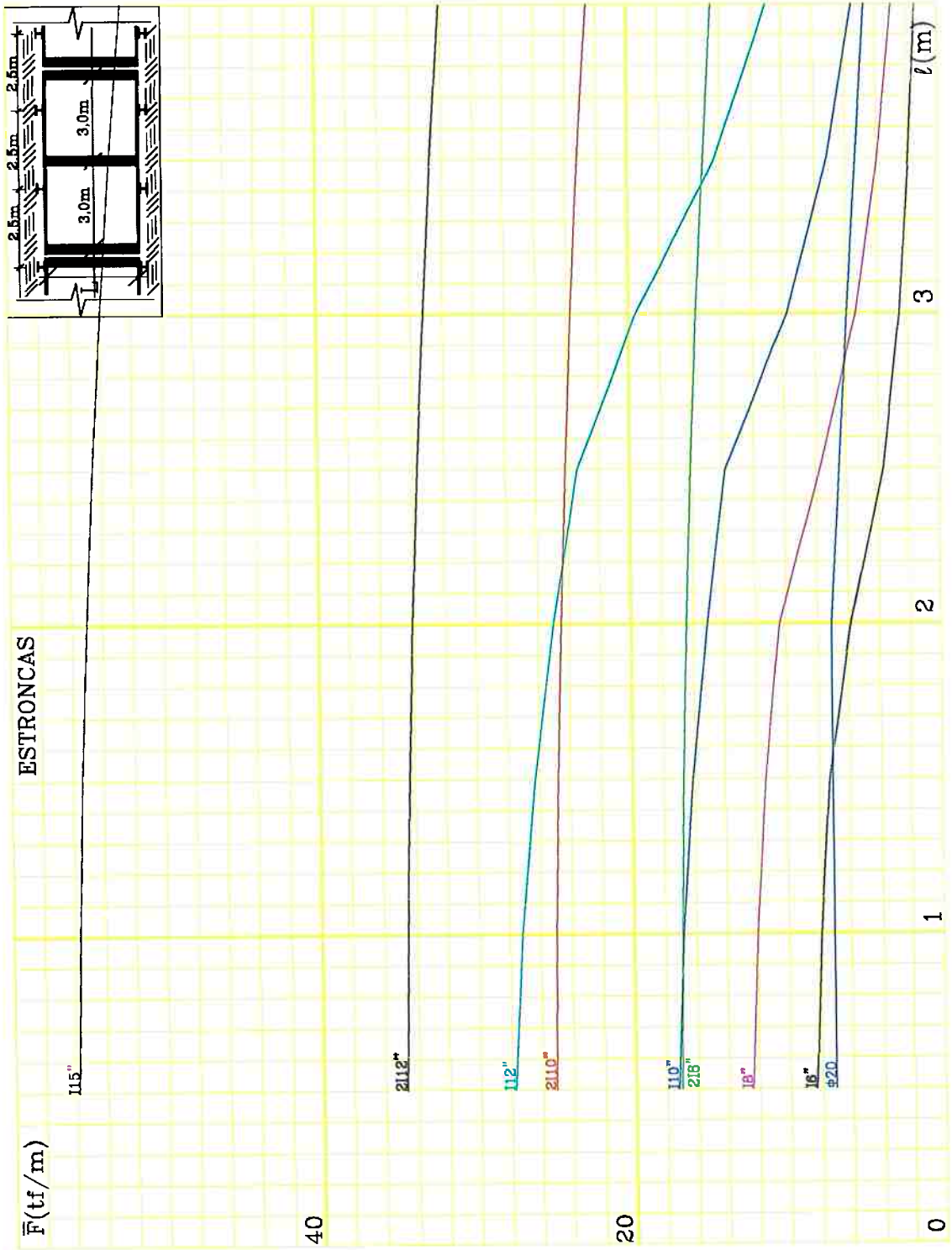


Fig. II.148- Ábaco DS

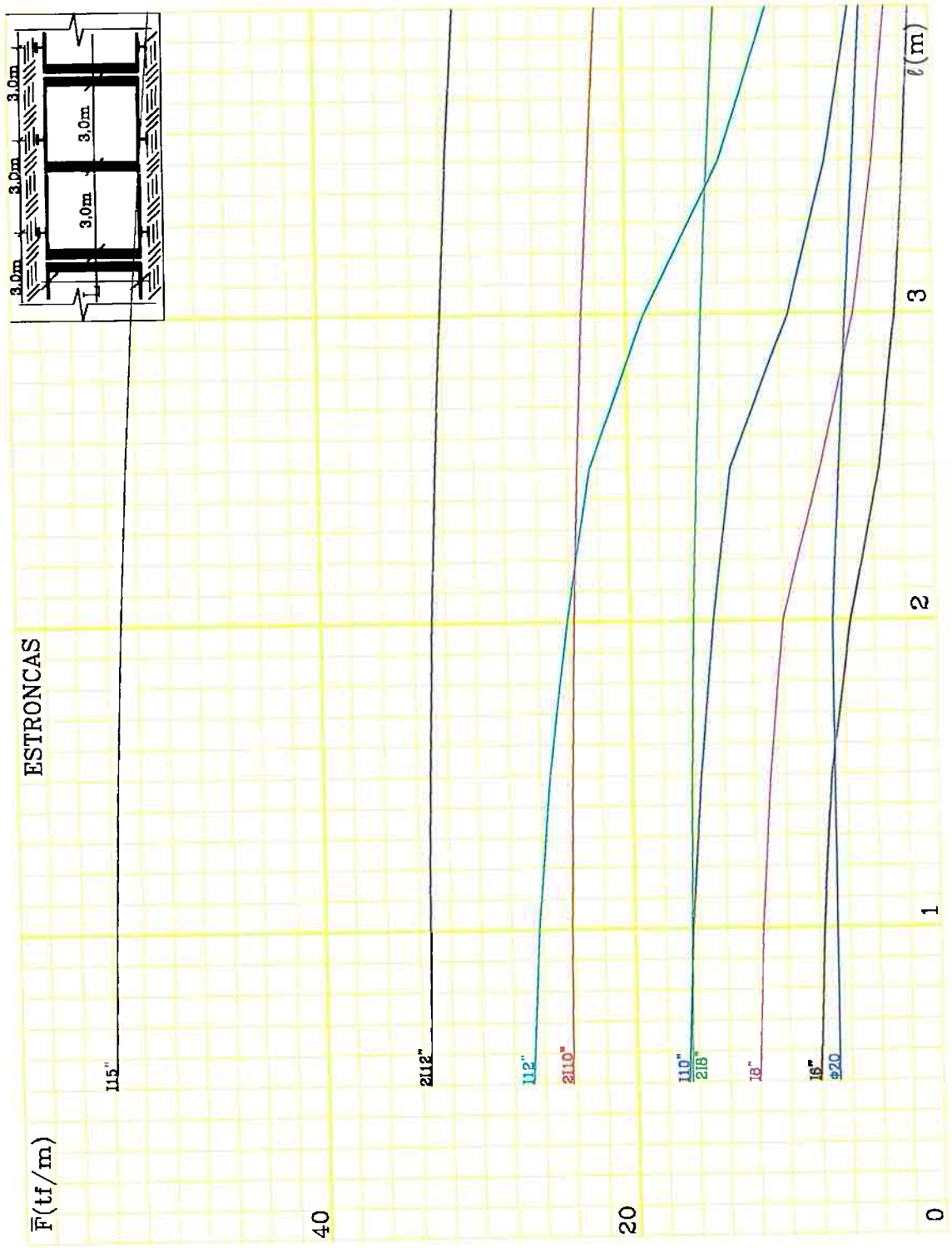


