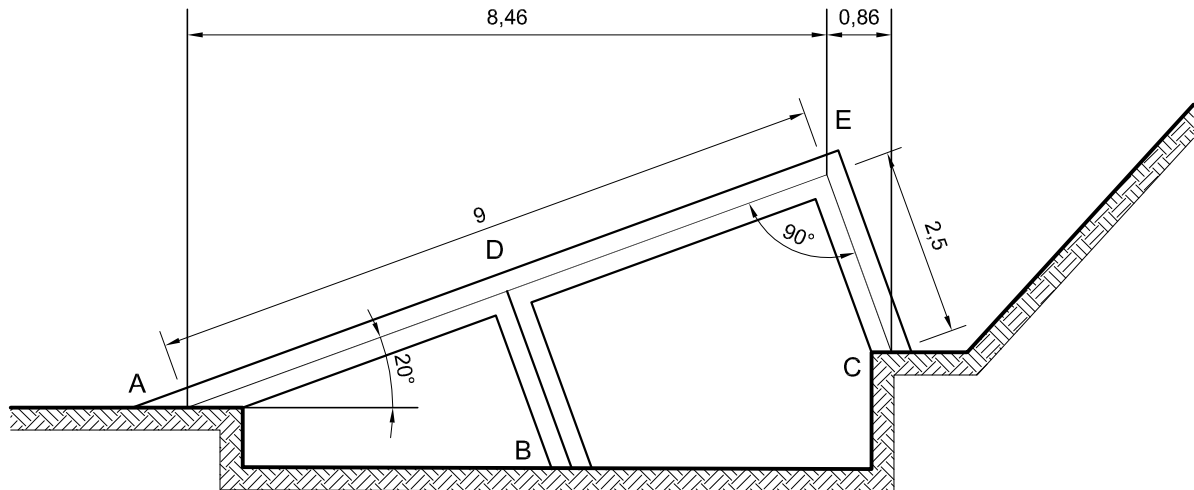


ESTABILIDAD DE LAS CONSTRUCCIONES II

Se plantea la siguiente estructura en Hormigón Armado:

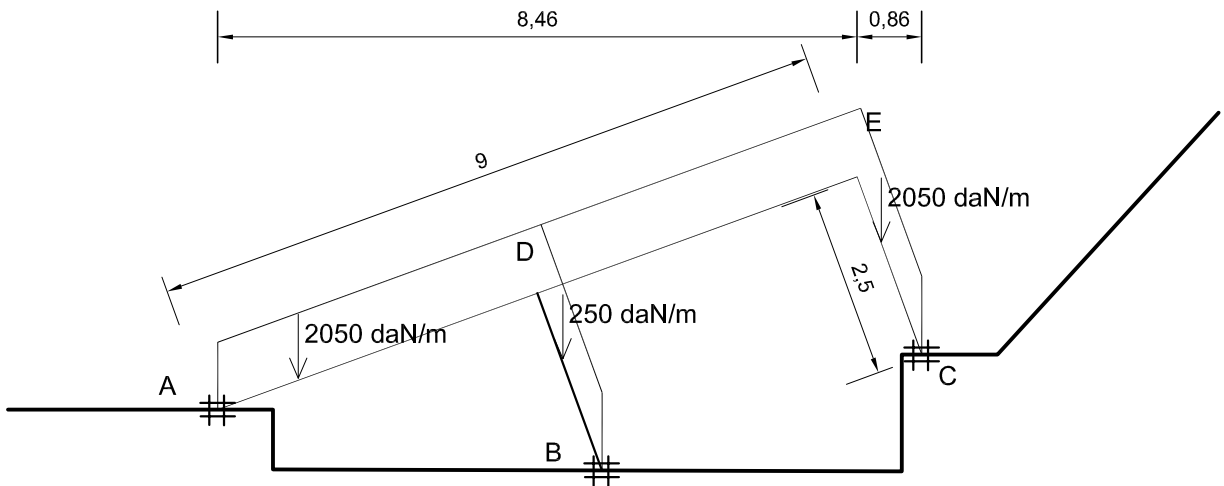


Se trata de una costilla de tramos AD, DE, DB y EC de sección constante de 20x50cm y luces según gráfico. En los tramos AD y DE se considera una descarga de cubierta de 1800daN/m de tramo.

