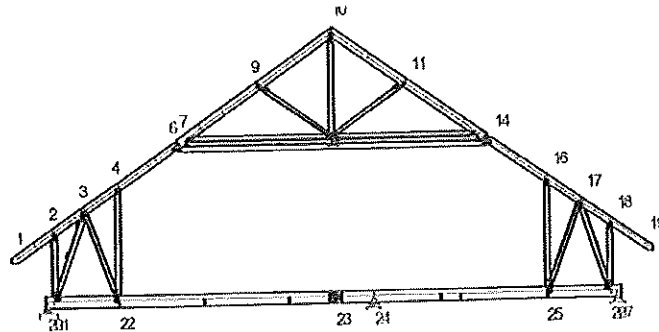


GEOMETRIE ET MODELE DE LA STRUCTURE

➤ **Schema de la Structure**



Dimensions du bâtiment:

| | | | |
|--------------------------|-------------|----------------------------|-------------|
| Longueur (a) | : 15 m | Largeur (b) | : 8 m |
| Hauteur totale (H) | : 10 m | Hauteur au faitage (h) | : 10 m |
| Pente Gauche | : 35.00 deg | Pente Droite | : 35.00 deg |
| Portee | : 10400 mm | Entraxe des fermes | : 600 mm |
| Hauteur Hors-tout | : 5071 mm | Longueur Hors-tout | : 11800 mm |
| Prolonge Gauche Arba. | : 700 mm | Prolonge Droite Arba. | : 700 mm |
| Entraxe lattes Arba. (*) | : 600 mm | Entraxe lattes Entrait (*) | : 0 mm |

(*) - Valeurs de saisie, voir les longueurs de flambement calculees en 'Caracteristiques des barres.'

Coordonnees des noeuds:

| Noeud | Coordonnees | | Liberte | | | |
|-------|-------------|-----------|---------|-------|------|-------|
| | X (mm) | Y (mm) | Horiz. | Vert. | Rot. | |
| J20 | -50 | 111 | 1 | 1 | 0 | Appui |
| J23 | 5246 | 111 | 0 | 0 | 0 | |
| J1 | -650 | 885 | 0 | 0 | 0 | |
| J6 | 2310 | 2958 | 0 | 0 | 0 | |
| J7 | 2507 | 3055 | 0 | 0 | 0 | |
| J13 | 7893 | 3055 | 0 | 0 | 0 | |
| J19 | 11050 | 885 | 0 | 0 | 0 | |
| J14 | 8090 | 2958 | 0 | 0 | 0 | |
| J10 | 5200 | 4981 | 0 | 0 | 0 | |
| J22 | 1252 | 111 | 0 | 0 | 0 | |
| J4 | 1252 | 2217 | 0 | 0 | 0 | |
| J25 | 9149 | 111 | 0 | 0 | 0 | |
| J16 | 9149 | 2217 | 0 | 0 | 0 | |
| J8 | 2772 | 3281 | 0 | 0 | 0 | |
| J5 | 1952 | 2707 | 0 | 0 | 0 | |
| J12 | 7628 | 3281 | 0 | 0 | 0 | |
| J15 | 8448 | 2707 | 0 | 0 | 0 | |
| J21 | 79 | 111 | 0 | 0 | 0 | |
| J2 | 79 | 1395 | 0 | 0 | 0 | |
| J26 | 10322 | 111 | 0 | 0 | 0 | |
| J18 | 10322 | 1395 | 0 | 0 | 0 | |
| J28 | 5200 | 3055 | 0 | 0 | 0 | |
| J9 | 3841 | 4030 | 0 | 0 | 0 | |
| J11 | 6559 | 4030 | 0 | 0 | 0 | |
| J3 | 639 | 1788 | 0 | 0 | 0 | |
| J17 | 9761 | 1788 | 0 | 0 | 0 | |
| J27 | 10450 | 111 | 0 | 1 | 0 | Appui |
| J24 | 5950 | 111 | 0 | 1 | 0 | Appui |

0=Libre, 1=Fix

Caracteristiques des barres:

| Barre | Section | | | | Longueur (mm) | Project. X (mm) | Longueur Flambage (mm) | Pente (deg) | Conditions Extremites Debut-Fin |
|-----------|---------|------|--------|-----|------------------|-----------------------|------------------------------|----------------|---------------------------------------|
| Debut-Fin | Pli | Coef | BxH | Cat | | | | | |
| T1 1-2 | 1 | 1.0 | 36x147 | C24 | 890 | 729 | 540 | 35.00 | Pin-Fix |
| T1 2-3 | 1 | 1.0 | 36x147 | C24 | 684 | 561 | 540 | 35.00 | Fix-Fix |
| T1 3-4 | 1 | 1.0 | 36x147 | C24 | 747 | 612 | 540 | 35.00 | Fix-Fix |
| T1 4-5 | 1 | 1.0 | 36x147 | C24 | 856 | 701 | 540 | 35.00 | Fix-Fix |
| T1 5-6 | 1 | 1.0 | 36x147 | C24 | 436 | 357 | 540 | 35.00 | Fix-Fix |
| T1 5-6 | | | 36x147 | C24 | | | | | |
| T1 5-6 | | | 36x147 | C24 | | | | | |
| T1 6-7 | 1 | 1.0 | 36x147 | C24 | 220 | 197 | 540 | 26.17 | Fix-Fix |
| T1 6-7 | | | 36x147 | C24 | | | | | |
| T1 6-7 | | | 36x147 | C24 | | | | | |
| T1 7-8 | 1 | 1.0 | 36x147 | C24 | 348 | 265 | 540 | 40.56 | Fix-Fix |
| T1 7-8 | | | 36x147 | C24 | | | | | |
| T1 7-8 | | | 36x147 | C24 | | | | | |
| T1 8-9 | 1 | 1.0 | 36x147 | C24 | 1305 | 1069 | 540 | 35.00 | Fix-Fix |

| Barre | -----Section----- | | | | Longueur | Project. | Longueur | Pente | Conditions |
|-----------|-------------------|------|--------|-----|----------|----------|----------|--------|------------|
| Debut-Fin | Pli | Coef | BxH | Cat | (mm) | X | Flambage | (deg) | Extremites |
| | | | | | | (mm) | (mm) | | Debut-Fin |
| T1 9-10 | 1 | 1.0 | 36x147 | C24 | 1659 | 1359 | 540 | 35.00 | Fix-Pin |
| T3 10-11 | 1 | 1.0 | 36x147 | C24 | 1659 | 1359 | 540 | -35.00 | Pin-Fix |
| T3 11-12 | 1 | 1.0 | 36x147 | C24 | 1305 | 1069 | 540 | -35.00 | Fix-Fix |
| T3 12-13 | 1 | 1.0 | 36x147 | C24 | 348 | 265 | 540 | -40.56 | Fix-Fix |
| T3 12-13 | | | 36x147 | C24 | | | | | |
| T3 12-13 | | | 36x147 | C24 | | | | | |
| T3 13-14 | 1 | 1.0 | 36x147 | C24 | 220 | 197 | 540 | -26.17 | Fix-Fix |
| T3 13-14 | | | 36x147 | C24 | | | | | |
| T3 13-14 | | | 36x147 | C24 | | | | | |
| T3 14-15 | 1 | 1.0 | 36x147 | C24 | 436 | 357 | 540 | -35.00 | Fix-Fix |
| T3 14-15 | | | 36x147 | C24 | | | | | |
| T3 14-15 | | | 36x147 | C24 | | | | | |
| T3 15-16 | 1 | 1.0 | 36x147 | C24 | 856 | 701 | 540 | -35.00 | Fix-Fix |
| T3 16-17 | 1 | 1.0 | 36x147 | C24 | 747 | 612 | 540 | -35.00 | Fix-Fix |
| T3 17-18 | 1 | 1.0 | 36x147 | C24 | 684 | 561 | 540 | -35.00 | Fix-Fix |
| T3 18-19 | 1 | 1.0 | 36x147 | C24 | 890 | 729 | 540 | -35.00 | Fix-Pin |
| T2 21-2 | 1 | 1.0 | 36x97 | C24 | 1284 | 1284 | 1284 | 90.00 | Pin-Pin |
| T4 26-18 | 1 | 1.0 | 36x97 | C24 | 1284 | 1284 | 1284 | 90.00 | Pin-Pin |
| B5 20-21 | 1 | 1.0 | 36x222 | C24 | 129 | 129 | 129 | 0.00 | Pin-Fix |
| B5 20-21 | | | 36x222 | C24 | | | | | |
| B5 21-22 | 1 | 1.0 | 36x222 | C24 | 1173 | 1173 | 1173 | 0.00 | Fix-Fix |
| B5 21-22 | | | 36x222 | C24 | | | | | |
| B5 22-23 | 1 | 1.0 | 36x222 | C24 | 3995 | 3995 | 4699 | 0.00 | Fix-Fix |
| B5 22-23 | | | 36x222 | C24 | | | | | |
| B5 23-24 | 1 | 1.0 | 36x222 | C24 | 704 | 704 | 4699 | 0.00 | Fix-Fix |
| B5 23-25 | 1 | 1.0 | 0x0 | C24 | 3902 | 3902 | 3902 | 0.00 | Fix-Fix |
| B5 23-25 | | | 36x222 | C24 | | | | | |
| B5 24-25 | 1 | 1.0 | 36x222 | C24 | 3199 | 3199 | 3199 | 0.00 | Fix-Fix |
| B5 25-26 | 1 | 1.0 | 36x222 | C24 | 1173 | 1173 | 1173 | 0.00 | Fix-Fix |
| B5 25-26 | | | 36x222 | C24 | | | | | |
| B5 26-27 | 1 | 1.0 | 36x222 | C24 | 129 | 129 | 129 | 0.00 | Fix-Pin |
| B5 26-27 | | | 36x222 | C24 | | | | | |
| W9 28-10 | 1 | 1.0 | 36x72 | C24 | 1927 | 1927 | 1927 | 90.00 | Pin-Pin |
| W8 9-28 | 1 | 1.0 | 36x72 | C24 | 1673 | 1359 | 1673 | -35.65 | Pin-Pin |
| W10 28-11 | 1 | 1.0 | 36x72 | C24 | 1673 | 1359 | 1673 | 35.65 | Pin-Pin |
| W7 3-22 | 1 | 1.0 | 36x97 | C24 | 1785 | 612 | 1785 | -69.94 | Pin-Pin |
| W11 25-17 | 1 | 1.0 | 36x97 | C24 | 1785 | 612 | 1785 | 69.94 | Pin-Pin |
| W6 21-3 | 1 | 1.0 | 36x97 | C24 | 1768 | 561 | 884 | 71.51 | Pin-Pin |
| W12 17-26 | 1 | 1.0 | 36x97 | C24 | 1768 | 561 | 884 | -71.51 | Pin-Pin |
| I15 7-28 | 1 | 1.0 | 36x97 | C24 | 2693 | 2693 | 1346 | 0.00 | Pin-Fix |
| I15 28-13 | 1 | 1.0 | 36x97 | C24 | 2693 | 2693 | 1346 | 0.00 | Fix-Pin |
| I14 6-14 | 1 | 1.0 | 36x112 | C24 | 5781 | 5781 | 1927 | 0.00 | Fix-Fix |
| I13 22-4 | 1 | 1.0 | 36x97 | C24 | 2106 | 2106 | 1053 | 90.00 | Pin-Pin |
| I16 25-16 | 1 | 1.0 | 36x97 | C24 | 2106 | 2106 | 1053 | 90.00 | Pin-Pin |