Fig. II.149- Ábaco DS

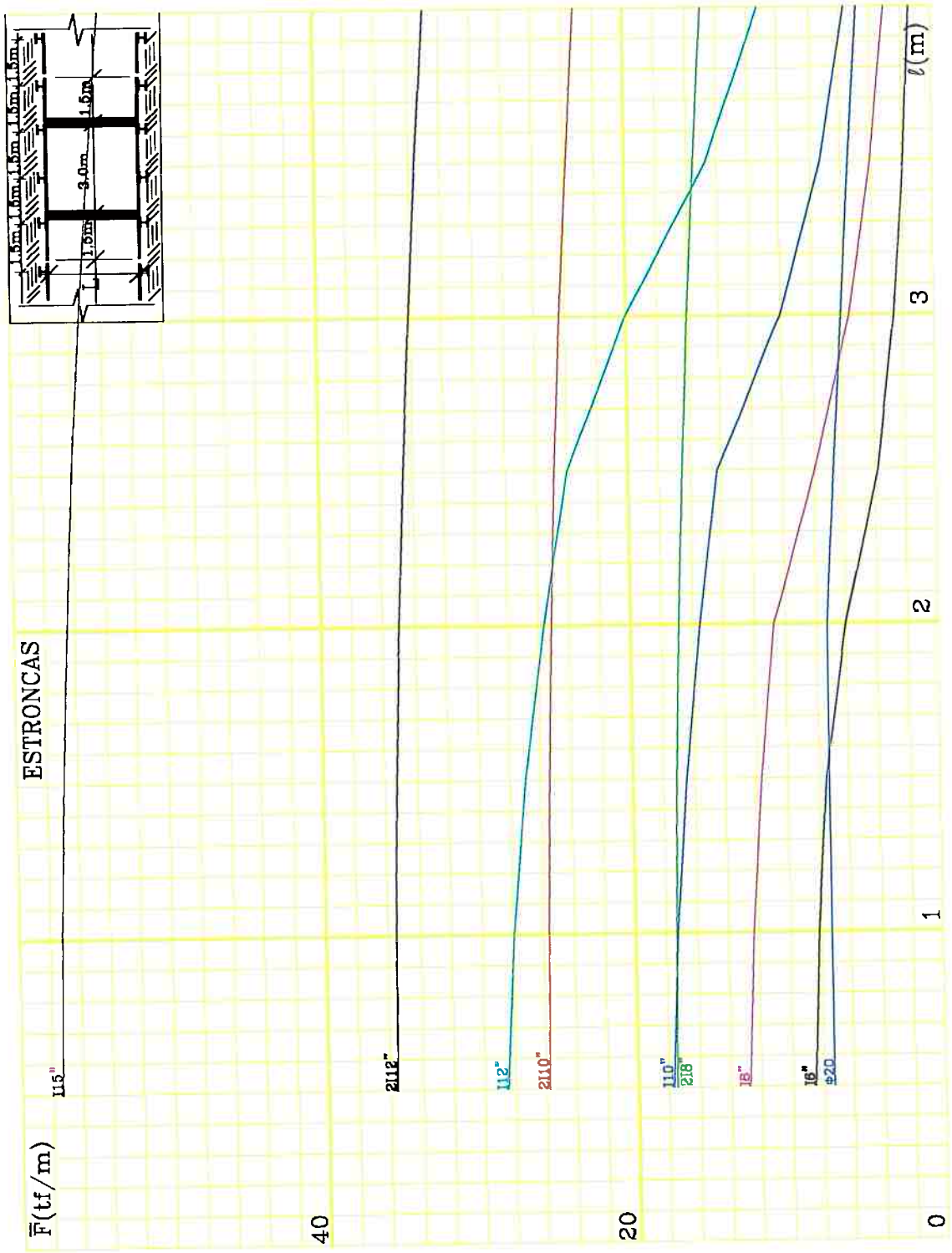


Fig. II.150- Ábaco DS

