

*Regione Autonoma della Sardegna*

**COMUNE DI ESCOLCA**

**Provincia di CAGLIARI**

REALIZZAZIONE DI UNA RESIDENZA  
COMUNITARIA DIFFUSA PER ANZIANI

## PROGETTO ESECUTIVO

AGGIORNAMENTO:

ALLEGATO  
A.2

RELAZIONE DI CALCOLO  
TRAVE COPERTURA  
SOLAIO TIPO 3 (Tav. 13)



STUDIO TECNICO DI INGEGNERIA  
Sede Legale Via Ogliastro n°28 09121 CAGLIARI  
Tel:070/273906  
E-mail: ing.ireneosanna@gmail.com  
pec: ireneo.sanna@ingpec.eu

PROGETTAZIONE:

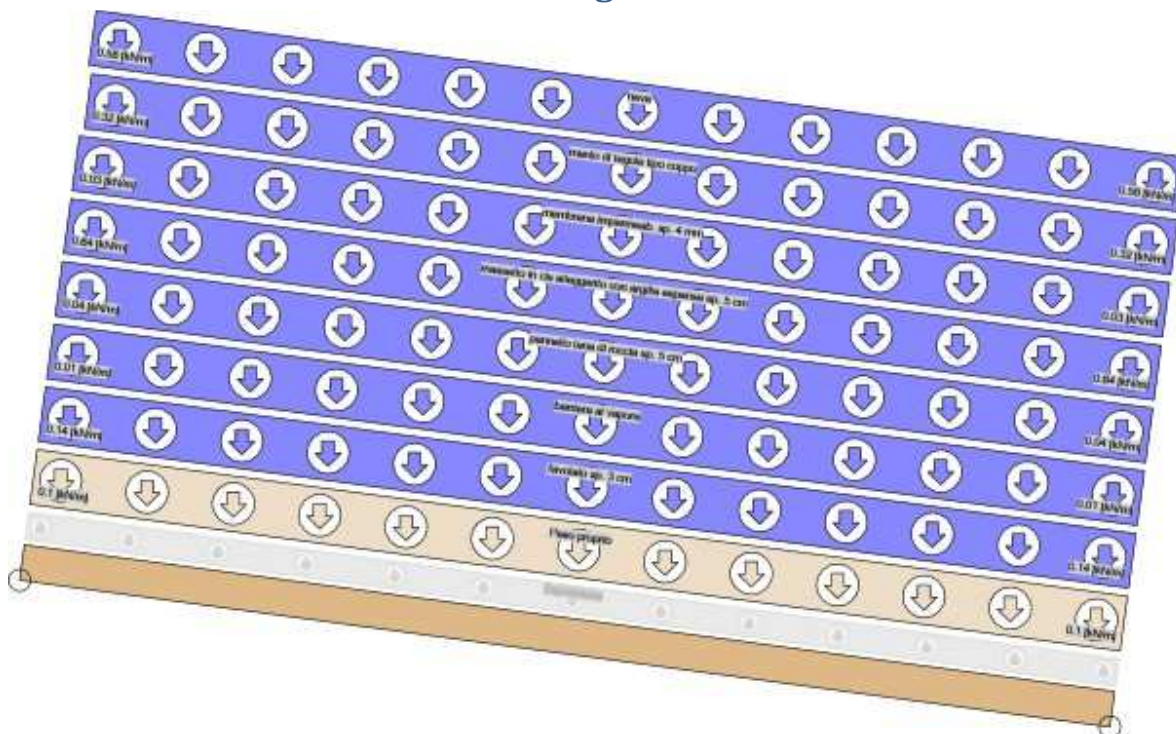
**A.T.P.**

**Ing. Ireneo Sanna**  
**Studio Associato**  
**ORGIANA & ORRU'**  
**Ing. Jonathan della Marianna**

COMMITTENTE

**Amministrazione Comunale**  
**Il Sindaco**

**Il Responsabile del Procedimento**



Classe di servizio: Classe 2

| <b>Name</b>        | <b><math>V_{G,j,unfav}</math></b> | <b><math>V_{G,j,fav}</math></b> | <b><math>V_{Q,i,unfav}</math></b> | <b><math>V_{Q,i,fav}</math></b> | <b><math>V_{P,unfav}</math></b> | <b><math>V_{P,fav}</math></b> |
|--------------------|-----------------------------------|---------------------------------|-----------------------------------|---------------------------------|---------------------------------|-------------------------------|
| SLU, STR & GEO, A1 | 1.35                              | 1.00                            | 1.50                              | 0.00                            | 1.20                            | 1.00                          |

| Nome          | $\Psi_0$ | $\Psi_1$ | $\Psi_2$ |
|---------------|----------|----------|----------|
| Neve < 1000 m | 0.50     | 0.20     | 0.00     |

| Nome                      | $\gamma_M$ |
|---------------------------|------------|
| Legno lamellare incollato | 1.25       |

| Legno lamellare incollato |            |              |              |              |            |
|---------------------------|------------|--------------|--------------|--------------|------------|
| Classe                    | Permanente | Lunga Durata | Media Durata | Breve Durata | Istantaneo |
| Classe 2                  | 0.60       | 0.70         | 0.80         | 0.90         | 1.10       |

| Nome | Classe 1 | Classe 2 | Classe 3 |
|------|----------|----------|----------|
|------|----------|----------|----------|

Questa copia del software non è registrata. Se continuate ad utilizzare questo programma a scopo di lucro, siete pregati di acquistarlo.

|                           |      |      |      |
|---------------------------|------|------|------|
| Legno lamellare incollato | 0.60 | 0.80 | 2.00 |
|---------------------------|------|------|------|

**Valori limite della freccia**

| Struttura            | $w_{inst}$ | $w_{net,fin}$ | $w_{fin}$ |
|----------------------|------------|---------------|-----------|
| Trave su due appoggi | 1/300.0    | 1/250.0       | 1/150.0   |
| Mensola              | 1/150.0    | 1/125.0       | 1/75.0    |

In situazioni di incendio,  $k_{mod,fi}$  = 1.00.

**Valori di  $k_{fi}$  per incendio**

|                           | $k_{fi}$ |
|---------------------------|----------|
| Legno lamellare incollato | 1.15     |

**Coefficienti di sicurezza parziali, per incendio**

| Nome             | $\gamma_M$ |
|------------------|------------|
| Legno incendiato | 1.00       |

**Struttura**

Materiale della trave:

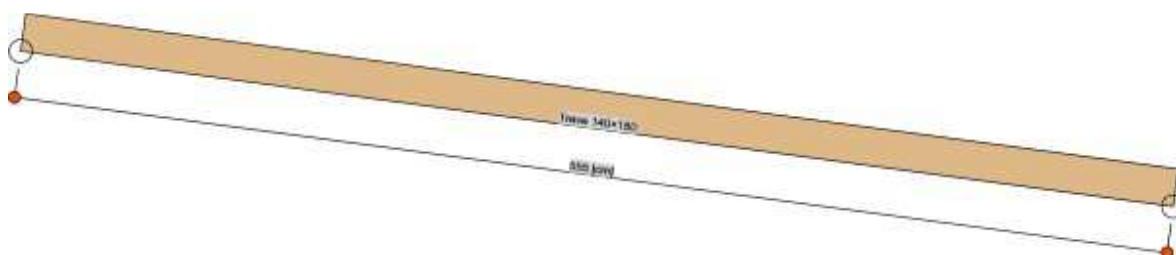
**Nome: GL24h**

|                                  |             |              |             |
|----------------------------------|-------------|--------------|-------------|
| <b>Legno tenero</b>              |             |              |             |
| <b>Legno lamellare incollato</b> |             |              |             |
| <b>EN 14080:2013</b>             |             |              |             |
| <b>GL24h</b>                     |             |              |             |
| $f_{m,k}$                        | 24 [MPa]    | $f_{v,k}$    | 3.5 [MPa]   |
| $f_{t,0,k}$                      | 19.2 [MPa]  | $f_{t,90,k}$ | 0.5 [MPa]   |
| $f_{c,0,k}$                      | 24 [MPa]    | $f_{c,90,k}$ | 2.5 [MPa]   |
| $E_{0,mean}$                     | 11500 [MPa] | $E_{0,0.05}$ | 9600 [MPa]  |
| $G_{mean}$                       | 650 [MPa]   | $G_{0.05}$   | 540 [MPa]   |
| $\rho_{mean}$                    | 420 [kg/m3] | $\rho_k$     | 385 [kg/m3] |

Velocità di carbonatazione della trave:

**Nome: Predefinito**

|           |               |           |               |
|-----------|---------------|-----------|---------------|
| $\beta_0$ | 0.65 [mm/min] | $\beta_n$ | 0.70 [mm/min] |
|-----------|---------------|-----------|---------------|



Coordinate, estremo sinistro, X0: 0 [cm], Y0: 0 [cm].

Coordinate, estremo destro, X1: 0 [cm], Y1: 0 [cm].

Lunghezza: 555 [cm].

Sezione trasversale, Larghezza: 14 [cm], Altezza: 18 [cm].

Vincolo estremo sx: Cerniera.

Vincolo estremo dx: Cerniera.

## Carichi

### Azioni

#### Insiemi di Azioni

| Nome               | Classe | Categoria (Q)            | Durata       | Coefficiente | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------------------|--------|--------------------------|--------------|--------------|----------|----------|----------|
| Carichi permanenti | G      | Peso proprio strutturale | Permanente   | 1.00         | -        | -        | -        |
| Carichi neve       | Q      | Neve < 1000 m            | Breve Durata | 1.00         | -        | -        | -        |

#### Pesi propri

| Nome         | Q[kN/m] | Elemento | Insieme di Azioni  |
|--------------|---------|----------|--------------------|
| Peso proprio | 0.1     | Trave    | Carichi permanenti |

#### Carichi distribuiti

| Nome                                                     | Q0[kN/m] | Q1[kN/m] | Distanza sx[cm] | Distanza dx[cm] | Insieme di Azioni  |
|----------------------------------------------------------|----------|----------|-----------------|-----------------|--------------------|
| Tavolato sp. 3 cm                                        | -0.14    | -0.14    | 0               | 0               | Carichi permanenti |
| barriera al vapore                                       | -0.01    | -0.01    | 0               | 0               | Carichi permanenti |
| pannello lana di roccia sp. 5 cm                         | -0.04    | -0.04    | 0               | 0               | Carichi permanenti |
| massetto in cls alleggerito con argilla espansa sp. 5 cm | -0.64    | -0.64    | 0               | 0               | Carichi permanenti |
| membrana impermeab. sp. 4 mm                             | -0.03    | -0.03    | 0               | 0               | Carichi permanenti |
| manto di tegole tipo coppo                               | -0.32    | -0.32    | 2               | 0               | Carichi neve       |
| neve                                                     | -0.58    | -0.58    | 0               | 0               | Carichi permanenti |

## Azioni termiche

### Esposizioni al fuoco

| Nome        | Distanza sx[cm] | Distanza dx[cm] | Lati                           | Protezione |
|-------------|-----------------|-----------------|--------------------------------|------------|
| Esposizione | 0               | 0               | A sinistra, A destra, In basso | -          |