HYPOTHESES DE CHARGES ET SURCHARGES

| | | | | | |
|----------------------------------|---|-----------------------------------|---------------------|-----------|------------------|
| Charges permanentes: | | | | | |
| Couverture | : | 0.520 | Plafond haut | : | 0.150 |
| Plancher/Cloison | : | 0.170 | Plafond bas | : | 0.170 |
| Surcharge d'exploitation: | | | | | |
| Permanente 20% | : | 0.300 | Temporaire 80% | : | 1.200 |
| Surcharge de neige: | | | | | |
| Region de neige | : | 3 | Altitude | : | 420 m |
| Normale | : | 0.550 | Normale majoree | : | 0.770 |
| Extreme | : | 0.900 | Extreme majoree | : | 1.267 |
| Accidentelle | : | 1.080 | | : | |
| Permanente | : | 0 % | Temporaire | : | 100 % |
| Barre Pente | | Coef multiplicateur du a la pente | | | |
| 1-10 35.000 | | 0.800 | | | |
| 10-19 -35.000 | | 0.800 | | | |
| Surcharge de vent: | | | | | |
| Région de vent | : | II | Nature du Site | : | Normal |
| Pression de base | : | 0.600 | Permeabilite | : | 5% |
| Longueur (a) | : | 15000 mm | Coef site | : | 1.000 |
| Largeur (b) | : | 8000 mm | Coef majoration | : | 1.000 |
| Hauteur totale (H) | : | 10000 mm | Coef hauteur | : | 1.000 |
| Hauteur au faitage (h) | : | 10000 mm | Valeur pression | : | 0.600 |
| Flèche | : | 4131 mm | Lambda a | : | 0.667 |
| Coef delta | : | 0.880 | Lambda b | : | 1.250 |
| f/h | : | 0.413 | Gamma 0 normal | : | 1.000 |
| b/a | : | 0.533 | Gamma 0 Parallele | : | 1.000 |
| Barre Pente | | -----Exterieur (Ce)----- | --Interieure (Ci)-- | | |
| | | Au vent | Sous le vent | Parallèle | Succion Pression |
| 1-2 35.000 | | -0.212 | -0.475 | -0.502 | 0.000 0.000 |
| 18-19 -35.000 | | -0.212 | -0.475 | -0.502 | 0.000 0.000 |
| 2-10 35.000 | | -0.212 | -0.475 | -0.502 | -0.300 0.300 |
| 10-18 -35.000 | | -0.212 | -0.475 | -0.502 | -0.300 0.300 |

➤ **Combinaisons de charges vérifiées:**

- Cas 1: Charges Permanentes + Neige Normale (Cas 1)
- Cas 2: Charges Perm. + Charges d'Exploitation Maj. 20% (Cas 1bis)
- Cas 3: Charges Permanentes + 1kN Arba (Cas 2)
- Cas 5: Vent Normal G->D Depression Interne (Cas 3)
- Cas 7: Vent Normal D->G Depression Interne (Cas 3)
- Cas 11: Charges Permanentes + Neige Extreme (Cas 4)
- Cas 13: Vent Extreme G->D Surpression Interne (Cas 5)
- Cas 15: Vent Extreme D->G Surpression Interne (Cas 5)
- Cas 16: Vent Extreme Parallele Surpression Interne (Cas 5bis)

➤ **Reactions d'appuis par Cas de Charges**

| Cas Charge | Nom | Appui 20 | | Appui 27 | | Appui 24 | |
|------------|-------|------------|------------|------------|------------|------------|------------|
| | | Verti (kN) | Horiz (kN) | Verti (kN) | Horiz (kN) | Verti (kN) | Horiz (kN) |
| 1 | TOTAL | 7.880 | 0.000 | 6.824 | 0.000 | 4.923 | 0.000 |
| 1 | DEAD | 4.280 | 0.000 | 4.101 | 0.000 | 2.387 | 0.000 |
| 1 | LIVE | 3.600 | 0.000 | 2.723 | 0.000 | 2.536 | 0.000 |
| 2 | TOTAL | 6.019 | 0.000 | 4.725 | 0.000 | 5.692 | 0.000 |
| 2 | DEAD | 4.280 | 0.000 | 4.101 | 0.000 | 2.387 | 0.000 |
| 2 | LIVE | 1.740 | 0.000 | 0.623 | 0.000 | 3.305 | 0.000 |
| 3 | TOTAL | 5.665 | 0.000 | 4.614 | 0.000 | 5.024 | 0.000 |
| 5 | TOTAL | 6.260 | -0.174 | 4.787 | 0.000 | 4.907 | 0.000 |
| 5 | DEAD | 4.280 | 0.000 | 4.101 | 0.000 | 2.387 | 0.000 |
| 5 | LIVE | 1.980 | -0.174 | 0.686 | 0.000 | 2.521 | 0.000 |
| 7 | TOTAL | 5.758 | 0.174 | 5.095 | 0.000 | 5.102 | 0.000 |
| 7 | DEAD | 4.280 | 0.000 | 4.101 | 0.000 | 2.387 | 0.000 |
| 7 | LIVE | 1.478 | 0.174 | 0.993 | 0.000 | 2.715 | 0.000 |
| 11 | TOTAL | 10.526 | 0.000 | 8.905 | 0.000 | 6.664 | 0.000 |
| 13 | TOTAL | 2.706 | -0.335 | 2.004 | 0.000 | 4.521 | 0.000 |
| 15 | TOTAL | 2.869 | 0.335 | 1.643 | 0.000 | 4.720 | 0.000 |
| 16 | TOTAL | 0.851 | 0.000 | 0.690 | 0.000 | 2.248 | 0.000 |

RESULTATS DE CALCUL

➤ **Cas de Charges 1: Coef =1.00 Charges Permanentes + Neige Normale (Cas 1)**

CHARGEMENT

| Barre | No. | Type | Distrib. | DirCharge | Dir. | Proj. | Début | Val1 | Fin | Val2 |
|---------------|-----|------------|----------|-----------|------|-------|-------|-------|-------|------|
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | -650 | 0.053 | 11050 | |
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | -650 | 0.312 | 5200 | |
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | 5200 | 0.312 | 11050 | |
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | 1252 | 0.102 | 2310 | |
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | 8090 | 0.102 | 9149 | |
| Arbalétrier | | Neige | Uniforme | Bas | X | Oui | -650 | 0.370 | 5200 | |
| Arbalétrier | | Neige | Uniforme | Bas | X | Oui | 5200 | 0.370 | 11050 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | -50 | 0.094 | 10450 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | -50 | 0.001 | 79 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 10321 | 0.001 | 10450 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | -50 | 0.102 | 10450 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 1252 | 0.180 | 5950 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 1252 | 0.102 | 5950 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 5950 | 0.090 | 9149 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 5950 | 0.102 | 9149 | |
| Entrait | | Temp. | Uniforme | Bas | X | Oui | 1252 | 0.720 | 5950 | |
| Entrait | | Temp. | Uniforme | Bas | X | Oui | 5950 | 0.360 | 9149 | |
| Barre interne | | Permanente | Uniforme | Bas | X | Non | 2310 | 0.090 | 8090 | |
| Barre interne | | Permanente | Uniforme | Bas | X | Non | 1252 | 0.090 | 1252 | |
| Barre interne | | Permanente | Uniforme | Bas | X | Non | 9149 | 0.090 | 9149 | |

➤ **Charges Uniformes**

| Barre | ---Debut Barre--- | | ----Fin Barre---- | |
|-------------|-------------------|--------|-------------------|--------|
| | Vert. | Horiz. | Vert. | Horiz. |
| Arbalétrier | | | | |
| T1 1-2 | -0.815 | 0.000 | -0.815 | 0.000 |
| T1 2-3 | -0.815 | 0.000 | -0.815 | 0.000 |
| T1 3-4 | -0.815 | 0.000 | -0.815 | 0.000 |
| T1 4-5 | -0.940 | 0.000 | -0.940 | 0.000 |
| T1 5-6 | -0.940 | 0.000 | -0.940 | 0.000 |
| T1 6-7 | -0.776 | 0.000 | -0.776 | 0.000 |
| T1 7-8 | -0.850 | 0.000 | -0.850 | 0.000 |
| T1 8-9 | -0.815 | 0.000 | -0.815 | 0.000 |
| T1 9-10 | -0.815 | 0.000 | -0.815 | 0.000 |
| T3 10-11 | -0.815 | 0.000 | -0.815 | 0.000 |
| T3 11-12 | -0.815 | 0.000 | -0.815 | 0.000 |
| T3 12-13 | -0.850 | 0.000 | -0.850 | 0.000 |
| T3 13-14 | -0.776 | 0.000 | -0.776 | 0.000 |
| T3 14-15 | -0.940 | 0.000 | -0.940 | 0.000 |
| T3 15-16 | -0.940 | 0.000 | -0.940 | 0.000 |
| T3 16-17 | -0.815 | 0.000 | -0.815 | 0.000 |
| T3 17-18 | -0.815 | 0.000 | -0.815 | 0.000 |
| T3 18-19 | -0.815 | 0.000 | -0.815 | 0.000 |
| Entrait | | | | |
| B5 20-21 | -0.197 | 0.000 | -0.197 | 0.000 |
| B5 21-22 | -0.196 | 0.000 | -0.196 | 0.000 |
| B5 22-23 | -1.198 | 0.000 | -1.198 | 0.000 |
| B5 23-24 | -1.198 | 0.000 | -1.198 | 0.000 |
| B5 23-25 | -0.196 | 0.000 | -0.196 | 0.000 |
| B5 24-25 | -0.748 | 0.000 | -0.748 | 0.000 |
| B5 25-26 | -0.196 | 0.000 | -0.196 | 0.000 |
| B5 26-27 | -0.197 | 0.000 | -0.197 | 0.000 |
| Fiches | | | | |
| Barre | ---Debut Barre--- | | ----Fin Barre---- | |
| Intérieur | Vert. | Horiz. | Vert. | Horiz. |
| I14 6-14 | -0.090 | 0.000 | -0.090 | 0.000 |