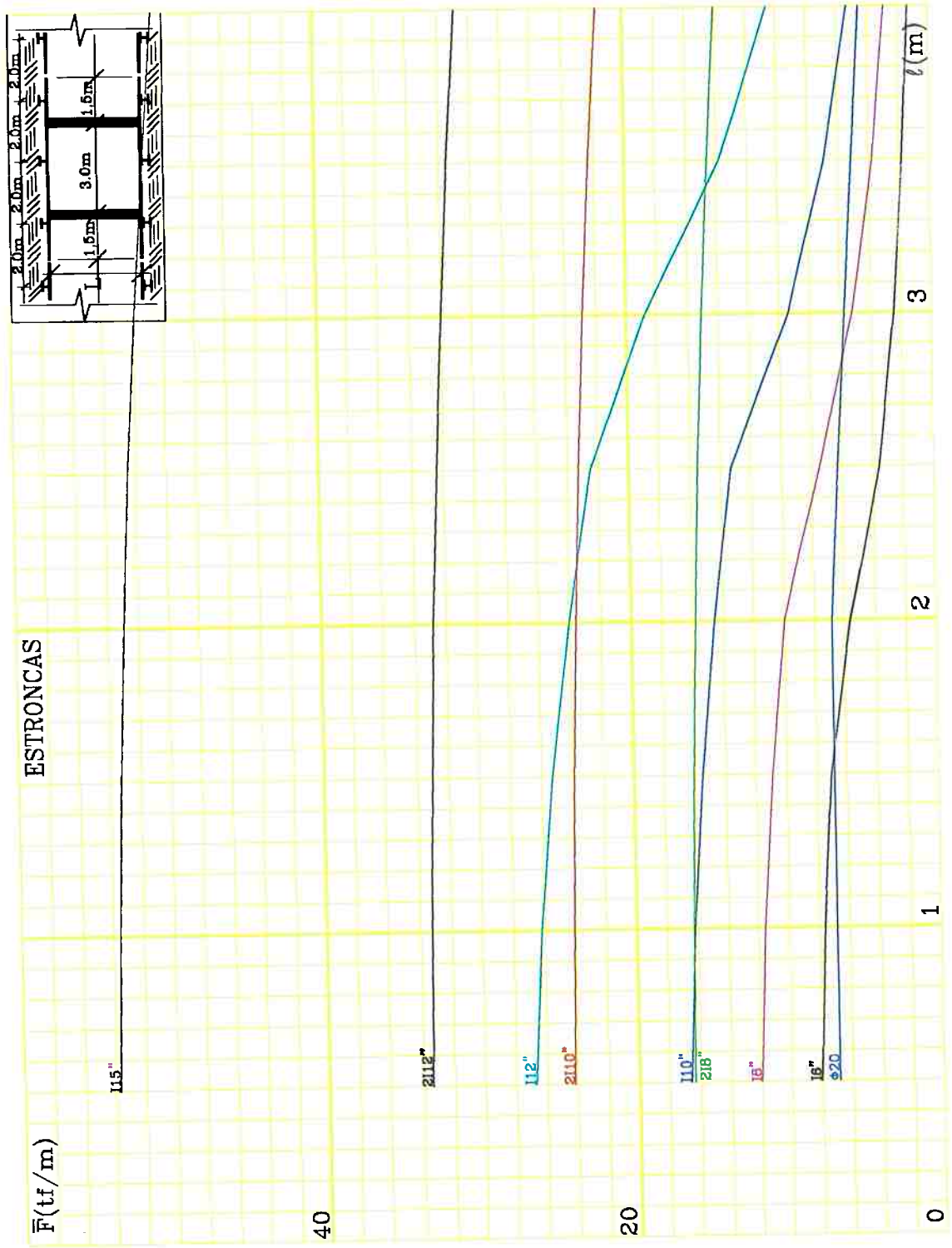


Fig. II.151- Ábaco DS

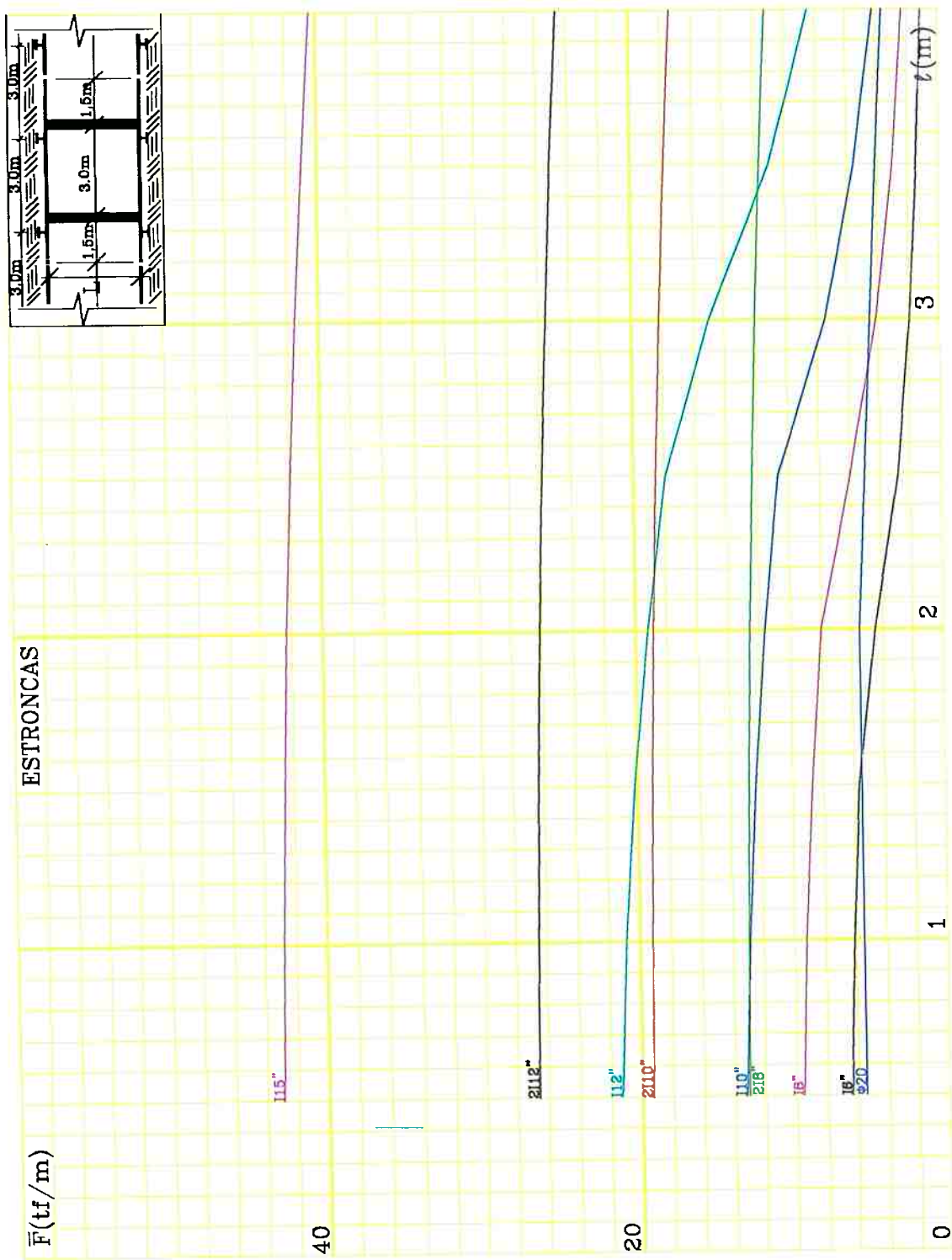


Fig. II.153- Ábaco DS