Estudiándola por Método de Cross se pide:

- Diagrama de Solicitaciones de todos los tramos
- Reacciones en los apoyos.
- Verificar la sección más comprometida y proponer ajustes de ser necesarios.

ESQUEMA GEOMÉTRICO DE CARGAS



CARGAS AE Y EC:

pp: $0.20 \times 0.50 \times 2500 = 250 \text{ daN/m}$
 descarga cubierta = 1800 daN/m
 = 2050 daN/m
 Barra DB - sólo pp = 250 daN/m

TRAMO	L(m)	lr	α	χ	$\alpha\chi$	β
AD	4.50	1	1	0.222	0.222	0.50
DE	4.50	1	1	0.222	0.222	0.50
DB	2.50	1	1	0.40	0.40	0.50
EC	2.50	1	1	0.40	0.40	0.50

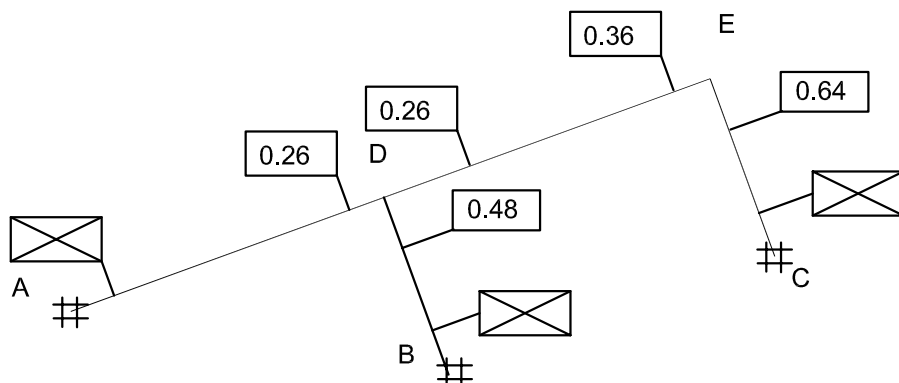
COEFICIENTES DE REPARTICIÓN

NUDO D $\alpha\chi_{DA} = 0.222$ | $\Sigma\alpha\chi = 0.844$ |
 $\alpha\chi_{DE} = 0.222$ |
 $\alpha\chi_{DB} = 0.40$ |

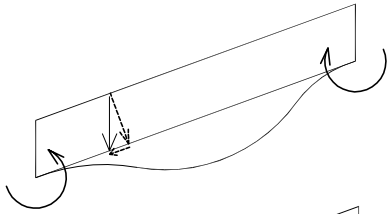
NUDO E $\alpha\chi_{ED} = 0.222$ | Σ |
 $\alpha\chi_{EC} = 0.40$ |

$$r_{DA} = \frac{0.222}{0.844} = 0.26 \quad r_{DE} = 0.26 \quad r_{DB} = 0.48 \quad r_{ED} = \frac{0.222}{0.624} = 0.36 \quad r_{EC} = \frac{0.40}{0.624}$$

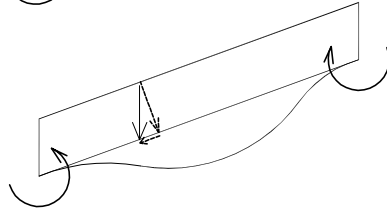
$\Sigma \text{coef. rep.} = 0$



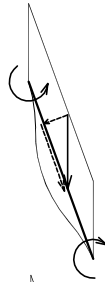
MONEMTOS DE EMPOTRAMIENTO PERFECTO



TRAMO AD $MAD = MDA = \frac{2050 \times 4.5 \times 4.23}{12} = 3252 \text{ daNm}$