### Profondità di carbonizzazione efficace

| Nome                      | $\beta_n$<br>[mm/min] | R30,d <sub>ef</sub> [mm] | R60,d <sub>ef</sub> [mm] |
|---------------------------|-----------------------|--------------------------|--------------------------|
| Esposizione • Predefinito | 0.70                  | 28                       | 49                       |

### Metodo della sezione ridotta: sezione efficace

| Esposizione | $\beta_n$<br>[mm/min] | R30,A <sub>ef</sub> [mm]×[mm] | R60,A <sub>ef</sub> [mm]×[mm] |
|-------------|-----------------------|-------------------------------|-------------------------------|
| Esposizione | 0.70                  | 84×152                        | 42×131                        |

## Situazioni di progetto

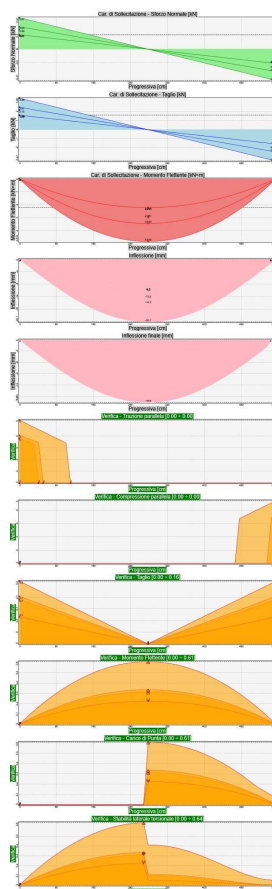
### Situazioni di progetto

| Nome                                      | Coeff. parziali           | Stato limite     | Condizioni        | Tempo di esp. al fuoco [min] | Combinazione       |   |                            |                          |
|-------------------------------------------|---------------------------|------------------|-------------------|------------------------------|--------------------|---|----------------------------|--------------------------|
| SLU Fondamentale                          | SLU, STR & GEO, A1        | SLU STR          | Normale esercizio | -                            | <b>Nome</b>        |   | <b><math>\gamma</math></b> | <b><math>\psi</math></b> |
|                                           |                           |                  |                   |                              | Carichi permanenti | + | 1.35                       | 1.00                     |
| SLU Fondamentale<br>• Neve < 1000 m       | SLU, STR & GEO, A1        | SLU STR          | Normale esercizio | -                            | <b>Nome</b>        |   | <b><math>\gamma</math></b> | <b><math>\psi</math></b> |
|                                           |                           |                  |                   |                              | Carichi permanenti | + | 1.35                       | 1.00                     |
|                                           |                           |                  |                   |                              | Carichi neve       | + | 1.50                       | 1.00                     |
| SLU Eccezionale, Incendio R30             | SLU Eccezionale           | SLU STR          | Incendio          | 30                           | <b>Nome</b>        |   | <b><math>\gamma</math></b> | <b><math>\psi</math></b> |
|                                           |                           |                  |                   |                              | Carichi permanenti | + | 1.00                       | 1.00                     |
| SLU Eccezionale, Incendio R60             | SLU Eccezionale           | SLU STR          | Incendio          | 60                           | <b>Nome</b>        |   | <b><math>\gamma</math></b> | <b><math>\psi</math></b> |
|                                           |                           |                  |                   |                              | Carichi permanenti | + | 1.00                       | 1.00                     |
| SLE Caratteristica (rara)                 | SLE Caratteristica (rara) | SLE Deformazioni | Normale esercizio | -                            | <b>Nome</b>        |   | <b><math>\gamma</math></b> | <b><math>\psi</math></b> |
|                                           |                           |                  |                   |                              | Carichi permanenti | + | 1.00                       | 1.00                     |
| SLE Caratteristica (rara) • Neve < 1000 m | SLE Caratteristica (rara) | SLE Deformazioni | Normale esercizio | -                            | <b>Nome</b>        |   | <b><math>\gamma</math></b> | <b><math>\psi</math></b> |
|                                           |                           |                  |                   |                              | Carichi permanenti | + | 1.00                       | 1.00                     |
|                                           |                           |                  |                   |                              | Carichi neve       | + | 1.00                       | 1.00                     |
| SLE Quasi permanente                      | SLE Quasi permanente      | SLE Deformazioni | Normale esercizio | -                            | <b>Nome</b>        |   | <b><math>\gamma</math></b> | <b><math>\psi</math></b> |
|                                           |                           |                  |                   |                              | Carichi permanenti | + | 1.00                       | 1.00                     |

## Sollecitazioni e Verifiche

### Sollecitazioni

Questa copia del software non è registrata. Se continuate ad utilizzare questo programma a scopo di lucro, siete pregati di acquistarlo.



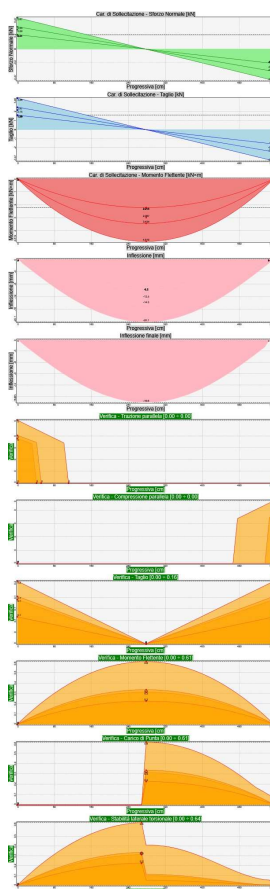
### Situazione di progetto 1 • SLU Fondamentale

| Caratteristiche di Sollecitazione |       |       |         | Verifiche |    |      |      |   |      |
|-----------------------------------|-------|-------|---------|-----------|----|------|------|---|------|
| x[cm]                             | N[kN] | V[kN] | M[kN×m] | n+        | n- | v    | m    | b | lb   |
| 0                                 | 0.29  | 2.15  | 0       | 0.00      | 0  | 0.11 | 0    | 0 | 0    |
| 2                                 | 0.29  | 2.14  | 0.043   | 0.00      | 0  | 0.11 | 0.01 | 0 | 0.00 |
| 2                                 | 0.29  | 2.14  | 0.043   | 0.00      | 0  | 0.11 | 0.01 | 0 | 0.00 |
| 11.9                              | 0.28  | 2.06  | 0.25    | 0.00      | 0  | 0.11 | 0.03 | 0 | 0.03 |
| 21.7                              | 0.27  | 1.98  | 0.45    | 0.00      | 0  | 0.10 | 0.05 | 0 | 0.05 |
| 31.6                              | 0.26  | 1.91  | 0.642   | 0.00      | 0  | 0.10 | 0.07 | 0 | 0.07 |
| 41.5                              | 0.25  | 1.83  | 0.827   | 0.00      | 0  | 0.10 | 0.09 | 0 | 0.09 |
| 51.4                              | 0.24  | 1.75  | 1.004   | 0.00      | 0  | 0.09 | 0.11 | 0 | 0.10 |
| 61.2                              | 0.23  | 1.68  | 1.173   | 0.00      | 0  | 0.09 | 0.12 | 0 | 0.12 |
| 71.1                              | 0.22  | 1.6   | 1.335   | 0.00      | 0  | 0.08 | 0.14 | 0 | 0.14 |
| 81                                | 0.21  | 1.52  | 1.489   | 0.00      | 0  | 0.08 | 0.16 | 0 | 0.16 |
| 90.9                              | 0.19  | 1.45  | 1.636   | 0.00      | 0  | 0.08 | 0.17 | 0 | 0.17 |
| 100.7                             | 0.18  | 1.37  | 1.775   | 0.00      | 0  | 0.07 | 0.19 | 0 | 0.19 |
| 110.6                             | 0.17  | 1.29  | 1.907   | 0.00      | 0  | 0.07 | 0.20 | 0 | 0.20 |
| 120.5                             | 0.16  | 1.22  | 2.031   | 0.00      | 0  | 0.06 | 0.21 | 0 | 0.21 |
| 130.4                             | 0.15  | 1.14  | 2.148   | 0.00      | 0  | 0.06 | 0.22 | 0 | 0.22 |
| 140.2                             | 0.14  | 1.06  | 2.257   | 0.00      | 0  | 0.06 | 0.24 | 0 | 0.24 |
| 150.1                             | 0.13  | 0.99  | 2.358   | 0.00      | 0  | 0.05 | 0.25 | 0 | 0.25 |
| 160                               | 0.12  | 0.91  | 2.452   | 0.00      | 0  | 0.05 | 0.26 | 0 | 0.26 |
| 169.9                             | 0.11  | 0.84  | 2.538   | 0.00      | 0  | 0.04 | 0.27 | 0 | 0.26 |
| 179.7                             | 0.1   | 0.76  | 2.617   | 0.00      | 0  | 0.04 | 0.27 | 0 | 0.27 |