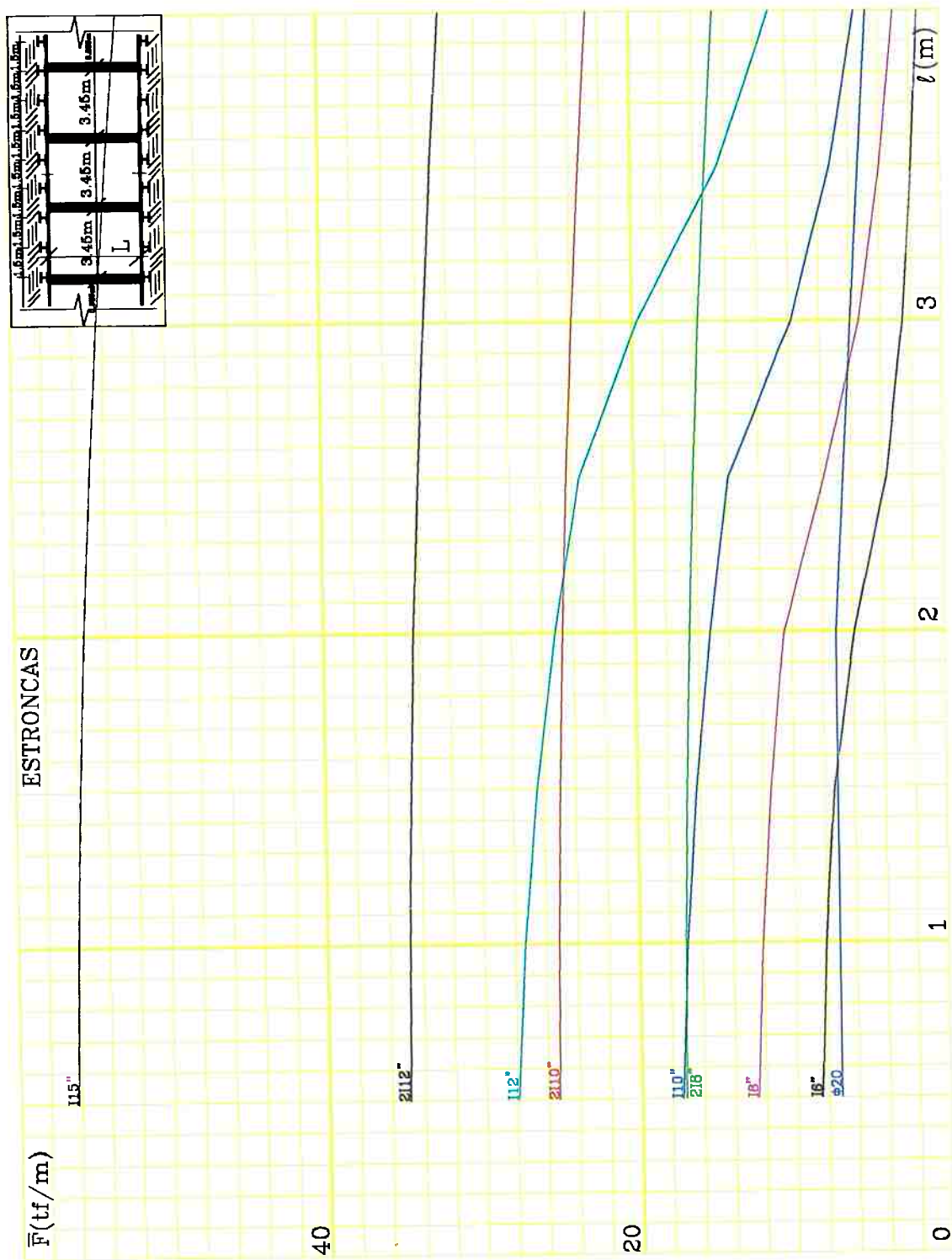


Fig. II.154- Ábaco DS

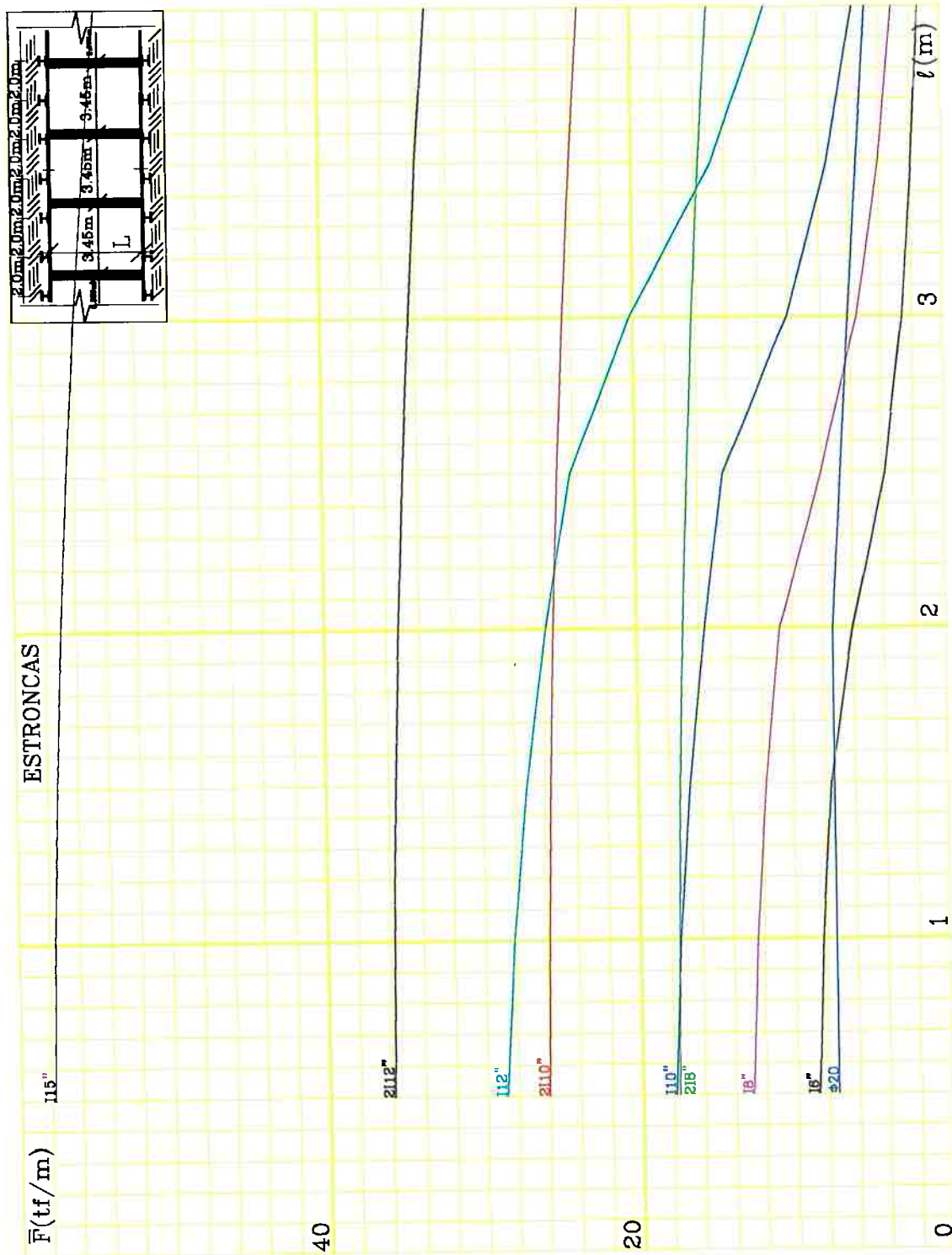