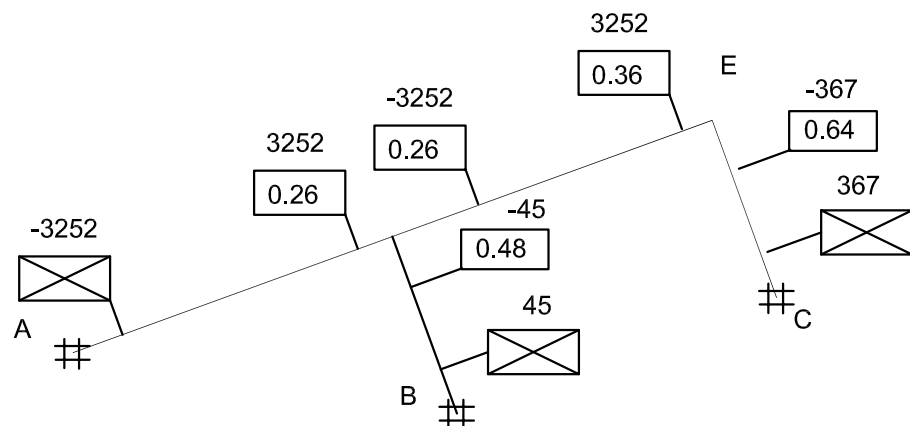
TRAMO DE $MDE = MED = \frac{2050 \times 4.5 \times 4.23}{12} = 3252 \text{ daNm}$



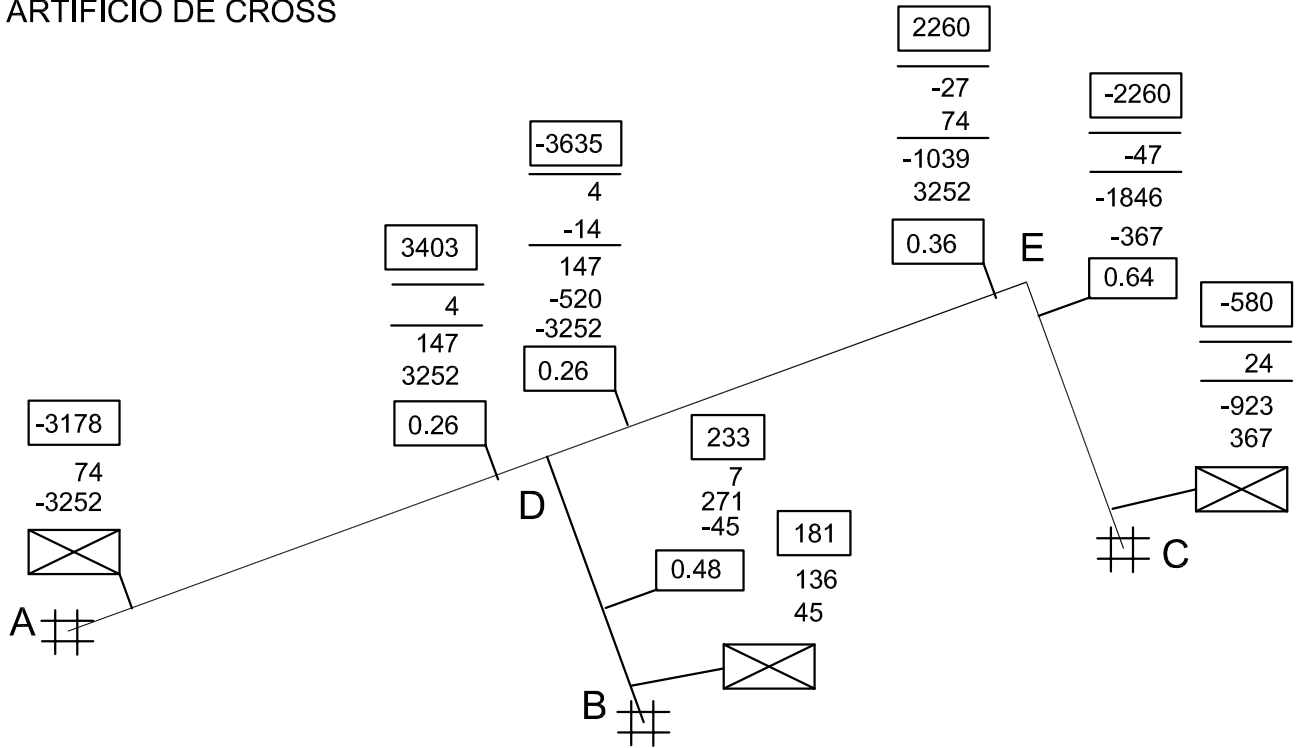
TRAMO DB $MDB = MBD = \frac{250 \times 2.5 \times 0.86}{12} = 45 \text{ daNm}$