|       |       |       |       |      |      |      |      |      |      |
|-------|-------|-------|-------|------|------|------|------|------|------|
| 189.6 | 0.09  | 0.68  | 2.688 | 0.00 | 0    | 0.04 | 0.28 | 0    | 0.28 |
| 199.5 | 0.08  | 0.61  | 2.751 | 0.00 | 0    | 0.03 | 0.29 | 0    | 0.29 |
| 209.4 | 0.07  | 0.53  | 2.807 | 0.00 | 0    | 0.03 | 0.29 | 0    | 0.29 |
| 219.2 | 0.06  | 0.45  | 2.856 | 0.00 | 0    | 0.02 | 0.30 | 0    | 0.30 |
| 229.1 | 0.05  | 0.38  | 2.897 | 0.00 | 0    | 0.02 | 0.30 | 0    | 0.30 |
| 239   | 0.04  | 0.3   | 2.93  | 0.00 | 0    | 0.02 | 0.31 | 0    | 0.31 |
| 248.9 | 0.03  | 0.22  | 2.956 | 0.00 | 0    | 0.01 | 0.31 | 0    | 0.31 |
| 258.7 | 0.02  | 0.15  | 2.974 | 0.00 | 0    | 0.01 | 0.31 | 0    | 0.31 |
| 268.6 | 0.01  | 0.07  | 2.984 | 0.00 | 0    | 0.00 | 0.31 | 0    | 0.31 |
| 278.5 | 0     | -0.01 | 2.987 | 0    | 0.00 | 0.00 | 0.31 | 0.31 | 0.10 |
| 288.4 | -0.01 | -0.08 | 2.983 | 0    | 0.00 | 0.00 | 0.31 | 0.31 | 0.10 |
| 298.2 | -0.02 | -0.16 | 2.971 | 0    | 0.00 | 0.01 | 0.31 | 0.31 | 0.10 |
| 308.1 | -0.03 | -0.24 | 2.951 | 0    | 0.00 | 0.01 | 0.31 | 0.31 | 0.10 |
| 318   | -0.04 | -0.31 | 2.924 | 0    | 0.00 | 0.02 | 0.31 | 0.31 | 0.09 |
| 327.8 | -0.05 | -0.39 | 2.889 | 0    | 0.00 | 0.02 | 0.30 | 0.30 | 0.09 |
| 337.7 | -0.06 | -0.47 | 2.847 | 0    | 0.00 | 0.02 | 0.30 | 0.30 | 0.09 |
| 347.6 | -0.07 | -0.54 | 2.797 | 0    | 0.00 | 0.03 | 0.29 | 0.29 | 0.09 |
| 357.5 | -0.08 | -0.62 | 2.739 | 0    | 0.00 | 0.03 | 0.29 | 0.29 | 0.08 |
| 367.3 | -0.09 | -0.7  | 2.674 | 0    | 0.00 | 0.04 | 0.28 | 0.28 | 0.08 |
| 377.2 | -0.1  | -0.77 | 2.601 | 0    | 0.00 | 0.04 | 0.27 | 0.27 | 0.08 |
| 387.1 | -0.11 | -0.85 | 2.521 | 0    | 0.00 | 0.04 | 0.26 | 0.26 | 0.07 |
| 397   | -0.12 | -0.93 | 2.433 | 0    | 0.00 | 0.05 | 0.25 | 0.26 | 0.07 |
| 406.8 | -0.14 | -1    | 2.338 | 0    | 0.00 | 0.05 | 0.24 | 0.25 | 0.06 |
| 416.7 | -0.15 | -1.08 | 2.235 | 0    | 0.00 | 0.06 | 0.23 | 0.23 | 0.06 |
| 426.6 | -0.16 | -1.16 | 2.125 | 0    | 0.00 | 0.06 | 0.22 | 0.22 | 0.05 |
| 436.5 | -0.17 | -1.23 | 2.007 | 0    | 0.00 | 0.07 | 0.21 | 0.21 | 0.05 |
| 446.3 | -0.18 | -1.31 | 1.881 | 0    | 0.00 | 0.07 | 0.20 | 0.20 | 0.04 |
| 456.2 | -0.19 | -1.39 | 1.748 | 0    | 0.00 | 0.07 | 0.18 | 0.18 | 0.04 |
| 466.1 | -0.2  | -1.46 | 1.607 | 0    | 0.00 | 0.08 | 0.17 | 0.17 | 0.03 |
| 476   | -0.21 | -1.54 | 1.459 | 0    | 0.00 | 0.08 | 0.15 | 0.15 | 0.03 |
| 485.8 | -0.22 | -1.62 | 1.303 | 0    | 0.00 | 0.09 | 0.14 | 0.14 | 0.02 |
| 495.7 | -0.23 | -1.69 | 1.14  | 0    | 0.00 | 0.09 | 0.12 | 0.12 | 0.02 |
| 505.6 | -0.24 | -1.77 | 0.969 | 0    | 0.00 | 0.09 | 0.10 | 0.10 | 0.01 |
| 515.5 | -0.25 | -1.85 | 0.79  | 0    | 0.00 | 0.10 | 0.08 | 0.09 | 0.01 |
| 525.3 | -0.26 | -1.92 | 0.604 | 0    | 0.00 | 0.10 | 0.06 | 0.07 | 0.01 |
| 535.2 | -0.27 | -2    | 0.41  | 0    | 0.00 | 0.11 | 0.04 | 0.05 | 0.01 |
| 545.1 | -0.28 | -2.08 | 0.209 | 0    | 0.00 | 0.11 | 0.02 | 0.02 | 0.00 |
| 555   | -0.29 | -2.15 | 0     | 0    | 0.00 | 0.11 | 0    | 0.01 | 0    |

N: Sforzo Normale;V: Sforzo di Taglio.M: Momento Flettente;

n+: Tensione parallela;n-: Compressione parallela;v: Taglio.m: Flessione;b: Carico di Punta;lb: Stabilità laterale torsionale;



**Situazione di progetto 2 • SLU Fondamentale • Neve < 1000 m**

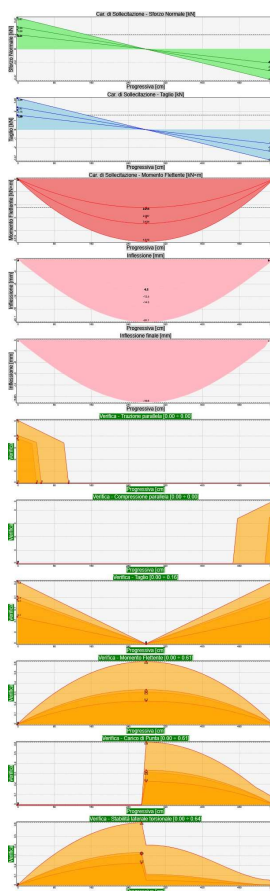
| Caratteristiche di Sollecitazione |       |       |         | Verifiche |    |      |      |   |      |
|-----------------------------------|-------|-------|---------|-----------|----|------|------|---|------|
| x[cm]                             | N[kN] | V[kN] | M[kN×m] | n+        | n- | v    | m    | b | lb   |
| 0                                 | 0.47  | 3.46  | 0       | 0.00      | 0  | 0.12 | 0    | 0 | 0    |
| 2                                 | 0.46  | 3.45  | 0.069   | 0.00      | 0  | 0.12 | 0.01 | 0 | 0.00 |
| 2                                 | 0.46  | 3.45  | 0.069   | 0.00      | 0  | 0.12 | 0.01 | 0 | 0.00 |
| 11.9                              | 0.45  | 3.32  | 0.404   | 0.00      | 0  | 0.12 | 0.03 | 0 | 0.03 |
| 21.7                              | 0.43  | 3.2   | 0.726   | 0.00      | 0  | 0.11 | 0.05 | 0 | 0.05 |
| 31.6                              | 0.41  | 3.08  | 1.036   | 0.00      | 0  | 0.11 | 0.07 | 0 | 0.07 |
| 41.5                              | 0.4   | 2.95  | 1.333   | 0.00      | 0  | 0.10 | 0.09 | 0 | 0.09 |
| 51.4                              | 0.38  | 2.83  | 1.619   | 0.00      | 0  | 0.10 | 0.11 | 0 | 0.11 |
| 61.2                              | 0.36  | 2.71  | 1.892   | 0.00      | 0  | 0.10 | 0.13 | 0 | 0.13 |
| 71.1                              | 0.35  | 2.58  | 2.154   | 0.00      | 0  | 0.09 | 0.15 | 0 | 0.15 |
| 81                                | 0.33  | 2.46  | 2.402   | 0.00      | 0  | 0.09 | 0.17 | 0 | 0.17 |
| 90.9                              | 0.31  | 2.34  | 2.639   | 0.00      | 0  | 0.08 | 0.18 | 0 | 0.18 |
| 100.7                             | 0.3   | 2.21  | 2.864   | 0.00      | 0  | 0.08 | 0.20 | 0 | 0.20 |
| 110.6                             | 0.28  | 2.09  | 3.076   | 0.00      | 0  | 0.07 | 0.21 | 0 | 0.21 |
| 120.5                             | 0.26  | 1.97  | 3.276   | 0.00      | 0  | 0.07 | 0.23 | 0 | 0.23 |
| 130.4                             | 0.25  | 1.84  | 3.464   | 0.00      | 0  | 0.06 | 0.24 | 0 | 0.24 |
| 140.2                             | 0.23  | 1.72  | 3.64    | 0.00      | 0  | 0.06 | 0.25 | 0 | 0.25 |
| 150.1                             | 0.21  | 1.59  | 3.803   | 0.00      | 0  | 0.06 | 0.27 | 0 | 0.26 |
| 160                               | 0.2   | 1.47  | 3.955   | 0.00      | 0  | 0.05 | 0.28 | 0 | 0.28 |
| 169.9                             | 0.18  | 1.35  | 4.094   | 0.00      | 0  | 0.05 | 0.29 | 0 | 0.28 |
| 179.7                             | 0.16  | 1.22  | 4.221   | 0.00      | 0  | 0.04 | 0.29 | 0 | 0.29 |



|       |       |       |       |      |      |      |      |      |      |
|-------|-------|-------|-------|------|------|------|------|------|------|
| 189.6 | 0.15  | 1.1   | 4.335 | 0.00 | 0    | 0.04 | 0.30 | 0    | 0.30 |
| 199.5 | 0.13  | 0.98  | 4.438 | 0.00 | 0    | 0.03 | 0.31 | 0    | 0.31 |
| 209.4 | 0.11  | 0.85  | 4.528 | 0.00 | 0    | 0.03 | 0.32 | 0    | 0.32 |
| 219.2 | 0.1   | 0.73  | 4.606 | 0.00 | 0    | 0.03 | 0.32 | 0    | 0.32 |
| 229.1 | 0.08  | 0.61  | 4.672 | 0.00 | 0    | 0.02 | 0.33 | 0    | 0.33 |
| 239   | 0.06  | 0.48  | 4.726 | 0.00 | 0    | 0.02 | 0.33 | 0    | 0.33 |
| 248.9 | 0.05  | 0.36  | 4.767 | 0.00 | 0    | 0.01 | 0.33 | 0    | 0.33 |
| 258.7 | 0.03  | 0.23  | 4.797 | 0.00 | 0    | 0.01 | 0.33 | 0    | 0.33 |
| 268.6 | 0.01  | 0.11  | 4.814 | 0.00 | 0    | 0.00 | 0.34 | 0    | 0.33 |
| 278.5 | 0     | -0.01 | 4.819 | 0    | 0.00 | 0.00 | 0.34 | 0.34 | 0.11 |
| 288.4 | -0.02 | -0.14 | 4.811 | 0    | 0.00 | 0.00 | 0.33 | 0.33 | 0.11 |
| 298.2 | -0.03 | -0.26 | 4.792 | 0    | 0.00 | 0.01 | 0.33 | 0.33 | 0.11 |
| 308.1 | -0.05 | -0.38 | 4.76  | 0    | 0.00 | 0.01 | 0.33 | 0.33 | 0.11 |
| 318   | -0.07 | -0.51 | 4.716 | 0    | 0.00 | 0.02 | 0.33 | 0.33 | 0.11 |
| 327.8 | -0.08 | -0.63 | 4.66  | 0    | 0.00 | 0.02 | 0.32 | 0.32 | 0.11 |
| 337.7 | -0.1  | -0.75 | 4.592 | 0    | 0.00 | 0.03 | 0.32 | 0.32 | 0.10 |
| 347.6 | -0.12 | -0.88 | 4.511 | 0    | 0.00 | 0.03 | 0.31 | 0.31 | 0.10 |
| 357.5 | -0.13 | -1    | 4.418 | 0    | 0.00 | 0.04 | 0.31 | 0.31 | 0.10 |
| 367.3 | -0.15 | -1.12 | 4.313 | 0    | 0.00 | 0.04 | 0.30 | 0.30 | 0.09 |
| 377.2 | -0.17 | -1.25 | 4.196 | 0    | 0.00 | 0.04 | 0.29 | 0.29 | 0.09 |
| 387.1 | -0.18 | -1.37 | 4.067 | 0    | 0.00 | 0.05 | 0.28 | 0.28 | 0.08 |
| 397   | -0.2  | -1.5  | 3.925 | 0    | 0.00 | 0.05 | 0.27 | 0.27 | 0.08 |
| 406.8 | -0.22 | -1.62 | 3.771 | 0    | 0.00 | 0.06 | 0.26 | 0.26 | 0.07 |
| 416.7 | -0.23 | -1.74 | 3.605 | 0    | 0.00 | 0.06 | 0.25 | 0.25 | 0.07 |
| 426.6 | -0.25 | -1.87 | 3.427 | 0    | 0.00 | 0.07 | 0.24 | 0.24 | 0.06 |
| 436.5 | -0.27 | -1.99 | 3.237 | 0    | 0.00 | 0.07 | 0.23 | 0.23 | 0.05 |
| 446.3 | -0.28 | -2.11 | 3.034 | 0    | 0.00 | 0.07 | 0.21 | 0.21 | 0.05 |
| 456.2 | -0.3  | -2.24 | 2.819 | 0    | 0.00 | 0.08 | 0.20 | 0.20 | 0.04 |
| 466.1 | -0.32 | -2.36 | 2.592 | 0    | 0.00 | 0.08 | 0.18 | 0.18 | 0.04 |
| 476   | -0.33 | -2.48 | 2.353 | 0    | 0.00 | 0.09 | 0.16 | 0.17 | 0.03 |
| 485.8 | -0.35 | -2.61 | 2.102 | 0    | 0.00 | 0.09 | 0.15 | 0.15 | 0.02 |
| 495.7 | -0.37 | -2.73 | 1.838 | 0    | 0.00 | 0.10 | 0.13 | 0.13 | 0.02 |
| 505.6 | -0.38 | -2.86 | 1.562 | 0    | 0.00 | 0.10 | 0.11 | 0.11 | 0.02 |
| 515.5 | -0.4  | -2.98 | 1.274 | 0    | 0.00 | 0.11 | 0.09 | 0.09 | 0.01 |
| 525.3 | -0.42 | -3.1  | 0.974 | 0    | 0.00 | 0.11 | 0.07 | 0.07 | 0.01 |
| 535.2 | -0.43 | -3.23 | 0.662 | 0    | 0.00 | 0.11 | 0.05 | 0.05 | 0.01 |
| 545.1 | -0.45 | -3.35 | 0.337 | 0    | 0.00 | 0.12 | 0.02 | 0.03 | 0.00 |
| 555   | -0.47 | -3.47 | 0     | 0    | 0.00 | 0.12 | 0    | 0.01 | 0    |