Fig. II.155- Ábaco DS

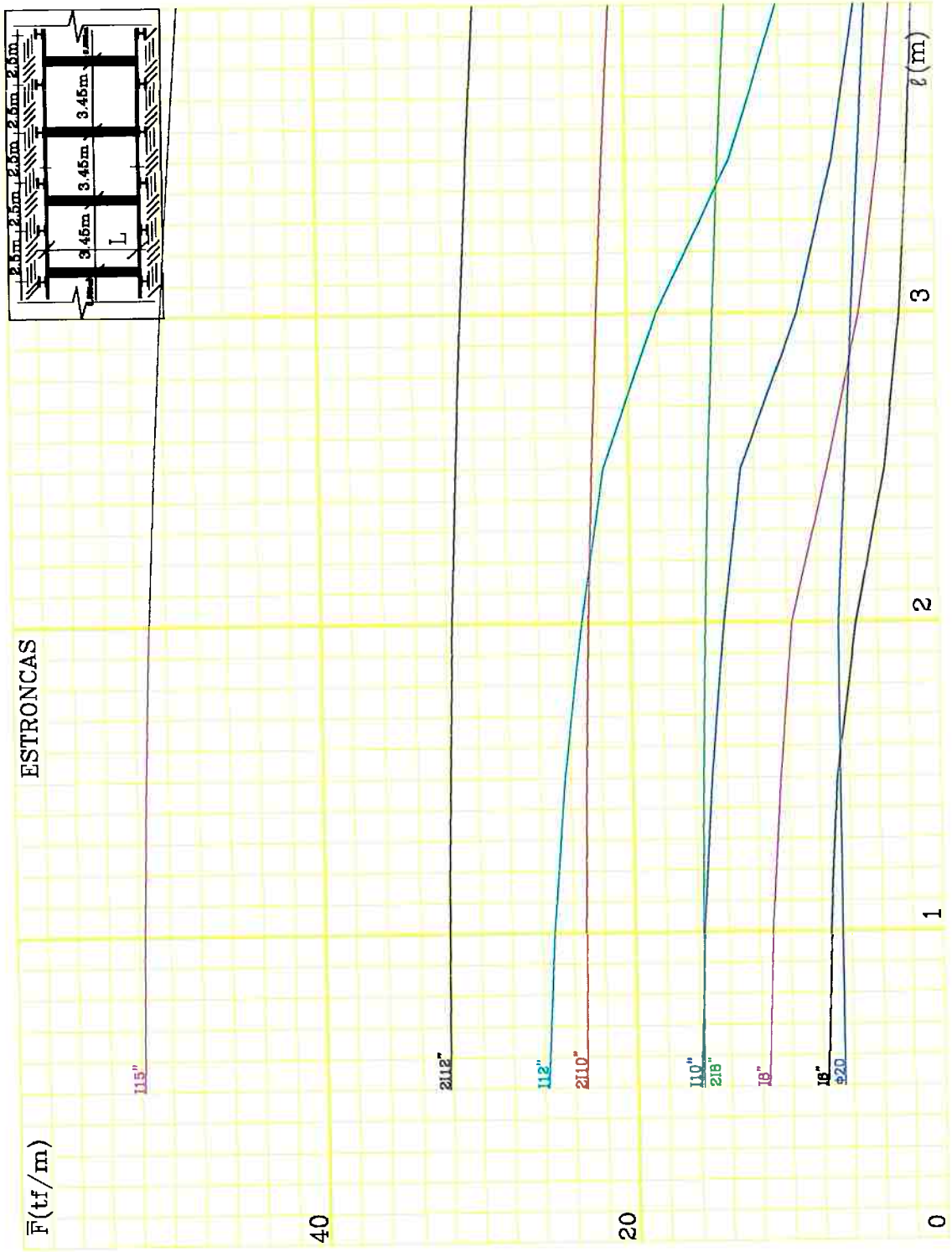


Fig. II.156- Ábaco DS