TRAMO EC $MEC = MCE = \frac{2050 \times 2.5 \times 0.86}{12} = 367 \text{ daNm}$

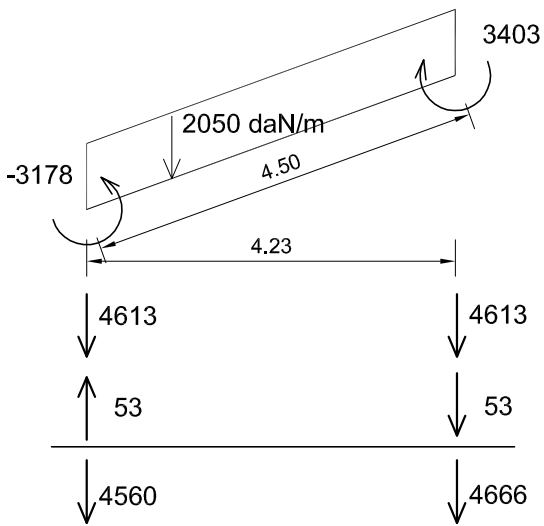


ARTIFICIO DE CROSS

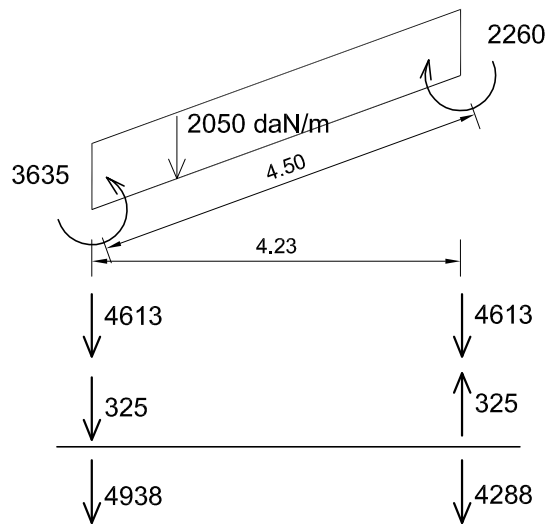


DESCARGAS TRAMO POR TRAMO.

