

### Diagrama de interacción con PHI COL 40X80

|    | Curve 1 | 0, degrees |     | Curve 2 | 15, degrees |     | Curve 3 |
|----|---------|------------|-----|---------|-------------|-----|---------|
|    | P       | M3         | M2  | P       | M3          | M2  | P       |
| 1  | -303.8  | 0.0        | 0.0 | -303.8  | 0.0         | 0.0 | -303.8  |
| 2  | -303.8  | 14.1       | 0.0 | -303.8  | 9.6         | 0.9 | -303.8  |
| 3  | -303.8  | 22.0       | 0.0 | -303.8  | 18.6        | 1.0 | -303.8  |
| 4  | -277.4  | 28.7       | 0.0 | -285.6  | 26.4        | 1.0 | -294.8  |
| 5  | -248.2  | 34.0       | 0.0 | -253.4  | 32.6        | 1.0 | -259.8  |
| 6  | -216.4  | 38.3       | 0.0 | -219.4  | 37.4        | 1.1 | -222.7  |
| 7  | -182.2  | 41.6       | 0.0 | -182.5  | 40.9        | 1.1 | -183.0  |
| 8  | -144.9  | 44.1       | 0.0 | -142.5  | 43.2        | 1.2 | -138.4  |
| 9  | -113.9  | 43.5       | 0.0 | -108.3  | 42.7        | 1.1 | -100.4  |
| 10 | -81.6   | 41.6       | 0.0 | -73.2   | 40.2        | 1.1 | -62.7   |
| 11 | -50.1   | 37.8       | 0.0 | -38.2   | 35.2        | 1.3 | -27.3   |
| 12 | -22.8   | 36.0       | 0.0 | -5.0    | 34.8        | 1.6 | 17.2    |
| 13 | 18.9    | 30.4       | 0.0 | 41.4    | 23.1        | 1.4 | 63.4    |
| 14 | 58.6    | 17.4       | 0.0 | 88.2    | 6.9         | 1.6 | 95.1    |
| 15 | 107.3   | 0.0        | 0.0 | 107.3   | 0.0         | 0.0 | 107.3   |

|    | 0 GRADOS        |                                | 180 GRADOS      |                                | 90 GRADOS       |                 |
|----|-----------------|--------------------------------|-----------------|--------------------------------|-----------------|-----------------|
|    | $\phi P_n$ (tn) | $M_{3-3}$<br>$\phi M_n$ (tn.m) | $\phi P_n$ (tn) | $M_{3-3}$<br>$\phi M_n$ (tn.m) | $\phi P_n$ (tn) | $\phi P_n$ (tn) |
| 1  | 303.8           | 0.0                            | 303.8           | 0.0                            | 303.8           | 303.8           |
| 2  | 303.8           | 14.1                           | 303.8           | -14.1                          | 303.8           | 303.8           |
| 3  | 303.8           | 22.0                           | 303.8           | -22.0                          | 297.9           | 297.9           |
| 4  | 277.4           | 28.7                           | 277.4           | -28.7                          | 268.4           | 268.4           |
| 5  | 248.2           | 34.0                           | 248.2           | -34.0                          | 235.7           | 235.7           |
| 6  | 216.4           | 38.3                           | 216.4           | -38.3                          | 200.8           | 200.8           |
| 7  | 182.2           | 41.6                           | 182.2           | -41.6                          | 160.8           | 160.8           |
| 8  | 144.9           | 44.1                           | 144.9           | -44.1                          | 113.0           | 113.0           |
| 9  | 113.9           | 43.5                           | 113.9           | -43.5                          | 91.5            | 91.5            |
| 10 | 81.6            | 41.6                           | 81.6            | -41.6                          | 68.3            | 68.3            |
| 11 | 50.1            | 37.8                           | 50.1            | -37.8                          | 42.1            | 42.1            |
| 12 | 22.8            | 36.0                           | 22.8            | -36.0                          | 14.0            | 14.0            |
| 13 | -18.9           | 30.4                           | -18.9           | -30.4                          | -45.2           | -45.2           |
| 14 | -58.6           | 17.4                           | -58.6           | -17.4                          | -85.1           | -85.1           |
| 15 | -107.3          | 0.0                            | -107.3          | 0.0                            | -107.3          | -107.3          |

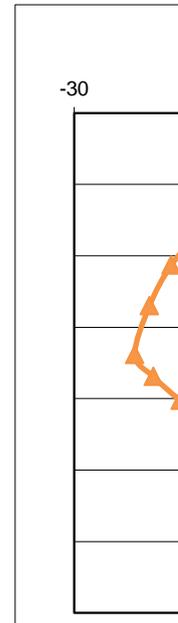
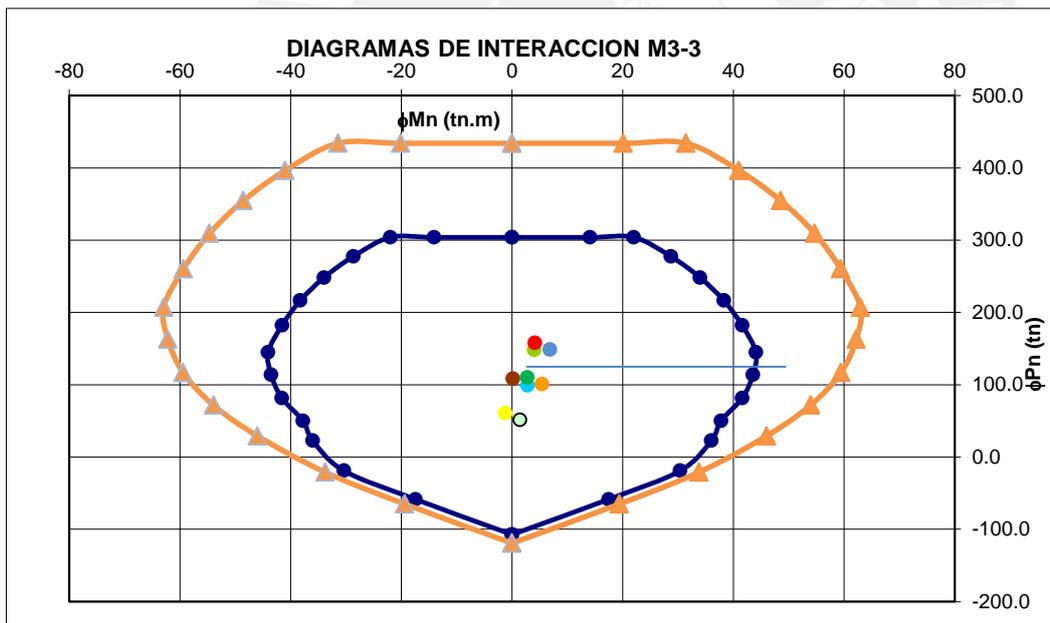
### Diagrama de interacción sin PHI 40x80

|   | Curve 1 | 0, degrees |     | Curve 2 | 15, degrees |     | Curve 3 |
|---|---------|------------|-----|---------|-------------|-----|---------|
|   | P       | M3         | M2  | P       | M3          | M2  | P       |
| 1 | -434.0  | 0.0        | 0.0 | -434.0  | 0.0         | 0.0 | -434.0  |
| 2 | -434.0  | 20.1       | 0.0 | -434.0  | 13.7        | 1.2 | -434.0  |
| 3 | -434.0  | 31.4       | 0.0 | -434.0  | 26.5        | 1.4 | -434.0  |
| 4 | -396.3  | 41.0       | 0.0 | -408.0  | 37.7        | 1.5 | -421.1  |
| 5 | -354.5  | 48.6       | 0.0 | -362.0  | 46.6        | 1.5 | -371.1  |
| 6 | -309.2  | 54.7       | 0.0 | -313.5  | 53.4        | 1.6 | -318.2  |
| 7 | -260.3  | 59.4       | 0.0 | -260.7  | 58.4        | 1.6 | -261.4  |
| 8 | -207.1  | 63.0       | 0.0 | -203.5  | 61.7        | 1.7 | -197.6  |
| 9 | -162.7  | 62.2       | 0.0 | -154.7  | 61.0        | 1.6 | -143.5  |

|    |        |      |     |        |      |     |       |
|----|--------|------|-----|--------|------|-----|-------|
| 10 | -116.6 | 59.4 | 0.0 | -104.5 | 57.4 | 1.6 | -89.6 |
| 11 | -71.6  | 54.0 | 0.0 | -54.6  | 50.2 | 1.8 | -36.2 |
| 12 | -29.2  | 46.0 | 0.0 | -5.7   | 39.7 | 1.8 | 19.1  |
| 13 | 21.1   | 33.8 | 0.0 | 46.0   | 25.7 | 1.6 | 70.4  |
| 14 | 65.1   | 19.4 | 0.0 | 98.0   | 7.7  | 1.8 | 105.6 |
| 15 | 119.2  | 0.0  | 0.0 | 119.2  | 0.0  | 0.0 | 119.2 |

|    | 0 GRADOS       |                               | 180 GRADOS     |                               |
|----|----------------|-------------------------------|----------------|-------------------------------|
|    | $\phi Pn$ (tn) | $M_{3-3}$<br>$\phi Mn$ (tn.m) | $\phi Pn$ (tn) | $M_{3-3}$<br>$\phi Mn$ (tn.m) |
| 1  | 434.0          | 0.0                           | 434.0          | 0.0                           |
| 2  | 434.0          | 20.1                          | 434.0          | -20.1                         |
| 3  | 434.0          | 31.4                          | 434.0          | -31.4                         |
| 4  | 396.3          | 41.0                          | 396.3          | -41.0                         |
| 5  | 354.5          | 48.6                          | 354.5          | -48.6                         |
| 6  | 309.2          | 54.7                          | 309.2          | -54.7                         |
| 7  | 260.3          | 59.4                          | 260.3          | -59.4                         |
| 8  | 207.1          | 63.0                          | 207.1          | -63.0                         |
| 9  | 162.7          | 62.2                          | 162.7          | -62.2                         |
| 10 | 116.6          | 59.4                          | 116.6          | -59.4                         |
| 11 | 71.6           | 54.0                          | 71.6           | -54.0                         |
| 12 | 29.2           | 46.0                          | 29.2           | -46.0                         |
| 13 | -21.1          | 33.8                          | -21.1          | -33.8                         |
| 14 | -65.1          | 19.4                          | -65.1          | -19.4                         |
| 15 | -119.2         | 0.0                           | -119.2         | 0.0                           |

|    | 90 GRADOS      |
|----|----------------|
|    | $\phi Pn$ (tn) |
| 1  | 434.0          |
| 2  | 434.0          |
| 3  | 425.5          |
| 4  | 383.4          |
| 5  | 336.7          |
| 6  | 286.9          |
| 7  | 229.8          |
| 8  | 161.5          |
| 9  | 130.7          |
| 10 | 97.5           |
| 11 | 60.1           |
| 12 | 16.8           |
| 13 | -50.2          |
| 14 | -94.5          |
| 15 | -119.2         |



|       | $P_u$ (tn) | $M_{u_{3-3}}$ (tn.m) | $M_{u_{2-2}}$ (tn.m) |
|-------|------------|----------------------|----------------------|
| MV    | 147.99     | 4.05                 | 1.73                 |
| MV+SX | 148.61     | 6.82                 | 12.11                |
| MV-SX | 108.46     | 0.17                 | -9.11                |
| M+SX  | 100.55     | 5.41                 | 11.55                |
| M-SX  | 60.39      | -1.24                | -9.66                |

|                |       |
|----------------|-------|
| A (m2)         | 2.6   |
| I33 (m4)       | 11.01 |
| I22 (m4)       | 2.072 |
| X2 (m)         | 2.6   |
| Y3 (m)         | 2     |
| Longitud 2 (m) | 5.2   |
| Longitud 3 (m) | 2.85  |

|       |        |      |       |
|-------|--------|------|-------|
| MV+SY | 157.89 | 4.16 | 9.53  |
| MV-SY | 99.19  | 2.82 | -6.53 |
| M+SY  | 109.82 | 2.76 | 8.98  |
| M-SY  | 51.12  | 1.42 | -7.09 |

|              |      |
|--------------|------|
| f'c (ton/m2) | 2800 |
|--------------|------|

|                                 |      |      |         |
|---------------------------------|------|------|---------|
|                                 | X-X  | Y-Y  | CAMBIAR |
| factor de amplificación sísmico | 1.08 | 1.00 |         |

|     |       |       |       |       |
|-----|-------|-------|-------|-------|
|     | CM    | CV    | Sx    | Sy    |
| P   | 89.41 | 13.42 | 18.59 | 29.35 |
| M22 | 1.05  | 0.15  | 9.82  | 8.03  |
| M33 | 2.32  | 0.47  | 3.08  | 0.67  |

piso  
 8  
 7  
 6  
 5  
 4  
 3  
 2  
 1

| Story  | Frame | Load       | Loc | P      | V2    | V3   |
|--------|-------|------------|-----|--------|-------|------|
| STORY1 | C8    | VIVA       | 0   | -13.31 | -0.55 | 0.03 |
| STORY1 | C8    | SPECTROXX  | 0   | 18.59  | 1.66  | 3.82 |
| STORY1 | C8    | SPECTROY Y | 0   | 29.35  | 0.38  | 3.1  |
| STORY1 | C8    | MUERTA     | 0   | -90.49 | -2.67 | 0.43 |

| Story  | Column | Load       | Loc | P      | V2    | V3   |
|--------|--------|------------|-----|--------|-------|------|
| STORY1 | C8     | MUERTA     | 0   | -90.49 | -2.67 | 0.43 |
| STORY1 | C8     | VIVA       | 0   | -13.31 | -0.55 | 0.03 |
| STORY1 | C8     | SPECTROXX  | 0   | 18.59  | 1.66  | 3.82 |
| STORY1 | C8     | SPECTROY Y | 0   | 29.35  | 0.38  | 3.1  |

|        |    |            |   |       |       |      |
|--------|----|------------|---|-------|-------|------|
| STORY8 | C8 | MUERTA     | 0 | -9.03 | -4.12 | 2.35 |
| STORY8 | C8 | VIVA       | 0 | -1    | -0.66 | 0.23 |
| STORY8 | C8 | SPECTROXX  | 0 | 0.91  | 2.15  | 1.33 |
| STORY8 | C8 | SPECTROY Y | 0 | 2.81  | 0.32  | 3.28 |
| STORY8 | C8 | MUERTA     | 0 | -9.03 | -4.12 | 2.35 |

| Story  | Column | Load       | Loc | P      | V2    | V3   |
|--------|--------|------------|-----|--------|-------|------|
| STORY1 | C8     | MUERTA     | 0   | -90.49 | -2.67 | 0.43 |
| STORY1 | C8     | VIVA       | 0   | -13.31 | -0.55 | 0.03 |
| STORY1 | C8     | SPECTROXX  | 0   | 18.59  | 1.66  | 3.82 |
| STORY1 | C8     | SPECTROY Y | 0   | 29.35  | 0.38  | 3.1  |

|        |    |            |   |       |       |      |
|--------|----|------------|---|-------|-------|------|
| STORY8 | C8 | MUERTA     | 0 | -9.03 | -4.12 | 2.35 |
| STORY8 | C8 | VIVA       | 0 | -1    | -0.66 | 0.23 |
| STORY8 | C8 | SPECTROXX  | 0 | 0.91  | 2.15  | 1.33 |
| STORY8 | C8 | SPECTROY Y | 0 | 2.81  | 0.32  | 3.28 |

|        |    |           |   |        |       |      |
|--------|----|-----------|---|--------|-------|------|
| STORY1 | C6 | MUERTA    | 0 | -87.85 | -0.48 | 0.4  |
| STORY1 | C6 | VIVA      | 0 | -12.4  | -0.12 | 0.1  |
| STORY1 | C6 | SPECTROXX | 0 | 5.45   | 0.37  | 5.74 |
| STORY1 | C6 | SPECTROY  | 0 | 7.11   | 0.1   | 4.66 |