➤ Efforts/Moments aux Extrémités

| | ----- Debut de Barre ----- | | | ----- Fin de Barre ----- | | | Travee Moment Maxi. (kNm) |
|-------------|----------------------------|--------------------------|-----------------|---------------------------|--------------------------|-----------------|------------------------------------|
| | Effort Tranch. (kN) | Effort Normal (kN) | Moment (kNm) | Effort Tranch. (kN) | Effort Normal (kN) | Moment (kNm) | |
| Arbalétrier | | | | | | | |
| T1 1-2 | 0.000 | 0.000 | 0.000 | 0.487 | 0.341 | -0.217 | -0.175 |
| T1 2-3 | 0.612 | -0.428 | 0.217 | -0.237 | -0.166 | 0.074 | -0.176 |
| T1 3-4 | 0.267 | -5.505 | -0.074 | 0.142 | -5.218 | 0.121 | 0.139 |
| T1 4-5 | 0.403 | -5.600 | -0.121 | 0.137 | -5.222 | 0.234 | 0.249 |
| T1 5-6 | -0.137 | -5.222 | -0.234 | 0.412 | -5.030 | 0.115 | 0.026 |
| T1 6-7 | 0.315 | -4.569 | -0.317 | -0.178 | -4.501 | 0.371 | 0.041 |
| T1 7-8 | -0.177 | -3.503 | -0.371 | 0.348 | -3.357 | 0.280 | 0.037 |
| T1 8-9 | -0.021 | -3.375 | -0.280 | 0.735 | -2.875 | -0.213 | 0.280 |
| T1 9-10 | 0.582 | -2.412 | 0.213 | 0.326 | -1.777 | 0.000 | -0.124 |
| T3 10-11 | 0.362 | -1.751 | 0.000 | 0.546 | -2.387 | -0.152 | 0.120 |
| T3 11-12 | 0.504 | -2.755 | 0.152 | 0.210 | -3.255 | 0.039 | 0.080 |
| T3 12-13 | 0.106 | -3.260 | -0.039 | 0.065 | -3.406 | 0.046 | 0.006 |
| T3 13-14 | -0.286 | -4.554 | -0.046 | 0.424 | -4.622 | -0.032 | 0.004 |
| T3 14-15 | 0.296 | -5.111 | 0.295 | -0.021 | -5.303 | -0.226 | -0.029 |
| T3 15-16 | 0.021 | -5.303 | 0.226 | 0.519 | -5.681 | -0.438 | -0.377 |
| T3 16-17 | 0.962 | -4.644 | 0.438 | -0.553 | -4.931 | 0.128 | -0.368 |
| T3 17-18 | -0.316 | -0.221 | -0.128 | 0.691 | -0.484 | -0.217 | -0.171 |
| T3 18-19 | 0.487 | 0.341 | 0.217 | 0.000 | 0.000 | 0.000 | -0.175 |
| T2 21-2 | 0.000 | -1.341 | 0.000 | 0.000 | -1.341 | 0.000 | 0.000 |
| T4 26-18 | 0.000 | -1.437 | 0.000 | 0.000 | -1.437 | 0.000 | 0.000 |
| Entrait | | | | | | | |
| B5 20-21 | 7.880 | 0.000 | 0.000 | -7.855 | 0.000 | 1.011 | 0.228 |
| B5 21-22 | -1.325 | 2.621 | -1.011 | 1.555 | 2.621 | -0.678 | 0.214 |
| B5 22-23 | 2.532 | 4.356 | 0.678 | 2.255 | 4.356 | -0.125 | 0.499 |
| B5 23-24 | -2.681 | 2.178 | -0.657 | 3.525 | 2.178 | -1.527 | 0.657 |
| B5 23-25 | 0.426 | 2.178 | 0.782 | 0.339 | 2.178 | -0.613 | 0.000 |
| B5 24-25 | 1.399 | 2.178 | 1.527 | 0.995 | 2.178 | -0.881 | -1.118 |
| B5 25-26 | 2.135 | 2.430 | 1.494 | -1.905 | 2.430 | 0.875 | -0.311 |
| B5 26-27 | -6.798 | 0.000 | -0.875 | 6.824 | 0.000 | 0.000 | 0.197 |
| Fiches | | | | | | | |
| W9 28-10 | 0.000 | 1.460 | 0.000 | 0.000 | 1.460 | 0.000 | 0.000 |
| W8 9-28 | 0.000 | -1.396 | 0.000 | 0.000 | -1.396 | 0.000 | 0.000 |
| W10 28-11 | 0.000 | -1.112 | 0.000 | 0.000 | -1.112 | 0.000 | 0.000 |
| W7 3-22 | 0.000 | 5.059 | 0.000 | 0.000 | 5.059 | 0.000 | 0.000 |
| W11 25-17 | 0.000 | 5.618 | 0.000 | 0.000 | 5.618 | 0.000 | 0.000 |
| W6 21-3 | 0.000 | -8.265 | 0.000 | 0.000 | -8.265 | 0.000 | 0.000 |
| W12 17-26 | 0.000 | -7.661 | 0.000 | 0.000 | -7.661 | 0.000 | 0.000 |
| Intérieur | | | | | | | |
| I15 7-28 | 0.001 | -1.185 | 0.000 | -0.001 | -1.185 | 0.002 | 0.002 |
| I15 28-13 | -0.001 | -1.416 | -0.002 | 0.001 | -1.416 | 0.000 | 0.002 |
| I14 6-14 | 0.250 | -0.395 | 0.203 | 0.271 | -0.395 | -0.263 | 0.144 |
| I13 22-4 | 0.000 | -0.665 | 0.000 | 0.000 | -0.665 | 0.000 | 0.000 |
| I16 25-16 | 0.000 | -1.808 | 0.000 | 0.000 | -1.808 | 0.000 | 0.000 |

➤ Verification des Contraintes pour le cas de charge 1

| Barres Externes: Barre | --Section-- BxH Cat. | --- Maximum --- | | --Plan Ferme -- | | ---Plan Perp--- | | Signal ATF |
|---------------------------|-------------------------|-----------------|-----------------|-----------------|-------|-----------------|-------|---------------|
| | | Effort (kN) | Moment (kNm) | K | Taux | K | Taux | |
| T 2-3 | 36x147 C24 | -0.402 | -0.176 | 1.000 | 0.131 | 0.826 | 0.133 | |
| T 3-4 | 36x147 C24 | -5.318 | 0.139 | 1.000 | 0.203 | 0.826 | 0.226 | |
| T 4-6 | 36x147 C24 | -5.318 | 0.249 | 1.000 | 0.280 | 0.826 | 0.303 | |
| T 6-7 | 36x147 C24 + | -1.512 | 0.116 | 1.000 | 0.111 | 1.000 | 0.111 | |
| T 6-7 | 36x147 C24 + | | | | | | | |
| T 6-7 | 36x147 C24 | | | | | | | |
| T 7-9 | 36x147 C24 | -3.375 | 0.280 | 1.000 | 0.263 | 0.826 | 0.278 | |
| T 9-10 | 36x147 C24 | -2.349 | -0.124 | 1.000 | 0.134 | 0.826 | 0.143 | |
| T10-11 | 36x147 C24 | -2.005 | 0.120 | 1.000 | 0.124 | 0.826 | 0.132 | |
| T11-13 | 36x147 C24 | -3.108 | 0.080 | 1.000 | 0.118 | 0.826 | 0.131 | |
| T13-14 | 36x147 C24 + | -1.529 | 0.004 | 1.000 | 0.033 | 1.000 | 0.033 | |
| T13-14 | 36x147 C24 + | | | | | | | |
| T13-14 | 36x147 C24 | | | | | | | |
| T14-16 | 36x147 C24 | -5.624 | -0.377 | 1.000 | 0.376 | 0.826 | 0.400 | |
| T16-17 | 36x147 C24 | -4.673 | -0.368 | 1.000 | 0.351 | 0.826 | 0.371 | |
| T17-18 | 36x147 C24 | -0.457 | -0.171 | 1.000 | 0.129 | 0.826 | 0.131 | |
| V21-2 | 36x97 C24 | -1.341 | 0.000 | 0.900 | 0.045 | 0.203 | 0.199 | |
| V26-18 | 36x97 C24 | -1.437 | 0.000 | 0.900 | 0.048 | 0.203 | 0.213 | |
| B20-21 | 36x222 C24 + | 0.000 | 0.253 | | 0.078 | | | |
| B20-21 | 36x222 C24 | | | | | | | |
| B21-22 | 36x222 C24 + | 0.655 | 0.214 | | 0.078 | | | |
| B21-22 | 36x222 C24 | | | | | | | |
| B22-24 | 36x222 C24 + | 2.178 | 0.994 | | 0.348 | | | |
| B22-24 | 36x222 C24 | | | | | | | |

- F1

| Barre | --Section-- | | --- Maximum --- | | --Plan Ferme -- | | ---Plan Perp--- | | | Signal |
|--------|-------------|-------|-----------------|--------------|-----------------|-------|-----------------|------|-----|--------|
| | BxH | Cat. | Effort (kN) | Moment (kNm) | K | Taux | K | Taux | ATF | |
| B23-25 | 0x0 | C24 + | 0.000 | 0.000 | | | | | | |
| B23-25 | 36x222 | C24 | | | | | | | | |
| B24-25 | 36x222 | C24 | 2.178 | -1.118 | | 0.386 | | | | |
| B25-26 | 36x222 | C24 + | 0.607 | -0.311 | | 0.107 | | | | |
| B25-26 | 36x222 | C24 | | | | | | | | |
| B26-27 | 36x222 | C24 + | 0.000 | 0.219 | | 0.067 | | | | |
| B26-27 | 36x222 | C24 | | | | | | | | |
| O 1-2 | 36x147 | C24 | 0.307 | -0.175 | | 0.132 | | | | |
| O18-19 | 36x147 | C24 | 0.307 | -0.175 | | 0.132 | | | | |

Barres Internes:

| Barre | --Section-- | | --- Maximum --- | | --Plan Ferme -- | | ---Plan Perp--- | | | Signal |
|--------|-------------|------|-----------------|--------------|-----------------|-------|-----------------|-------|-----|--------|
| | BxH | Cat. | Effort (kN) | Moment (kNm) | K | Taux | K | Taux | ATF | |
| W 7-28 | 36x97 | C24 | -1.185 | 0.002 | 0.524 | 0.072 | 0.185 | 0.197 | 1 | |
| W28-13 | 36x97 | C24 | -1.416 | 0.002 | 0.524 | 0.085 | 0.185 | 0.234 | 1 | |
| W 6-14 | 36x112 | C24 | -0.395 | 0.144 | 0.149 | 0.243 | 0.038 | 0.444 | 2 | |
| W22-4 | 36x97 | C24 | -0.665 | 0.000 | 0.548 | 0.037 | 0.302 | 0.066 | 1 | |
| W25-16 | 36x97 | C24 | -1.808 | 0.000 | 0.548 | 0.099 | 0.302 | 0.180 | 1 | |
| W28-10 | 36x72 | C24 | 1.460 | 0.000 | | 0.087 | | | | |
| W 9-28 | 36x72 | C24 | -1.396 | 0.000 | 0.479 | 0.118 | 0.102 | 0.555 | | |
| W28-11 | 36x72 | C24 | -1.112 | 0.000 | 0.479 | 0.094 | 0.102 | 0.443 | | |
| W 3-22 | 36x97 | C24 | 5.059 | 0.000 | | 0.223 | | | | |
| W25-17 | 36x97 | C24 | 5.618 | 0.000 | | 0.247 | | | | |
| W21-3 | 36x97 | C24 | -8.265 | 0.000 | 0.692 | 0.360 | 0.428 | 0.582 | 1 | |
| W17-26 | 36x97 | C24 | -7.661 | 0.000 | 0.692 | 0.334 | 0.428 | 0.539 | 1 | |