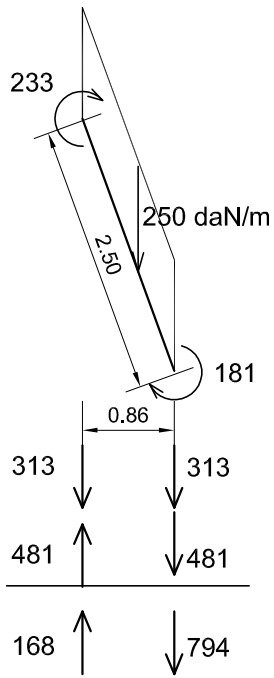
TRAMO AD



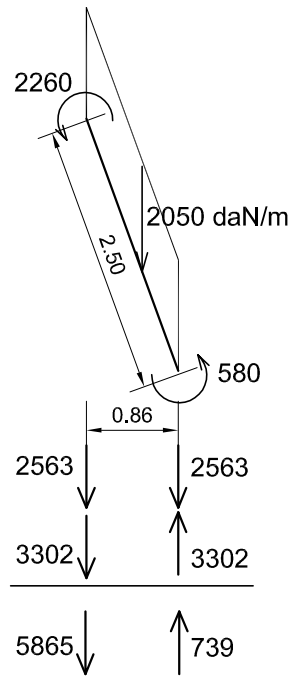
TRAMO DE



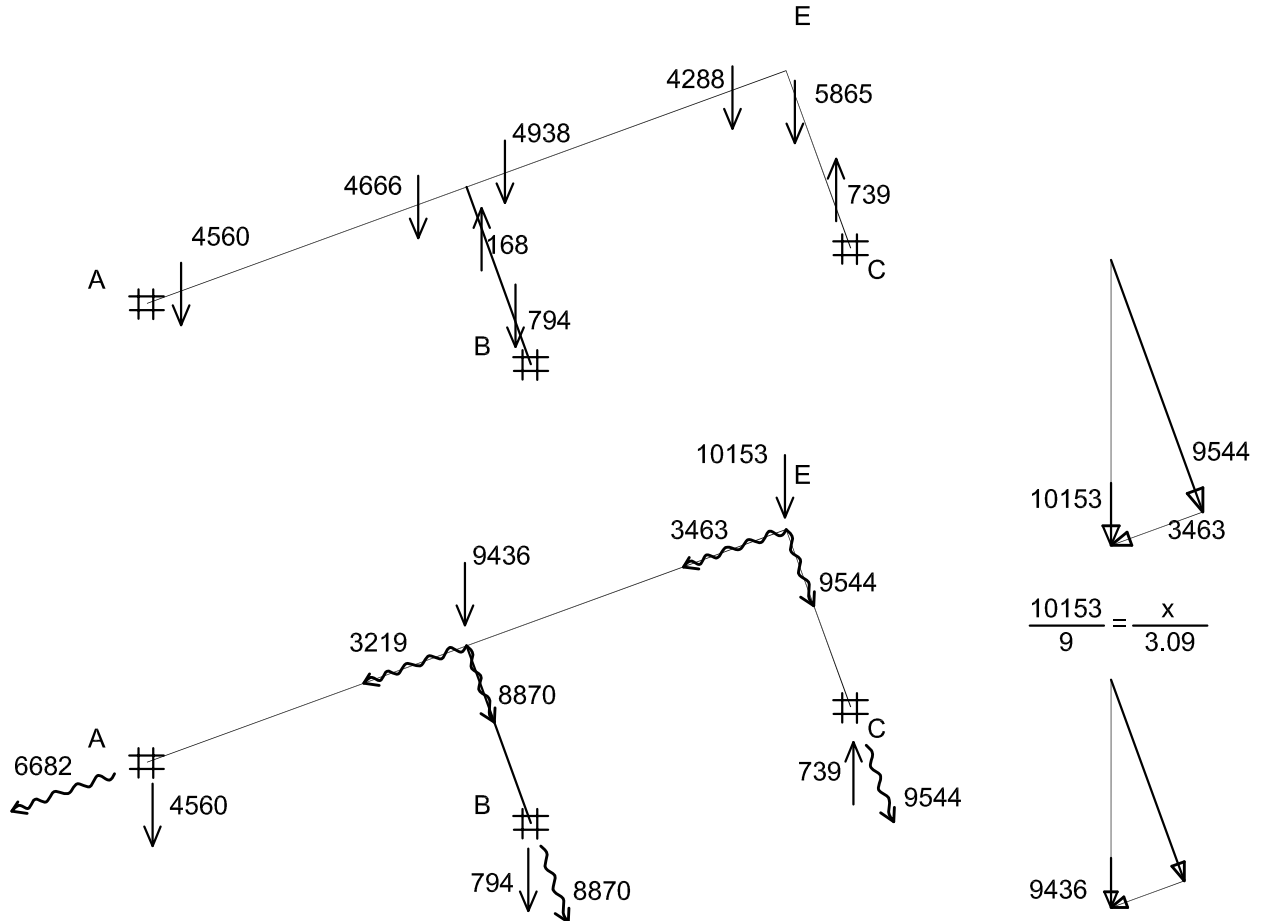
TRAMO DB



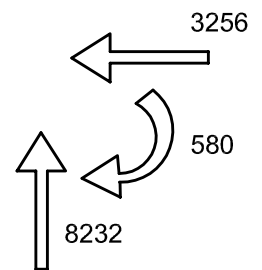