### DISEÑO POR FUERZA CORTANTE

|        | $\phi Mni$   | L          | $\phi Mnd$  |
|--------|--------------|------------|-------------|
|        | 22.62        | 6.95       | 22.62       |
|        | (Mni + Mnd)/ | 7.65806179 | -7.65806179 |
| COMB 1 | 1.4CM+1.7CV  | 12.92      | 11.62       |
|        |              | 20.5780618 | 3.96193821  |

19323.9611      **Aporte del concreto**       $\phi = 0.85$       b  
 $\phi Vc = 12077$  kg      25  
 $Av = 1.42$

Cortante a la cara       $V = 19680$   
Cortante d de la cara       $Vu = 19680$

**Aporte del acero**       $Vs = Vu/\phi - Vc = 8944$

Espaciamiento minimo       $S1 = 49.3435579$   
Espaciamiento minimo       $S2 = 82.3110199$   
Espaciamiento minimo       $S3 = 68.16$   
Espaciamiento minimo       $S4 = 37$

..5 CM      1

$Vs = 88267$   
5  
 $\phi(Vc+Vs) = 87105$   
1  
5

| 30, degrees |     | Curve 4 | 45, degrees |     | Curve 5 | 60, degrees |     |
|-------------|-----|---------|-------------|-----|---------|-------------|-----|
| M3          | M2  | P       | M3          | M2  | P       | M3          | M2  |
| 0.0         | 0.0 | -303.8  | 0.0         | 0.0 | -303.8  | 0.0         | 0.0 |
| 7.4         | 1.0 | -303.8  | 6.4         | 1.2 | -303.8  | 5.4         | 1.4 |
| 14.4        | 2.0 | -303.8  | 11.6        | 2.4 | -303.8  | 9.6         | 2.8 |
| 23.4        | 2.1 | -303.8  | 19.3        | 3.4 | -303.8  | 15.6        | 4.4 |
| 30.8        | 2.2 | -267.9  | 27.7        | 3.7 | -276.9  | 22.4        | 5.8 |
| 36.2        | 2.3 | -225.9  | 34.0        | 3.9 | -231.9  | 29.1        | 6.5 |
| 39.8        | 2.4 | -181.8  | 37.8        | 4.1 | -179.6  | 33.6        | 6.8 |
| 41.8        | 2.5 | -132.6  | 39.3        | 4.4 | -123.5  | 34.3        | 7.2 |
| 41.0        | 2.5 | -91.5   | 38.0        | 4.4 | -77.2   | 31.4        | 7.4 |
| 37.6        | 2.5 | -49.7   | 33.5        | 4.4 | -33.0   | 27.5        | 6.9 |
| 34.0        | 2.9 | -10.5   | 31.7        | 5.2 | 9.5     | 26.3        | 7.2 |
| 29.0        | 3.4 | 37.0    | 22.1        | 4.6 | 51.4    | 16.9        | 5.2 |
| 15.3        | 2.7 | 76.6    | 10.7        | 3.0 | 81.5    | 8.8         | 2.7 |
| 4.4         | 1.2 | 99.3    | 2.9         | 0.9 | 103.7   | 1.3         | 0.5 |
| 0.0         | 0.0 | 107.3   | 0.0         | 0.0 | 107.3   | 0.0         | 0.0 |

| M <sub>2-2</sub> | 270 GRADOS | M <sub>2-2</sub> |
|------------------|------------|------------------|
| φMn(tn.m)        | φPn (tn)   | φMn(tn.m)        |
| 0.0              | 303.8      | 0.0              |
| -5.9             | 303.8      | 5.9              |
| -9.1             | 297.9      | 9.1              |
| -11.7            | 268.4      | 11.7             |
| -13.9            | 235.7      | 13.9             |
| -15.6            | 200.8      | 15.6             |
| -16.8            | 160.8      | 16.8             |
| -17.6            | 113.0      | 17.6             |
| -16.6            | 91.5       | 16.6             |
| -15.1            | 68.3       | 15.1             |
| -13.1            | 42.1       | 13.1             |
| -12.3            | 14.0       | 12.3             |
| -7.5             | -45.2      | 7.5              |
| -3.1             | -85.1      | 3.1              |
| 0.0              | -107.3     | 0.0              |

con 60 cm<sup>2</sup> de acero 0.04

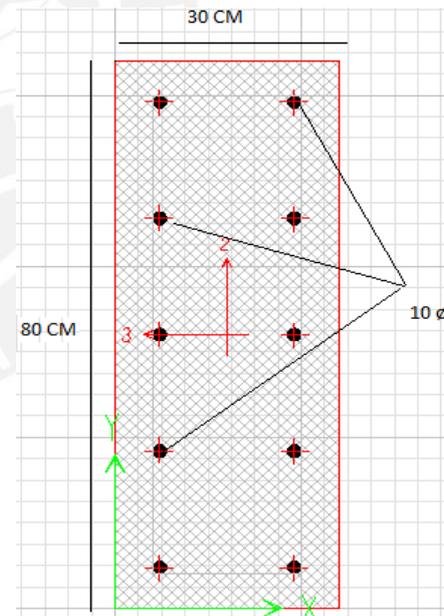
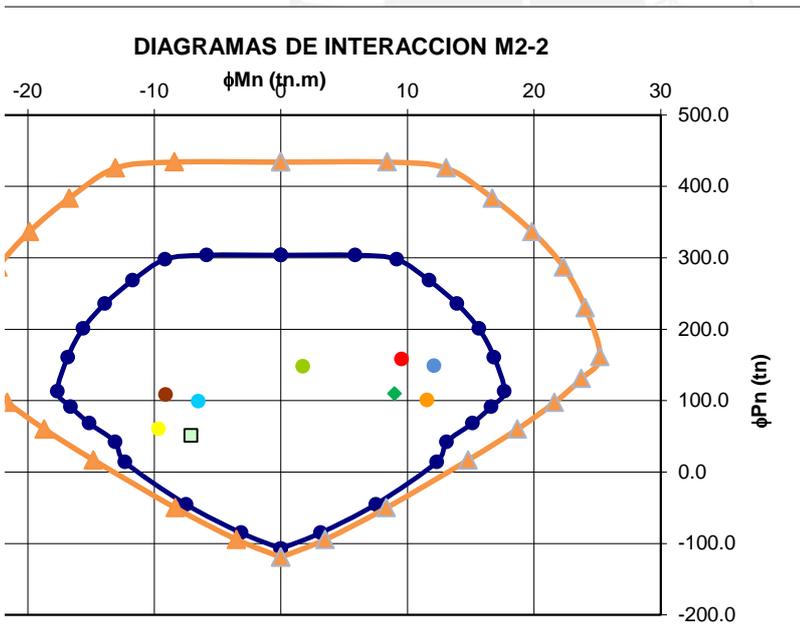
CON 12 de 1pulg 0.03

| 30, degrees |     | Curve 4 | 45, degrees |     | Curve 5 | 60, degrees |      |
|-------------|-----|---------|-------------|-----|---------|-------------|------|
| M3          | M2  | P       | M3          | M2  | P       | M3          | M2   |
| 0.0         | 0.0 | -434.0  | 0.0         | 0.0 | -434.0  | 0.0         | 0.0  |
| 10.6        | 1.5 | -434.0  | 9.1         | 1.7 | -434.0  | 7.7         | 2.0  |
| 20.6        | 2.8 | -434.0  | 16.6        | 3.4 | -434.0  | 13.8        | 4.0  |
| 33.5        | 3.0 | -434.0  | 27.6        | 4.9 | -434.0  | 22.4        | 6.3  |
| 44.0        | 3.1 | -382.7  | 39.6        | 5.3 | -395.6  | 32.0        | 8.3  |
| 51.7        | 3.3 | -322.7  | 48.6        | 5.5 | -331.3  | 41.6        | 9.3  |
| 56.9        | 3.4 | -259.7  | 54.0        | 5.8 | -256.6  | 47.9        | 9.7  |
| 59.7        | 3.6 | -189.4  | 56.1        | 6.2 | -176.4  | 49.0        | 10.3 |
| 58.6        | 3.6 | -130.7  | 54.2        | 6.3 | -110.2  | 44.8        | 10.6 |

|      |     |       |      |     |       |      |     |
|------|-----|-------|------|-----|-------|------|-----|
| 53.7 | 3.6 | -71.0 | 47.9 | 6.2 | -46.2 | 38.5 | 9.7 |
| 45.1 | 3.8 | -12.3 | 37.3 | 6.1 | 10.6  | 29.2 | 8.0 |
| 32.2 | 3.7 | 41.2  | 24.6 | 5.1 | 57.1  | 18.8 | 5.8 |
| 17.0 | 3.0 | 85.1  | 11.8 | 3.3 | 90.6  | 9.8  | 3.0 |
| 4.9  | 1.4 | 110.4 | 3.2  | 1.0 | 115.2 | 1.5  | 0.5 |
| 0.0  | 0.0 | 119.2 | 0.0  | 0.0 | 119.2 | 0.0  | 0.0 |

| M <sub>2-2</sub><br>φMn(tn.m) | 270 GRADOS<br>φPn (tn) | M <sub>2-2</sub><br>φMn(tn.m) |
|-------------------------------|------------------------|-------------------------------|
| 0.0                           | 434.0                  | 0.0                           |
| -8.4                          | 434.0                  | 8.4                           |
| -13.1                         | 425.5                  | 13.1                          |
| -16.7                         | 383.4                  | 16.7                          |
| -19.9                         | 336.7                  | 19.9                          |
| -22.3                         | 286.9                  | 22.3                          |
| -24.1                         | 229.8                  | 24.1                          |
| -25.2                         | 161.5                  | 25.2                          |
| -23.7                         | 130.7                  | 23.7                          |
| -21.6                         | 97.5                   | 21.6                          |
| -18.7                         | 60.1                   | 18.7                          |
| -14.8                         | 16.8                   | 14.8                          |
| -8.3                          | -50.2                  | 8.3                           |
| -3.5                          | -94.5                  | 3.5                           |
| 0.0                           | -119.2                 | 0.0                           |

|          |          |      |
|----------|----------|------|
| -7.6204  | -5.3343  | 0.70 |
| 392.3364 | 274.6355 | 0.70 |
| 633.2892 | 443.3024 | 0.70 |
| 706.5516 | 494.5861 | 0.70 |
| 759.294  | 531.5058 | 0.70 |
| 792.0534 | 554.4374 | 0.70 |
| 805.6659 | 563.9661 | 0.70 |
| 801.3197 | 560.9238 | 0.70 |
| 765.3689 | 535.7583 | 0.70 |
| 702.4955 | 491.7468 | 0.70 |
| 615.4962 | 430.8473 | 0.70 |
| 505.2843 | 353.699  | 0.70 |
| 371.632  | 294.1822 | 0.79 |
| 215.2673 | 192.8361 | 0.90 |
| 7.9587   | 7.1628   | 0.90 |



|              | Vu 2-2 (tn) | Vu 3-3 (tn) |
|--------------|-------------|-------------|
| <b>MV</b>    | -4.67       | 0.65        |
| <b>MV+SX</b> | -2.23       | 4.70        |
| <b>MV-SX</b> | -5.82       | -3.55       |
| <b>M+SX</b>  | -0.61       | 4.51        |
| <b>M-SX</b>  | -4.20       | -3.74       |

|       |       |       |
|-------|-------|-------|
| MV+SY | -3.65 | 3.68  |
| MV-SY | -4.41 | -2.53 |
| M+SY  | -2.02 | 3.49  |
| M-SY  | -2.78 | -2.71 |

|       |       |      |
|-------|-------|------|
| MV-SX | -8.30 | 6.51 |
|-------|-------|------|

|       |      |       |                             |
|-------|------|-------|-----------------------------|
| cm    | cv   |       |                             |
| 7.35  | 0.75 |       | Mn 33 / Mu 33 Mn 22 / Mu 22 |
| 11.01 | 1.5  |       | 21,6 / 9,11 25,2 / 9,53     |
| 11.01 | 1.5  |       | 2.37102086 2.64             |
| 11.01 | 1.5  |       |                             |
| 11.01 | 1.5  |       | Vu -19.6794731 17.2142707   |
| 11.01 | 1.5  |       |                             |
| 11.01 | 1.5  |       |                             |
| 13.05 | 2.48 | 86.46 | 12.23                       |
|       |      |       | 1.25                        |

| T     | M2    | M3     |
|-------|-------|--------|
| 0.001 | 0.152 | -0.473 |
| 0.226 | 9.822 | 3.079  |
| 0.051 | 8.033 | 0.673  |
| 0.009 | 1.048 | -2.32  |

| Frame | Load       | Loc | P      |
|-------|------------|-----|--------|
| C8    | MUERTA     | 0   | -90.49 |
| C8    | VIVA       | 0   | -13.31 |
| C8    | SPECTROXX  | 0   | 18.59  |
| C8    | SPECTROY Y | 0   | 29.35  |

| T     | M2    | M3     | Story  | Column | Load       | Loc |
|-------|-------|--------|--------|--------|------------|-----|
| 0.009 | 1.048 | -2.32  | STORY1 | C8     | MUERTA     | 0   |
| 0.001 | 0.152 | -0.473 | STORY1 | C8     | VIVA       | 0   |
| 0.226 | 9.822 | 3.079  | STORY1 | C8     | SPECTROXX  | 0   |
| 0.051 | 8.033 | 0.673  | STORY1 | C8     | SPECTROY Y | 0   |
| 0.003 | 2.323 | -4.296 |        |        |            |     |
| 0     | 0.208 | -0.741 |        |        |            |     |
| 0.205 | 0.713 | 1.984  |        |        |            |     |
| 0.045 | 2.491 | 0.277  |        |        |            |     |
| 0.003 | 2.323 | -4.296 |        |        |            |     |

| T     | M2    | M3     | Pu (tn) | Mu3-3 (tn.m) | Mu2-2 (tn.m)      |
|-------|-------|--------|---------|--------------|-------------------|
|       |       |        | MV      | 147.988      | 4.0521 1.7256     |
|       |       |        | MV+SX   | 148.6147     | 6.81657 12.10776  |
|       |       |        | MV-SX   | 108.4603     | 0.16593 -9.10776  |
|       |       |        | M+SX    | 100.5462     | 5.41332 11.55096  |
|       |       |        | M-SX    | 60.3918      | -1.23732 -9.66456 |
| 0.009 | 1.048 | -2.32  | MV+SY   | 157.8875     | 4.16425 9.533     |
| 0.001 | 0.152 | -0.473 | MV-SY   | 99.1875      | 2.81825 -6.533    |
| 0.226 | 9.822 | 3.079  | M+SY    | 109.819      | 2.761 8.9762      |
| 0.051 | 8.033 | 0.673  | M-SY    | 51.119       | 1.415 -7.0898     |
| 0.003 | 2.323 | -4.296 |         |              |                   |
| 0     | 0.208 | -0.741 |         |              |                   |
| 0.205 | 0.713 | 1.984  |         |              |                   |
| 0.045 | 2.491 | 0.277  |         |              |                   |