N: Sforzo Normale;V: Sforzo di Taglio.M: Momento Flettente;

n+: Tensione parallela;n-: Compressione parallela;v: Taglio.m: Flessione;b: Carico di Punta;lb: Stabilità laterale torsionale;



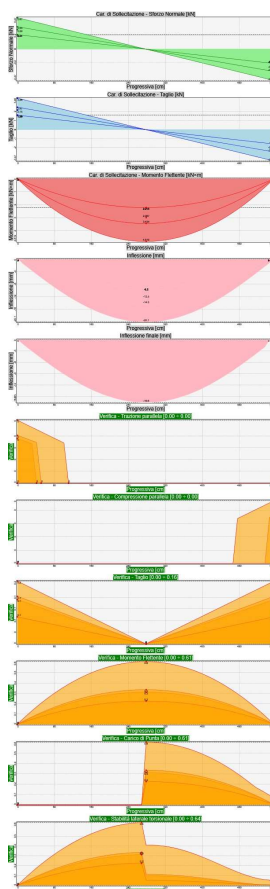
### Situazione di progetto 3 • SLU Eccezionale, Incendio R30

| Caratteristiche di Sollecitazione |       |       |         | Verifiche |    |      |      |   |      |
|-----------------------------------|-------|-------|---------|-----------|----|------|------|---|------|
| x[cm]                             | N[kN] | V[kN] | M[kN×m] | n+        | n- | v    | m    | b | lb   |
| 0                                 | 0.21  | 1.59  | 0       | 0.00      | 0  | 0.07 | 0    | 0 | 0    |
| 2                                 | 0.21  | 1.58  | 0.032   | 0.00      | 0  | 0.07 | 0.00 | 0 | 0.00 |
| 2                                 | 0.21  | 1.58  | 0.032   | 0.00      | 0  | 0.07 | 0.00 | 0 | 0.00 |
| 11.9                              | 0.21  | 1.53  | 0.185   | 0.00      | 0  | 0.07 | 0.02 | 0 | 0.02 |
| 21.7                              | 0.2   | 1.47  | 0.333   | 0.00      | 0  | 0.06 | 0.03 | 0 | 0.03 |
| 31.6                              | 0.19  | 1.41  | 0.476   | 0.00      | 0  | 0.06 | 0.05 | 0 | 0.05 |
| 41.5                              | 0.18  | 1.36  | 0.612   | 0.00      | 0  | 0.06 | 0.06 | 0 | 0.06 |
| 51.4                              | 0.17  | 1.3   | 0.744   | 0.00      | 0  | 0.06 | 0.08 | 0 | 0.08 |
| 61.2                              | 0.17  | 1.24  | 0.869   | 0.00      | 0  | 0.05 | 0.09 | 0 | 0.09 |
| 71.1                              | 0.16  | 1.19  | 0.989   | 0.00      | 0  | 0.05 | 0.10 | 0 | 0.10 |
| 81                                | 0.15  | 1.13  | 1.103   | 0.00      | 0  | 0.05 | 0.11 | 0 | 0.11 |
| 90.9                              | 0.14  | 1.07  | 1.212   | 0.00      | 0  | 0.05 | 0.12 | 0 | 0.12 |
| 100.7                             | 0.14  | 1.02  | 1.315   | 0.00      | 0  | 0.04 | 0.13 | 0 | 0.13 |
| 110.6                             | 0.13  | 0.96  | 1.413   | 0.00      | 0  | 0.04 | 0.14 | 0 | 0.14 |
| 120.5                             | 0.12  | 0.9   | 1.505   | 0.00      | 0  | 0.04 | 0.15 | 0 | 0.15 |
| 130.4                             | 0.11  | 0.85  | 1.591   | 0.00      | 0  | 0.04 | 0.16 | 0 | 0.16 |
| 140.2                             | 0.11  | 0.79  | 1.672   | 0.00      | 0  | 0.03 | 0.17 | 0 | 0.17 |
| 150.1                             | 0.1   | 0.73  | 1.747   | 0.00      | 0  | 0.03 | 0.18 | 0 | 0.18 |
| 160                               | 0.09  | 0.68  | 1.816   | 0.00      | 0  | 0.03 | 0.19 | 0 | 0.18 |
| 169.9                             | 0.08  | 0.62  | 1.88    | 0.00      | 0  | 0.03 | 0.19 | 0 | 0.19 |
| 179.7                             | 0.08  | 0.56  | 1.938   | 0.00      | 0  | 0.02 | 0.20 | 0 | 0.20 |

|       |       |       |       |      |      |      |      |      |      |
|-------|-------|-------|-------|------|------|------|------|------|------|
| 189.6 | 0.07  | 0.51  | 1.991 | 0.00 | 0    | 0.02 | 0.20 | 0    | 0.20 |
| 199.5 | 0.06  | 0.45  | 2.038 | 0.00 | 0    | 0.02 | 0.21 | 0    | 0.21 |
| 209.4 | 0.05  | 0.39  | 2.08  | 0.00 | 0    | 0.02 | 0.21 | 0    | 0.21 |
| 219.2 | 0.05  | 0.33  | 2.115 | 0.00 | 0    | 0.01 | 0.22 | 0    | 0.22 |
| 229.1 | 0.04  | 0.28  | 2.146 | 0.00 | 0    | 0.01 | 0.22 | 0    | 0.22 |
| 239   | 0.03  | 0.22  | 2.17  | 0.00 | 0    | 0.01 | 0.22 | 0    | 0.22 |
| 248.9 | 0.02  | 0.16  | 2.189 | 0.00 | 0    | 0.01 | 0.22 | 0    | 0.22 |
| 258.7 | 0.01  | 0.11  | 2.203 | 0.00 | 0    | 0.00 | 0.22 | 0    | 0.22 |
| 268.6 | 0.01  | 0.05  | 2.211 | 0.00 | 0    | 0.00 | 0.23 | 0    | 0.23 |
| 278.5 | 0     | -0.01 | 2.213 | 0    | 0.00 | 0.00 | 0.23 | 0.23 | 0.05 |
| 288.4 | -0.01 | -0.06 | 2.209 | 0    | 0.00 | 0.00 | 0.22 | 0.23 | 0.05 |
| 298.2 | -0.02 | -0.12 | 2.201 | 0    | 0.00 | 0.01 | 0.22 | 0.22 | 0.05 |
| 308.1 | -0.02 | -0.18 | 2.186 | 0    | 0.00 | 0.01 | 0.22 | 0.22 | 0.05 |
| 318   | -0.03 | -0.23 | 2.166 | 0    | 0.00 | 0.01 | 0.22 | 0.22 | 0.05 |
| 327.8 | -0.04 | -0.29 | 2.14  | 0    | 0.00 | 0.01 | 0.22 | 0.22 | 0.05 |
| 337.7 | -0.05 | -0.35 | 2.109 | 0    | 0.00 | 0.02 | 0.21 | 0.22 | 0.05 |
| 347.6 | -0.05 | -0.4  | 2.072 | 0    | 0.00 | 0.02 | 0.21 | 0.21 | 0.05 |
| 357.5 | -0.06 | -0.46 | 2.029 | 0    | 0.00 | 0.02 | 0.21 | 0.21 | 0.04 |
| 367.3 | -0.07 | -0.52 | 1.981 | 0    | 0.00 | 0.02 | 0.20 | 0.20 | 0.04 |
| 377.2 | -0.08 | -0.57 | 1.927 | 0    | 0.00 | 0.02 | 0.20 | 0.20 | 0.04 |
| 387.1 | -0.08 | -0.63 | 1.868 | 0    | 0.00 | 0.03 | 0.19 | 0.19 | 0.04 |
| 397   | -0.09 | -0.69 | 1.803 | 0    | 0.00 | 0.03 | 0.18 | 0.18 | 0.04 |
| 406.8 | -0.1  | -0.74 | 1.732 | 0    | 0.00 | 0.03 | 0.18 | 0.18 | 0.03 |
| 416.7 | -0.11 | -0.8  | 1.656 | 0    | 0.00 | 0.03 | 0.17 | 0.17 | 0.03 |
| 426.6 | -0.12 | -0.86 | 1.574 | 0    | 0.00 | 0.04 | 0.16 | 0.16 | 0.03 |
| 436.5 | -0.12 | -0.91 | 1.486 | 0    | 0.00 | 0.04 | 0.15 | 0.15 | 0.03 |
| 446.3 | -0.13 | -0.97 | 1.393 | 0    | 0.00 | 0.04 | 0.14 | 0.14 | 0.02 |
| 456.2 | -0.14 | -1.03 | 1.295 | 0    | 0.00 | 0.04 | 0.13 | 0.13 | 0.02 |
| 466.1 | -0.15 | -1.08 | 1.19  | 0    | 0.00 | 0.05 | 0.12 | 0.12 | 0.02 |
| 476   | -0.15 | -1.14 | 1.081 | 0    | 0.00 | 0.05 | 0.11 | 0.11 | 0.02 |
| 485.8 | -0.16 | -1.2  | 0.965 | 0    | 0.00 | 0.05 | 0.10 | 0.10 | 0.01 |
| 495.7 | -0.17 | -1.25 | 0.844 | 0    | 0.00 | 0.05 | 0.09 | 0.09 | 0.01 |
| 505.6 | -0.18 | -1.31 | 0.717 | 0    | 0.00 | 0.06 | 0.07 | 0.07 | 0.01 |
| 515.5 | -0.18 | -1.37 | 0.585 | 0    | 0.00 | 0.06 | 0.06 | 0.06 | 0.01 |
| 525.3 | -0.19 | -1.42 | 0.447 | 0    | 0.00 | 0.06 | 0.05 | 0.05 | 0.01 |
| 535.2 | -0.2  | -1.48 | 0.304 | 0    | 0.00 | 0.06 | 0.03 | 0.03 | 0.01 |
| 545.1 | -0.21 | -1.54 | 0.155 | 0    | 0.00 | 0.07 | 0.02 | 0.02 | 0.01 |
| 555   | -0.21 | -1.6  | 0     | 0    | 0.00 | 0.07 | 0    | 0.01 | 0    |