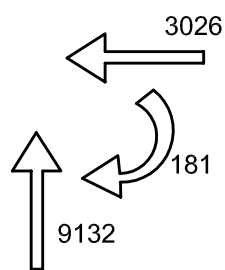
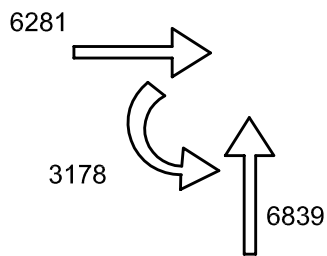
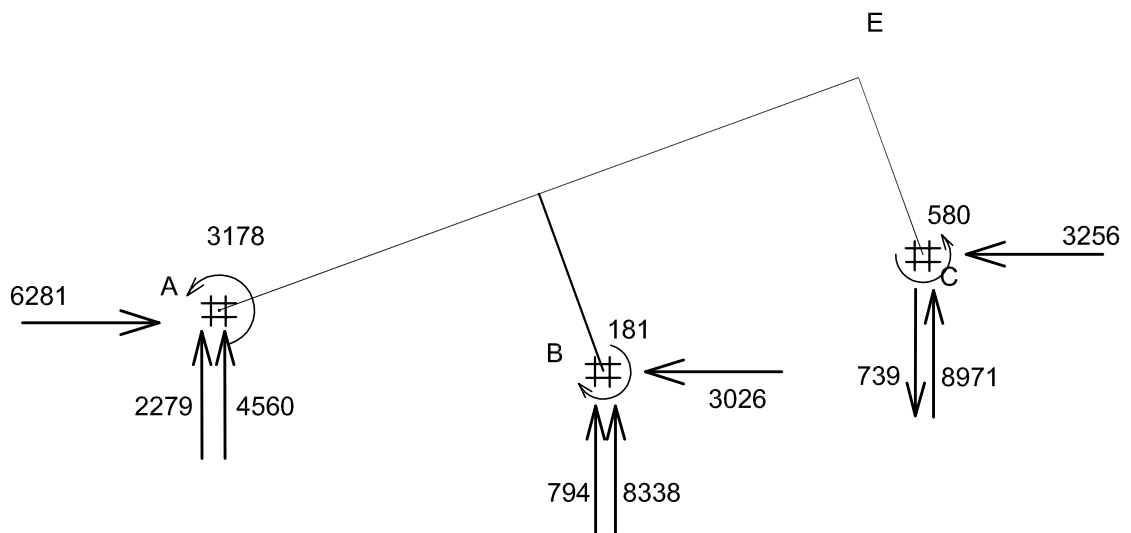
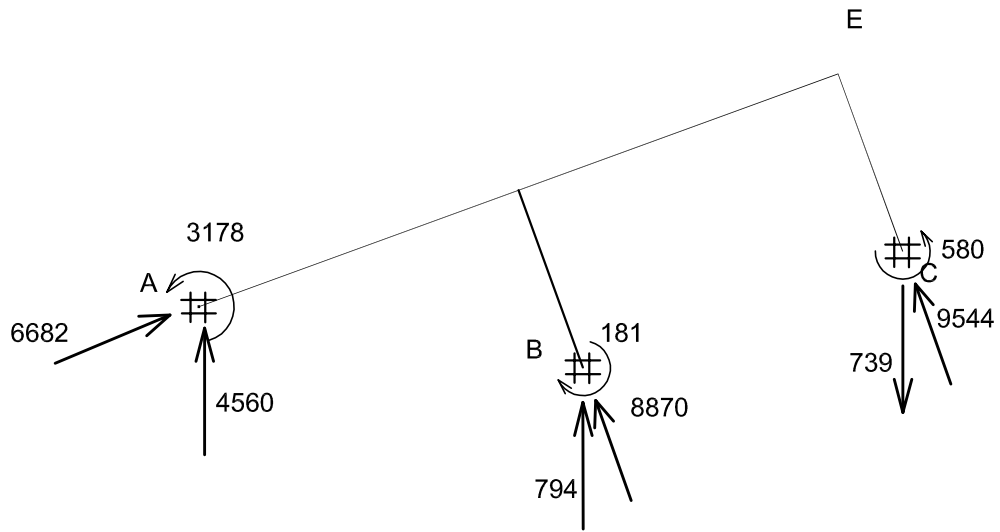
TRAMO EC