|       |        |        |
|-------|--------|--------|
| 0.009 | 1.02   | -0.508 |
| 0.001 | 0.203  | -0.121 |
| 0.226 | 11.237 | 1.515  |
| 0.051 | 9.191  | 0.322  |

piso 5

d raiz 210  
74 14.5

| Ø    | Area(cm2) |
|------|-----------|
| 1/4" | 0.34      |
| 3/8" | 0.71      |
| 1/2" | 1.27      |
| 5/8" | 1.99      |
| 3/4" | 2.84      |
| 1"   | 5.00      |

$$\phi A_h f_y \geq V_u \frac{h_s}{h_p}$$

|             |            |
|-------------|------------|
| hp          | 50cm       |
| Vu          | 16190      |
| Ah          | 4.54       |
| Av          | 1.42       |
|             | 3.19367183 |
| Estribos x  |            |
| cara        | 2          |
| (b+hp-hs)/2 | 12.5       |
| @           | 7.5        |

|              |         |         |         |         |       |
|--------------|---------|---------|---------|---------|-------|
| ..10 CM      | ..15 CM | ..20 CM | ..25 CM | ..30 CM | RESTO |
| 1            | 6       | 6       |         |         |       |
| D/4          |         |         |         |         |       |
| 10 x long    | 90      | 120     |         |         |       |
| 24 x estribo |         |         |         |         |       |
| 44134        | 29422   | 22067   | 17653   | 14711   |       |
| 10           | 15      | 20      | 25      | 30      |       |
| 49591        | 37087   | 30834   | 27083   | 24582   |       |
| 15           | 0       | 8       | 0       |         |       |
| 150          | 0       | 160     | 0       |         |       |



| Curve 6 | 75, degrees |      | Curve 7 | 90, degrees |      | Curve 8 | 105, degrees |
|---------|-------------|------|---------|-------------|------|---------|--------------|
| P       | M3          | M2   | P       | M3          | M2   | P       | M3           |
| -303.8  | 0.0         | 0.0  | -303.8  | 0.0         | 0.0  | -303.8  | 0.0          |
| -303.8  | 3.9         | 2.0  | -303.8  | 0.0         | 5.9  | -303.8  | -3.9         |
| -303.8  | 7.6         | 3.7  | -297.9  | 0.0         | 9.1  | -303.8  | -7.6         |
| -303.8  | 12.2        | 5.9  | -268.4  | 0.0         | 11.7 | -303.8  | -12.2        |
| -275.1  | 16.4        | 8.3  | -235.7  | 0.0         | 13.9 | -275.1  | -16.4        |
| -228.3  | 18.9        | 10.8 | -200.8  | 0.0         | 15.6 | -228.3  | -18.9        |
| -173.4  | 20.0        | 12.3 | -160.8  | 0.0         | 16.8 | -173.4  | -20.0        |
| -113.7  | 21.3        | 12.4 | -113.0  | 0.0         | 17.6 | -113.7  | -21.3        |
| -68.5   | 20.7        | 11.2 | -91.5   | 0.0         | 16.6 | -68.5   | -20.7        |
| -28.3   | 19.4        | 10.2 | -68.3   | 0.0         | 15.1 | -28.3   | -19.4        |
| 15.4    | 19.3        | 9.1  | -42.1   | 0.0         | 13.1 | 15.4    | -19.3        |
| 52.7    | 14.4        | 5.7  | -14.0   | 0.0         | 12.3 | 52.7    | -14.4        |
| 83.9    | 7.6         | 2.6  | 45.2    | 0.0         | 7.5  | 83.9    | -7.6         |
| 104.3   | 1.1         | 0.4  | 85.1    | 0.0         | 3.1  | 104.3   | -1.1         |
| 107.3   | 0.0         | 0.0  | 107.3   | 0.0         | 0.0  | 107.3   | 0.0          |

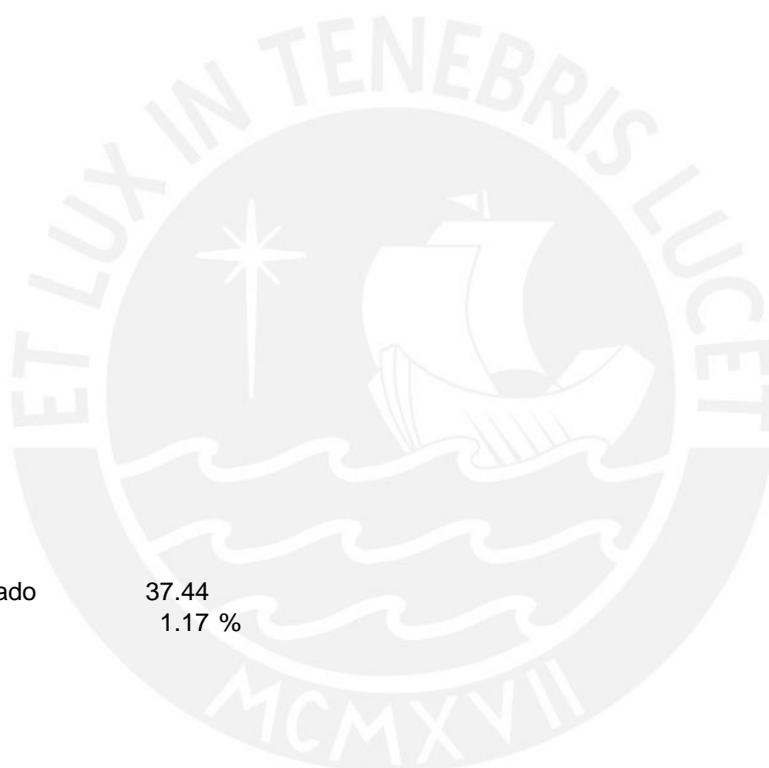
pasa

pasa



| Curve 6 | 75, degrees |      | Curve 7 | 90, degrees |      | Curve 8 | 105, degrees |
|---------|-------------|------|---------|-------------|------|---------|--------------|
| P       | M3          | M2   | P       | M3          | M2   | P       | M3           |
| -434.0  | 0.0         | 0.0  | -434.0  | 0.0         | 0.0  | -434.0  | 0.0          |
| -434.0  | 5.6         | 2.9  | -434.0  | 0.0         | 8.4  | -434.0  | -5.6         |
| -434.0  | 10.9        | 5.2  | -425.5  | 0.0         | 13.1 | -434.0  | -10.9        |
| -434.0  | 17.4        | 8.4  | -383.4  | 0.0         | 16.7 | -434.0  | -17.4        |
| -393.0  | 23.5        | 11.9 | -336.7  | 0.0         | 19.9 | -393.0  | -23.5        |
| -326.2  | 27.0        | 15.4 | -286.9  | 0.0         | 22.3 | -326.2  | -27.0        |
| -247.7  | 28.5        | 17.6 | -229.8  | 0.0         | 24.1 | -247.7  | -28.5        |
| -162.4  | 30.5        | 17.6 | -161.5  | 0.0         | 25.2 | -162.4  | -30.5        |
| -97.8   | 29.6        | 16.1 | -130.7  | 0.0         | 23.7 | -97.8   | -29.6        |

|       |      |      |       |     |      |       |       |
|-------|------|------|-------|-----|------|-------|-------|
| -37.9 | 25.9 | 13.6 | -97.5 | 0.0 | 21.6 | -37.9 | -25.9 |
| 17.1  | 21.4 | 10.2 | -60.1 | 0.0 | 18.7 | 17.1  | -21.4 |
| 58.5  | 16.0 | 6.3  | -16.8 | 0.0 | 14.8 | 58.5  | -16.0 |
| 93.3  | 8.4  | 2.9  | 50.2  | 0.0 | 8.3  | 93.3  | -8.4  |
| 115.9 | 1.2  | 0.5  | 94.5  | 0.0 | 3.5  | 115.9 | -1.2  |
| 119.2 | 0.0  | 0.0  | 119.2 | 0.0 | 0.0  | 119.2 | 0.0   |



As colocado  
cuantia= 37.44  
1.17 %

3/4"

|              | Vu 2-2 (tn) | Vu 3-3 (tn) |
|--------------|-------------|-------------|
| <b>MV</b>    | -4,67       | 0,65        |
| <b>MV+SX</b> | -2,23       | 4,70        |
| <b>MV-SX</b> | -5,82       | -3,55       |
| <b>M+SX</b>  | -0,61       | 4,51        |
| <b>M-SX</b>  | -4,20       | -3,74       |
| <b>MV-SX</b> | -2,65       | -2,68       |

|              | Vu 2-2 (tn) | Vu 3-3 (tn) |
|--------------|-------------|-------------|
| <b>MV</b>    | -6,89       | 3,68        |
| <b>MV+SX</b> | -3,65       | 4,66        |
| <b>MV-SX</b> | -8,30       | 1,79        |
| <b>M+SX</b>  | -1,39       | 3,55        |
| <b>M-SX</b>  | -6,03       | 0,68        |
| <b>MV-SX</b> | -5,66       | -2,54       |

|              |       |       |              |       |       |
|--------------|-------|-------|--------------|-------|-------|
| <b>MV+SY</b> | -3,65 | 3,68  | <b>MV+SY</b> | -5,66 | 6,51  |
| <b>MV-SY</b> | -4,41 | -2,53 | <b>MV-SY</b> | -6,30 | -0,05 |
| <b>M+SY</b>  | -2,02 | 3,49  | <b>M+SY</b>  | -3,39 | 5,40  |
| <b>M-SY</b>  | -2,78 | -2,71 | <b>M-SY</b>  | -4,03 | -1,17 |

?

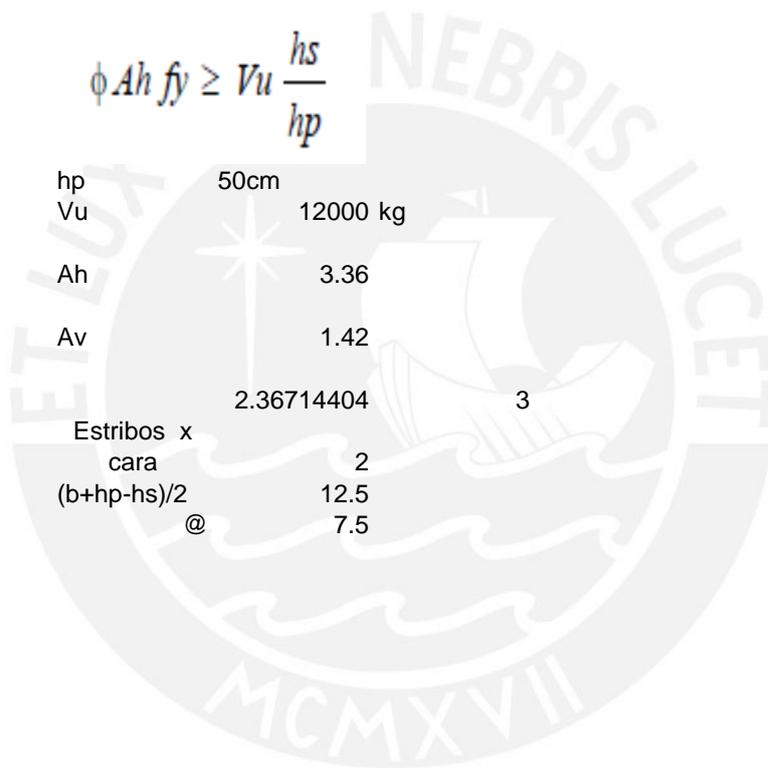
|           |           |          |           |           |
|-----------|-----------|----------|-----------|-----------|
| 1.25      | 1.25      | 1.25     | 1.25      | 1.25      |
| <b>V2</b> | <b>V3</b> | <b>T</b> | <b>M2</b> | <b>M3</b> |
| -2.67     | 0.43      | 0.009    | 1.048     | -2.32     |
| -0.55     | 0.03      | 0.001    | 0.152     | -0.473    |
| 1.66      | 3.82      | 0.226    | 9.822     | 3.079     |
| 0.38      | 3.1       | 0.051    | 8.033     | 0.673     |

|        |       |      |       |       |        |
|--------|-------|------|-------|-------|--------|
| P      | V2    | V3   | T     | M2    | M3     |
| -90.49 | -2.67 | 0.43 | 0.009 | 1.048 | -2.32  |
| -13.31 | -0.55 | 0.03 | 0.001 | 0.152 | -0.473 |
| 18.59  | 1.66  | 3.82 | 0.226 | 9.822 | 3.079  |
| 29.35  | 0.38  | 3.1  | 0.051 | 8.033 | 0.673  |

piso azotea

$$\phi Ah fy \geq Vu \frac{hs}{hp}$$

|     |             |            |   |
|-----|-------------|------------|---|
| kg  | hp          | 50cm       |   |
|     | Vu          | 12000 kg   |   |
| cm2 | Ah          | 3.36       |   |
|     | Av          | 1.42       |   |
| 4   |             | 2.36714404 | 3 |
|     | Estribos x  |            |   |
|     | cara        | 2          |   |
|     | (b+hp-hs)/2 | 12.5       |   |
|     | @           | 7.5        |   |



|      | Curve 9 |       | 120, degrees |        | Curve 10 |     | 135, degrees |     | Curve 11 |  |
|------|---------|-------|--------------|--------|----------|-----|--------------|-----|----------|--|
| M2   | P       | M3    | M2           | P      | M3       | M2  | P            | M2  | P        |  |
| 0.0  | -303.8  | 0.0   | 0.0          | -303.8 | 0.0      | 0.0 | -303.8       | 0.0 | -303.8   |  |
| 2.0  | -303.8  | -5.4  | 1.4          | -303.8 | -6.4     | 1.2 | -303.8       | 1.2 | -303.8   |  |
| 3.7  | -303.8  | -9.6  | 2.8          | -303.8 | -11.6    | 2.4 | -303.8       | 2.4 | -303.8   |  |
| 5.9  | -303.8  | -15.6 | 4.4          | -303.8 | -19.3    | 3.4 | -294.8       | 3.4 | -294.8   |  |
| 8.3  | -276.9  | -22.4 | 5.8          | -267.9 | -27.7    | 3.7 | -259.8       | 3.7 | -259.8   |  |
| 10.8 | -231.9  | -29.1 | 6.5          | -225.9 | -34.0    | 3.9 | -222.7       | 3.9 | -222.7   |  |
| 12.3 | -179.6  | -33.6 | 6.8          | -181.8 | -37.8    | 4.1 | -183.0       | 4.1 | -183.0   |  |
| 12.4 | -123.5  | -34.3 | 7.2          | -132.6 | -39.3    | 4.4 | -138.4       | 4.4 | -138.4   |  |
| 11.2 | -77.2   | -31.4 | 7.4          | -91.5  | -38.0    | 4.4 | -100.4       | 4.4 | -100.4   |  |
| 10.2 | -33.0   | -27.5 | 6.9          | -49.7  | -33.5    | 4.4 | -62.7        | 4.4 | -62.7    |  |
| 9.1  | 9.5     | -26.3 | 7.2          | -10.5  | -31.7    | 5.2 | -27.3        | 5.2 | -27.3    |  |
| 5.7  | 51.4    | -16.9 | 5.2          | 37.0   | -22.1    | 4.6 | 17.2         | 4.6 | 17.2     |  |
| 2.6  | 81.5    | -8.8  | 2.7          | 76.6   | -10.7    | 3.0 | 63.4         | 3.0 | 63.4     |  |
| 0.4  | 103.7   | -1.3  | 0.5          | 99.3   | -2.9     | 0.9 | 95.1         | 0.9 | 95.1     |  |
| 0.0  | 107.3   | 0.0   | 0.0          | 107.3  | 0.0      | 0.0 | 107.3        | 0.0 | 107.3    |  |