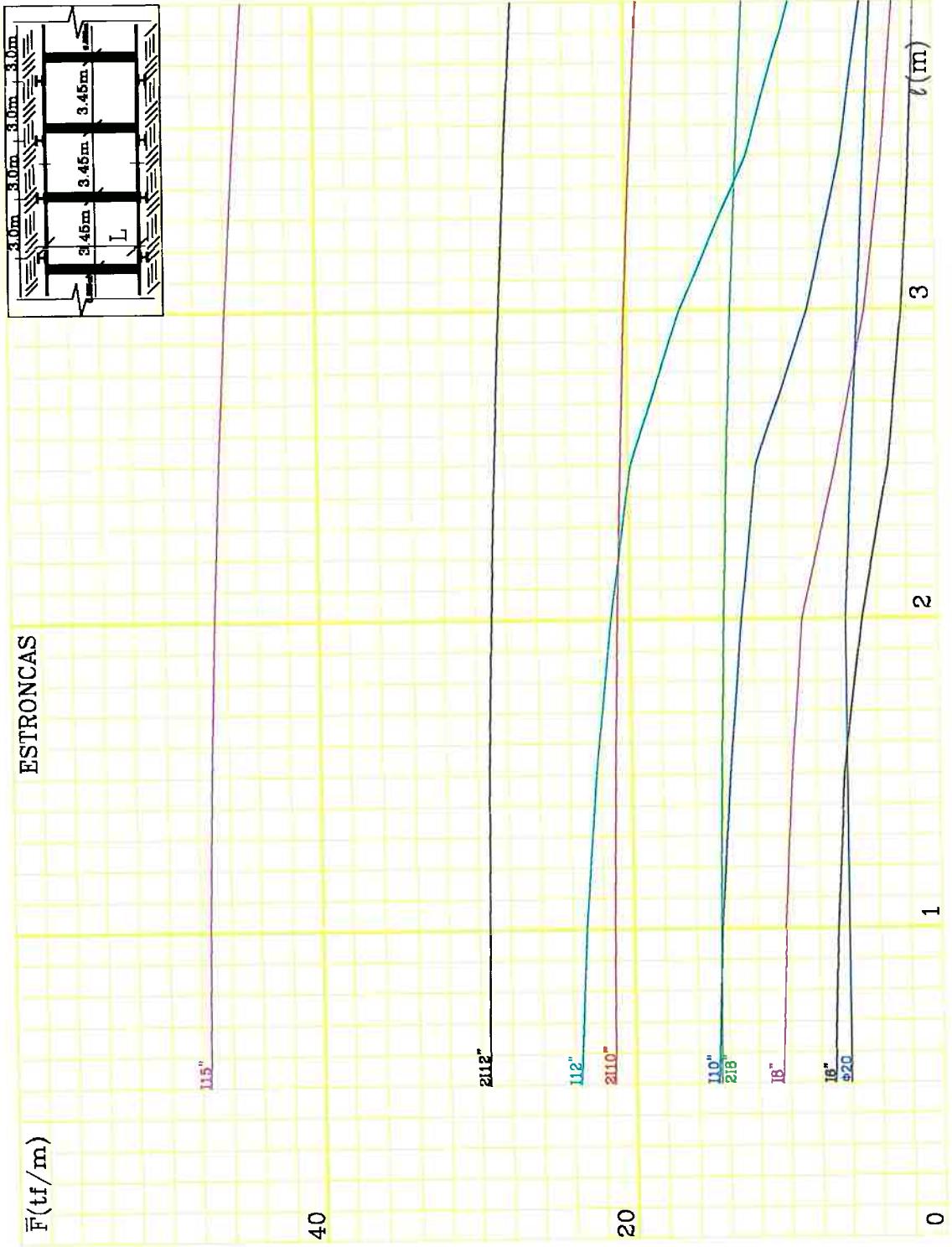


Fig. II.157- Ábaco DS

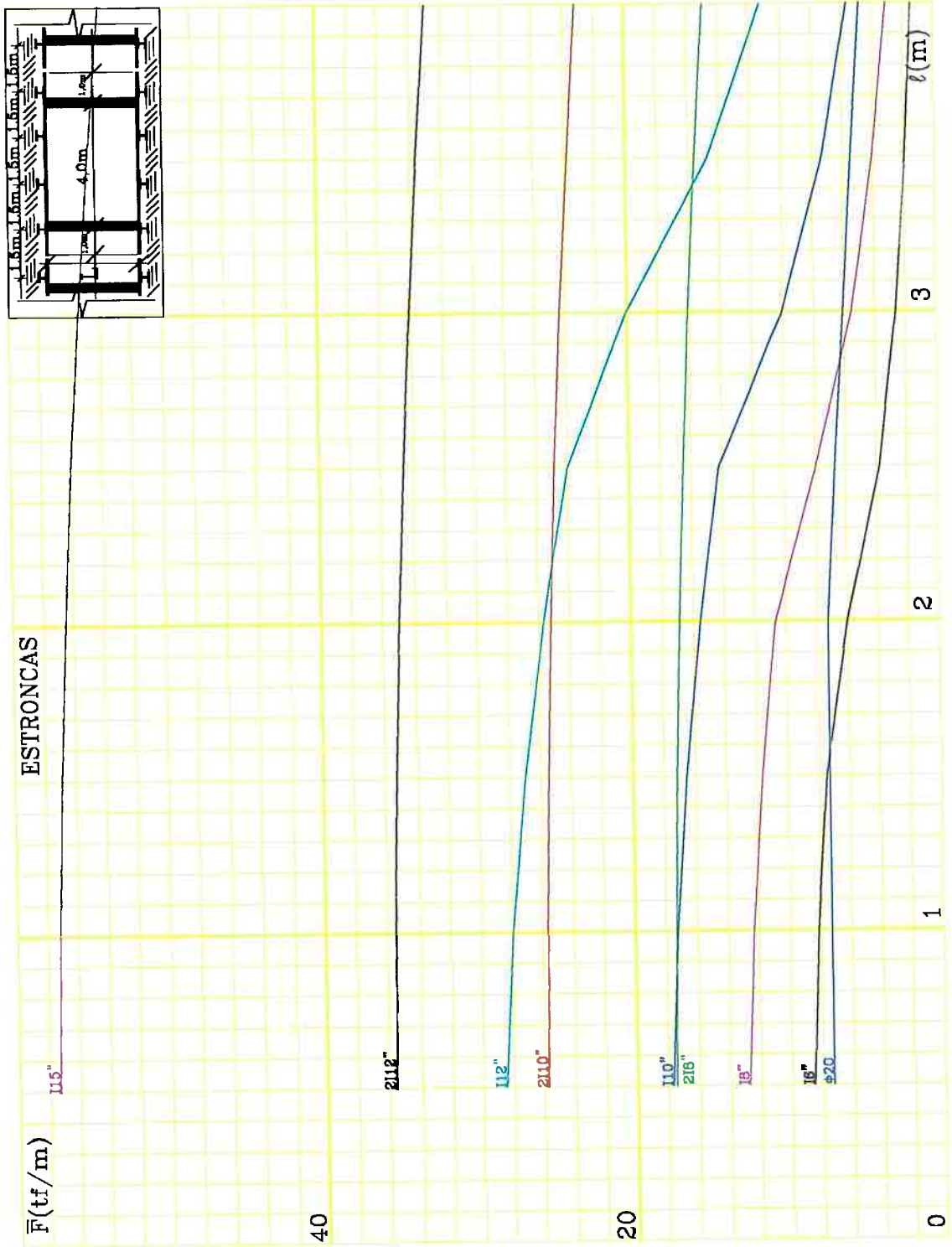