Noeuds:

| Noeud | --Section-- | | --- Maximum --- | | --Plan Ferme -- | | ---Plan Perp--- | | | Signal |
|-------|-------------|--------------|-----------------|--------------|-----------------|-------|-----------------|-------|-----|--------|
| | BxH | Cat. | Effort (kN) | Moment (kNm) | K | Taux | K | Taux | ATF | |
| J1 | O 1-2 | 36x147 C24 | 0.034 | -0.002 | | 0.003 | | | | 1 |
| J2 | T 1-2 | 36x147 C24 | 0.341 | -0.217 | | 0.162 | | | | 1 |
| J3 | T 3-4 | 36x147 C24 | -5.476 | 0.092 | 1.000 | 0.174 | 1.000 | 0.174 | 1 | |
| J4 | T 4-6 | 36x147 C24 | -5.543 | 0.167 | 1.000 | 0.228 | 1.000 | 0.228 | 1 | |
| J6 | T 6-7 | 36x147 C24 + | -1.523 | 0.106 | 1.000 | 0.104 | 1.000 | 0.104 | 1 | |
| J6 | T 6-7 | 36x147 C24 + | | | | | | | | |
| J6 | T 6-7 | 36x147 C24 | | | | | | | | |
| J7 | T 6-7 | 36x147 C24 + | -1.500 | 0.124 | 1.000 | 0.117 | 1.000 | 0.117 | 1 | |
| J7 | T 6-7 | 36x147 C24 + | | | | | | | | |
| J7 | T 6-7 | 36x147 C24 | | | | | | | | |
| J9 | T 7-9 | 36x147 C24 + | -2.875 | -0.213 | 1.000 | 0.206 | 1.000 | 0.206 | 1 | |
| J9 | T 7-9 | 36x147 C24 + | | | | | | | | |
| J9 | T 7-9 | 36x147 C24 | | | | | | | | |
| J10 | T 9-10 | 36x147 C24 | -1.840 | 0.047 | 1.000 | 0.069 | 1.000 | 0.069 | 1 | |
| J10 | T10-11 | 36x147 C24 | -1.815 | 0.053 | 1.000 | 0.073 | 1.000 | 0.073 | 1 | |
| J11 | T11-13 | 36x147 C24 | -2.755 | -0.152 | 1.000 | 0.162 | 1.000 | 0.162 | 1 | |
| J13 | T13-14 | 36x147 C24 + | -1.518 | 0.015 | 1.000 | 0.041 | 1.000 | 0.041 | 1 | |
| J13 | T13-14 | 36x147 C24 + | | | | | | | | |
| J13 | T13-14 | 36x147 C24 | | | | | | | | |
| J14 | T14-16 | 36x147 C24 + | -1.704 | -0.098 | 1.000 | 0.103 | 1.000 | 0.103 | 1 | |
| J14 | T14-16 | 36x147 C24 + | | | | | | | | |
| J14 | T14-16 | 36x147 C24 | | | | | | | | |
| J16 | T14-16 | 36x147 C24 + | -5.681 | -0.438 | 1.000 | 0.420 | 1.000 | 0.420 | 1 | |
| J16 | T14-16 | 36x147 C24 + | | | | | | | | |
| J16 | T14-16 | 36x147 C24 | | | | | | | | |
| J17 | T16-17 | 36x147 C24 | -4.931 | 0.128 | 1.000 | 0.188 | 1.000 | 0.188 | 1 | |
| J18 | O18-19 | 36x147 C24 | 0.341 | -0.217 | | 0.162 | | | | 1 |
| J19 | O18-19 | 36x147 C24 | 0.034 | -0.002 | | 0.003 | | | | 1 |
| J20 | B20-21 | 36x222 C24 + | 0.000 | 0.025 | | 0.008 | | | | 1 |
| J20 | B20-21 | 36x222 C24 | | | | | | | | |
| J21 | B21-22 | 36x222 C24 + | 1.311 | 0.505 | | 0.181 | | | | 1 |
| J21 | B21-22 | 36x222 C24 | | | | | | | | |
| J22 | B22-24 | 36x222 C24 + | 2.178 | -0.339 | | 0.146 | | | | 1 |
| J22 | B22-24 | 36x222 C24 | | | | | | | | |
| J24 | B22-24 | 36x222 C24 + | 2.178 | -1.527 | | 0.511 | | | | 1 |
| J24 | B22-24 | 36x222 C24 | | | | | | | | |
| J25 | B24-25 | 36x222 C24 | 2.178 | -0.881 | | 0.313 | | | | 1 |
| J26 | B25-26 | 36x222 C24 + | 1.215 | 0.438 | | 0.158 | | | | 1 |
| J26 | B25-26 | 36x222 C24 | | | | | | | | |
| J27 | B26-27 | 36x222 C24 + | 0.000 | 0.022 | | 0.007 | | | | 1 |
| J27 | B26-27 | 36x222 C24 | | | | | | | | |
| J7 | W 7-28 | 36x97 C24 | -1.185 | 0.000 | 1.000 | 0.036 | 1.000 | 0.036 | 1 | |
| J28 | W28-13 | 36x97 C24 | -1.416 | 0.002 | 1.000 | 0.046 | 1.000 | 0.046 | 1 | |
| J13 | W28-13 | 36x97 C24 | -1.416 | 0.000 | 1.000 | 0.043 | 1.000 | 0.043 | 1 | |
| J6 | W 6-14 | 36x112 C24 | -0.395 | -0.203 | 1.000 | 0.255 | 1.000 | 0.255 | 1 | |
| J14 | W 6-14 | 36x112 C24 | -0.395 | -0.263 | 1.000 | 0.328 | 1.000 | 0.328 | 1 | |

> Reactions d'appuis

| Noeud Appui | Reaction | | Largeur | | Hauteur | | Signal |
|----------------|---------------|---------------|----------------|--------------|----------------|--------------|--------|
| | Verti (kN) | Horiz (kN) | Réelle (mm) | Néc. (mm) | Réelle (mm) | Néc. (mm) | |
| J20 | 7.880 | 0.000 | 100 | 48 | 222 | 149 | 0.67 |
| J27 | 6.824 | 0.000 | 100 | 41 | 222 | 129 | 0.58 |
| J24 | 4.923 | 0.000 | 100 | 59 | 222 | 134 | 0.60 |

> Verifications des Deformations pour le cas de charge 1

> Fleche Locale

| Barre Debut-Fin | Panneau | | Segment | | Signal | | | |
|--------------------|--------------|---------------|--------------|---------------|--------|-------|-------|-------|
| | ---Reelle--- | ---Admiss.--- | ---Reelle--- | ---Admiss.--- | | | | |
| | Fleche | Ratio | Fleche | Ratio | Fleche | Ratio | | |
| T1 1-2 | 0.09 | L/999 | 2.97 | L/300 | -1.99 | L/999 | 23.81 | L/300 |
| T1 2-3 | 0.05 | L/999 | 2.28 | L/300 | -4.30 | L/999 | 23.81 | L/300 |
| T1 3-4 | -0.09 | L/999 | 2.49 | L/300 | -6.37 | L/999 | 23.81 | L/300 |
| T1 4-5 | -0.44 | L/999 | 3.23 | L/400 | -7.69 | L/928 | 23.81 | L/300 |
| T1 5-6 | -0.44 | L/999 | 3.23 | L/400 | -7.69 | L/928 | 23.81 | L/300 |
| T1 6-7 | -0.01 | L/999 | 0.73 | L/300 | -7.83 | L/911 | 23.81 | L/300 |
| T1 7-8 | -0.52 | L/999 | 5.51 | L/300 | -8.03 | L/889 | 23.81 | L/300 |
| T1 8-9 | -0.52 | L/999 | 5.51 | L/300 | -8.03 | L/889 | 23.81 | L/300 |
| T1 9-10 | -0.23 | L/999 | 5.53 | L/300 | -4.38 | L/999 | 23.81 | L/300 |
| T3 10-11 | -0.36 | L/999 | 5.53 | L/300 | 2.42 | L/999 | 23.81 | L/300 |
| T3 11-12 | 0.39 | L/999 | 5.51 | L/300 | 4.88 | L/999 | 23.81 | L/300 |
| T3 12-13 | 0.39 | L/999 | 5.51 | L/300 | 4.88 | L/999 | 23.81 | L/300 |
| T3 13-14 | -0.00 | L/999 | 0.73 | L/300 | 4.47 | L/999 | 23.81 | L/300 |
| T3 14-15 | 0.60 | L/999 | 3.23 | L/400 | 6.21 | L/999 | 23.81 | L/300 |
| T3 15-16 | 0.60 | L/999 | 3.23 | L/400 | 6.21 | L/999 | 23.81 | L/300 |
| T3 16-17 | 0.11 | L/999 | 2.49 | L/300 | 6.66 | L/999 | 23.81 | L/300 |
| T3 17-18 | 0.03 | L/999 | 2.28 | L/300 | 4.88 | L/999 | 23.81 | L/300 |
| T3 18-19 | 0.09 | L/999 | 2.97 | L/300 | 3.23 | L/999 | 23.81 | L/300 |
| B5 20-21 | -0.00 | L/999 | 1.00 | L/400 | -0.62 | L/999 | 15.00 | L/400 |
| B5 21-22 | -0.07 | L/999 | 2.93 | L/400 | -5.35 | L/999 | 15.00 | L/400 |
| B5 22-23 | -8.19 | L/573 | 11.75 | L/400 | -11.11 | L/540 | 15.00 | L/400 |
| B5 23-24 | -8.19 | L/573 | 11.75 | L/400 | -11.11 | L/540 | 15.00 | L/400 |
| B5 23-25 | 2.85 | L/999 | 9.76 | L/400 | 0.00 | L/999 | 13.01 | L/400 |
| B5 24-25 | 1.78 | L/999 | 8.00 | L/400 | 5.15 | L/999 | 13.01 | L/400 |
| B5 25-26 | 0.15 | L/999 | 2.93 | L/400 | 3.98 | L/999 | 13.01 | L/400 |
| B5 26-27 | -0.00 | L/999 | 1.00 | L/400 | 0.35 | L/999 | 13.01 | L/400 |
| I14 6-14 | -11.24 | L/514 | 14.45 | L/400 | -10.99 | L/525 | 14.45 | L/400 |