|      | Curve 9 |       | 120, degrees |        | Curve 10 |     | 135, degrees |     | Curve 11 |  |
|------|---------|-------|--------------|--------|----------|-----|--------------|-----|----------|--|
| M2   | P       | M3    | M2           | P      | M3       | M2  | P            | M2  | P        |  |
| 0.0  | -434.0  | 0.0   | 0.0          | -434.0 | 0.0      | 0.0 | -434.0       | 0.0 | -434.0   |  |
| 2.9  | -434.0  | -7.7  | 2.0          | -434.0 | -9.1     | 1.7 | -434.0       | 1.7 | -434.0   |  |
| 5.2  | -434.0  | -13.8 | 4.0          | -434.0 | -16.6    | 3.4 | -434.0       | 3.4 | -434.0   |  |
| 8.4  | -434.0  | -22.4 | 6.3          | -434.0 | -27.6    | 4.9 | -421.1       | 4.9 | -421.1   |  |
| 11.9 | -395.6  | -32.0 | 8.3          | -382.7 | -39.6    | 5.3 | -371.1       | 5.3 | -371.1   |  |
| 15.4 | -331.3  | -41.6 | 9.3          | -322.7 | -48.6    | 5.5 | -318.2       | 5.5 | -318.2   |  |
| 17.6 | -256.6  | -47.9 | 9.7          | -259.7 | -54.0    | 5.8 | -261.4       | 5.8 | -261.4   |  |
| 17.6 | -176.4  | -49.0 | 10.3         | -189.4 | -56.1    | 6.2 | -197.6       | 6.2 | -197.6   |  |
| 16.1 | -110.2  | -44.8 | 10.6         | -130.7 | -54.2    | 6.3 | -143.5       | 6.3 | -143.5   |  |

|      |       |       |     |       |       |     |       |
|------|-------|-------|-----|-------|-------|-----|-------|
| 13.6 | -46.2 | -38.5 | 9.7 | -71.0 | -47.9 | 6.2 | -89.6 |
| 10.2 | 10.6  | -29.2 | 8.0 | -12.3 | -37.3 | 6.1 | -36.2 |
| 6.3  | 57.1  | -18.8 | 5.8 | 41.2  | -24.6 | 5.1 | 19.1  |
| 2.9  | 90.6  | -9.8  | 3.0 | 85.1  | -11.8 | 3.3 | 70.4  |
| 0.5  | 115.2 | -1.5  | 0.5 | 110.4 | -3.2  | 1.0 | 105.6 |
| 0.0  | 119.2 | 0.0   | 0.0 | 119.2 | 0.0   | 0.0 | 119.2 |









| 150, degrees |     | Curve 12 | 165, degrees |     | Curve 13 | 180, degrees |     |
|--------------|-----|----------|--------------|-----|----------|--------------|-----|
| M3           | M2  | P        | M3           | M2  | P        | M3           | M2  |
| 0.0          | 0.0 | -303.8   | 0.0          | 0.0 | -303.8   | 0.0          | 0.0 |
| -7.4         | 1.0 | -303.8   | -9.6         | 0.9 | -303.8   | -14.1        | 0.0 |
| -14.4        | 2.0 | -303.8   | -18.6        | 1.0 | -303.8   | -22.0        | 0.0 |
| -23.4        | 2.1 | -285.6   | -26.4        | 1.0 | -277.4   | -28.7        | 0.0 |
| -30.8        | 2.2 | -253.4   | -32.6        | 1.0 | -248.2   | -34.0        | 0.0 |
| -36.2        | 2.3 | -219.4   | -37.4        | 1.1 | -216.4   | -38.3        | 0.0 |
| -39.8        | 2.4 | -182.5   | -40.9        | 1.1 | -182.2   | -41.6        | 0.0 |
| -41.8        | 2.5 | -142.5   | -43.2        | 1.2 | -144.9   | -44.1        | 0.0 |
| -41.0        | 2.5 | -108.3   | -42.7        | 1.1 | -113.9   | -43.5        | 0.0 |
| -37.6        | 2.5 | -73.2    | -40.2        | 1.1 | -81.6    | -41.6        | 0.0 |
| -34.0        | 2.9 | -38.2    | -35.2        | 1.3 | -50.1    | -37.8        | 0.0 |
| -29.0        | 3.4 | -5.0     | -34.8        | 1.6 | -22.8    | -36.0        | 0.0 |
| -15.3        | 2.7 | 41.4     | -23.1        | 1.4 | 18.9     | -30.4        | 0.0 |
| -4.4         | 1.2 | 88.2     | -6.9         | 1.6 | 58.6     | -17.4        | 0.0 |
| 0.0          | 0.0 | 107.3    | 0.0          | 0.0 | 107.3    | 0.0          | 0.0 |



| 150, degrees |     | Curve 12 | 165, degrees |     | Curve 13 | 180, degrees |     |
|--------------|-----|----------|--------------|-----|----------|--------------|-----|
| M3           | M2  | P        | M3           | M2  | P        | M3           | M2  |
| 0.0          | 0.0 | -434.0   | 0.0          | 0.0 | -434.0   | 0.0          | 0.0 |
| -10.6        | 1.5 | -434.0   | -13.7        | 1.2 | -434.0   | -20.1        | 0.0 |
| -20.6        | 2.8 | -434.0   | -26.5        | 1.4 | -434.0   | -31.4        | 0.0 |
| -33.5        | 3.0 | -408.0   | -37.7        | 1.5 | -396.3   | -41.0        | 0.0 |
| -44.0        | 3.1 | -362.0   | -46.6        | 1.5 | -354.5   | -48.6        | 0.0 |
| -51.7        | 3.3 | -313.5   | -53.4        | 1.6 | -309.2   | -54.7        | 0.0 |
| -56.9        | 3.4 | -260.7   | -58.4        | 1.6 | -260.3   | -59.4        | 0.0 |
| -59.7        | 3.6 | -203.5   | -61.7        | 1.7 | -207.1   | -63.0        | 0.0 |
| -58.6        | 3.6 | -154.7   | -61.0        | 1.6 | -162.7   | -62.2        | 0.0 |

|       |     |        |       |     |        |       |     |
|-------|-----|--------|-------|-----|--------|-------|-----|
| -53.7 | 3.6 | -104.5 | -57.4 | 1.6 | -116.6 | -59.4 | 0.0 |
| -45.1 | 3.8 | -54.6  | -50.2 | 1.8 | -71.6  | -54.0 | 0.0 |
| -32.2 | 3.7 | -5.7   | -39.7 | 1.8 | -29.2  | -46.0 | 0.0 |
| -17.0 | 3.0 | 46.0   | -25.7 | 1.6 | 21.1   | -33.8 | 0.0 |
| -4.9  | 1.4 | 98.0   | -7.7  | 1.8 | 65.1   | -19.4 | 0.0 |
| 0.0   | 0.0 | 119.2  | 0.0   | 0.0 | 119.2  | 0.0   | 0.0 |







| Curve 14 | 195, degrees |      | Curve 15 | 210, degrees |      | Curve 16 | 225, degrees |
|----------|--------------|------|----------|--------------|------|----------|--------------|
| P        | M3           | M2   | P        | M3           | M2   | P        | M3           |
| -303.8   | 0.0          | 0.0  | -303.8   | 0.0          | 0.0  | -303.8   | 0.0          |
| -303.8   | -9.6         | -0.9 | -303.8   | -7.4         | -1.0 | -303.8   | -6.4         |
| -303.8   | -18.6        | -1.0 | -303.8   | -14.4        | -2.0 | -303.8   | -11.6        |
| -285.6   | -26.4        | -1.0 | -294.8   | -23.4        | -2.1 | -303.8   | -19.3        |
| -253.4   | -32.6        | -1.0 | -259.8   | -30.8        | -2.2 | -267.9   | -27.7        |
| -219.4   | -37.4        | -1.1 | -222.7   | -36.2        | -2.3 | -225.9   | -34.0        |
| -182.5   | -40.9        | -1.1 | -183.0   | -39.8        | -2.4 | -181.8   | -37.8        |
| -142.5   | -43.2        | -1.2 | -138.4   | -41.8        | -2.5 | -132.6   | -39.3        |
| -108.3   | -42.7        | -1.1 | -100.4   | -41.0        | -2.5 | -91.5    | -38.0        |
| -73.2    | -40.2        | -1.1 | -62.7    | -37.6        | -2.5 | -49.7    | -33.5        |
| -38.2    | -35.2        | -1.3 | -27.3    | -34.0        | -2.9 | -10.5    | -31.7        |
| -5.0     | -34.8        | -1.6 | 17.2     | -29.0        | -3.4 | 37.0     | -22.1        |
| 41.4     | -23.1        | -1.4 | 63.4     | -15.3        | -2.7 | 76.6     | -10.7        |
| 88.2     | -6.9         | -1.6 | 95.1     | -4.4         | -1.2 | 99.3     | -2.9         |
| 107.3    | 0.0          | 0.0  | 107.3    | 0.0          | 0.0  | 107.3    | 0.0          |



| Curve 14 | 195, degrees |      | Curve 15 | 210, degrees |      | Curve 16 | 225, degrees |
|----------|--------------|------|----------|--------------|------|----------|--------------|
| P        | M3           | M2   | P        | M3           | M2   | P        | M3           |
| -434.0   | 0.0          | 0.0  | -434.0   | 0.0          | 0.0  | -434.0   | 0.0          |
| -434.0   | -13.7        | -1.2 | -434.0   | -10.6        | -1.5 | -434.0   | -9.1         |
| -434.0   | -26.5        | -1.4 | -434.0   | -20.6        | -2.8 | -434.0   | -16.6        |
| -408.0   | -37.7        | -1.5 | -421.1   | -33.5        | -3.0 | -434.0   | -27.6        |
| -362.0   | -46.6        | -1.5 | -371.1   | -44.0        | -3.1 | -382.7   | -39.6        |
| -313.5   | -53.4        | -1.6 | -318.2   | -51.7        | -3.3 | -322.7   | -48.6        |
| -260.7   | -58.4        | -1.6 | -261.4   | -56.9        | -3.4 | -259.7   | -54.0        |
| -203.5   | -61.7        | -1.7 | -197.6   | -59.7        | -3.6 | -189.4   | -56.1        |
| -154.7   | -61.0        | -1.6 | -143.5   | -58.6        | -3.6 | -130.7   | -54.2        |

|        |       |      |       |       |      |       |       |
|--------|-------|------|-------|-------|------|-------|-------|
| -104.5 | -57.4 | -1.6 | -89.6 | -53.7 | -3.6 | -71.0 | -47.9 |
| -54.6  | -50.2 | -1.8 | -36.2 | -45.1 | -3.8 | -12.3 | -37.3 |
| -5.7   | -39.7 | -1.8 | 19.1  | -32.2 | -3.7 | 41.2  | -24.6 |
| 46.0   | -25.7 | -1.6 | 70.4  | -17.0 | -3.0 | 85.1  | -11.8 |
| 98.0   | -7.7  | -1.8 | 105.6 | -4.9  | -1.4 | 110.4 | -3.2  |
| 119.2  | 0.0   | 0.0  | 119.2 | 0.0   | 0.0  | 119.2 | 0.0   |









|      | Curve 17 | 240, degrees |      | Curve 18 | 255, degrees |       | Curve 19 |
|------|----------|--------------|------|----------|--------------|-------|----------|
| M2   | P        | M3           | M2   | P        | M3           | M2    | P        |
| 0.0  | -303.8   | 0.0          | 0.0  | -303.8   | 0.0          | 0.0   | -303.8   |
| -1.2 | -303.8   | -5.4         | -1.4 | -303.8   | -3.9         | -2.0  | -303.8   |
| -2.4 | -303.8   | -9.6         | -2.8 | -303.8   | -7.6         | -3.7  | -297.9   |
| -3.4 | -303.8   | -15.6        | -4.4 | -303.8   | -12.2        | -5.9  | -268.4   |
| -3.7 | -276.9   | -22.4        | -5.8 | -275.1   | -16.4        | -8.3  | -235.7   |
| -3.9 | -231.9   | -29.1        | -6.5 | -228.3   | -18.9        | -10.8 | -200.8   |
| -4.1 | -179.6   | -33.6        | -6.8 | -173.4   | -20.0        | -12.3 | -160.8   |
| -4.4 | -123.5   | -34.3        | -7.2 | -113.7   | -21.3        | -12.4 | -113.0   |
| -4.4 | -77.2    | -31.4        | -7.4 | -68.5    | -20.7        | -11.2 | -91.5    |
| -4.4 | -33.0    | -27.5        | -6.9 | -28.3    | -19.4        | -10.2 | -68.3    |
| -5.2 | 9.5      | -26.3        | -7.2 | 15.4     | -19.3        | -9.1  | -42.1    |
| -4.6 | 51.4     | -16.9        | -5.2 | 52.7     | -14.4        | -5.7  | -14.0    |
| -3.0 | 81.5     | -8.8         | -2.7 | 83.9     | -7.6         | -2.6  | 45.2     |
| -0.9 | 103.7    | -1.3         | -0.5 | 104.3    | -1.1         | -0.4  | 85.1     |
| 0.0  | 107.3    | 0.0          | 0.0  | 107.3    | 0.0          | 0.0   | 107.3    |



|      | Curve 17 | 240, degrees |       | Curve 18 | 255, degrees |       | Curve 19 |
|------|----------|--------------|-------|----------|--------------|-------|----------|
| M2   | P        | M3           | M2    | P        | M3           | M2    | P        |
| 0.0  | -434.0   | 0.0          | 0.0   | -434.0   | 0.0          | 0.0   | -434.0   |
| -1.7 | -434.0   | -7.7         | -2.0  | -434.0   | -5.6         | -2.9  | -434.0   |
| -3.4 | -434.0   | -13.8        | -4.0  | -434.0   | -10.9        | -5.2  | -425.5   |
| -4.9 | -434.0   | -22.4        | -6.3  | -434.0   | -17.4        | -8.4  | -383.4   |
| -5.3 | -395.6   | -32.0        | -8.3  | -393.0   | -23.5        | -11.9 | -336.7   |
| -5.5 | -331.3   | -41.6        | -9.3  | -326.2   | -27.0        | -15.4 | -286.9   |
| -5.8 | -256.6   | -47.9        | -9.7  | -247.7   | -28.5        | -17.6 | -229.8   |
| -6.2 | -176.4   | -49.0        | -10.3 | -162.4   | -30.5        | -17.6 | -161.5   |
| -6.3 | -110.2   | -44.8        | -10.6 | -97.8    | -29.6        | -16.1 | -130.7   |