Fig. II.158- Ábaco DS

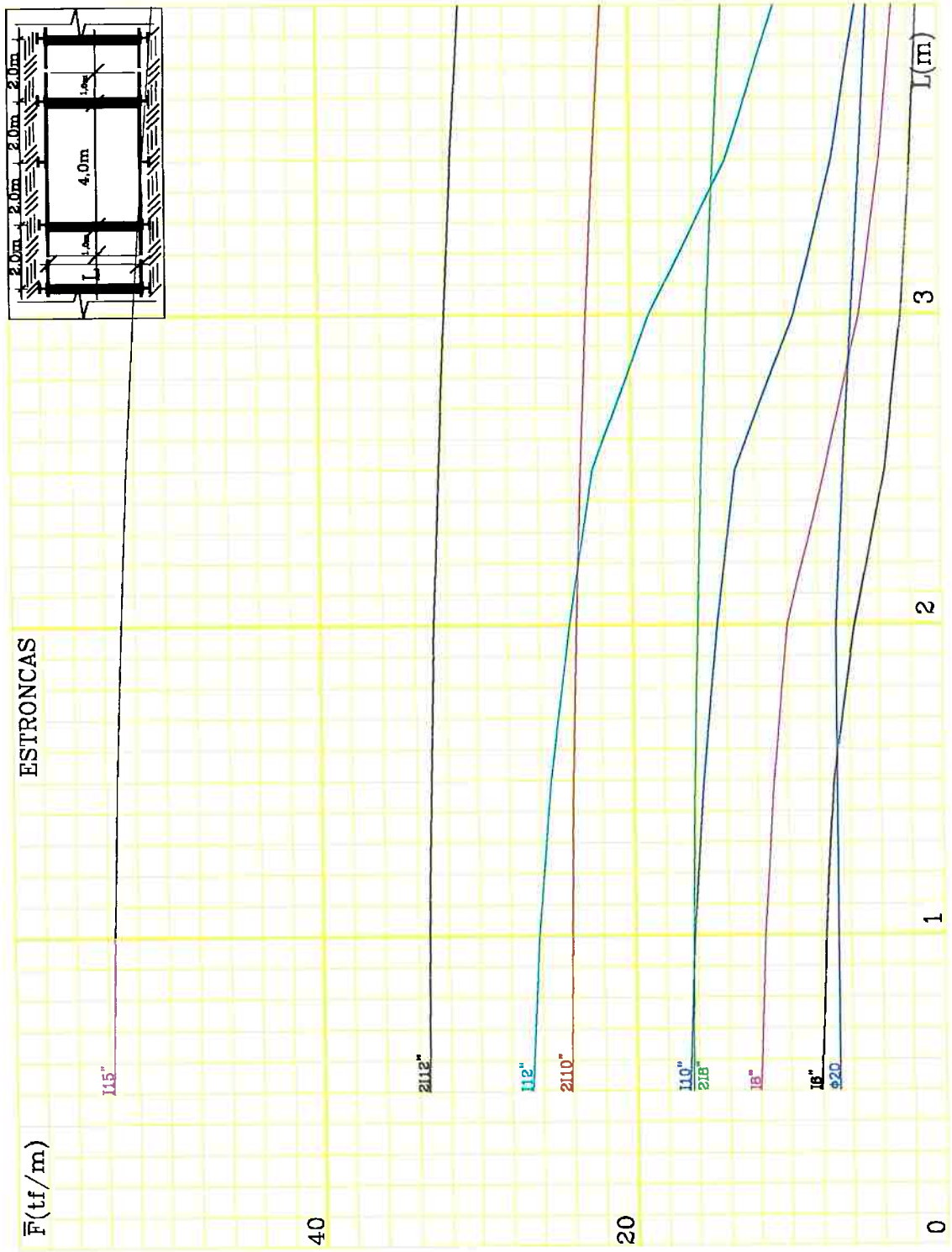


Fig. II.159- Ábaco DS

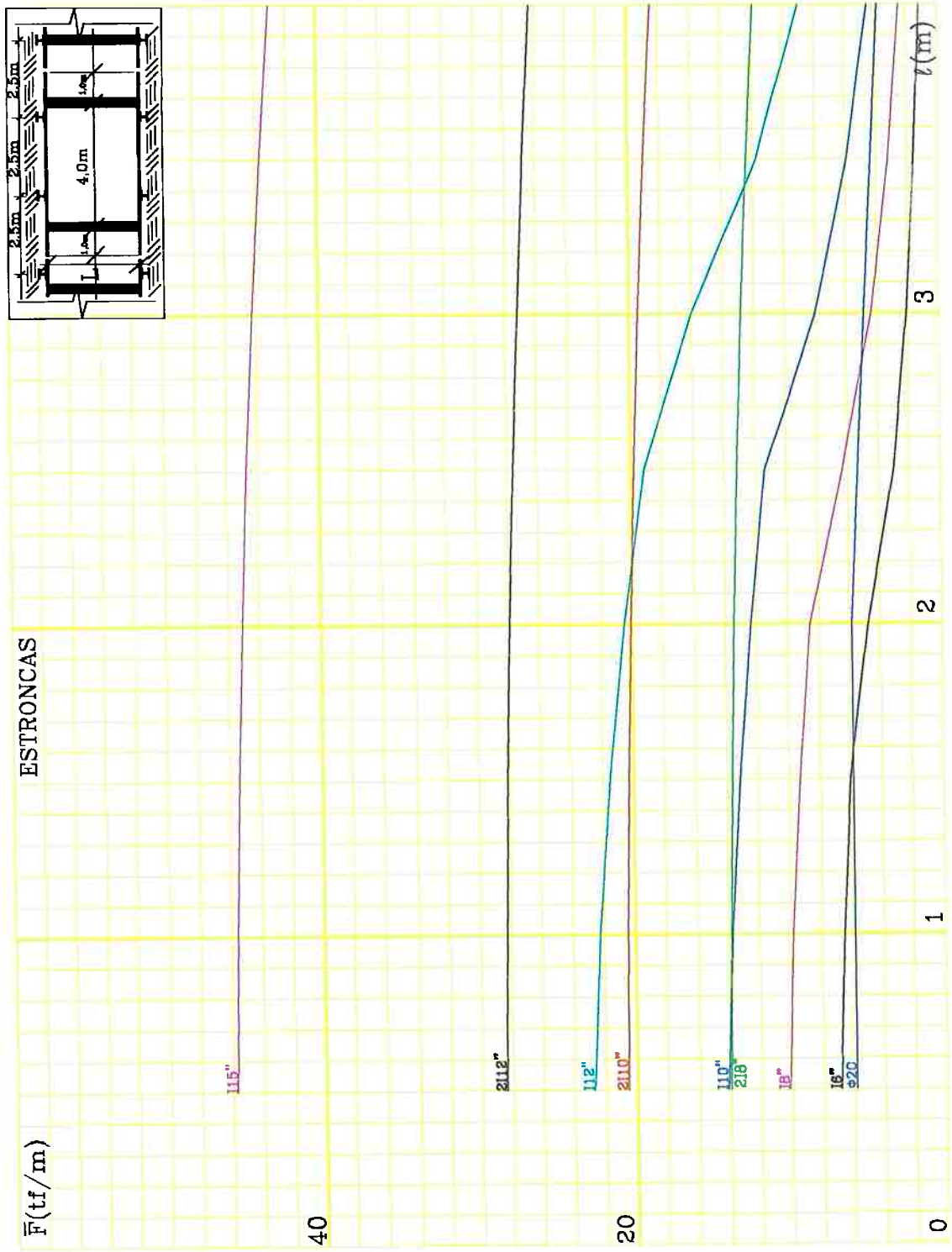