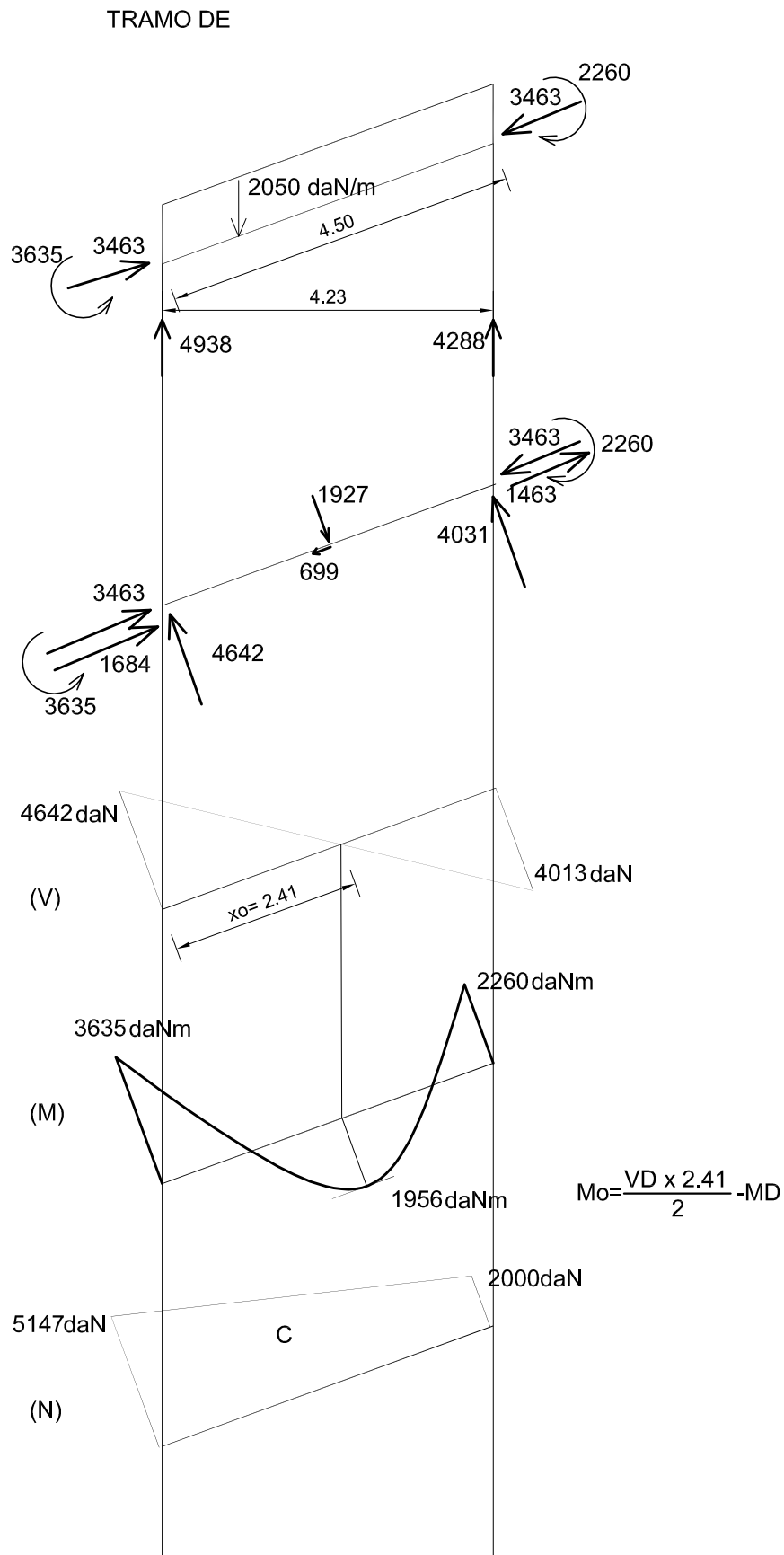
DESCARGAS POR CAMINOS MATERIALES



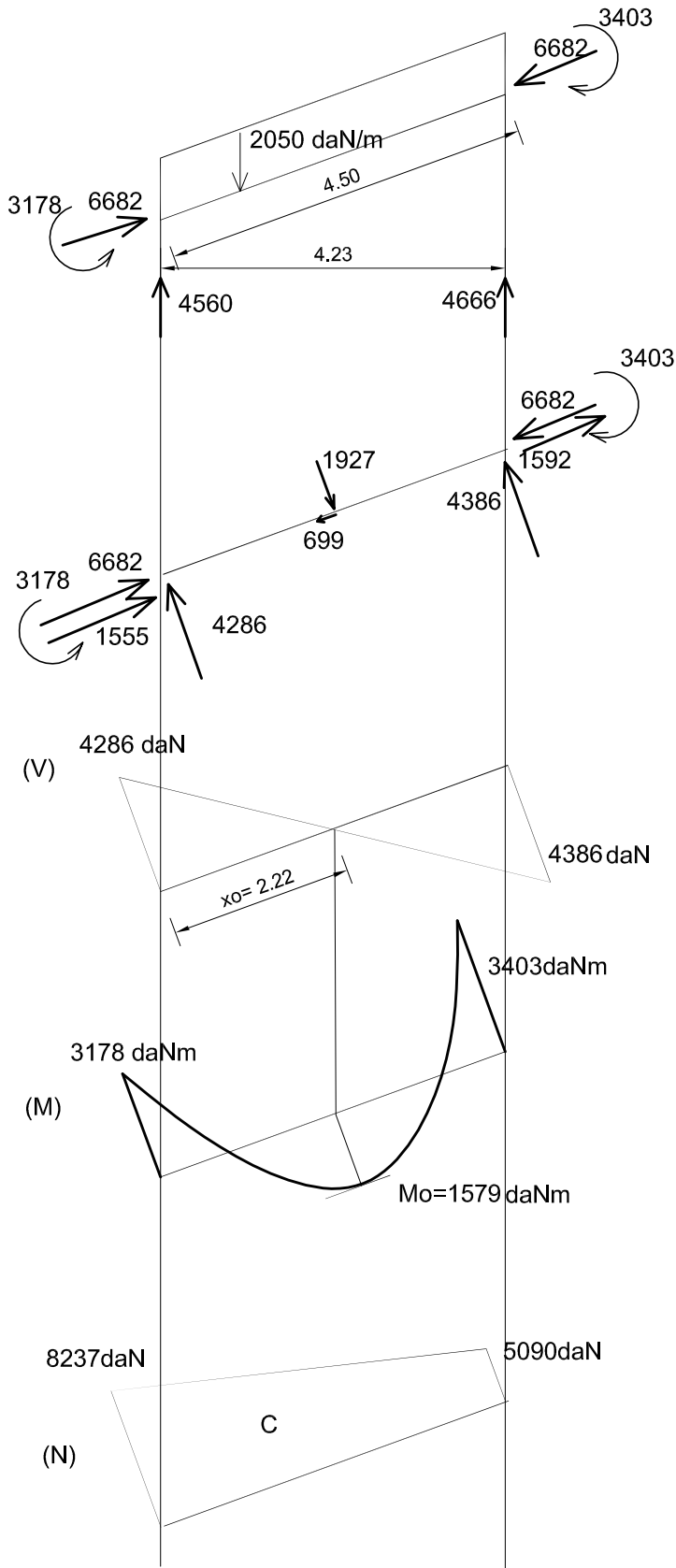