|      |       |       |      |       |       |       |       |
|------|-------|-------|------|-------|-------|-------|-------|
| -6.2 | -46.2 | -38.5 | -9.7 | -37.9 | -25.9 | -13.6 | -97.5 |
| -6.1 | 10.6  | -29.2 | -8.0 | 17.1  | -21.4 | -10.2 | -60.1 |
| -5.1 | 57.1  | -18.8 | -5.8 | 58.5  | -16.0 | -6.3  | -16.8 |
| -3.3 | 90.6  | -9.8  | -3.0 | 93.3  | -8.4  | -2.9  | 50.2  |
| -1.0 | 115.2 | -1.5  | -0.5 | 115.9 | -1.2  | -0.5  | 94.5  |
| 0.0  | 119.2 | 0.0   | 0.0  | 119.2 | 0.0   | 0.0   | 119.2 |







| 270, degrees |       | Curve 20 | 285, degrees |       | Curve 21 | 300, degrees |      |
|--------------|-------|----------|--------------|-------|----------|--------------|------|
| M3           | M2    | P        | M3           | M2    | P        | M3           | M2   |
| 0.0          | 0.0   | -303.8   | 0.0          | 0.0   | -303.8   | 0.0          | 0.0  |
| 0.0          | -5.9  | -303.8   | 3.9          | -2.0  | -303.8   | 5.4          | -1.4 |
| 0.0          | -9.1  | -303.8   | 7.6          | -3.7  | -303.8   | 9.6          | -2.8 |
| 0.0          | -11.7 | -303.8   | 12.2         | -5.9  | -303.8   | 15.6         | -4.4 |
| 0.0          | -13.9 | -275.1   | 16.4         | -8.3  | -276.9   | 22.4         | -5.8 |
| 0.0          | -15.6 | -228.3   | 18.9         | -10.8 | -231.9   | 29.1         | -6.5 |
| 0.0          | -16.8 | -173.4   | 20.0         | -12.3 | -179.6   | 33.6         | -6.8 |
| 0.0          | -17.6 | -113.7   | 21.3         | -12.4 | -123.5   | 34.3         | -7.2 |
| 0.0          | -16.6 | -68.5    | 20.7         | -11.2 | -77.2    | 31.4         | -7.4 |
| 0.0          | -15.1 | -28.3    | 19.4         | -10.2 | -33.0    | 27.5         | -6.9 |
| 0.0          | -13.1 | 15.4     | 19.3         | -9.1  | 9.5      | 26.3         | -7.2 |
| 0.0          | -12.3 | 52.7     | 14.4         | -5.7  | 51.4     | 16.9         | -5.2 |
| 0.0          | -7.5  | 83.9     | 7.6          | -2.6  | 81.5     | 8.8          | -2.7 |
| 0.0          | -3.1  | 104.3    | 1.1          | -0.4  | 103.7    | 1.3          | -0.5 |
| 0.0          | 0.0   | 107.3    | 0.0          | 0.0   | 107.3    | 0.0          | 0.0  |



| 270, degrees |       | Curve 20 | 285, degrees |       | Curve 21 | 300, degrees |       |
|--------------|-------|----------|--------------|-------|----------|--------------|-------|
| M3           | M2    | P        | M3           | M2    | P        | M3           | M2    |
| 0.0          | 0.0   | -434.0   | 0.0          | 0.0   | -434.0   | 0.0          | 0.0   |
| 0.0          | -8.4  | -434.0   | 5.6          | -2.9  | -434.0   | 7.7          | -2.0  |
| 0.0          | -13.1 | -434.0   | 10.9         | -5.2  | -434.0   | 13.8         | -4.0  |
| 0.0          | -16.7 | -434.0   | 17.4         | -8.4  | -434.0   | 22.4         | -6.3  |
| 0.0          | -19.9 | -393.0   | 23.5         | -11.9 | -395.6   | 32.0         | -8.3  |
| 0.0          | -22.3 | -326.2   | 27.0         | -15.4 | -331.3   | 41.6         | -9.3  |
| 0.0          | -24.1 | -247.7   | 28.5         | -17.6 | -256.6   | 47.9         | -9.7  |
| 0.0          | -25.2 | -162.4   | 30.5         | -17.6 | -176.4   | 49.0         | -10.3 |
| 0.0          | -23.7 | -97.8    | 29.6         | -16.1 | -110.2   | 44.8         | -10.6 |

|     |       |       |      |       |       |      |      |
|-----|-------|-------|------|-------|-------|------|------|
| 0.0 | -21.6 | -37.9 | 25.9 | -13.6 | -46.2 | 38.5 | -9.7 |
| 0.0 | -18.7 | 17.1  | 21.4 | -10.2 | 10.6  | 29.2 | -8.0 |
| 0.0 | -14.8 | 58.5  | 16.0 | -6.3  | 57.1  | 18.8 | -5.8 |
| 0.0 | -8.3  | 93.3  | 8.4  | -2.9  | 90.6  | 9.8  | -3.0 |
| 0.0 | -3.5  | 115.9 | 1.2  | -0.5  | 115.2 | 1.5  | -0.5 |
| 0.0 | 0.0   | 119.2 | 0.0  | 0.0   | 119.2 | 0.0  | 0.0  |









| Curve 22 | 315, degrees |      | Curve 23 | 330, degrees |      | Curve 24 | 345, degrees |
|----------|--------------|------|----------|--------------|------|----------|--------------|
| P        | M3           | M2   | P        | M3           | M2   | P        | M3           |
| -303.8   | 0.0          | 0.0  | -303.8   | 0.0          | 0.0  | -303.8   | 0.0          |
| -303.8   | 6.4          | -1.2 | -303.8   | 7.4          | -1.0 | -303.8   | 9.6          |
| -303.8   | 11.6         | -2.4 | -303.8   | 14.4         | -2.0 | -303.8   | 18.6         |
| -303.8   | 19.3         | -3.4 | -294.8   | 23.4         | -2.1 | -285.6   | 26.4         |
| -267.9   | 27.7         | -3.7 | -259.8   | 30.8         | -2.2 | -253.4   | 32.6         |
| -225.9   | 34.0         | -3.9 | -222.7   | 36.2         | -2.3 | -219.4   | 37.4         |
| -181.8   | 37.8         | -4.1 | -183.0   | 39.8         | -2.4 | -182.5   | 40.9         |
| -132.6   | 39.3         | -4.4 | -138.4   | 41.8         | -2.5 | -142.5   | 43.2         |
| -91.5    | 38.0         | -4.4 | -100.4   | 41.0         | -2.5 | -108.3   | 42.7         |
| -49.7    | 33.5         | -4.4 | -62.7    | 37.6         | -2.5 | -73.2    | 40.2         |
| -10.5    | 31.7         | -5.2 | -27.3    | 34.0         | -2.9 | -38.2    | 35.2         |
| 37.0     | 22.1         | -4.6 | 17.2     | 29.0         | -3.4 | -5.0     | 34.8         |
| 76.6     | 10.7         | -3.0 | 63.4     | 15.3         | -2.7 | 41.4     | 23.1         |
| 99.3     | 2.9          | -0.9 | 95.1     | 4.4          | -1.2 | 88.2     | 6.9          |
| 107.3    | 0.0          | 0.0  | 107.3    | 0.0          | 0.0  | 107.3    | 0.0          |



| Curve 22 | 315, degrees |      | Curve 23 | 330, degrees |      | Curve 24 | 345, degrees |
|----------|--------------|------|----------|--------------|------|----------|--------------|
| P        | M3           | M2   | P        | M3           | M2   | P        | M3           |
| -434.0   | 0.0          | 0.0  | -434.0   | 0.0          | 0.0  | -434.0   | 0.0          |
| -434.0   | 9.1          | -1.7 | -434.0   | 10.6         | -1.5 | -434.0   | 13.7         |
| -434.0   | 16.6         | -3.4 | -434.0   | 20.6         | -2.8 | -434.0   | 26.5         |
| -434.0   | 27.6         | -4.9 | -421.1   | 33.5         | -3.0 | -408.0   | 37.7         |
| -382.7   | 39.6         | -5.3 | -371.1   | 44.0         | -3.1 | -362.0   | 46.6         |
| -322.7   | 48.6         | -5.5 | -318.2   | 51.7         | -3.3 | -313.5   | 53.4         |
| -259.7   | 54.0         | -5.8 | -261.4   | 56.9         | -3.4 | -260.7   | 58.4         |
| -189.4   | 56.1         | -6.2 | -197.6   | 59.7         | -3.6 | -203.5   | 61.7         |
| -130.7   | 54.2         | -6.3 | -143.5   | 58.6         | -3.6 | -154.7   | 61.0         |

|       |      |      |       |      |      |        |      |
|-------|------|------|-------|------|------|--------|------|
| -71.0 | 47.9 | -6.2 | -89.6 | 53.7 | -3.6 | -104.5 | 57.4 |
| -12.3 | 37.3 | -6.1 | -36.2 | 45.1 | -3.8 | -54.6  | 50.2 |
| 41.2  | 24.6 | -5.1 | 19.1  | 32.2 | -3.7 | -5.7   | 39.7 |
| 85.1  | 11.8 | -3.3 | 70.4  | 17.0 | -3.0 | 46.0   | 25.7 |
| 110.4 | 3.2  | -1.0 | 105.6 | 4.9  | -1.4 | 98.0   | 7.7  |
| 119.2 | 0.0  | 0.0  | 119.2 | 0.0  | 0.0  | 119.2  | 0.0  |







| <b>M2</b> |
|-----------|
| 0.0       |
| -0.9      |
| -1.0      |
| -1.0      |
| -1.0      |
| -1.1      |
| -1.1      |
| -1.2      |
| -1.1      |
| -1.1      |
| -1.3      |
| -1.6      |
| -1.4      |
| -1.6      |
| 0.0       |



| <b>M2</b> |
|-----------|
| 0.0       |
| -1.2      |
| -1.4      |
| -1.5      |
| -1.5      |
| -1.6      |
| -1.6      |
| -1.7      |
| -1.6      |

|      |
|------|
| -1.6 |
| -1.8 |
| -1.8 |
| -1.6 |
| -1.8 |
| 0.0  |



METRADO DE EDIFICIO DE OCHO PISO TANQUE ELEVADO, CUARTO DE MAQUINA

|                          |                 | PESO DE PRIMER PISO |       |        |               |             |
|--------------------------|-----------------|---------------------|-------|--------|---------------|-------------|
|                          |                 | CANTIDAD            | AREA  | ALTURA | PESO UNITARIO | PESO UNIDAD |
| COLUMNAS                 | C1              | 2                   | 0.32  | 2.83   | 2.4           | 2.17        |
|                          | C2              | 1                   | 0.32  | 2.83   | 2.4           | 2.17        |
|                          | C3              | 2                   | 0.24  | 2.83   | 2.4           | 1.63        |
|                          | C4              | 2                   | 0.24  | 2.83   | 2.4           | 1.63        |
|                          | C5              | 2                   | 0.24  | 2.83   | 2.4           | 1.63        |
|                          | C6              | 1                   | 0.2   | 2.83   | 2.4           | 1.36        |
| PLACA T                  | T               | 1                   | 0.60  | 2.83   | 2.4           | 4.04        |
| PLACA L                  |                 | 2                   | 1.25  | 2.83   | 2.4           | 8.49        |
| CAJAS ASCENSOR           |                 | 1                   | 3.256 | 2.83   | 2.4           | 22.11       |
| LOSA ALIGERADA<br>+ P.T. |                 | 2                   | 11.01 |        | 0.4           | 4.40        |
|                          |                 | 2                   | 9.88  |        | 0.4           | 3.95        |
|                          |                 | 2                   | 9.75  |        | 0.4           | 3.9         |
|                          |                 | 1                   | 22.4  |        | 0.4           | 8.96        |
|                          |                 | 1                   | 28.16 |        | 0.4           | 11.26       |
|                          |                 | 2                   | 22.27 |        | 0.4           | 8.91        |
|                          |                 | 2                   | 24.31 |        | 0.4           | 9.72        |
|                          | BALCON          | 1                   | 6.84  |        | 0.4           | 2.74        |
| LOSA MACIZA<br>+P.T      |                 | 1                   | 5.86  |        | 0.58          | 3.40        |
|                          |                 | 1                   | 4.13  |        | 0.58          | 2.40        |
|                          |                 | 2                   | 8.74  |        | 0.58          | 5.0692      |
| PESO TABIQUERIA          |                 |                     |       |        |               |             |
|                          | vestibulo vent  | 2.45                |       | 1      | 0.18          |             |
|                          | dormito/estuc   | 38                  |       | 2.4    | 0.432         |             |
|                          | a/5-6           | 6.82                |       | 2.4    | 0.432         |             |
|                          | baño/lavande    | 30.04               |       | 2.4    | 0.432         |             |
|                          | limite escalera | 5.02                |       | 2.4    | 0.432         |             |
|                          | limite escalera | 7.49                |       | 2.4    | 0.432         |             |
|                          | baño/cocina     | 23.86               |       | 2.4    | 0.432         |             |
|                          | A/3-6           | 6.68                |       | 2.4    | 0.432         |             |
|                          | a/2-3           | 13.9                |       | 2.4    | 0.432         |             |
|                          |                 | 12                  |       | 2.4    | 0.432         |             |
|                          |                 | 7.87                |       | 2.4    | 0.432         |             |
|                          |                 | 15.6                |       | 2.4    | 0.432         |             |
|                          | 2/a-c           | 7.9                 |       | 2.4    | 0.432         |             |
|                          | BALCON          | 9.8                 |       | 1      | 0.18          |             |

|            |       |       |       |     |
|------------|-------|-------|-------|-----|
| PESO VIGAS | EJE2  | 13.7  | 0.15  | 2.4 |
|            | EJE3  | 8.78  | 0.125 | 2.4 |
|            | EJE5  | 11.36 | 0.125 | 2.4 |
|            | EJE6  | 11.36 | 0.125 | 2.4 |
|            | EJE7  | 13.9  | 0.15  | 2.4 |
|            | EJE A | 32.6  | 0.15  | 2.4 |
|            | EJE C | 13.9  | 0.125 | 2.4 |
|            | EJE B | 15.62 | 0.125 | 2.4 |
|            | EJE D | 12.4  | 0.125 | 2.4 |
|            | EJE E | 6.45  | 0.15  | 2.4 |