N: Sforzo Normale;V: Sforzo di Taglio.M: Momento Flettente;

n+: Tensione parallela;n-: Compressione parallela;v: Taglio.m: Flessione;b: Carico di Punta;lb: Stabilità laterale torsionale;



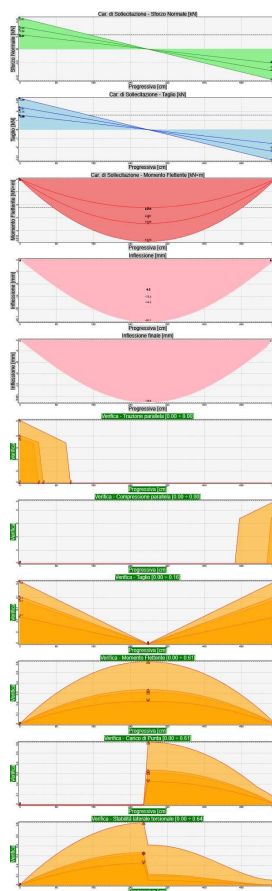
### Situazione di progetto 4 • SLU Eccezionale, Incendio R60

| Caratteristiche di Sollecitazione |       |       |         | Verifiche |    |      |      |   |      |
|-----------------------------------|-------|-------|---------|-----------|----|------|------|---|------|
| x[cm]                             | N[kN] | V[kN] | M[kN×m] | n+        | n- | v    | m    | b | lb   |
| 0                                 | 0.21  | 1.59  | 0       | 0.00      | 0  | 0.16 | 0    | 0 | 0    |
| 2                                 | 0.21  | 1.58  | 0.032   | 0.00      | 0  | 0.16 | 0.01 | 0 | 0.01 |
| 2                                 | 0.21  | 1.58  | 0.032   | 0.00      | 0  | 0.16 | 0.01 | 0 | 0.01 |
| 11.9                              | 0.21  | 1.53  | 0.185   | 0.00      | 0  | 0.15 | 0.05 | 0 | 0.05 |
| 21.7                              | 0.2   | 1.47  | 0.333   | 0.00      | 0  | 0.15 | 0.09 | 0 | 0.10 |
| 31.6                              | 0.19  | 1.41  | 0.476   | 0.00      | 0  | 0.14 | 0.13 | 0 | 0.14 |
| 41.5                              | 0.18  | 1.36  | 0.612   | 0.00      | 0  | 0.14 | 0.17 | 0 | 0.18 |
| 51.4                              | 0.17  | 1.3   | 0.744   | 0.00      | 0  | 0.13 | 0.21 | 0 | 0.21 |
| 61.2                              | 0.17  | 1.24  | 0.869   | 0.00      | 0  | 0.13 | 0.24 | 0 | 0.25 |
| 71.1                              | 0.16  | 1.19  | 0.989   | 0.00      | 0  | 0.12 | 0.27 | 0 | 0.29 |
| 81                                | 0.15  | 1.13  | 1.103   | 0.00      | 0  | 0.11 | 0.30 | 0 | 0.32 |
| 90.9                              | 0.14  | 1.07  | 1.212   | 0.00      | 0  | 0.11 | 0.33 | 0 | 0.35 |
| 100.7                             | 0.14  | 1.02  | 1.315   | 0.00      | 0  | 0.10 | 0.36 | 0 | 0.38 |
| 110.6                             | 0.13  | 0.96  | 1.413   | 0.00      | 0  | 0.10 | 0.39 | 0 | 0.41 |
| 120.5                             | 0.12  | 0.9   | 1.505   | 0.00      | 0  | 0.09 | 0.41 | 0 | 0.43 |
| 130.4                             | 0.11  | 0.85  | 1.591   | 0.00      | 0  | 0.09 | 0.44 | 0 | 0.46 |
| 140.2                             | 0.11  | 0.79  | 1.672   | 0.00      | 0  | 0.08 | 0.46 | 0 | 0.48 |
| 150.1                             | 0.1   | 0.73  | 1.747   | 0.00      | 0  | 0.07 | 0.48 | 0 | 0.50 |
| 160                               | 0.09  | 0.68  | 1.816   | 0.00      | 0  | 0.07 | 0.50 | 0 | 0.52 |
| 169.9                             | 0.08  | 0.62  | 1.88    | 0.00      | 0  | 0.06 | 0.52 | 0 | 0.54 |
| 179.7                             | 0.08  | 0.56  | 1.938   | 0.00      | 0  | 0.06 | 0.53 | 0 | 0.56 |

|       |       |       |       |      |      |      |      |      |      |
|-------|-------|-------|-------|------|------|------|------|------|------|
| 189.6 | 0.07  | 0.51  | 1.991 | 0.00 | 0    | 0.05 | 0.55 | 0    | 0.57 |
| 199.5 | 0.06  | 0.45  | 2.038 | 0.00 | 0    | 0.05 | 0.56 | 0    | 0.59 |
| 209.4 | 0.05  | 0.39  | 2.08  | 0.00 | 0    | 0.04 | 0.57 | 0    | 0.60 |
| 219.2 | 0.05  | 0.33  | 2.115 | 0.00 | 0    | 0.03 | 0.58 | 0    | 0.61 |
| 229.1 | 0.04  | 0.28  | 2.146 | 0.00 | 0    | 0.03 | 0.59 | 0    | 0.62 |
| 239   | 0.03  | 0.22  | 2.17  | 0.00 | 0    | 0.02 | 0.60 | 0    | 0.63 |
| 248.9 | 0.02  | 0.16  | 2.189 | 0.00 | 0    | 0.02 | 0.60 | 0    | 0.63 |
| 258.7 | 0.01  | 0.11  | 2.203 | 0.00 | 0    | 0.01 | 0.60 | 0    | 0.64 |
| 268.6 | 0.01  | 0.05  | 2.211 | 0.00 | 0    | 0.01 | 0.61 | 0    | 0.64 |
| 278.5 | 0     | -0.01 | 2.213 | 0    | 0.00 | 0.00 | 0.61 | 0.61 | 0.41 |
| 288.4 | -0.01 | -0.06 | 2.209 | 0    | 0.00 | 0.01 | 0.61 | 0.61 | 0.41 |
| 298.2 | -0.02 | -0.12 | 2.201 | 0    | 0.00 | 0.01 | 0.60 | 0.60 | 0.41 |
| 308.1 | -0.02 | -0.18 | 2.186 | 0    | 0.00 | 0.02 | 0.60 | 0.60 | 0.40 |
| 318   | -0.03 | -0.23 | 2.166 | 0    | 0.00 | 0.02 | 0.59 | 0.59 | 0.40 |
| 327.8 | -0.04 | -0.29 | 2.14  | 0    | 0.00 | 0.03 | 0.59 | 0.59 | 0.39 |
| 337.7 | -0.05 | -0.35 | 2.109 | 0    | 0.00 | 0.04 | 0.58 | 0.58 | 0.38 |
| 347.6 | -0.05 | -0.4  | 2.072 | 0    | 0.00 | 0.04 | 0.57 | 0.57 | 0.37 |
| 357.5 | -0.06 | -0.46 | 2.029 | 0    | 0.00 | 0.05 | 0.56 | 0.56 | 0.36 |
| 367.3 | -0.07 | -0.52 | 1.981 | 0    | 0.00 | 0.05 | 0.54 | 0.55 | 0.34 |
| 377.2 | -0.08 | -0.57 | 1.927 | 0    | 0.00 | 0.06 | 0.53 | 0.53 | 0.33 |
| 387.1 | -0.08 | -0.63 | 1.868 | 0    | 0.00 | 0.06 | 0.51 | 0.51 | 0.31 |
| 397   | -0.09 | -0.69 | 1.803 | 0    | 0.00 | 0.07 | 0.49 | 0.50 | 0.29 |
| 406.8 | -0.1  | -0.74 | 1.732 | 0    | 0.00 | 0.08 | 0.47 | 0.48 | 0.27 |
| 416.7 | -0.11 | -0.8  | 1.656 | 0    | 0.00 | 0.08 | 0.45 | 0.46 | 0.26 |
| 426.6 | -0.12 | -0.86 | 1.574 | 0    | 0.00 | 0.09 | 0.43 | 0.44 | 0.24 |
| 436.5 | -0.12 | -0.91 | 1.486 | 0    | 0.00 | 0.09 | 0.41 | 0.41 | 0.21 |
| 446.3 | -0.13 | -0.97 | 1.393 | 0    | 0.00 | 0.10 | 0.38 | 0.39 | 0.19 |
| 456.2 | -0.14 | -1.03 | 1.295 | 0    | 0.00 | 0.10 | 0.36 | 0.36 | 0.17 |
| 466.1 | -0.15 | -1.08 | 1.19  | 0    | 0.00 | 0.11 | 0.33 | 0.33 | 0.15 |
| 476   | -0.15 | -1.14 | 1.081 | 0    | 0.00 | 0.12 | 0.30 | 0.30 | 0.14 |
| 485.8 | -0.16 | -1.2  | 0.965 | 0    | 0.00 | 0.12 | 0.26 | 0.27 | 0.12 |
| 495.7 | -0.17 | -1.25 | 0.844 | 0    | 0.00 | 0.13 | 0.23 | 0.24 | 0.10 |
| 505.6 | -0.18 | -1.31 | 0.717 | 0    | 0.00 | 0.13 | 0.20 | 0.20 | 0.09 |
| 515.5 | -0.18 | -1.37 | 0.585 | 0    | 0.00 | 0.14 | 0.16 | 0.17 | 0.07 |
| 525.3 | -0.19 | -1.42 | 0.447 | 0    | 0.00 | 0.14 | 0.12 | 0.14 | 0.06 |
| 535.2 | -0.2  | -1.48 | 0.304 | 0    | 0.00 | 0.15 | 0.08 | 0.12 | 0.06 |
| 545.1 | -0.21 | -1.54 | 0.155 | 0    | 0.00 | 0.16 | 0.04 | 0.09 | 0.05 |
| 555   | -0.21 | -1.6  | 0     | 0    | 0.00 | 0.16 | 0    | 0.07 | 0    |