> Fleche Globale

| Noeud | Déplacement | | | Admissible | | | Signal |
|-------|-------------|--------|----------|------------|--------|-------|--------|
| | X | Y | Rotation | X | Y | Ratio | |
| J1 | 1.852 | 1.402 | 0.000 | 10.000 | 5.000 | L/200 | |
| J2 | 3.142 | -0.742 | 0.000 | 10.000 | 15.000 | L/400 | |
| J3 | 4.572 | -3.126 | -0.003 | 10.000 | 15.000 | L/400 | |
| J4 | 5.902 | -5.477 | -0.004 | 10.000 | 15.000 | L/400 | |
| J6 | 7.085 | -7.708 | -0.003 | 10.000 | 15.000 | L/400 | |
| J7 | 7.153 | -7.865 | -0.001 | 10.000 | 15.000 | L/400 | |
| J9 | 5.733 | -6.013 | -0.000 | 10.000 | 15.000 | L/400 | |
| J10 | 3.893 | -3.583 | 0.002 | 10.000 | 15.000 | L/400 | |
| J11 | 5.135 | -1.614 | 0.000 | 10.000 | 15.000 | L/400 | |
| J13 | 6.793 | 2.008 | 0.002 | 10.000 | 15.000 | L/400 | |
| J14 | 7.031 | 2.424 | 0.002 | 10.000 | 15.000 | L/400 | |
| J16 | 7.844 | 3.208 | 0.002 | 10.000 | 15.000 | L/400 | |
| J17 | 6.818 | 1.658 | -0.001 | 10.000 | 15.000 | L/400 | |
| J18 | 5.930 | 0.234 | -0.002 | 10.000 | 15.000 | L/400 | |
| J19 | 4.160 | -2.415 | -0.002 | 10.000 | 5.000 | L/200 | |
| J20 | 0.000 | 0.000 | 0.000 | 10.000 | 15.000 | L/400 | |
| J21 | -0.000 | -0.616 | 0.000 | 10.000 | 15.000 | L/400 | |
| J22 | 0.025 | -5.347 | -0.004 | 10.000 | 15.000 | L/400 | |
| J24 | 0.194 | 0.000 | -0.004 | 10.000 | 15.000 | L/400 | |
| J23 | 0.169 | -4.021 | 0.005 | 10.000 | 15.000 | L/400 | |
| J25 | 0.309 | 3.339 | 0.005 | 10.000 | 15.000 | L/400 | |
| J26 | 0.333 | 0.302 | -0.001 | 10.000 | 15.000 | L/400 | |
| J27 | 0.333 | 0.000 | -0.002 | 10.000 | 15.000 | L/400 | |
| J6 | 7.085 | -7.708 | -0.001 | 10.000 | 15.000 | L/400 | |
| J14 | 7.031 | 2.424 | -0.001 | 10.000 | 15.000 | L/400 | |

> Cas de Charges 11: Coef =1.50 Charges Permanentes + Neige Extreme (Cas 4)

CHARGEMENT

| Barre | No. | Type | Distrib. | DirCharge | Dir. | Proj. | Début | Vall | Fin | Val2 |
|---------------|-----|------------|----------|-----------|------|-------|-------|-------|-------|------|
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | -650 | 0.053 | 11050 | |
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | -650 | 0.343 | 5200 | |
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | 5200 | 0.343 | 11050 | |
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | 1252 | 0.112 | 2310 | |
| Arbalétrier | | Permanente | Uniforme | Bas | X | Non | 8090 | 0.112 | 9149 | |
| Arbalétrier | | Neige | Uniforme | Bas | X | Oui | -650 | 0.608 | 5200 | |
| Arbalétrier | | Neige | Uniforme | Bas | X | Oui | 5200 | 0.608 | 11050 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | -50 | 0.094 | 10450 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | -50 | 0.001 | 79 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 10321 | 0.001 | 10450 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | -50 | 0.112 | 10450 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 1252 | 0.198 | 5950 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 1252 | 0.112 | 5950 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 5950 | 0.099 | 9149 | |
| Entrait | | Permanente | Uniforme | Bas | X | Non | 5950 | 0.112 | 9149 | |
| Entrait | | Temp. | Uniforme | Bas | X | Oui | 1252 | 1.166 | 5950 | |
| Entrait | | Temp. | Uniforme | Bas | X | Oui | 5950 | 0.583 | 9149 | |
| Barre interne | | Permanente | Uniforme | Bas | X | Non | 2310 | 0.099 | 8090 | |
| Barre interne | | Permanente | Uniforme | Bas | X | Non | 1252 | 0.099 | 1252 | |
| Barre interne | | Permanente | Uniforme | Bas | X | Non | 9149 | 0.099 | 9149 | |

> Charges Uniformes

| Barre | ---Debut Barre--- | | ----Fin Barre---- | |
|-------------|-------------------|--------|-------------------|--------|
| | Vert. | Horiz. | Vert. | Horiz. |
| Arbalétrier | | | | |
| T1 1-2 | -1.092 | 0.000 | -1.092 | 0.000 |
| T1 2-3 | -1.092 | 0.000 | -1.092 | 0.000 |
| T1 3-4 | -1.092 | 0.000 | -1.092 | 0.000 |
| T1 4-5 | -1.229 | 0.000 | -1.229 | 0.000 |
| T1 5-6 | -1.229 | 0.000 | -1.229 | 0.000 |
| T1 6-7 | -1.050 | 0.000 | -1.050 | 0.000 |
| T1 7-8 | -1.130 | 0.000 | -1.130 | 0.000 |
| T1 8-9 | -1.092 | 0.000 | -1.092 | 0.000 |
| T1 9-10 | -1.092 | 0.000 | -1.092 | 0.000 |
| T3 10-11 | -1.092 | 0.000 | -1.092 | 0.000 |
| T3 11-12 | -1.092 | 0.000 | -1.092 | 0.000 |
| T3 12-13 | -1.130 | 0.000 | -1.130 | 0.000 |
| T3 13-14 | -1.050 | 0.000 | -1.050 | 0.000 |
| T3 14-15 | -1.229 | 0.000 | -1.229 | 0.000 |
| T3 15-16 | -1.229 | 0.000 | -1.229 | 0.000 |
| T3 16-17 | -1.092 | 0.000 | -1.092 | 0.000 |
| T3 17-18 | -1.092 | 0.000 | -1.092 | 0.000 |
| T3 18-19 | -1.092 | 0.000 | -1.092 | 0.000 |
| Entrait | | | | |
| B5 20-21 | -0.207 | 0.000 | -0.207 | 0.000 |
| B5 21-22 | -0.206 | 0.000 | -0.206 | 0.000 |
| B5 22-23 | -1.683 | 0.000 | -1.683 | 0.000 |
| B5 23-24 | -1.683 | 0.000 | -1.683 | 0.000 |
| B5 23-25 | -0.206 | 0.000 | -0.206 | 0.000 |
| B5 24-25 | -1.001 | 0.000 | -1.001 | 0.000 |
| B5 25-26 | -0.206 | 0.000 | -0.206 | 0.000 |
| B5 26-27 | -0.207 | 0.000 | -0.207 | 0.000 |
| Fiches | | | | |
| Intérieur | | | | |
| I14 6-14 | -0.099 | 0.000 | -0.099 | 0.000 |

> Efforts/Moments aux Extremites

| Arbalétrier | ----- Debut de Barre ----- | | | ----- Fin de Barre ----- | | | Travee Moment (kNm) |
|-------------|----------------------------|--------------------------|-----------------|---------------------------|--------------------------|-----------------|---------------------------|
| | Effort Tranch. (kN) | Effort Normal (kN) | Moment (kNm) | Effort Tranch. (kN) | Effort Normal (kN) | Moment (kNm) | |
| T1 1-2 | 0.000 | 0.000 | 0.000 | 0.652 | 0.457 | -0.290 | -0.235 |
| T1 2-3 | 0.808 | -0.566 | 0.290 | -0.307 | -0.215 | 0.092 | -0.236 |
| T1 3-4 | 0.472 | -7.385 | -0.092 | 0.075 | -7.002 | 0.240 | 0.244 |
| T1 4-5 | 0.485 | -7.394 | -0.240 | 0.221 | -6.900 | 0.353 | 0.383 |
| T1 5-6 | -0.221 | -6.900 | -0.353 | 0.580 | -6.648 | 0.179 | 0.039 |
| T1 6-7 | 0.484 | -5.971 | -0.389 | -0.298 | -5.880 | 0.474 | 0.052 |
| T1 7-8 | -0.219 | -4.652 | -0.474 | 0.446 | -4.458 | 0.359 | 0.048 |
| T1 8-9 | -0.012 | -4.480 | -0.359 | 0.968 | -3.811 | -0.280 | 0.359 |
| T1 9-10 | 0.777 | -3.198 | 0.280 | 0.439 | -2.346 | 0.000 | -0.162 |
| T3 10-11 | 0.494 | -2.308 | 0.000 | 0.722 | -3.160 | -0.190 | 0.166 |
| T3 11-12 | 0.622 | -3.632 | 0.190 | 0.334 | -4.301 | -0.002 | -0.097 |
| T3 12-13 | 0.084 | -4.313 | 0.002 | 0.143 | -4.508 | -0.012 | 0.000 |
| T3 13-14 | -0.460 | -5.960 | 0.012 | 0.646 | -6.051 | -0.134 | -0.013 |
| T3 14-15 | 0.407 | -6.770 | 0.434 | -0.047 | -7.021 | -0.335 | -0.043 |

| | ----- Debut de Barre ----- | | | ----- Fin de Barre ----- | | | Travee Moment Maxi. (kNm) |
|-----------|----------------------------|--------------------------|-----------------|---------------------------|--------------------------|-----------------|------------------------------------|
| | Effort Tranch. (kN) | Effort Normal (kN) | Moment (kNm) | Effort Tranch. (kN) | Effort Normal (kN) | Moment (kNm) | |
| T3 15-16 | 0.047 | -7.021 | 0.335 | 0.659 | -7.516 | -0.597 | -0.518 |
| T3 16-17 | 1.302 | -6.143 | 0.597 | -0.755 | -6.526 | 0.172 | -0.501 |
| T3 17-18 | -0.425 | -0.297 | -0.172 | 0.926 | -0.648 | -0.290 | -0.228 |
| T3 18-19 | 0.652 | 0.457 | 0.290 | 0.000 | 0.000 | 0.000 | -0.235 |
| T2 21-2 | 0.000 | -1.783 | 0.000 | 0.000 | -1.783 | 0.000 | 0.000 |
| T4 26-18 | 0.000 | -1.927 | 0.000 | 0.000 | -1.927 | 0.000 | 0.000 |
| Entrait | | | | | | | |
| B5 20-21 | 10.526 | 0.000 | 0.000 | -10.500 | 0.000 | 1.351 | 0.304 |
| B5 21-22 | -1.761 | 3.504 | -1.351 | 2.004 | 3.504 | -0.857 | 0.286 |
| B5 22-23 | 3.542 | 5.779 | 0.857 | 3.181 | 5.779 | -0.135 | 0.718 |
| B5 23-24 | -3.624 | 2.889 | -0.868 | 4.809 | 2.889 | -2.100 | 0.868 |
| B5 23-25 | 0.444 | 2.889 | 1.003 | 0.362 | 2.889 | -0.844 | 0.000 |
| B5 24-25 | 1.855 | 2.889 | 2.100 | 1.346 | 2.889 | -1.287 | -1.558 |
| B5 25-26 | 2.912 | 3.217 | 2.132 | -2.670 | 3.217 | 1.143 | -0.448 |
| B5 26-27 | -8.878 | 0.000 | -1.143 | 8.905 | 0.000 | 0.000 | 0.257 |
| Fiches | | | | | | | |
| W9 28-10 | 0.000 | 1.906 | 0.000 | 0.000 | 1.906 | 0.000 | 0.000 |
| W8 9-28 | 0.000 | -1.849 | 0.000 | 0.000 | -1.849 | 0.000 | 0.000 |
| W10 28-11 | 0.000 | -1.425 | 0.000 | 0.000 | -1.425 | 0.000 | 0.000 |
| W7 3-22 | 0.000 | 6.632 | 0.000 | 0.000 | 6.632 | 0.000 | 0.000 |
| W11 25-17 | 0.000 | 7.468 | 0.000 | 0.000 | 7.468 | 0.000 | 0.000 |
| W6 21-3 | 0.000 | -11.049 | 0.000 | 0.000 | -11.049 | 0.000 | 0.000 |
| W12 17-26 | 0.000 | -10.145 | 0.000 | 0.000 | -10.145 | 0.000 | 0.000 |
| Intérieur | | | | | | | |
| I15 7-28 | 0.001 | -1.470 | 0.000 | -0.001 | -1.470 | 0.003 | 0.003 |
| I15 28-13 | -0.001 | -1.814 | -0.003 | 0.001 | -1.814 | 0.000 | 0.003 |
| I14 6-14 | 0.271 | -0.632 | 0.210 | 0.302 | -0.632 | -0.300 | 0.160 |
| I13 22-4 | 0.000 | -0.684 | 0.000 | 0.000 | -0.684 | 0.000 | 0.000 |
| I16 25-16 | 0.000 | -2.394 | 0.000 | 0.000 | -2.394 | 0.000 | 0.000 |