Fig. II.160- Ábaco DS

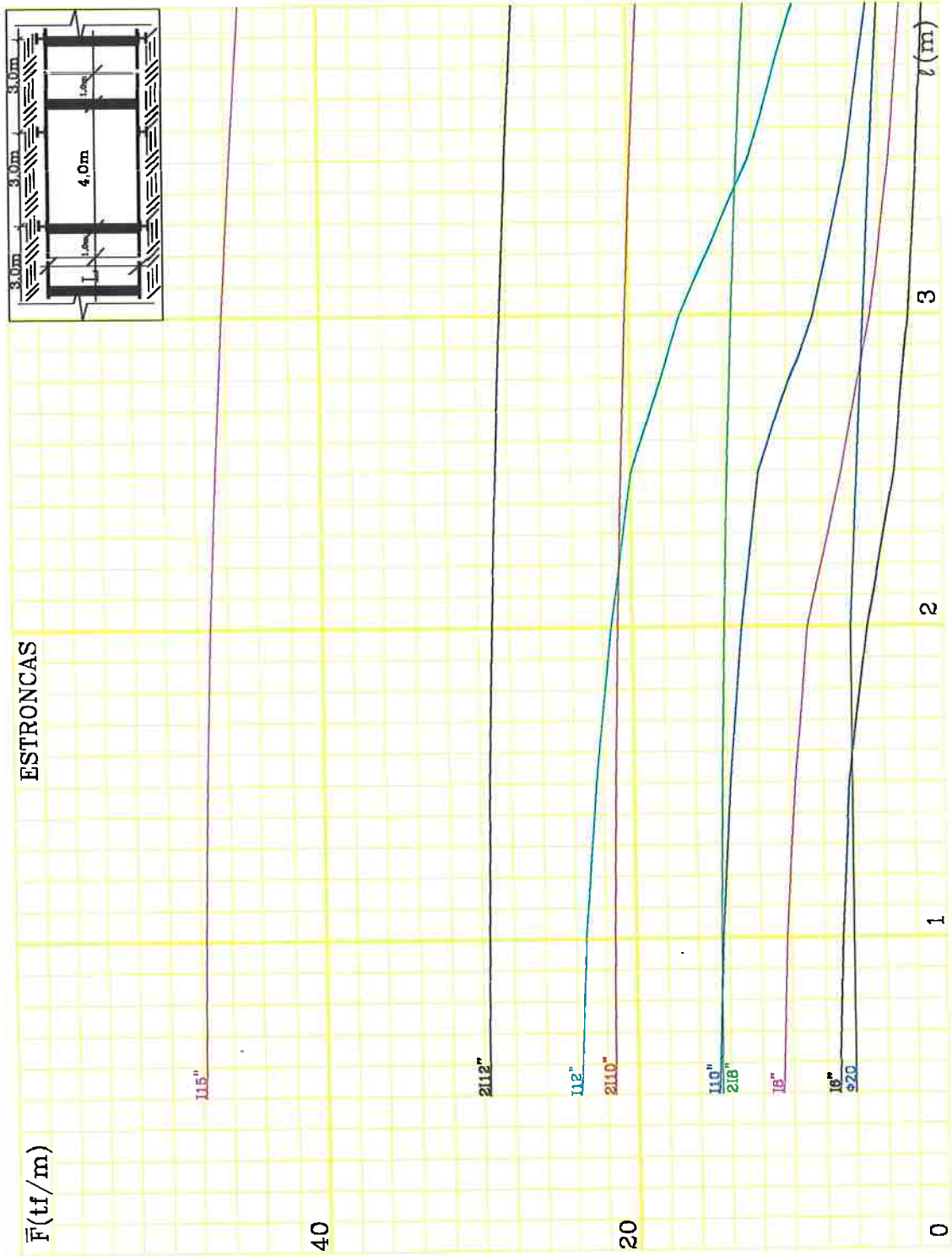


Fig. II.161- Ábaco DS