N: Sforzo Normale;V: Sforzo di Taglio.M: Momento Flettente;

n+: Tensione parallela;n-: Compressione parallela;v: Taglio.m: Flessione;b: Carico di Punta;lb: Stabilità laterale torsionale;

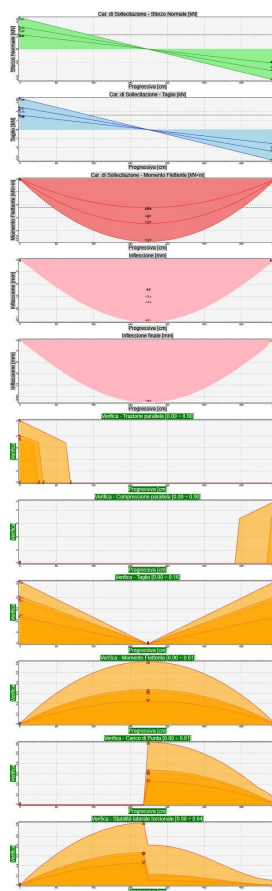


*Situazione di progetto 5 • SLE Caratteristica (rara)*

| Caratteristiche di Sollecitazione |       |       |         | Verifiche |
|-----------------------------------|-------|-------|---------|-----------|
| x[cm]                             | N[kN] | V[kN] | M[kN×m] | wi        |
| 0                                 | 0.21  | 1.59  | 0       | 0         |
| 2                                 | 0.21  | 1.58  | 0.032   | 0.01      |
| 2                                 | 0.21  | 1.58  | 0.032   | 0.01      |
| 11.9                              | 0.21  | 1.53  | 0.185   | 0.03      |
| 21.7                              | 0.2   | 1.47  | 0.333   | 0.06      |
| 31.6                              | 0.19  | 1.41  | 0.476   | 0.09      |
| 41.5                              | 0.18  | 1.36  | 0.612   | 0.12      |
| 51.4                              | 0.17  | 1.3   | 0.744   | 0.15      |
| 61.2                              | 0.17  | 1.24  | 0.869   | 0.17      |
| 71.1                              | 0.16  | 1.19  | 0.989   | 0.20      |
| 81                                | 0.15  | 1.13  | 1.103   | 0.22      |
| 90.9                              | 0.14  | 1.07  | 1.212   | 0.25      |
| 100.7                             | 0.14  | 1.02  | 1.315   | 0.27      |
| 110.6                             | 0.13  | 0.96  | 1.413   | 0.30      |
| 120.5                             | 0.12  | 0.9   | 1.505   | 0.32      |
| 130.4                             | 0.11  | 0.85  | 1.591   | 0.34      |
| 140.2                             | 0.11  | 0.79  | 1.672   | 0.36      |
| 150.1                             | 0.1   | 0.73  | 1.747   | 0.38      |
| 160                               | 0.09  | 0.68  | 1.816   | 0.40      |
| 169.9                             | 0.08  | 0.62  | 1.88    | 0.41      |
| 179.7                             | 0.08  | 0.56  | 1.938   | 0.43      |

|       |       |       |       |      |
|-------|-------|-------|-------|------|
| 189.6 | 0.07  | 0.51  | 1.991 | 0.44 |
| 199.5 | 0.06  | 0.45  | 2.038 | 0.45 |
| 209.4 | 0.05  | 0.39  | 2.08  | 0.46 |
| 219.2 | 0.05  | 0.33  | 2.115 | 0.47 |
| 229.1 | 0.04  | 0.28  | 2.146 | 0.48 |
| 239   | 0.03  | 0.22  | 2.17  | 0.49 |
| 248.9 | 0.02  | 0.16  | 2.189 | 0.49 |
| 258.7 | 0.01  | 0.11  | 2.203 | 0.50 |
| 268.6 | 0.01  | 0.05  | 2.211 | 0.50 |
| 278.5 | 0     | -0.01 | 2.213 | 0.50 |
| 288.4 | -0.01 | -0.06 | 2.209 | 0.50 |
| 298.2 | -0.02 | -0.12 | 2.201 | 0.50 |
| 308.1 | -0.02 | -0.18 | 2.186 | 0.49 |
| 318   | -0.03 | -0.23 | 2.166 | 0.49 |
| 327.8 | -0.04 | -0.29 | 2.14  | 0.48 |
| 337.7 | -0.05 | -0.35 | 2.109 | 0.47 |
| 347.6 | -0.05 | -0.4  | 2.072 | 0.46 |
| 357.5 | -0.06 | -0.46 | 2.029 | 0.45 |
| 367.3 | -0.07 | -0.52 | 1.981 | 0.44 |
| 377.2 | -0.08 | -0.57 | 1.927 | 0.42 |
| 387.1 | -0.08 | -0.63 | 1.868 | 0.41 |
| 397   | -0.09 | -0.69 | 1.803 | 0.39 |
| 406.8 | -0.1  | -0.74 | 1.732 | 0.37 |
| 416.7 | -0.11 | -0.8  | 1.656 | 0.36 |
| 426.6 | -0.12 | -0.86 | 1.574 | 0.33 |
| 436.5 | -0.12 | -0.91 | 1.486 | 0.31 |
| 446.3 | -0.13 | -0.97 | 1.393 | 0.29 |
| 456.2 | -0.14 | -1.03 | 1.295 | 0.27 |
| 466.1 | -0.15 | -1.08 | 1.19  | 0.24 |
| 476   | -0.15 | -1.14 | 1.081 | 0.22 |
| 485.8 | -0.16 | -1.2  | 0.965 | 0.19 |
| 495.7 | -0.17 | -1.25 | 0.844 | 0.17 |
| 505.6 | -0.18 | -1.31 | 0.717 | 0.14 |
| 515.5 | -0.18 | -1.37 | 0.585 | 0.11 |
| 525.3 | -0.19 | -1.42 | 0.447 | 0.09 |
| 535.2 | -0.2  | -1.48 | 0.304 | 0.06 |
| 545.1 | -0.21 | -1.54 | 0.155 | 0.03 |
| 555   | -0.21 | -1.6  | 0     | 0    |

N: Sforzo Normale; V: Sforzo di Taglio; M: Momento Flettente;  
wi: Inflessione istantanea;



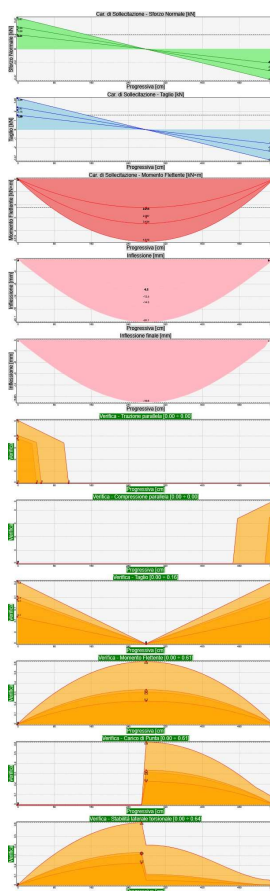
**Situazione di progetto 6 • SLE Caratteristica (rara) • Neve < 1000 m**

| Caratteristiche di Sollecitazione |       |       |         | Verifiche |
|-----------------------------------|-------|-------|---------|-----------|
| x[cm]                             | N[kN] | V[kN] | M[kN×m] | wi        |
| 0                                 | 0.33  | 2.47  | 0       | 0         |
| 2                                 | 0.33  | 2.46  | 0.049   | 0.01      |
| 2                                 | 0.33  | 2.46  | 0.049   | 0.01      |
| 11.9                              | 0.32  | 2.37  | 0.288   | 0.05      |
| 21.7                              | 0.31  | 2.28  | 0.517   | 0.10      |
| 31.6                              | 0.3   | 2.19  | 0.738   | 0.14      |
| 41.5                              | 0.28  | 2.1   | 0.95    | 0.18      |
| 51.4                              | 0.27  | 2.02  | 1.154   | 0.23      |
| 61.2                              | 0.26  | 1.93  | 1.348   | 0.27      |
| 71.1                              | 0.25  | 1.84  | 1.535   | 0.31      |
| 81                                | 0.24  | 1.75  | 1.712   | 0.35      |
| 90.9                              | 0.22  | 1.66  | 1.881   | 0.39      |
| 100.7                             | 0.21  | 1.58  | 2.041   | 0.42      |
| 110.6                             | 0.2   | 1.49  | 2.192   | 0.46      |
| 120.5                             | 0.19  | 1.4   | 2.335   | 0.49      |
| 130.4                             | 0.18  | 1.31  | 2.469   | 0.53      |
| 140.2                             | 0.16  | 1.22  | 2.594   | 0.56      |
| 150.1                             | 0.15  | 1.14  | 2.71    | 0.59      |
| 160                               | 0.14  | 1.05  | 2.818   | 0.61      |
| 169.9                             | 0.13  | 0.96  | 2.917   | 0.64      |
| 179.7                             | 0.12  | 0.87  | 3.008   | 0.66      |



|       |       |       |       |      |
|-------|-------|-------|-------|------|
| 189.6 | 0.11  | 0.78  | 3.089 | 0.68 |
| 199.5 | 0.09  | 0.7   | 3.162 | 0.70 |
| 209.4 | 0.08  | 0.61  | 3.227 | 0.72 |
| 219.2 | 0.07  | 0.52  | 3.282 | 0.73 |
| 229.1 | 0.06  | 0.43  | 3.329 | 0.75 |
| 239   | 0.05  | 0.34  | 3.368 | 0.76 |
| 248.9 | 0.03  | 0.26  | 3.397 | 0.76 |
| 258.7 | 0.02  | 0.17  | 3.418 | 0.77 |
| 268.6 | 0.01  | 0.08  | 3.43  | 0.77 |
| 278.5 | 0     | -0.01 | 3.434 | 0.77 |
| 288.4 | -0.01 | -0.1  | 3.428 | 0.77 |
| 298.2 | -0.02 | -0.19 | 3.415 | 0.77 |
| 308.1 | -0.04 | -0.27 | 3.392 | 0.76 |
| 318   | -0.05 | -0.36 | 3.361 | 0.75 |
| 327.8 | -0.06 | -0.45 | 3.321 | 0.74 |
| 337.7 | -0.07 | -0.54 | 3.272 | 0.73 |
| 347.6 | -0.08 | -0.63 | 3.214 | 0.72 |
| 357.5 | -0.1  | -0.71 | 3.148 | 0.70 |
| 367.3 | -0.11 | -0.8  | 3.074 | 0.68 |
| 377.2 | -0.12 | -0.89 | 2.99  | 0.66 |
| 387.1 | -0.13 | -0.98 | 2.898 | 0.63 |
| 397   | -0.14 | -1.07 | 2.797 | 0.61 |
| 406.8 | -0.16 | -1.15 | 2.687 | 0.58 |
| 416.7 | -0.17 | -1.24 | 2.569 | 0.55 |
| 426.6 | -0.18 | -1.33 | 2.442 | 0.52 |
| 436.5 | -0.19 | -1.42 | 2.306 | 0.49 |
| 446.3 | -0.2  | -1.51 | 2.162 | 0.45 |
| 456.2 | -0.21 | -1.59 | 2.009 | 0.42 |
| 466.1 | -0.23 | -1.68 | 1.847 | 0.38 |
| 476   | -0.24 | -1.77 | 1.677 | 0.34 |
| 485.8 | -0.25 | -1.86 | 1.498 | 0.30 |
| 495.7 | -0.26 | -1.95 | 1.31  | 0.26 |
| 505.6 | -0.27 | -2.03 | 1.113 | 0.22 |
| 515.5 | -0.29 | -2.12 | 0.908 | 0.18 |
| 525.3 | -0.3  | -2.21 | 0.694 | 0.13 |
| 535.2 | -0.31 | -2.3  | 0.471 | 0.09 |
| 545.1 | -0.32 | -2.39 | 0.24  | 0.04 |
| 555   | -0.33 | -2.47 | 0     | 0    |