> Verification des Contraintes pour le cas de charge 11

Barres Externes:

| Barre | --Section-- BxH Cat. | --- Maximum --- | | --Plan Ferme -- | | ---Plan Perp--- | | Signal ATF |
|--------|-------------------------|-----------------|-----------------|-----------------|-------|-----------------|-------|---------------|
| | | Effort (kN) | Moment (kNm) | K | Taux | K | Taux | |
| T 2-3 | 36x147 C24 | -0.531 | -0.236 | 1.000 | 0.118 | 0.826 | 0.119 | |
| T 3-4 | 36x147 C24 | -7.054 | 0.244 | 1.000 | 0.208 | 0.826 | 0.227 | |
| T 4-6 | 36x147 C24 | -7.054 | 0.383 | 1.000 | 0.272 | 0.826 | 0.292 | |
| T 6-7 | 36x147 C24 | -1.975 | 0.145 | 1.000 | 0.094 | 1.000 | 0.094 | |
| T 6-7 | 36x147 C24 | | | | | | | |
| T 7-9 | 36x147 C24 | -4.480 | 0.359 | 1.000 | 0.227 | 0.826 | 0.240 | |
| T 9-10 | 36x147 C24 | -3.113 | -0.162 | 1.000 | 0.117 | 0.826 | 0.125 | |
| T10-11 | 36x147 C24 | -2.654 | 0.166 | 1.000 | 0.113 | 0.826 | 0.120 | |
| T11-13 | 36x147 C24 | -3.716 | -0.097 | 1.000 | 0.095 | 0.826 | 0.105 | |
| T13-14 | 36x147 C24 | -2.002 | -0.023 | 1.000 | 0.037 | 1.000 | 0.037 | |
| T13-14 | 36x147 C24 | | | | | | | |
| T13-14 | 36x147 C24 | | | | | | | |
| T14-16 | 36x147 C24 | -7.441 | -0.518 | 1.000 | 0.341 | 0.826 | 0.362 | |
| T16-17 | 36x147 C24 | -6.181 | -0.501 | 1.000 | 0.316 | 0.826 | 0.333 | |
| T17-18 | 36x147 C24 | -0.613 | -0.228 | 1.000 | 0.115 | 0.826 | 0.117 | |
| V21-2 | 36x97 C24 | -1.783 | 0.000 | 0.900 | 0.040 | 0.203 | 0.176 | |
| V26-18 | 36x97 C24 | -1.927 | 0.000 | 0.900 | 0.043 | 0.203 | 0.191 | |
| B20-21 | 36x222 C24 | 0.000 | 0.338 | | 0.069 | | | |
| B20-21 | 36x222 C24 | | | | | | | |
| B21-22 | 36x222 C24 | 0.876 | 0.286 | | 0.070 | | | |
| B21-22 | 36x222 C24 | | | | | | | |
| B22-24 | 36x222 C24 | 2.889 | 1.430 | | 0.330 | | | |
| B22-24 | 36x222 C24 | | | | | | | |
| B23-25 | 0x0 C24 | 0.000 | 0.000 | | | | | |
| B23-25 | 36x222 C24 | | | | | | | |
| B24-25 | 36x222 C24 | 2.889 | -1.558 | | 0.356 | | | |
| B25-26 | 36x222 C24 | 0.804 | -0.448 | | 0.102 | | | |
| B25-26 | 36x222 C24 | | | | | | | |
| B26-27 | 36x222 C24 | 0.000 | 0.286 | | 0.059 | | | |
| B26-27 | 36x222 C24 | | | | | | | |
| O 1-2 | 36x147 C24 | 0.411 | -0.235 | | 0.118 | | | |
| O18-19 | 36x147 C24 | 0.411 | -0.235 | | 0.118 | | | |

Barres Internes:

| Barre | --Section-- | | --- Maximum --- | | --Plan Ferme -- | | ---Plan Perp--- | | Signal |
|--------|-------------|------|-----------------|-----------------|-----------------|-------|-----------------|-------|--------|
| | BxH | Cat. | Effort (kN) | Moment (kNm) | K | Taux | K | Taux | |
| W 7-28 | 36x97 | C24 | -1.470 | 0.003 | 0.524 | 0.059 | 0.185 | 0.163 | 1 |
| W28-13 | 36x97 | C24 | -1.814 | 0.003 | 0.524 | 0.073 | 0.185 | 0.200 | 1 |
| W 6-14 | 36x112 | C24 | -0.632 | 0.160 | 0.149 | 0.203 | 0.038 | 0.417 | 2 |
| W22-4 | 36x97 | C24 | -0.684 | 0.000 | 0.548 | 0.025 | 0.302 | 0.046 | 1 |
| W25-16 | 36x97 | C24 | -2.394 | 0.000 | 0.548 | 0.088 | 0.302 | 0.159 | 1 |
| W28-10 | 36x72 | C24 | 1.906 | 0.000 | | 0.075 | | | |
| W 9-28 | 36x72 | C24 | -1.849 | 0.000 | 0.479 | 0.105 | 0.102 | 0.491 | |
| W28-11 | 36x72 | C24 | -1.425 | 0.000 | 0.479 | 0.081 | 0.102 | 0.378 | |
| W 3-22 | 36x97 | C24 | 6.632 | 0.000 | | 0.195 | | | |
| W25-17 | 36x97 | C24 | 7.468 | 0.000 | | 0.219 | | | |
| W21-3 | 36x97 | C24 | -11.049 | 0.000 | 0.692 | 0.321 | 0.428 | 0.518 | 1 |
| W17-26 | 36x97 | C24 | -10.145 | 0.000 | 0.692 | 0.294 | 0.428 | 0.476 | 1 |

Noeuds:

| Noeud | --Section-- | | --- Maximum --- | | --Plan Ferme -- | | ---Plan Perp--- | | Signal |
|-------|-------------|--------------|-----------------|-----------------|-----------------|-------|-----------------|-------|--------|
| | BxH | Cat. | Effort (kN) | Moment (kNm) | K | Taux | K | Taux | |
| J1 | O 1-2 | 36x147 C24 | 0.046 | -0.003 | | 0.002 | | | 1 |
| J2 | T 1-2 | 36x147 C24 | 0.457 | -0.290 | | 0.144 | | | 1 |
| J3 | T 3-4 | 36x147 C24 | -7.347 | 0.125 | 1.000 | 0.156 | 1.000 | 0.156 | 1 |
| J4 | T 4-6 | 36x147 C24 | -7.319 | 0.296 | 1.000 | 0.235 | 1.000 | 0.235 | 1 |
| J6 | T 6-7 | 36x147 C24 + | -1.990 | 0.130 | 1.000 | 0.087 | 1.000 | 0.087 | 1 |
| J6 | T 6-7 | 36x147 C24 + | | | | | | | |
| J6 | T 6-7 | 36x147 C24 | | | | | | | |
| J7 | T 6-7 | 36x147 C24 + | -1.960 | 0.158 | 1.000 | 0.100 | 1.000 | 0.100 | 1 |
| J7 | T 6-7 | 36x147 C24 + | | | | | | | |
| J7 | T 6-7 | 36x147 C24 | | | | | | | |
| J9 | T 7-9 | 36x147 C24 + | -3.811 | -0.280 | 1.000 | 0.182 | 1.000 | 0.182 | 1 |
| J9 | T 7-9 | 36x147 C24 + | | | | | | | |
| J9 | T 7-9 | 36x147 C24 | | | | | | | |
| J10 | T 9-10 | 36x147 C24 | -2.432 | 0.063 | 1.000 | 0.062 | 1.000 | 0.062 | 1 |
| J10 | T10-11 | 36x147 C24 | -2.393 | 0.072 | 1.000 | 0.065 | 1.000 | 0.065 | 1 |
| J11 | T11-13 | 36x147 C24 | -3.632 | -0.190 | 1.000 | 0.137 | 1.000 | 0.137 | 1 |
| J13 | T13-14 | 36x147 C24 + | -1.987 | -0.004 | 1.000 | 0.028 | 1.000 | 0.028 | 1 |
| J13 | T13-14 | 36x147 C24 + | | | | | | | |
| J13 | T13-14 | 36x147 C24 | | | | | | | |
| J14 | T14-16 | 36x147 C24 + | -2.257 | -0.145 | 1.000 | 0.098 | 1.000 | 0.098 | 1 |
| J14 | T14-16 | 36x147 C24 + | | | | | | | |
| J14 | T14-16 | 36x147 C24 | | | | | | | |
| J16 | T14-16 | 36x147 C24 + | -7.516 | -0.597 | 1.000 | 0.379 | 1.000 | 0.379 | 1 |
| J16 | T14-16 | 36x147 C24 + | | | | | | | |
| J16 | T14-16 | 36x147 C24 | | | | | | | |
| J17 | T16-17 | 36x147 C24 | -6.526 | 0.172 | 1.000 | 0.167 | 1.000 | 0.167 | 1 |
| J18 | O18-19 | 36x147 C24 | 0.457 | -0.290 | | 0.144 | | | 1 |
| J19 | O18-19 | 36x147 C24 | 0.046 | -0.003 | | 0.002 | | | 1 |
| J20 | B20-21 | 36x222 C24 + | 0.000 | 0.034 | | 0.007 | | | 1 |
| J20 | B20-21 | 36x222 C24 | | | | | | | |
| J21 | B21-22 | 36x222 C24 + | 1.752 | 0.675 | | 0.161 | | | 1 |
| J21 | B21-22 | 36x222 C24 | | | | | | | |
| J22 | B22-24 | 36x222 C24 + | 2.889 | -0.429 | | 0.125 | | | 1 |
| J22 | B22-24 | 36x222 C24 | | | | | | | |
| J24 | B22-24 | 36x222 C24 + | 2.889 | -2.100 | | 0.468 | | | 1 |
| J24 | B22-24 | 36x222 C24 | | | | | | | |
| J25 | B24-25 | 36x222 C24 | 2.889 | -1.287 | | 0.301 | | | 1 |
| J26 | B25-26 | 36x222 C24 + | 1.609 | 0.571 | | 0.138 | | | 1 |
| J26 | B25-26 | 36x222 C24 | | | | | | | |
| J27 | B26-27 | 36x222 C24 + | 0.000 | 0.029 | | 0.006 | | | 1 |
| J27 | B26-27 | 36x222 C24 | | | | | | | |
| J7 | W 7-28 | 36x97 C24 | -1.470 | 0.000 | 1.000 | 0.030 | 1.000 | 0.030 | 1 |
| J28 | W28-13 | 36x97 C24 | -1.814 | 0.003 | 1.000 | 0.040 | 1.000 | 0.040 | 1 |
| J13 | W28-13 | 36x97 C24 | -1.814 | 0.000 | 1.000 | 0.037 | 1.000 | 0.037 | 1 |
| J6 | W 6-14 | 36x112 C24 | -0.632 | -0.210 | 1.000 | 0.180 | 1.000 | 0.180 | 1 |
| J14 | W 6-14 | 36x112 C24 | -0.632 | -0.300 | 1.000 | 0.253 | 1.000 | 0.253 | 1 |