REACCIONES



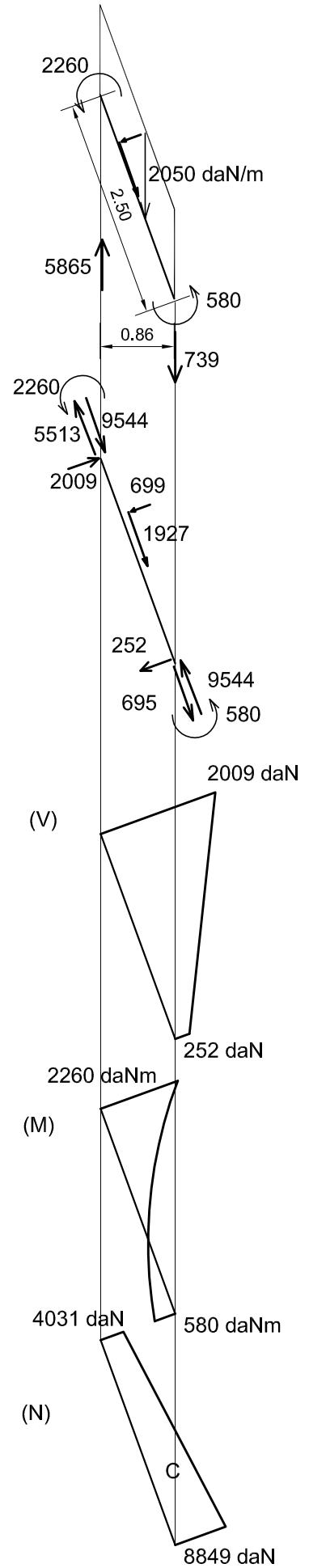
DIAGRAMAS DE SOLICITACIONES



TRAMO AD



TRAMO EC



TRAMO DB