ESCALERA 9.18 1.48

#### PESO DE PISO TIPICO

|                          |    | CANTIDAD | AREA   | ALTURA | PESO UNITARIO | PESO UNIDAD |
|--------------------------|----|----------|--------|--------|---------------|-------------|
| COLUMNAS                 | C1 | 2        | 0.32   | 2.65   | 2.4           | 2.04        |
|                          | C2 | 1        | 0.32   | 2.65   | 2.4           | 2.04        |
|                          | C3 | 2        | 0.24   | 2.65   | 2.4           | 1.53        |
|                          | C4 | 2        | 0.24   | 2.65   | 2.4           | 1.53        |
|                          | C5 | 2        | 0.24   | 2.65   | 2.4           | 1.53        |
|                          | C6 | 1        | 0.2    | 2.65   | 2.4           | 1.27        |
| PLACA T                  | T  | 1        | 0.66   | 2.65   | 2.4           | 4.20        |
| PLACA L                  |    | 2        | 0.883  | 2.65   | 2.4           | 5.62        |
| CAJAS ASCENSOR           |    | 1        | 3.256  | 2.65   | 2.4           | 20.71       |
| LOSA ALIGERADA<br>+ P.T. |    | 2        | 11.01  |        | 0.4           | 4.40        |
|                          |    | 2        | 9.88   |        | 0.4           | 3.95        |
|                          |    | 2        | 9.75   |        | 0.4           | 3.9         |
|                          |    | 1        | 22.4   |        | 0.4           | 8.96        |
|                          |    | 1        | 28.16  |        | 0.4           | 11.26       |
|                          |    | 2        | 22.27  |        | 0.4           | 8.91        |
|                          |    | 2        | 24.31  |        | 0.4           | 9.72        |
|                          |    | 2        | 24.31  |        | 0.4           | 9.72        |
| BALCON                   |    | 1        | 6.84   |        | 0.4           | 2.74        |
|                          |    | 2        | -10.11 |        | 0.4           | -4.04       |
| LOSA MACIZA<br>+P.T      |    | 1        | 5.86   |        | 0.58          | 3.40        |
|                          |    | 1        | 4.13   |        | 0.58          | 2.40        |
|                          |    | 2        | 8.74   |        | 0.58          | 5.0692      |

PESO TABIQUERIA



|                 |       |     |       |
|-----------------|-------|-----|-------|
| vestibulo vent  | 2.45  | 1   | 0.18  |
| dormito/estuc   | 38    | 2.4 | 0.432 |
| a/5-6           | 6.82  | 2.4 | 0.432 |
| baño/lavande    | 30.04 | 2.4 | 0.432 |
| limite escalera | 5.02  | 2.4 | 0.432 |
| limite escalera | 7.49  | 2.4 | 0.432 |
| baño/cocina     | 23.86 | 2.4 | 0.432 |
| A/3-6           | 6.68  | 2.4 | 0.432 |
| a/2-3           | 13.9  | 2.4 | 0.432 |
|                 | 12    | 2.4 | 0.432 |
|                 | 7.87  | 2.4 | 0.432 |
|                 | 15.6  | 2.4 | 0.432 |
| 2/a-c           | 7.9   | 2.4 | 0.432 |
| BALCON          | 9.8   | 1   | 0.18  |

|            |       |       |       |     |
|------------|-------|-------|-------|-----|
| PESO VIGAS | EJE2  | 13.7  | 0.15  | 2.4 |
|            | EJE3  | 8.78  | 0.125 | 2.4 |
|            | EJE5  | 11.36 | 0.125 | 2.4 |
|            | EJE6  | 11.36 | 0.125 | 2.4 |
|            | EJE7  | 13.9  | 0.15  | 2.4 |
|            | EJE A | 32.6  | 0.15  | 2.4 |
|            | EJE C | 13.9  | 0.125 | 2.4 |
|            | EJE B | 15.62 | 0.125 | 2.4 |
|            | EJE D | 12.4  | 0.125 | 2.4 |
|            | EJE E | 6.45  | 0.15  | 2.4 |

ESCALERA 9.18 1.48

#### PESO DE PISO AZOTEA

|                |    | CANTIDAD | AREA  | ALTURA | PESO UNITARIO | PESO UNIDAD |
|----------------|----|----------|-------|--------|---------------|-------------|
| COLUMNAS       | C1 | 2        | 0.32  | 2.65   | 2.4           | 2.04        |
|                | C2 | 1        | 0.32  | 2.65   | 2.4           | 2.04        |
|                | C3 | 2        | 0.24  | 2.65   | 2.4           | 1.53        |
|                | C4 | 2        | 0.24  | 2.65   | 2.4           | 1.53        |
|                | C5 | 2        | 0.24  | 2.65   | 2.4           | 1.53        |
|                | C6 | 1        | 0.2   | 2.65   | 2.4           | 1.27        |
| PLACA T        | T  | 1        | 0.66  | 2.65   | 2.4           | 4.20        |
| PLACA L        |    | 2        | 0.883 | 2.65   | 2.4           | 5.62        |
| CAJAS ASCENSOR |    | 1        | 3.256 | 2.65   | 2.4           | 20.71       |
| LOSA ALIGERADA |    | 2        | 11.01 |        | 0.4           | 4.40        |
| + P.T.         |    | 2        | 9.88  |        | 0.4           | 3.95        |

|             |   |        |      |        |
|-------------|---|--------|------|--------|
|             | 2 | 9.75   | 0.4  | 3.9    |
|             | 1 | 22.4   | 0.4  | 8.96   |
|             | 1 | 28.16  | 0.4  | 11.26  |
|             | 2 | 22.27  | 0.4  | 8.91   |
|             | 2 | 24.31  | 0.4  | 9.72   |
| BALCON      | 1 | 0      | 0.4  | 0.00   |
|             | 2 | -10.11 | 0.4  | -4.04  |
| LOSA MACIZA | 1 | 5.86   | 0.58 | 3.40   |
| +P.T        | 1 | 4.13   | 0.58 | 2.40   |
|             | 2 | 8.74   | 0.58 | 5.0692 |

PESO TABIQUERIA

|       |     |       |
|-------|-----|-------|
| 12.9  | 1   | 0.18  |
| 6.3   | 2.4 | 0.432 |
| 8.7   | 2.4 | 0.432 |
| 5.82  | 2.4 | 0.432 |
| 5.82  | 2.4 | 0.432 |
| 7.22  | 2.4 | 0.432 |
| 10.58 | 2.4 | 0.432 |
| 5.2   | 2.4 | 0.432 |
| 13.3  | 2.4 | 0.432 |
| 14.8  | 2.4 | 0.432 |
| 7.91  | 2.4 | 0.432 |

|            |       |       |       |     |
|------------|-------|-------|-------|-----|
| PESO VIGAS | EJE2  | 13.7  | 0.15  | 2.4 |
|            | EJE3  | 8.78  | 0.125 | 2.4 |
|            | EJE5  | 11.36 | 0.125 | 2.4 |
|            | EJE6  | 11.36 | 0.125 | 2.4 |
|            | EJE7  | 13.9  | 0.15  | 2.4 |
|            | EJE A | 32.6  | 0.15  | 2.4 |
|            | EJE C | 13.9  | 0.125 | 2.4 |
|            | EJE B | 15.62 | 0.125 | 2.4 |
|            | EJE D | 12.4  | 0.125 | 2.4 |
|            | EJE E | 6.45  | 0.15  | 2.4 |

|          |      |      |
|----------|------|------|
| ESCALERA | 9.18 | 1.48 |
|----------|------|------|

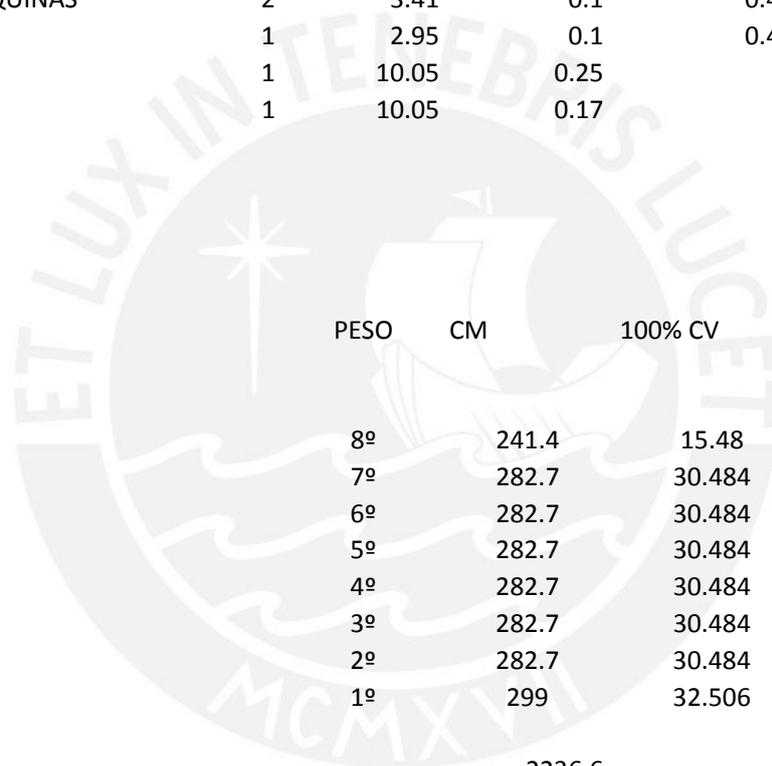
PESO DE PISO TANQUE ELEVADO Y CUARTO DE MAQUINA

|                | AREA | ALTURA | DENSIDAD | PESO X UNIDAD |
|----------------|------|--------|----------|---------------|
| CAJAS ASCENSOR | 1    | 3.256  | 2.65     | 20.71         |

|                       |   |       |      |     |      |
|-----------------------|---|-------|------|-----|------|
| PAREDES DE TQ ELEVADO | 2 | 6.10  | 0.25 | 2.4 | 3.66 |
|                       | 2 | 8.84  | 0.25 | 2.4 | 5.30 |
|                       | 1 | 10.48 | 0.25 | 2.4 | 6.29 |
|                       | 1 | 10.48 | 0.17 | 2.4 | 4.28 |

|                 |  |      |     |   |  |
|-----------------|--|------|-----|---|--|
| VOLUMEN DE AGUA |  | 7.11 | 2.1 | 1 |  |
|-----------------|--|------|-----|---|--|

|                          |   |       |      |       |      |
|--------------------------|---|-------|------|-------|------|
| PAREDES DE CTO. MAQUINAS | 2 | 3.41  | 0.1  | 0.432 | 1.47 |
|                          | 1 | 2.95  | 0.1  | 0.432 | 1.27 |
|                          | 1 | 10.05 | 0.25 | 2.4   | 6.03 |
|                          | 1 | 10.05 | 0.17 | 2.4   | 4.10 |



|    | PESO | CM    | 100% CV | 25%  |
|----|------|-------|---------|------|
| 8º |      | 241.4 | 15.48   | 3.87 |
| 7º |      | 282.7 | 30.484  | 7.62 |
| 6º |      | 282.7 | 30.484  | 7.62 |
| 5º |      | 282.7 | 30.484  | 7.62 |
| 4º |      | 282.7 | 30.484  | 7.62 |
| 3º |      | 282.7 | 30.484  | 7.62 |
| 2º |      | 282.7 | 30.484  | 7.62 |
| 1º |      | 299   | 32.506  | 8.13 |

2236.6

57.7

|               |            |
|---------------|------------|
| PESO EDIFICIO | 2294.3 TON |
|---------------|------------|

2372.805

| Story  | Diaphragm | MassX   | MassY   | MMI       | XM    |
|--------|-----------|---------|---------|-----------|-------|
| STORY8 | DPISO8    | 24.8565 | 24.8565 | 1260.248  | 7.304 |
| STORY7 | DPISO7    | 30.5411 | 30.5411 | 1915.2879 | 7.3   |
| STORY6 | DPISO6    | 30.5411 | 30.5411 | 1915.2879 | 7.3   |
| STORY5 | DPISO5    | 30.5411 | 30.5411 | 1915.2879 | 7.3   |
| STORY4 | DPISO4    | 30.5411 | 30.5411 | 1915.2879 | 7.3   |
| STORY3 | DPISO3    | 30.5411 | 30.5411 | 1915.2879 | 7.3   |

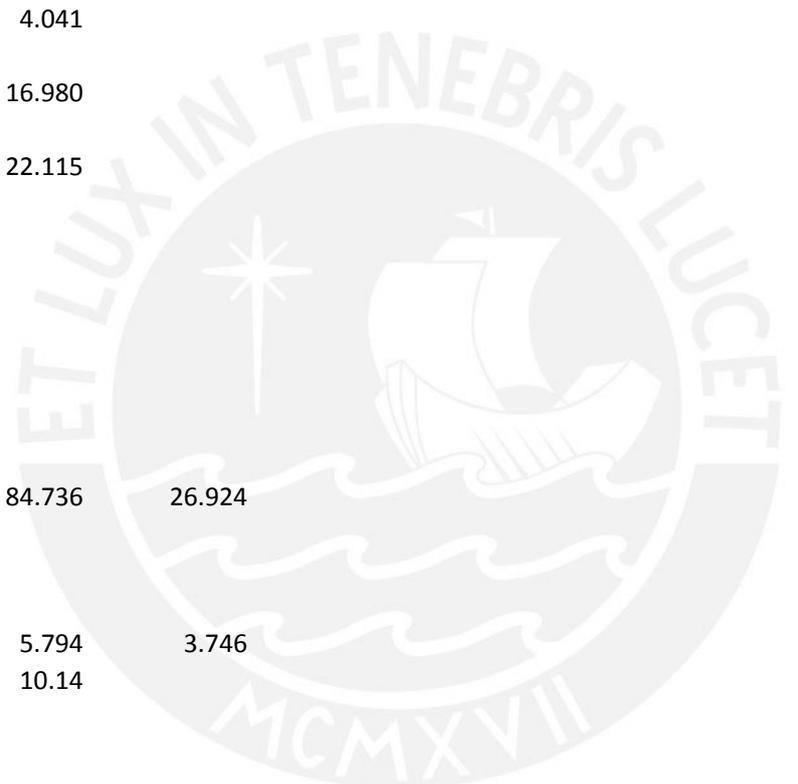
|        |        |         |         |           |       |
|--------|--------|---------|---------|-----------|-------|
| STORY2 | DPISO2 | 30.5411 | 30.5411 | 1915.2879 | 7.3   |
| STORY1 | DPISO1 | 31.0179 | 31.0179 | 1981.1481 | 7.292 |

|                         |        |
|-------------------------|--------|
| PESO TANQUE ELEVADO +CM | 78     |
| PESO AZOTEA             | 245.27 |
| PESO PISO TIPICO        | 290.32 |
| PESO 1ER PISO           | 307.13 |

|                   |               |
|-------------------|---------------|
| <b>PESO TOTAL</b> | <b>2372.8</b> |
|-------------------|---------------|