> **Reactions d'appuis**

| Noeud Appui | ----- Reaction ----- | | ----- Largeur ----- | | ----- Hauteur ----- | | Signal |
|----------------|----------------------|---------------|---------------------|--------------|---------------------|--------------|--------|
| | Verti (kN) | Horiz (kN) | Réelle (mm) | Néc. (mm) | Réelle (mm) | Néc. (mm) | |
| J20 | 10.526 | 0.000 | 100 | 42 | 222 | 89 | 0.40 |
| J27 | 8.905 | 0.000 | 100 | 36 | 222 | 75 | 0.34 |
| J24 | 6.664 | 0.000 | 100 | 54 | 222 | 81 | 0.36 |

RESUME DU CALCUL**> Contraintes**

| Barre | -Section- BxH Cat. | Cas | Effort (kN) | Moment (kNm) | Taux Max. | Taux Cis. | ATF | Signal |
|-----------|-----------------------|-----|----------------|-----------------|--------------|--------------|-------|--------|
| T1 1-2 | 36x147 C24 | 1 | 0.307 | -0.175 | 0.132 | 0.125 | | |
| T1 2-3 | 36x147 C24 | 1 | -0.402 | -0.176 | 0.133 | 0.158 | | |
| T1 3-4 | 36x147 C24 | 2 | -4.390 | 0.458 | 0.426 | 0.158 | | |
| T1 4-5 | 36x147 C24 | 2 | -3.850 | 0.467 | 0.420 | 0.114 | | |
| T1 5-6 | 36x147 C24 | + | 5 | -0.436 | 0.037 | 0.109 | 0.037 | |
| T1 5-6 | 36x147 C24 | + | | | | | | |
| T1 5-6 | 36x147 C24 | + | | | | | | |
| T1 6-7 | 36x147 C24 | + | 5 | -0.323 | 0.046 | 0.112 | 0.026 | |
| T1 6-7 | 36x147 C24 | + | | | | | | |
| T1 6-7 | 36x147 C24 | + | | | | | | |
| T1 7-8 | 36x147 C24 | + | 5 | -0.267 | 0.043 | 0.108 | 0.029 | |
| T1 7-8 | 36x147 C24 | + | | | | | | |
| T1 7-8 | 36x147 C24 | + | | | | | | |
| T1 8-9 | 36x147 C24 | 5 | -2.367 | 0.328 | 0.287 | 0.086 | | |
| T1 9-10 | 36x147 C24 | 3 | -1.383 | 0.272 | 0.160 | 0.114 | | |
| T3 10-11 | 36x147 C24 | 3 | -1.353 | 0.308 | 0.177 | 0.108 | | |
| T3 11-12 | 36x147 C24 | 5 | -1.822 | -0.230 | 0.205 | 0.086 | | |
| T3 12-13 | 36x147 C24 | + | 5 | -0.210 | -0.029 | 0.076 | 0.020 | |
| T3 12-13 | 36x147 C24 | + | | | | | | |
| T3 12-13 | 36x147 C24 | + | | | | | | |
| T3 13-14 | 36x147 C24 | + | 5 | -0.341 | -0.036 | 0.093 | 0.015 | |
| T3 13-14 | 36x147 C24 | + | | | | | | |
| T3 13-14 | 36x147 C24 | + | | | | | | |
| T3 14-15 | 36x147 C24 | + | 5 | -0.437 | -0.064 | 0.157 | 0.046 | |
| T3 14-15 | 36x147 C24 | + | | | | | | |
| T3 14-15 | 36x147 C24 | + | | | | | | |
| T3 15-16 | 36x147 C24 | 5 | -4.020 | -0.441 | 0.406 | 0.101 | | |
| T3 16-17 | 36x147 C24 | 1 | -4.673 | -0.368 | 0.371 | 0.248 | | |
| T3 17-18 | 36x147 C24 | 1 | -0.457 | -0.171 | 0.131 | 0.178 | | |
| T3 18-19 | 36x147 C24 | 1 | 0.307 | -0.175 | 0.132 | 0.125 | | |
| T2 21-2 | 36x97 C24 | 1 | -1.341 | 0.000 | 0.199 | 0.000 | | |
| T4 26-18 | 36x97 C24 | 1 | -1.437 | 0.000 | 0.213 | 0.000 | | |
| B5 20-21 | 36x222 C24 | + | 1 | 0.000 | 0.228 | 0.078 | 0.672 | |
| B5 20-21 | 36x222 C24 | + | | | | | | |
| B5 21-22 | 36x222 C24 | + | 1 | 0.655 | 0.214 | 0.078 | 0.133 | |
| B5 21-22 | 36x222 C24 | + | | | | | | |
| B5 22-23 | 36x222 C24 | + | 2 | 0.824 | 0.593 | 0.396 | 0.243 | |
| B5 22-23 | 36x222 C24 | + | | | | | | |
| B5 23-24 | 36x222 C24 | 2 | 1.648 | 0.728 | 0.256 | 0.697 | | |
| B5 24-25 | 36x222 C24 | 2 | 1.648 | -1.333 | 0.441 | 0.275 | | |
| B5 25-26 | 36x222 C24 | + | 5 | 0.520 | -0.423 | 0.140 | 0.197 | |
| B5 25-26 | 36x222 C24 | + | | | | | | |
| B5 26-27 | 36x222 C24 | + | 1 | 0.000 | 0.197 | 0.067 | 0.582 | |
| B5 26-27 | 36x222 C24 | + | | | | | | |
| W9 28-10 | 36x72 C24 | 16 | -0.404 | 0.000 | 0.286 | 0.000 | | |
| W8 9-28 | 36x72 C24 | 1 | -1.396 | 0.000 | 0.555 | 0.000 | | |
| W10 28-11 | 36x72 C24 | 1 | -1.112 | 0.000 | 0.443 | 0.000 | | |
| W7 3-22 | 36x97 C24 | 1 | 5.059 | 0.000 | 0.223 | 0.000 | | |
| W11 25-17 | 36x97 C24 | 1 | 5.618 | 0.000 | 0.247 | 0.000 | | |
| W6 21-3 | 36x97 C24 | 1 | -8.265 | 0.000 | 0.582 | 0.000 | 1 | |
| W12 17-26 | 36x97 C24 | 1 | -7.661 | 0.000 | 0.539 | 0.000 | 1 | |
| I15 7-28 | 36x97 C24 | 1 | -1.185 | 0.002 | 0.197 | 0.000 | 1 | |
| I15 28-13 | 36x97 C24 | 1 | -1.416 | 0.002 | 0.234 | 0.000 | 1 | |
| I14 6-14 | 36x112 C24 | 2 | -1.188 | -0.144 | 0.988 | 0.092 | 2 | |
| I13 22-4 | 36x97 C24 | 1 | -0.665 | 0.000 | 0.066 | 0.000 | 1 | |
| I16 25-16 | 36x97 C24 | 1 | -1.808 | 0.000 | 0.180 | 0.000 | 1 | |