N: Sforzo Normale; V: Sforzo di Taglio; M: Momento Flettente;  
wi: Inflessione istantanea;



### Situazione di progetto 7 • SLE Quasi permanente

| Caratteristiche di Sollecitazione |       |       |         | Verifiche |
|-----------------------------------|-------|-------|---------|-----------|
| x[cm]                             | N[kN] | V[kN] | M[kN×m] | wf        |
| 0                                 | 0.21  | 1.59  | 0       | 0         |
| 2                                 | 0.21  | 1.58  | 0.032   | 0.01      |
| 2                                 | 0.21  | 1.58  | 0.032   | 0.01      |
| 11.9                              | 0.21  | 1.53  | 0.185   | 0.03      |
| 21.7                              | 0.2   | 1.47  | 0.333   | 0.06      |
| 31.6                              | 0.19  | 1.41  | 0.476   | 0.08      |
| 41.5                              | 0.18  | 1.36  | 0.612   | 0.11      |
| 51.4                              | 0.17  | 1.3   | 0.744   | 0.13      |
| 61.2                              | 0.17  | 1.24  | 0.869   | 0.16      |
| 71.1                              | 0.16  | 1.19  | 0.989   | 0.18      |
| 81                                | 0.15  | 1.13  | 1.103   | 0.20      |
| 90.9                              | 0.14  | 1.07  | 1.212   | 0.22      |
| 100.7                             | 0.14  | 1.02  | 1.315   | 0.25      |
| 110.6                             | 0.13  | 0.96  | 1.413   | 0.27      |
| 120.5                             | 0.12  | 0.9   | 1.505   | 0.29      |
| 130.4                             | 0.11  | 0.85  | 1.591   | 0.31      |
| 140.2                             | 0.11  | 0.79  | 1.672   | 0.32      |
| 150.1                             | 0.1   | 0.73  | 1.747   | 0.34      |
| 160                               | 0.09  | 0.68  | 1.816   | 0.36      |
| 169.9                             | 0.08  | 0.62  | 1.88    | 0.37      |
| 179.7                             | 0.08  | 0.56  | 1.938   | 0.38      |

|       |       |       |       |      |
|-------|-------|-------|-------|------|
| 189.6 | 0.07  | 0.51  | 1.991 | 0.40 |
| 199.5 | 0.06  | 0.45  | 2.038 | 0.41 |
| 209.4 | 0.05  | 0.39  | 2.08  | 0.42 |
| 219.2 | 0.05  | 0.33  | 2.115 | 0.43 |
| 229.1 | 0.04  | 0.28  | 2.146 | 0.43 |
| 239   | 0.03  | 0.22  | 2.17  | 0.44 |
| 248.9 | 0.02  | 0.16  | 2.189 | 0.44 |
| 258.7 | 0.01  | 0.11  | 2.203 | 0.45 |
| 268.6 | 0.01  | 0.05  | 2.211 | 0.45 |
| 278.5 | 0     | -0.01 | 2.213 | 0.45 |
| 288.4 | -0.01 | -0.06 | 2.209 | 0.45 |
| 298.2 | -0.02 | -0.12 | 2.201 | 0.45 |
| 308.1 | -0.02 | -0.18 | 2.186 | 0.44 |
| 318   | -0.03 | -0.23 | 2.166 | 0.44 |
| 327.8 | -0.04 | -0.29 | 2.14  | 0.43 |
| 337.7 | -0.05 | -0.35 | 2.109 | 0.42 |
| 347.6 | -0.05 | -0.4  | 2.072 | 0.42 |
| 357.5 | -0.06 | -0.46 | 2.029 | 0.41 |
| 367.3 | -0.07 | -0.52 | 1.981 | 0.39 |
| 377.2 | -0.08 | -0.57 | 1.927 | 0.38 |
| 387.1 | -0.08 | -0.63 | 1.868 | 0.37 |
| 397   | -0.09 | -0.69 | 1.803 | 0.35 |
| 406.8 | -0.1  | -0.74 | 1.732 | 0.34 |
| 416.7 | -0.11 | -0.8  | 1.656 | 0.32 |
| 426.6 | -0.12 | -0.86 | 1.574 | 0.30 |
| 436.5 | -0.12 | -0.91 | 1.486 | 0.28 |
| 446.3 | -0.13 | -0.97 | 1.393 | 0.26 |
| 456.2 | -0.14 | -1.03 | 1.295 | 0.24 |
| 466.1 | -0.15 | -1.08 | 1.19  | 0.22 |
| 476   | -0.15 | -1.14 | 1.081 | 0.20 |
| 485.8 | -0.16 | -1.2  | 0.965 | 0.17 |
| 495.7 | -0.17 | -1.25 | 0.844 | 0.15 |
| 505.6 | -0.18 | -1.31 | 0.717 | 0.13 |
| 515.5 | -0.18 | -1.37 | 0.585 | 0.10 |
| 525.3 | -0.19 | -1.42 | 0.447 | 0.08 |
| 535.2 | -0.2  | -1.48 | 0.304 | 0.05 |
| 545.1 | -0.21 | -1.54 | 0.155 | 0.03 |
| 555   | -0.21 | -1.6  | 0     | 0    |

N: Sforzo Normale; V: Sforzo di Taglio; M: Momento Flettente;  
wf: Inflessione finale;

## Tensione parallela

[EN 1995-1-1: 6.1.2]  $\sigma_{t,0,d}/f_{t,0,d} \leq 1$ .



**Situazione di progetto 1 • SLU Fondamentale, Permanente ÷ Tensione parallela**

| x[cm] | N[kN] | A[cm <sup>2</sup> ] | $\sigma_{t,0,d}$ [MPa] | $f_{t,0,d}$ [MPa] | Verifica |
|-------|-------|---------------------|------------------------|-------------------|----------|
| 0     | 0.29  | 252                 | 0.01                   | 10.14             | 0.00     |



**Situazione di progetto 2 • SLU Fondamentale • Neve < 1000 m, Breve Durata ÷ Tensione parallela**

| x[cm] | N[kN] | A[cm <sup>2</sup> ] | $\sigma_{t,0,d}$ [MPa] | $f_{t,0,d}$ [MPa] | Verifica |
|-------|-------|---------------------|------------------------|-------------------|----------|
| 0     | 0.47  | 252                 | 0.02                   | 15.21             | 0.00     |



**Situazione di progetto 3 • SLU Eccezionale, Incendio R30, Permanente ÷ Tensione parallela**

| x[cm] | N[kN] | A[cm <sup>2</sup> ] | $\sigma_{t,0,d}$ [MPa] | $f_{t,0,d}$ [MPa] | Verifica |
|-------|-------|---------------------|------------------------|-------------------|----------|
| 0     | 0.21  | 127.7               | 0.02                   | 24.29             | 0.00     |



**Situazione di progetto 4 • SLU Eccezionale, Incendio R60, Permanente ÷ Tensione parallela**

| x[cm] | N[kN] | A[cm <sup>2</sup> ] | $\sigma_{t,0,d}$ [MPa] | $f_{t,0,d}$ [MPa] | Verifica |
|-------|-------|---------------------|------------------------|-------------------|----------|
| 0     | 0.21  | 55                  | 0.04                   | 24.29             | 0.00     |

**Compressione parallela**

[EN 1995-1-1: 6.1.4]  $\sigma_{c,0,d}/f_{c,0,d} \leq 1$ .



**Situazione di progetto 1 • SLU Fondamentale, Permanente ÷ Compressione parallela**

| x[cm] | N[kN] | A[cm <sup>2</sup> ] | $\sigma_{c,0,d}$ [MPa] | $f_{c,0,d}$ [MPa] | Verifica |
|-------|-------|---------------------|------------------------|-------------------|----------|
| 555   | -0.29 | 252                 | 0.01                   | 11.52             | 0.00     |



**Situazione di progetto 2 • SLU Fondamentale • Neve < 1000 m, Breve Durata ÷ Compressione parallela**

| x[cm] | N[kN] | A[cm <sup>2</sup> ] | $\sigma_{c,0,d}$ [MPa] | $f_{c,0,d}$ [MPa] | Verifica |
|-------|-------|---------------------|------------------------|-------------------|----------|
| 555   | -0.47 | 252                 | 0.02                   | 17.28             | 0.00     |



**Situazione di progetto 3 • SLU Eccezionale, Incendio R30, Permanente ÷ Compressione parallela**

| x[cm] | N[kN] | A[cm <sup>2</sup> ] | $\sigma_{c,0,d}$ [MPa] | $f_{c,0,d}$ [MPa] | Verifica |
|-------|-------|---------------------|------------------------|-------------------|----------|
| 555   | -0.21 | 127.7               | 0.02                   | 27.6              | 0.00     |



**Situazione di progetto 4 • SLU Eccezionale, Incendio R60, Permanente ÷ Compressione parallela**

| x[cm] | N[kN] | A[cm <sup>2</sup> ] | $\sigma_{c,0,d}$ [MPa] | $f_{c,0,d}$ [MPa] | Verifica |
|-------|-------|---------------------|------------------------|-------------------|----------|
| 555   | -0.21 | 55                  | 0.04                   | 27.6              | 0.00     |

**Taglio**

[EN 1995-1-1: 6.1.7]  $\tau_d/f_{v,d} \leq 1$ .



