

okAgenda

Subject: SECTION CUT ILLUSTRATION - TEST PROBLEM

Subtask:

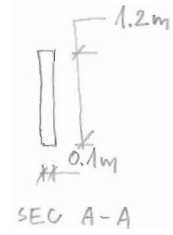
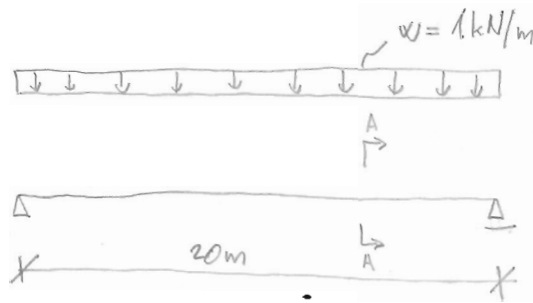
Prepared by: ok

Date: 1/2/2009

Sheet No. 1 of

GOAL: Demonstrate section cuts defined by groups and cutting planes on frame and area objects.

MODEL:



use the following for meshes:

FRAME WITH 2m LONG ELEMENTS (F1)



FRAME WITH 0.2m LONG ELEMENTS (F2)



AREA MODEL WITH 2m x 1.2m ELEMENTS (A1)



AREA MODEL WITH 0.2m x 0.2m ELEMENTS (A2)



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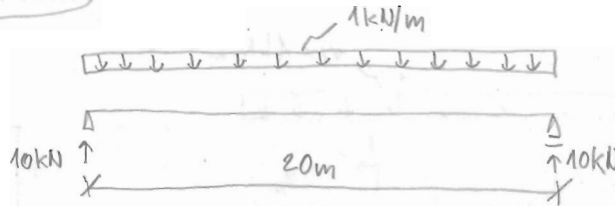
Subtask:

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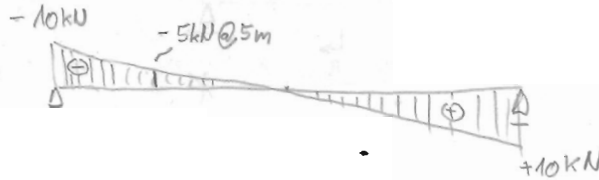
Sheet No. 2 of

CHECK MOMENT AND SHEAR AT QUARTER-POINT OF THE BEAM:

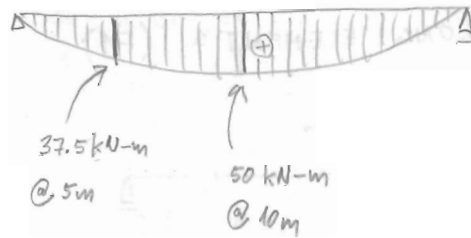
LOADS & REACTIONS



V (SHEAR)



M MOMENT



$$M_{@5m} = (10kN)(5m) - (5kN)(2.5m) = 37.5kN-m$$

$$M_{@10m} = (10kN)(10m) - (10kN)(5m) = 50kN-m$$

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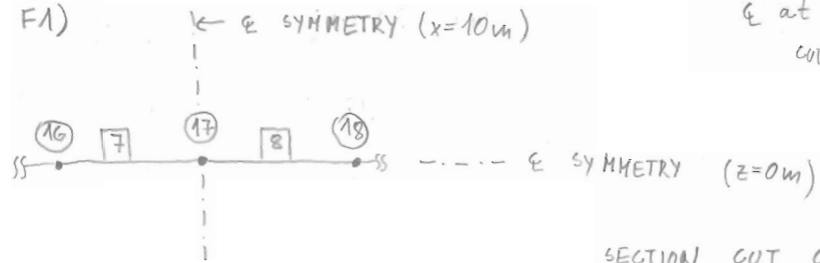
Subtask:

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Date: 1/5/2009

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RESULTS (MODEL F1)



ε at z=0m
CUT 0.1m BELOW & ABOVE

F1-10-GROUP - BOTH:

$F_3 = \sim 0 \text{ kN}$

$M_2 = \sim 0 \text{ kN-m}$



F1-10-GROUP - LEFT:

$F_3 = \sim 0 \text{ kN}$

$M_2 = -50 \text{ kN-m}$



F1-10-GROUP - RIGHT:

$F_3 = \sim 0 \text{ kN}$

$M_2 = 50 \text{ kN-m}$



F1-10-GROUP - LEFT-NO-PTS:

$F_3 = \sim 0 \text{ kN}$

$M_2 = 0 \text{ kN-m}$



F1-9.9-PLANE :

(POSITIVE 3 AXIS SIDE

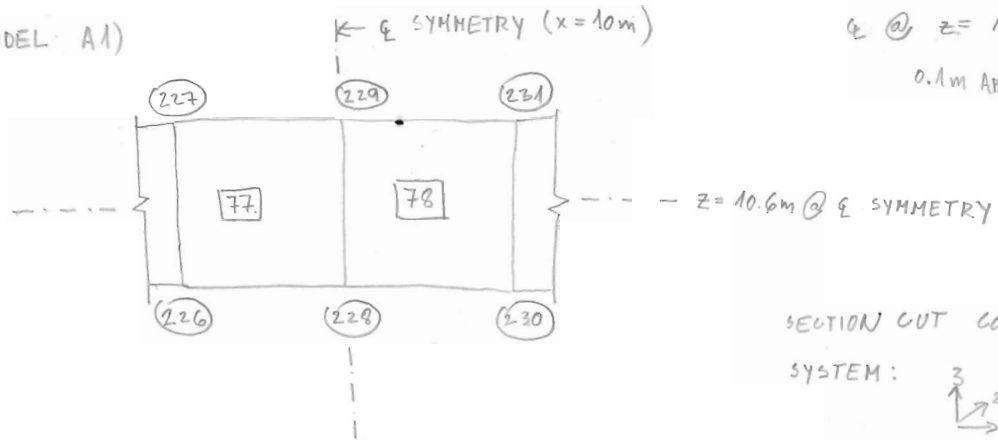
OF QUADRILATERAL)

$F_3 = \sim 0 \text{ kN}$

$M_2 = -50 \text{ kN-m}$

REPORTED AT x=10m → WHY?

RESULTS (MODEL: A1)



ξ @ $z=10.6m$
0.1m ABOVE & BELOW

A1-10-GROUP-BOTH :

$F_3 = \sim 0kN$

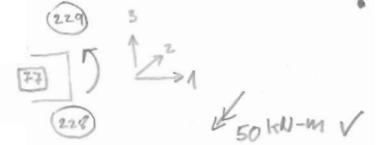
$M_2 = \sim 0kN-m$



A1-10-GROUP-LEFT :

$F_3 = \sim 0kN$

$M_2 = -50kN-m$



A1-10-GROUP-RIGHT :

$F_3 = \sim 0kN$

$M_2 = 50kN-m$



A1-10-GROUP-LEFT-NO-PTS :

$F_3 = \sim 0kN$

$M_2 = \sim 0kN-m$



A1-9.9-PLANE :
(POSITIVE 3 AXIS SIDE
OF QUADRILATERAL)

$F_3 = \sim 0kN$

$M_2 = -50kN$

REPORTED AT $x=10m \rightarrow$ WHY?