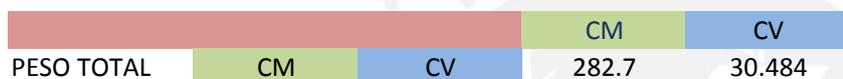
| Story  | Load       | Loc    | P       | VX     | VY     |   |
|--------|------------|--------|---------|--------|--------|---|
| STORY1 | MUERTA     | Bottom | 2293.97 | 0      | 0      | 0 |
| STORY1 | VIVA       | Bottom | 396.24  | 0      | 0      | 0 |
| STORY1 | SPECTROXX  | Bottom | 0       | 142.02 | 5.14   |   |
| STORY1 | SPECTROY Y | Bottom | 0       | 4.41   | 180.49 |   |

| PESO TOTAL | CM     | CV     | CM    | CV     |
|------------|--------|--------|-------|--------|
|            |        |        | 299.0 | 32.506 |
| 4.347      |        |        |       |        |
| 2.173      |        |        |       |        |
| 3.260      |        |        |       |        |
| 3.260      |        |        |       |        |
| 3.260      |        |        |       |        |
| 1.358      | 17.659 |        |       |        |
| 4.041      | 4.041  |        |       |        |
| 16.980     | 16.980 |        |       |        |
| 22.115     | 22.115 |        |       |        |
| 8.808      |        |        |       |        |
| 7.904      |        |        |       |        |
| 7.8        |        |        |       |        |
| 8.96       |        |        |       |        |
| 11.264     |        |        |       |        |
| 17.816     |        |        |       |        |
| 19.448     |        |        |       |        |
| 2.736      | 84.736 | 26.924 |       |        |
| 3.40       |        |        |       |        |
| 2.40       | 5.794  | 3.746  |       |        |
| 10.14      | 10.14  |        |       |        |
| 0.44       |        |        |       |        |
| 16.42      |        |        |       |        |
| 2.95       |        |        |       |        |
| 12.98      |        |        |       |        |
| 2.17       |        |        |       |        |
| 3.24       |        |        |       |        |
| 10.31      |        |        |       |        |
| 2.89       |        |        |       |        |
| 6.00       |        |        |       |        |
| 5.18       |        |        |       |        |
| 3.40       |        |        |       |        |
| 6.74       |        |        |       |        |
| 3.41       |        |        |       |        |
| 1.76       | 77.88  |        |       |        |



4.932  
 2.634  
 3.408  
 3.408  
 5.004  
 11.736  
 4.17  
 4.686  
 3.72  
 2.322      46.02

13.5864      13.59      1.836



|        |        |        |
|--------|--------|--------|
| 4.070  |        |        |
| 2.035  |        |        |
| 3.053  |        |        |
| 3.053  |        |        |
| 3.053  |        |        |
| 1.272  | 16.536 |        |
| 4.198  | 4.198  |        |
| 11.232 | 11.232 |        |
| 20.708 | 20.708 |        |
| 8.808  |        |        |
| 7.904  |        |        |
| 7.8    |        |        |
| 8.96   |        |        |
| 11.264 |        |        |
| 17.816 |        |        |
| 19.448 |        |        |
| 2.736  |        |        |
| -8.088 | 76.648 | 24.902 |
| 3.399  |        |        |
| 2.395  | 5.794  | 3.746  |
| 10.14  | 10.14  |        |

0.44  
 16.42  
 2.95  
 12.98  
 2.17  
 3.24  
 10.31  
 2.89  
 6.00  
 5.18  
 3.40  
 6.74  
 3.41  
 1.76

77.88

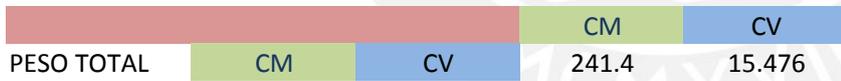
4.932  
 2.634  
 3.408  
 3.408  
 5.004  
 11.736  
 4.17  
 4.686  
 3.72  
 2.322

46.02

13.5864

13.59

1.84



4.070  
 2.035  
 3.053  
 3.053  
 3.053  
 1.272  
 4.198  
 11.232  
 20.708  
 8.808  
 7.904

16.536

4.198

11.232

20.708

|        |        |       |
|--------|--------|-------|
| 7.8    |        |       |
| 8.96   |        |       |
| 11.264 |        |       |
| 17.816 |        |       |
| 19.448 |        |       |
| 0      |        |       |
| -8.088 | 73.912 | 11.77 |
| 3.399  |        |       |
| 2.395  | 5.794  | 1.87  |
| 10.14  | 10.14  |       |

|      |       |  |
|------|-------|--|
| 2.32 |       |  |
| 2.72 |       |  |
| 3.76 |       |  |
| 2.51 |       |  |
| 2.51 |       |  |
| 3.12 |       |  |
| 4.57 |       |  |
| 2.25 |       |  |
| 5.75 |       |  |
| 6.39 |       |  |
| 3.42 | 39.32 |  |

|        |       |  |
|--------|-------|--|
| 4.932  |       |  |
| 2.634  |       |  |
| 3.408  |       |  |
| 3.408  |       |  |
| 5.004  |       |  |
| 11.736 |       |  |
| 4.17   |       |  |
| 4.686  |       |  |
| 3.72   |       |  |
| 2.322  | 46.02 |  |

|         |       |      |
|---------|-------|------|
| 13.5864 | 13.59 | 1.84 |
|---------|-------|------|

|            |        |
|------------|--------|
| PESO TOTAL | CM     |
| 20.708     | 20.708 |



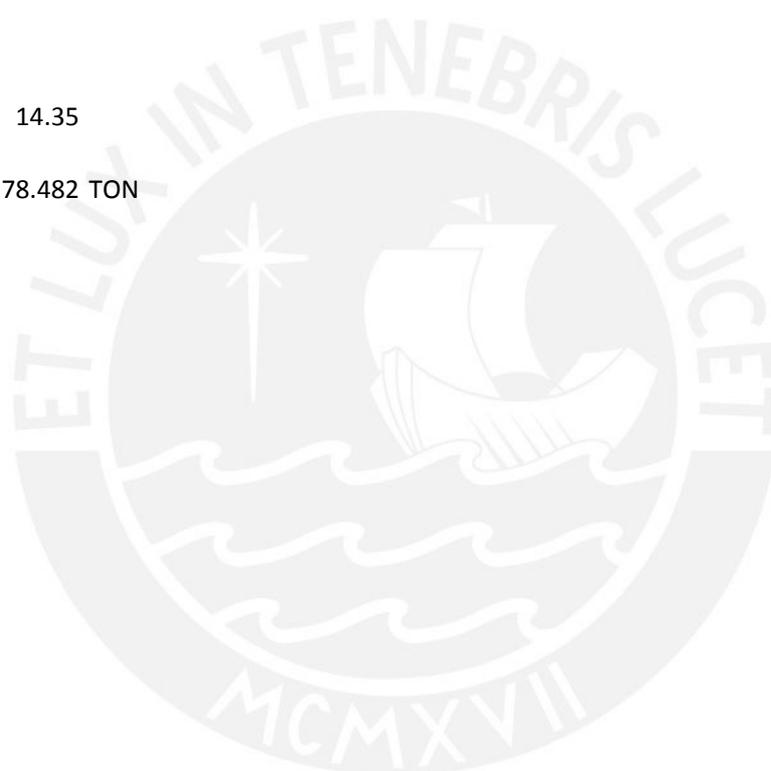


7.32  
10.61  
6.29  
4.28      28.49

14.93      14.93

2.95  
1.27  
6.03  
4.10      14.35

78.482 TON

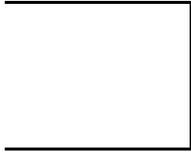


YM

|        |            |
|--------|------------|
| 10.309 | 243.842265 |
| 10.157 | 299.608191 |
| 10.157 | 299.608191 |
| 10.157 | 299.608191 |
| 10.157 | 299.608191 |
| 10.157 | 299.608191 |
| 10.157 | 299.608191 |

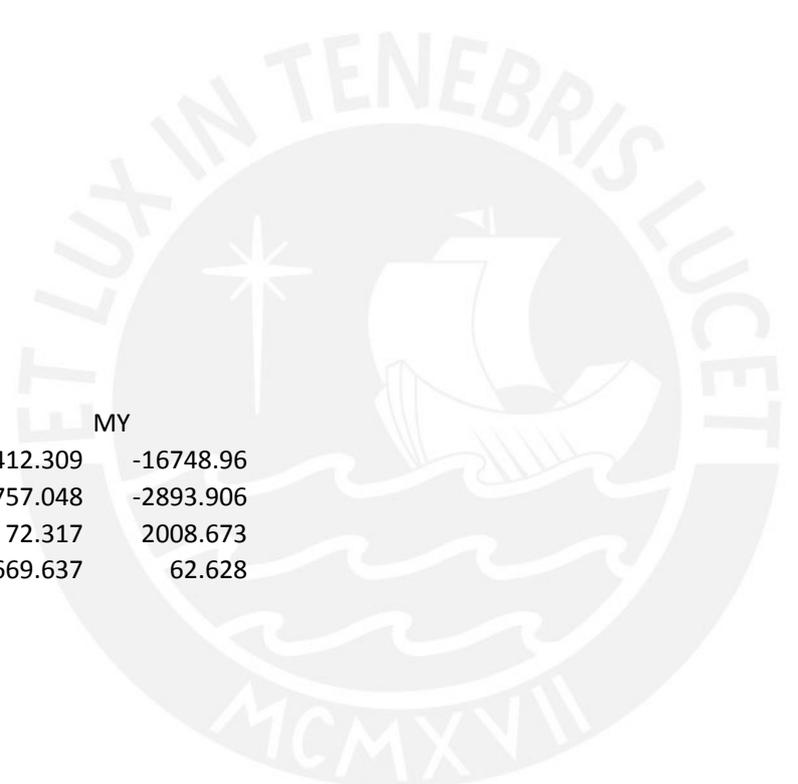
|        |            |
|--------|------------|
| 10.157 | 299.608191 |
| 10.186 | 304.285599 |

2345.77701



**Ton**

| T        | MX        | MY        |
|----------|-----------|-----------|
| 0        | 23412.309 | -16748.96 |
| 0        | 3757.048  | -2893.906 |
| 1417.759 | 72.317    | 2008.673  |
| 1340.98  | 2669.637  | 62.628    |















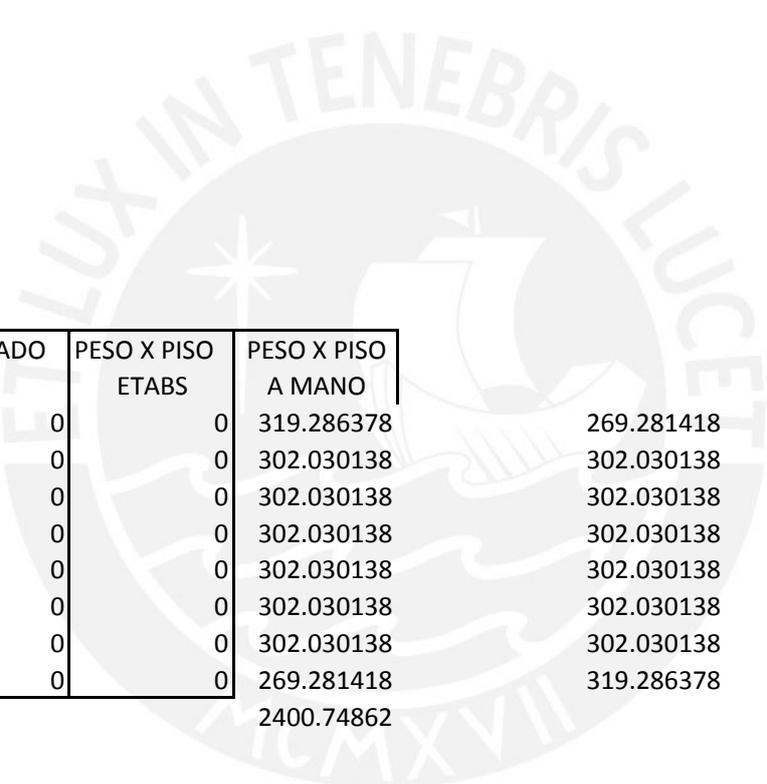












|  | ACUMULADO<br>ETABS | PESO X PISO<br>ETABS | PESO X PISO<br>A MANO |            |
|--|--------------------|----------------------|-----------------------|------------|
|  | 0                  | 0                    | 319.286378            | 269.281418 |
|  | 0                  | 0                    | 302.030138            | 302.030138 |
|  | 0                  | 0                    | 302.030138            | 302.030138 |
|  | 0                  | 0                    | 302.030138            | 302.030138 |
|  | 0                  | 0                    | 302.030138            | 302.030138 |
|  | 0                  | 0                    | 302.030138            | 302.030138 |
|  | 0                  | 0                    | 302.030138            | 302.030138 |
|  | 0                  | 0                    | 269.281418            | 319.286378 |
|  |                    |                      | 2400.74862            |            |

HOJA 1

VIGA  
UBICACIÓN  
EJE

B28

5to PISO

PAR

EV2

loc

P

V2

V3

|        |     |                |       |   |        |   |
|--------|-----|----------------|-------|---|--------|---|
| STORY5 | B28 | ENVOLVENTE MAX | 0     | 0 | 0.68   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 0.36  | 0 | 1.27   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 0.72  | 0 | 1.86   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 1.08  | 0 | 2.45   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 1.08  | 0 | 10.3   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 1.564 | 0 | 11.65  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 2.048 | 0 | 13.06  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 2.532 | 0 | 14.36  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 3.016 | 0 | 15.51  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 3.5   | 0 | 16.66  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 3.5   | 0 | 16.66  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 3.87  | 0 | 17.32  | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 0     | 0 | -27.88 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 0.36  | 0 | -26.83 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 0.72  | 0 | -25.78 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 1.08  | 0 | -24.73 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 1.08  | 0 | -10.56 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 1.564 | 0 | -9.7   | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 2.048 | 0 | -8.9   | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 2.532 | 0 | -8.19  | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 3.016 | 0 | -7.58  | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 3.5   | 0 | -6.98  | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 3.5   | 0 | -6.98  | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 3.87  | 0 | -6.62  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 0     | 0 | 0.68   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 0.36  | 0 | 1.27   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 0.72  | 0 | 1.86   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 1.08  | 0 | 2.45   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 1.08  | 0 | 10.3   | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 1.564 | 0 | 11.65  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 2.048 | 0 | 13.06  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 2.532 | 0 | 14.36  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 3.016 | 0 | 15.51  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 3.5   | 0 | 16.66  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 3.5   | 0 | 16.66  | 0 |
| STORY5 | B28 | ENVOLVENTE MAX | 3.87  | 0 | 17.32  | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 0     | 0 | -27.88 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 0.36  | 0 | -26.83 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 0.72  | 0 | -25.78 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 1.08  | 0 | -24.73 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 1.09  | 0 | -10.56 | 0 |

|        |     |                |       |   |       |   |
|--------|-----|----------------|-------|---|-------|---|
| STORY5 | B28 | ENVOLVENTE MIN | 1.564 | 0 | -9.7  | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 2.048 | 0 | -8.9  | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 2.532 | 0 | -8.19 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 3.016 | 0 | -7.58 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 3.5   | 0 | -6.98 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 3.5   | 0 | -6.98 | 0 |
| STORY5 | B28 | ENVOLVENTE MIN | 3.87  | 0 | -6.62 | 0 |
| STORY8 | B7  | ENVOLVENTE MIN | 3.813 | 0 | -0.29 | 0 |
| STORY8 | B7  | ENVOLVENTE MIN | 4.29  | 0 | 0.53  | 0 |
| STORY8 | B7  | ENVOLVENTE MIN | 4.767 | 0 | 1.29  | 0 |
| STORY8 | B7  | ENVOLVENTE MIN | 5.243 | 0 | 2.05  | 0 |
| STORY8 | B7  | ENVOLVENTE MIN | 5.72  | 0 | 2.81  | 0 |
| STORY8 | B7  | ENVOLVENTE MIN | 6.197 | 0 | 3.57  | 0 |
| STORY8 | B7  | ENVOLVENTE MIN | 6.673 | 0 | 4.33  | 0 |
| STORY8 | B7  | ENVOLVENTE MIN | 7.15  | 0 | 5.09  | 0 |