**Situazione di progetto 1 • SLU Fondamentale, Permanente ÷ Taglio**

| x[cm] | V[kN] | A <sub>v</sub> [cm <sup>2</sup> ] | $\tau_d$ [MPa] | $f_{v,d}$ [MPa] | Verifica |
|-------|-------|-----------------------------------|----------------|-----------------|----------|
| 555   | -2.15 | 112.6                             | 0.19           | 1.68            | 0.11     |



*Situazione di progetto 2 • SLU Fondamentale • Neve < 1000 m, Breve Durata ÷ Taglio*

| x[cm] | V[kN] | A <sub>v</sub> [cm <sup>2</sup> ] | τ <sub>d</sub> [MPa] | f <sub>v,d</sub> [MPa] | Verifica |
|-------|-------|-----------------------------------|----------------------|------------------------|----------|
| 555   | -3.47 | 112.6                             | 0.31                 | 2.52                   | 0.12     |



*Situazione di progetto 3 • SLU Eccezionale, Incendio R30, Permanente ÷ Taglio*

| x[cm] | V[kN] | A <sub>v</sub> [cm <sup>2</sup> ] | τ <sub>d</sub> [MPa] | f <sub>v,d</sub> [MPa] | Verifica |
|-------|-------|-----------------------------------|----------------------|------------------------|----------|
| 555   | -1.6  | 57                                | 0.28                 | 4.03                   | 0.07     |



*Situazione di progetto 4 • SLU Eccezionale, Incendio R60, Permanente ÷ Taglio*

| x[cm] | V[kN] | A <sub>v</sub> [cm <sup>2</sup> ] | τ <sub>d</sub> [MPa] | f <sub>v,d</sub> [MPa] | Verifica |
|-------|-------|-----------------------------------|----------------------|------------------------|----------|
| 555   | -1.6  | 24.6                              | 0.65                 | 4.03                   | 0.16     |

## Flessione

[EN 1995-1-1: 6.1.6]  $\sigma_{m,y,d}/f_{m,y,d} \leq 1$ .

[EN 1995-1-1: 6.2.3]  $\sigma_{t,0,d}/f_{t,0,d} + \sigma_{m,y,d}/f_{m,y,d} \leq 1$ .

[EN 1995-1-1: 6.2.4]  $(\sigma_{c,0,d}/f_{c,0,d})^2 + \sigma_{m,y,d}/f_{m,y,d} \leq 1$ .





*Situazione di progetto 1 • SLU Fondamentale, Permanente ÷ Flessione*

| x[cm] | N[kN] | M[kN×m] | $W_{el,y}$ [cm <sup>3</sup> ] | $\sigma_{m,y,d}$ [MPa] | $f_{m,y,d}$ [MPa] | Verifica |
|-------|-------|---------|-------------------------------|------------------------|-------------------|----------|
| 278.5 | 0     | 2.987   | 756                           | 3.95                   | 12.67             | 0.31     |



*Situazione di progetto 2 • SLU Fondamentale • Neve < 1000 m, Breve Durata ÷ Flessione*

| x[cm] | N[kN] | M[kN×m] | $W_{el,y}$ [cm <sup>3</sup> ] | $\sigma_{m,y,d}$ [MPa] | $f_{m,y,d}$ [MPa] | Verifica |
|-------|-------|---------|-------------------------------|------------------------|-------------------|----------|
| 278.5 | 0     | 4.819   | 756                           | 6.37                   | 19.01             | 0.34     |



*Situazione di progetto 3 • SLU Eccezionale, Incendio R30, Permanente ÷ Flessione*

| x[cm] | N[kN] | M[kN×m] | $W_{el,y}$ [cm <sup>3</sup> ] | $\sigma_{m,y,d}$ [MPa] | $f_{m,y,d}$ [MPa] | Verifica |
|-------|-------|---------|-------------------------------|------------------------|-------------------|----------|
| 278.5 | 0     | 2.213   | 323                           | 6.84                   | 30.36             | 0.23     |





**Situazione di progetto 4 • SLU Eccezionale, Incendio R60, Permanente ÷ Flessione**

| x[cm] | N[kN] | M[kN×m] | W <sub>el,y</sub> [cm <sup>3</sup> ] | σ <sub>m,y,d</sub> [MPa] | f <sub>m,y,d</sub> [MPa] | Verifica |
|-------|-------|---------|--------------------------------------|--------------------------|--------------------------|----------|
| 278.5 | 0     | 2.213   | 120                                  | 18.42                    | 30.36                    | 0.61     |

**Carico di Punta**

[EN 1995-1-1: 6.3.2]

$$\sigma_{c,0,d}/(k_{c,y}f_{c,0,d}) + \sigma_{m,y,d}/f_{m,y,d} + k\sigma_{m,z,d}/f_{m,z,d} \leq 1.$$

$$\sigma_{c,0,d}/(k_{c,z}f_{c,0,d}) + \sigma_{m,z,d}/f_{m,z,d} + k\sigma_{m,y,d}/f_{m,y,d} \leq 1.$$



**Situazione di progetto 1 • SLU Fondamentale, Permanente ÷ Carico di Punta**

| x[cm] | N[kN] | M[kN×m] | σ <sub>c,0,d</sub> [MPa] | λ <sub>z</sub> •λ <sub>rel,z</sub> | λ <sub>y</sub> •λ <sub>rel,y</sub> | β <sub>c</sub> | Verifica |
|-------|-------|---------|--------------------------|------------------------------------|------------------------------------|----------------|----------|
| 278.5 | 0     | 2.987   | 0                        | 137.3 • 2.2                        | 106.8 • 1.7                        | 0.1            | 0.31     |



**Situazione di progetto 2 • SLU Fondamentale • Neve < 1000 m, Breve Durata ÷ Carico di Punta**

| x[cm] | N[kN] | M[kN×m] | σ <sub>c,0,d</sub> [MPa] | λ <sub>z</sub> •λ <sub>rel,z</sub> | λ <sub>y</sub> •λ <sub>rel,y</sub> | β <sub>c</sub> | Verifica |
|-------|-------|---------|--------------------------|------------------------------------|------------------------------------|----------------|----------|
| 278.5 | 0     | 4.819   | 0                        | 137.3 • 2.2                        | 106.8 • 1.7                        | 0.1            | 0.34     |



**Situazione di progetto 3 • SLU Eccezionale, Incendio R30, Permanente ÷ Carico di Punta**

| x[cm] | N[kN] | M[kN×m] | $\sigma_{c,0,d}$ [MPa] | $\lambda_z \cdot \lambda_{rel,z}$ | $\lambda_y \cdot \lambda_{rel,y}$ | $\beta_c$ | Verifica |
|-------|-------|---------|------------------------|-----------------------------------|-----------------------------------|-----------|----------|
| 278.5 | 0     | 2.213   | 0                      | 228.9 • 3.4                       | 126.5 • 1.9                       | 0.1       | 0.23     |



**Situazione di progetto 4 • SLU Eccezionale, Incendio R60, Permanente ÷ Carico di Punta**

| x[cm] | N[kN] | M[kN×m] | $\sigma_{c,0,d}$ [MPa] | $\lambda_z \cdot \lambda_{rel,z}$ | $\lambda_y \cdot \lambda_{rel,y}$ | $\beta_c$ | Verifica |
|-------|-------|---------|------------------------|-----------------------------------|-----------------------------------|-----------|----------|
| 278.5 | 0     | 2.213   | 0                      | 457.7 • 6.8                       | 146.7 • 2.2                       | 0.1       | 0.61     |

**Stabilità torsionale laterale**

[EN 1995-1-1: 6.3.3]

$$\sigma_{m,y,d} / (k_{crit} f_{m,y,d}) \leq 1.$$

$$\sigma_{m,y,d} / (k_{crit} f_{m,y,d})^2 + \sigma_{c,0,d} / (k_{c,z} f_{c,0,d}) \leq 1.$$



**Situazione di progetto 1 • SLU Fondamentale, Permanente ÷ Stabilità torsionale laterale**

| x[cm] | N[kN] | M[kN×m] | $\sigma_{c,0,d}$ [MPa] | $\sigma_{m,y,d}$ [MPa] | $\lambda_{rel,y}$ | $\lambda_{rel,z}$ | $k_{crit}$ | Verifica |
|-------|-------|---------|------------------------|------------------------|-------------------|-------------------|------------|----------|
| 268.6 | 0.01  | 2.984   | 0                      | 3.95                   | 0.4               | 2.0               | 1.0        | 0.31     |



**Situazione di progetto 2 • SLU Fondamentale • Neve < 1000 m, Breve Durata ÷ Stabilità torsionale laterale**

| x[cm] | N[kN] | M[kN×m] | $\sigma_{c,0,d}$ [MPa] | $\sigma_{m,y,d}$ [MPa] | $\lambda_{rel,y}$ | $\lambda_{rel,z}$ | $k_{crit}$ | Verifica |
|-------|-------|---------|------------------------|------------------------|-------------------|-------------------|------------|----------|
| 268.6 | 0.01  | 4.814   | 0                      | 6.37                   | 0.4               | 2.0               | 1.0        | 0.33     |



**Situazione di progetto 3 • SLU Eccezionale, Incendio R30, Permanente ÷ Stabilità torsionale laterale**

| x[cm] | N[kN] | M[kN×m] | $\sigma_{c,0,d}$ [MPa] | $\sigma_{m,y,d}$ [MPa] | $\lambda_{rel,y}$ | $\lambda_{rel,z}$ | $k_{crit}$ | Verifica |
|-------|-------|---------|------------------------|------------------------|-------------------|-------------------|------------|----------|
| 268.6 | 0.01  | 2.211   | 0                      | 6.83                   | 0.6               | 3.1               | 1.0        | 0.23     |



**Situazione di progetto 4 • SLU Eccezionale, Incendio R60, Permanente ÷ Stabilità torsionale laterale**

| x[cm] | N[kN] | M[kN×m] | $\sigma_{c,0,d}$ [MPa] | $\sigma_{m,y,d}$ [MPa] | $\lambda_{rel,y}$ | $\lambda_{rel,z}$ | $k_{crit}$ | Verifica |
|-------|-------|---------|------------------------|------------------------|-------------------|-------------------|------------|----------|
| 268.6 | 0.01  | 2.211   | 0                      | 18.4                   | 0.8               | 6.1               | 1.0        | 0.64     |

**Inflessione istantanea**

[EN 1995-1-1: 7.2]  $w_{inst} / w_{lim} \leq 1$ .

**Situazione di progetto 5 • SLE Caratteristica (rara), Permanente ÷ Inflessione istantanea**

| x[cm] | $w_{inst}$ [mm] | $w_{lim}$ [mm] | Verifica |
|-------|-----------------|----------------|----------|
| 278.5 | -9.2            | 18.5           | 0.50     |

**Situazione di progetto 6 • SLE Caratteristica (rara) • Neve < 1000 m, Breve Durata ÷ Inflessione istantanea**

| x[cm] | w <sub>inst</sub> [mm] | w <sub>lim</sub> [mm] | Verifica |
|-------|------------------------|-----------------------|----------|
| 278.5 | -14.3                  | 18.5                  | 0.77     |

**Inflessione finale**[EN 1995-1-1: 7.2]  $w_{fin}/w_{lim} \leq 1$ .**Situazione di progetto 7 • SLE Quasi permanente, Permanente ÷ Inflessione finale**

| x[cm] | w <sub>fin</sub> [mm] | w <sub>lim</sub> [mm] | Verifica |
|-------|-----------------------|-----------------------|----------|
| 278.5 | -16.6                 | 37                    | 0.45     |