| Nœuds: Noeud | --Section-- | | Cas | ---- Maximum ---- | | ---Plan (yy)--- | | ---Plan (xx)--- | | Signal ATF |
|-----------------|-------------|------------|-----|-------------------|-----------------|-----------------|-------|-----------------|-------|---------------|
| | BxH | Cat. | | Effort (kN) | Moment (kNm) | K | Taux | K | Taux | |
| J1 | O 1-2 | 36x147 C24 | 1 | 0.034 | -0.002 | | 0.003 | | | 1 |
| J2 | T 1-2 | 36x147 C24 | 1 | 0.341 | -0.217 | | 0.162 | | | 1 |
| J3 | T 3-4 | 36x147 C24 | 2 | -4.515 | 0.090 | 1.000 | 0.153 | 1.000 | 0.153 | 1 |
| J4 | T 3-4 | 36x147 C24 | 2 | -4.374 | 0.496 | 1.000 | 0.435 | 1.000 | 0.435 | 1 |
| J6 | T 6-7 | 36x147 C24 | + 5 | -0.984 | 0.122 | 1.000 | 0.105 | 1.000 | 0.105 | 1 |
| J6 | T 6-7 | 36x147 C24 | + | | | | | | | |
| J6 | T 6-7 | 36x147 C24 | + | | | | | | | |
| J7 | T 6-7 | 36x147 C24 | + 1 | -1.500 | 0.124 | 1.000 | 0.117 | 1.000 | 0.117 | 1 |
| J7 | T 6-7 | 36x147 C24 | + | | | | | | | |
| J7 | T 6-7 | 36x147 C24 | + | | | | | | | |
| J9 | T 7-9 | 36x147 C24 | + 1 | -2.875 | -0.213 | 1.000 | 0.206 | 1.000 | 0.206 | 1 |
| J9 | T 7-9 | 36x147 C24 | + | | | | | | | |
| J9 | T 7-9 | 36x147 C24 | + | | | | | | | |
| J10 | T 9-10 | 36x147 C24 | 1 | -1.840 | 0.047 | 1.000 | 0.069 | 1.000 | 0.069 | 1 |
| J10 | T10-11 | 36x147 C24 | 3 | -0.640 | 0.078 | 1.000 | 0.048 | 1.000 | 0.048 | 1 |
| J11 | T11-13 | 36x147 C24 | 1 | -2.755 | -0.152 | 1.000 | 0.162 | 1.000 | 0.162 | 1 |
| J13 | T13-14 | 36x147 C24 | + 5 | -1.013 | -0.100 | 1.000 | 0.090 | 1.000 | 0.090 | 1 |
| J13 | T13-14 | 36x147 C24 | + | | | | | | | |
| J13 | T13-14 | 36x147 C24 | + | | | | | | | |
| J14 | T14-16 | 36x147 C24 | + 1 | -1.704 | -0.098 | 1.000 | 0.103 | 1.000 | 0.103 | 1 |
| J14 | T14-16 | 36x147 C24 | + | | | | | | | |
| J14 | T14-16 | 36x147 C24 | + | | | | | | | |
| J16 | T14-16 | 36x147 C24 | + 1 | -5.681 | -0.438 | 1.000 | 0.420 | 1.000 | 0.420 | 1 |
| J16 | T14-16 | 36x147 C24 | + | | | | | | | |
| J16 | T14-16 | 36x147 C24 | + | | | | | | | |
| J17 | T16-17 | 36x147 C24 | 1 | -4.931 | 0.128 | 1.000 | 0.188 | 1.000 | 0.188 | 1 |
| J18 | O18-19 | 36x147 C24 | 1 | 0.341 | -0.217 | | 0.162 | | | 1 |
| J19 | O18-19 | 36x147 C24 | 1 | 0.034 | -0.002 | | 0.003 | | | 1 |
| J20 | B20-21 | 36x222 C24 | + 1 | 0.000 | 0.025 | | 0.008 | | | 1 |
| J20 | B20-21 | 36x222 C24 | + | | | | | | | |
| J21 | B21-22 | 36x222 C24 | + 1 | 1.311 | 0.505 | | 0.181 | | | 1 |
| J21 | B21-22 | 36x222 C24 | + | | | | | | | |
| J22 | B22-24 | 36x222 C24 | + 2 | 1.648 | -0.286 | | 0.120 | | | 1 |
| J22 | B22-24 | 36x222 C24 | + | | | | | | | |
| J24 | B22-24 | 36x222 C24 | + 2 | 1.648 | -1.805 | | 0.586 | | | 1 |
| J24 | B22-24 | 36x222 C24 | + | | | | | | | |
| J25 | B24-25 | 36x222 C24 | 5 | 1.832 | -1.137 | | 0.385 | | | 1 |
| J26 | B25-26 | 36x222 C24 | + 1 | 1.215 | 0.438 | | 0.158 | | | 1 |
| J26 | B25-26 | 36x222 C24 | + | | | | | | | |
| J27 | B26-27 | 36x222 C24 | + 1 | 0.000 | 0.022 | | 0.007 | | | 1 |
| J27 | B26-27 | 36x222 C24 | + | | | | | | | |
| J7 | W 7-28 | 36x97 C24 | 1 | -1.185 | 0.000 | 1.000 | 0.036 | 1.000 | 0.036 | 1 |
| J28 | W28-13 | 36x97 C24 | 1 | -1.416 | 0.002 | 1.000 | 0.046 | 1.000 | 0.046 | 1 |
| J13 | W28-13 | 36x97 C24 | 1 | -1.416 | 0.000 | 1.000 | 0.043 | 1.000 | 0.043 | 1 |
| J6 | W 6-14 | 36x112 C24 | 5 | -0.820 | -0.174 | 1.000 | 0.231 | 1.000 | 0.231 | 1 |
| J14 | W 6-14 | 36x112 C24 | 5 | -0.820 | -0.314 | 1.000 | 0.401 | 1.000 | 0.401 | 1 |

> Reactions d'appuis

| Deformation Noeud | -----Normale----- | | | -----Extreme----- | | | Permanente | |
|----------------------|-------------------|-------|-----------|-------------------|-----------|-----------|------------|-------|
| | vert. | soul. | horz. | vert. | soul. | horz. | vert. | vert. |
| J20 | 7.880(1) | | 0.174(5) | 10.526(6) | | 0.335(8) | 4.280 | 7.880 |
| J27 | 6.824(1) | | 0.000(-1) | 8.905(6) | | 0.000(-1) | 4.101 | 6.824 |
| J24 | 5.692(2) | | 0.000(-1) | 6.664(6) | | 0.000(-1) | 2.387 | 5.102 |
| Noeud | Largeur | | Signal | | Hauteur | | | |
| | min. (mm) | | | | min. (mm) | | | |
| J20 | 48 | | | | 149 | | | |
| J27 | 41 | | | | 129 | | | |
| J24 | 69 | | | | 155 | | | |

> Deformations

| Barre | Panneau Max. | Segment Max. | --- Noeud Debut --- | | --- Noeud Fin --- | | Signal |
|----------|-----------------|-----------------|---------------------|----------|-------------------|----------|--------|
| | | | X | Y | X | Y | |
| T1 1-2 | 0.09(1) | -3.99(5) | 2.52(5) | 3.09(5) | 4.94(5) | -0.83(5) | |
| T1 2-3 | 0.05(1) | -7.19(5) | 4.94(5) | -0.83(5) | 6.91(5) | -3.98(5) | |
| T1 3-4 | -0.14(5) | -10.01(5) | 6.91(5) | -3.98(5) | 8.78(5) | -7.02(5) | |
| T1 4-5 | -0.68(5) | -10.84(5) | 8.78(5) | -7.02(5) | 9.97(5) | -9.08(5) | |
| T1 5-6 | -0.68(5) | -10.84(5) | 8.78(5) | -7.02(5) | 9.97(5) | -9.08(5) | |
| T1 6-7 | -0.01(5) | -10.79(5) | 9.97(5) | -9.08(5) | 9.98(5) | -9.10(5) | |
| T1 7-8 | -0.54(5) | -11.44(5) | 9.98(5) | -9.10(5) | 7.74(5) | -6.08(5) | |
| T1 8-9 | -0.54(5) | -11.44(5) | 9.98(5) | -9.10(5) | 7.74(5) | -6.08(5) | |
| T1 9-10 | -0.23(1) | -5.92(5) | 7.74(5) | -6.08(5) | 5.16(5) | -3.58(1) | |
| T3 10-11 | -0.36(1) | 4.18(5) | 5.16(5) | -3.58(1) | 7.33(5) | 1.75(5) | |
| T3 11-12 | 0.66(5) | 7.71(5) | 7.33(5) | 1.75(5) | 9.69(5) | 5.01(5) | |
| T3 12-13 | 0.66(5) | 7.71(5) | 7.33(5) | 1.75(5) | 9.69(5) | 5.01(5) | |
| T3 13-14 | 0.01(5) | 7.45(5) | 9.69(5) | 5.01(5) | 9.86(5) | 5.29(5) | |
| T3 14-15 | 0.77(5) | 8.80(5) | 9.86(5) | 5.29(5) | 9.49(5) | 4.50(5) | |

| Barre | Panneau Max. | Segment Max. | --- Noeud Debut --- | | --- Noeud Fin --- | | Signal |
|-----------|-----------------|-----------------|---------------------|----------|-------------------|----------|--------|
| | | | X | Y | X | Y | |
| T3 15-16 | 0.77(5) | 8.80(5) | 9.86(5) | 5.29(5) | 9.49(5) | 4.50(5) | |
| T3 16-17 | 0.11(1) | 7.79(5) | 9.49(5) | 4.50(5) | 7.99(5) | 2.32(5) | |
| T3 17-18 | -0.03(7) | 5.26(5) | 7.99(5) | 2.32(5) | 6.78(5) | 0.43(5) | |
| T3 18-19 | 0.09(1) | 3.23(1) | 6.78(5) | 0.43(5) | 4.99(5) | -2.42(1) | |
| T2 21-2 | -0.00(1) | 0.00(5) | -0.00(7) | -0.78(5) | 4.94(5) | -0.83(5) | |
| T4 26-18 | 0.00(1) | 0.00(5) | 0.33(1) | 0.46(5) | 6.78(5) | 0.43(5) | |
| B5 20-21 | -0.00(1) | -0.78(5) | 0.00(1) | 0.00(1) | -0.00(7) | -0.78(5) | |
| B5 21-22 | -0.10(5) | -6.96(5) | -0.00(7) | -0.78(5) | 0.03(1) | -6.96(5) | |
| B5 22-23 | -9.31(5) | -13.20(5) | 0.03(1) | -6.96(5) | 0.19(1) | 0.00(1) | |
| B5 23-24 | -9.31(5) | -13.20(5) | 0.03(1) | -6.96(5) | 0.19(1) | 0.00(1) | |
| B5 23-25 | 3.53(5) | 6.71(5) | 0.17(1) | -4.66(5) | 0.31(1) | 4.55(5) | |
| B5 24-25 | 2.30(5) | 6.77(5) | 0.19(1) | 0.00(1) | 0.31(1) | 4.55(5) | |
| B5 25-26 | 0.26(5) | 5.38(5) | 0.31(1) | 4.55(5) | 0.33(1) | 0.46(5) | |
| B5 26-27 | -0.00(1) | 0.54(5) | 0.33(1) | 0.46(5) | 0.33(1) | 0.00(1) | |
| W9 28-10 | -0.00(5) | 0.00(5) | 9.88(5) | -3.87(1) | 5.16(5) | -3.58(1) | |
| W8 9-28 | 0.00(1) | 0.00(5) | 7.74(5) | -6.08(5) | 9.88(5) | -3.87(1) | |
| W10 28-11 | 0.00(5) | -0.00(1) | 9.88(5) | -3.87(1) | 7.33(5) | 1.75(5) | |
| W7 3-22 | -0.00(5) | -0.00(5) | 6.91(5) | -3.98(5) | 0.03(1) | -6.96(5) | |
| W11 25-17 | 0.00(5) | 0.00(7) | 0.31(1) | 4.55(5) | 7.99(5) | 2.32(5) | |
| W6 21-3 | -0.00(5) | 0.00(5) | -0.00(7) | -0.78(5) | 6.91(5) | -3.98(5) | |
| W12 17-26 | 0.00(1) | -0.00(1) | 7.99(5) | 2.32(5) | 0.33(1) | 0.46(5) | |
| I15 7-28 | -0.04(1) | 0.00(5) | 9.98(5) | -9.10(5) | 9.88(5) | -3.87(1) | |
| I15 28-13 | -0.04(1) | -0.33(1) | 9.88(5) | -3.87(1) | 9.69(5) | 5.01(5) | |
| I14 6-14 | -11.24(1) | -10.99(1) | 9.97(5) | -9.08(5) | 9.86(5) | 5.29(5) | |
| I13 22-4 | 0.00(1) | 0.00(5) | 0.03(1) | -6.96(5) | 8.78(5) | -7.02(5) | |
| I16 25-16 | 0.00(5) | 0.00(5) | 0.31(1) | 4.55(5) | 9.49(5) | 4.50(5) | |

➤ **Notas importants:**

1. Antiflambage:

Lisse d'Antiflambage necessaires aux barres:

W 7-28, W28-13, W 6-14, W22-4 , W25-16
W21-3 , W17-26

La fixation du dispositif d'antiflambage sera réalisé de manière à reprendre par ferme et par versant un effort perpendiculaire à l'arba $F = \text{Effort axial arba}/60 = 0.125\text{kN}$
Cette valeur est à multiplier par le nombre de fermes intéressées par le dispositif.

➤ **Remarques:**

1. C'est la responsabilite du client de s'assurer que les donnees ci-dessus: dimensions, pentes, charges et autres caracteristiques sont celles demandees par le maitre d'ouvrage.
2. Cette note de calcul propre a chaque element triangule ne dispense pas de l'execution d'un plan de pose et de contreventement adapte au batiment etudie.
3. Poids de la Ferme 161.119 - 177.231 Kg