| T | M2 | M3      | V2     | M3      | 4 $\Phi$ 1" + 1 $\Phi$ 3/4" $\bar{o}$<br>23.84 cm <sup>2</sup> |
|---|----|---------|--------|---------|--|
| 0 | 0  | 13.285  | -0.68  | -13.29  |  |
| 0 | 0  | 12.935  | -1.27  | -12.94  |  |
| 0 | 0  | 12.372  | -1.86  | -12.37  |  |
| 0 | 0  | 13.763  | -2.45  | -13.76  |  |
| 0 | 0  | 13.763  | -10.3  | -13.76  |  |
| 0 | 0  | 8.467   | -11.65 | -8.47   |  |
| 0 | 0  | 4.834   | -13.06 | -4.83   |  |
| 0 | 0  | 8.248   | -14.36 | -8.25   |  |
| 0 | 0  | 11.14   | -15.51 | -11.14  |  |
| 0 | 0  | 14.663  | -16.66 | -14.66  |  |
| 0 | 0  | 14.663  | -16.66 | -14.66  |  |
| 0 | 0  | 17.179  | -17.32 | -17.18  |  |
| 0 | 0  | -32.433 | 27.88  | 32.43   | 36.9   |
| 0 | 0  | -22.584 | 26.83  | 22.58   | 36.9   |
| 0 | 0  | -13.114 | 25.78  | 13.11   | 36.9   |
| 0 | 0  | -6.186  | 24.73  | 6.19    | 36.9   |
| 0 | 0  | -6.186  | 10.56  | 6.19    | 36.9   |
| 0 | 0  | -1.301  | 9.7    | 1.30    |  |
| 0 | 0  | 0.855   | 8.9    | -0.86   |  |
| 0 | 0  | -5.084  | 8.19   | 5.08    |  |
| 0 | 0  | -11.389 | 7.58   | 11.39   |  |
| 0 | 0  | -19.174 | 6.98   | 19.17   |  |
| 0 | 0  | -19.174 | 6.98   | 19.17   |  |
| 0 | 0  | -25.459 | 6.62   | 25.46   |  |
| 0 | 0  | 13.285  | -0.68  | -13.285 | 30.9   |
| 0 | 0  | 12.935  | -1.27  | -12.935 | 30.9   |
| 0 | 0  | 12.372  | -1.86  | -12.372 | 30.9   |
| 0 | 0  | 13.763  | -2.45  | -13.763 | 30.9   |
| 0 | 0  | 13.763  | -10.3  | -13.763 | 30.9   |
| 0 | 0  | 8.467   | -11.65 | -8.467  | 30.9   |
| 0 | 0  | 4.834   | -13.06 | -4.834  | 30.9   |
| 0 | 0  | 8.248   | -14.36 | -8.248  | 30.9   |
| 0 | 0  | 11.14   | -15.51 | -11.14  | 30.9   |
| 0 | 0  | 14.663  | -16.66 | -14.663 | 30.9   |
| 0 | 0  | 14.663  | -16.66 | -14.663 | 30.9   |
| 0 | 0  | 17.179  | -17.32 | -17.179 | 30.9   |
| 0 | 0  | -32.433 | 27.88  | 32.433  |  |
| 0 | 0  | -22.584 | 26.83  | 22.584  |  |
| 0 | 0  | -13.114 | 25.78  | 13.114  |  |
| 0 | 0  | -6.186  | 24.73  | 6.186   |  |
| 0 | 0  | -6.186  | 10.56  | 6.186   |  |

|        |   |         |       |        |
|--------|---|---------|-------|--------|
| 0      | 0 | -1.301  | 9.7   | 1.301  |
| 0      | 0 | 0.855   | 8.9   | -0.855 |
| 0      | 0 | -5.084  | 8.19  | 5.084  |
| 0      | 0 | -11.389 | 7.58  | 11.389 |
| 0      | 0 | -19.174 | 6.98  | 19.174 |
| 0      | 0 | -19.174 | 6.98  | 19.174 |
| 0      | 0 | -25.459 | 6.62  | 25.459 |
| -0.079 | 0 | 8.427   | 0.29  | -8.427 |
| -0.079 | 0 | 8.31    | -0.53 | -8.31  |
| -0.079 | 0 | 7.831   | -1.29 | -7.831 |
| -0.079 | 0 | 6.989   | -2.05 | -6.989 |
| -0.079 | 0 | 5.785   | -2.81 | -5.785 |
| -0.079 | 0 | 4.219   | -3.57 | -4.219 |
| -0.079 | 0 | 2.291   | -4.33 | -2.291 |
| -0.079 | 0 | 0       | -5.09 | 0      |











M  
 As requerido  
 As col  
 M  
 Msumi ØMn

| Ø    | Area(cm2) |
|------|-----------|
| 1/4" | 0.34      |
| 3/4" | 2.84      |
| 1/2" | 1.27      |
| 5/8" | 2.00      |
| 3/4" | 2.84      |
| 1"   | 5.00      |

3  
  
0  
3

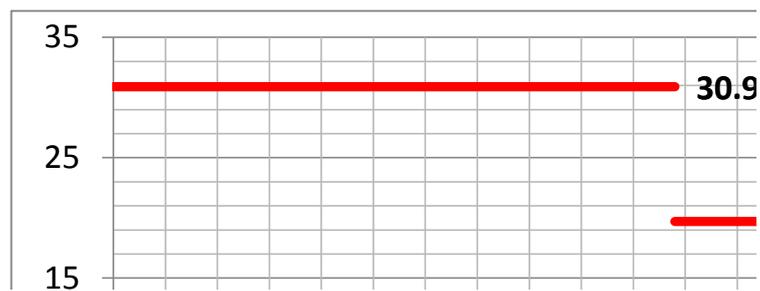
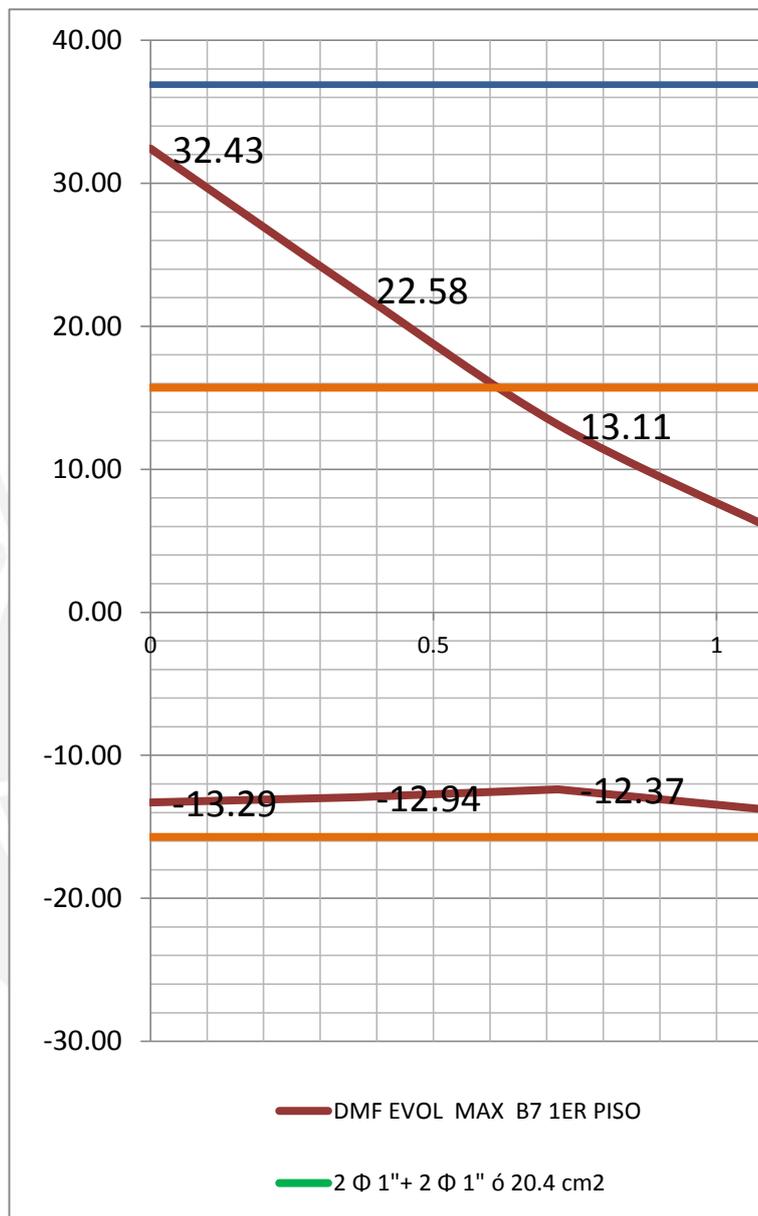
0  
 8.52  
 0  
 0  
 8.52 M  
 As requerido  
 17.04 As col  
 As  
 Msumi ØMn

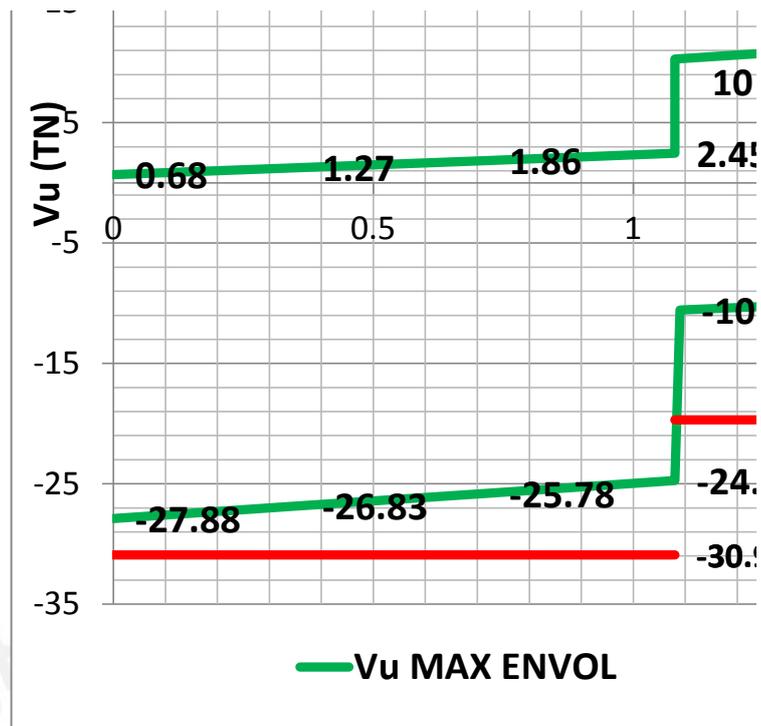






ET LUY





b 25      d 44      h 50      L 6.875

1er piso

|       |           |          |       |             |
|-------|-----------|----------|-------|-------------|
| 9.56  |           |          |       |             |
| 6.15  | corrido   | baston   |       |             |
|       | 8 3Ø 5/8  | 1Ø 5/8   |       |             |
|       |           | 9.33     | 12.21 |             |
| 12.21 |           | 20+75=95 |       |             |
|       |           |          | 10.52 |             |
|       | M         |          | 23.12 | 9.34        |
|       | As        |          | 16.99 | 17.41       |
|       | As col    |          | 17.33 | 3 Ø 5/8     |
|       | M suminis |          | 24.62 | baston      |
|       |           |          |       | 2 Ø 3/4     |
|       |           |          |       | de hasta    |
|       |           |          |       | 1.20 a 6.20 |

azotea

|      |          |        |
|------|----------|--------|
| 6.32 |          |        |
| 3.97 | corrido  | baston |
|      | 6 3Ø 5/8 |        |
| 9.32 |          |        |

|           |       |                      |
|-----------|-------|----------------------|
| M         | 16.81 |                      |
| As        | 11.54 | corrido              |
| As col    | 12.5  | 2 Ø 5/8      2 Ø 3/4 |
| M suminis | 18.55 | de 1.4 a 5.80        |

DISEÑO POR FUERZA CORTANTE

|        | ØMni         | L          | ØMnd        |
|--------|--------------|------------|-------------|
|        | 22.62        | 6.95       | 22.62       |
|        | (Mni + Mnd), | 7.65806179 | -7.65806179 |
| COMB 1 | 1.4CM+1.7CV  | 12.92      | 11.62       |
|        |              | 20.5780618 | 3.96193821  |

$\phi = 0.85$   
**Aporte del concreto**  $\phi V_c = 8617 \text{ kg}$   
 $A_v = 1.42$

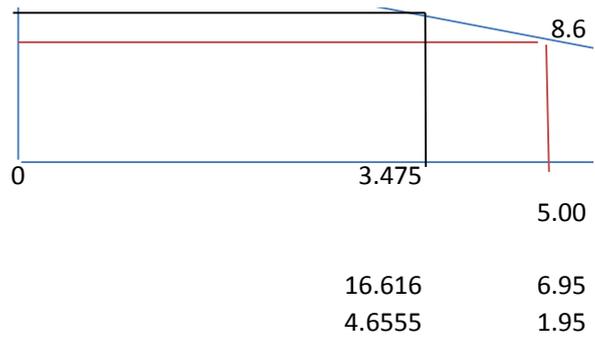
**Cortante a la cara**  $V = 16640$   
**Cortante d de la cara**  $V_u = 14770$

**Aporte del acero**  $V_s = V_u / \phi - V_c = 7238$

**Espaciamiento minimo**  $S_1 = 36.2537994$   
**Espaciamiento minimo**  $S_2 = 68.5925166$   
**Espaciamiento minimo**  $S_3 = 56.8$   
**Espaciamiento minimo**  $S_4 = 22$

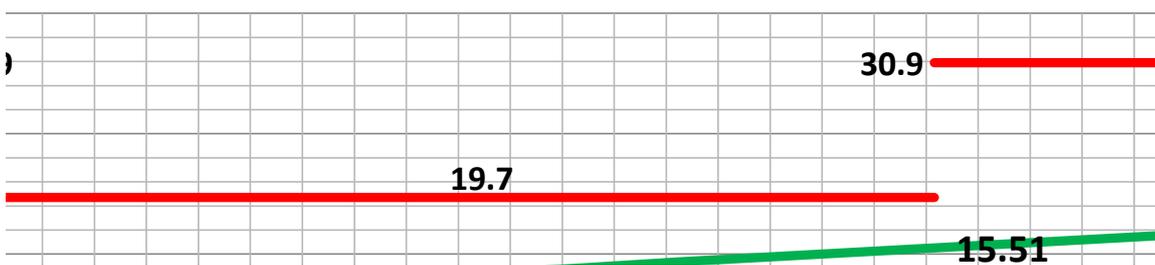
$V_s$   
 $\phi V_s =$   
 $\phi V_c =$   
 $\phi (V_c + V_s) =$

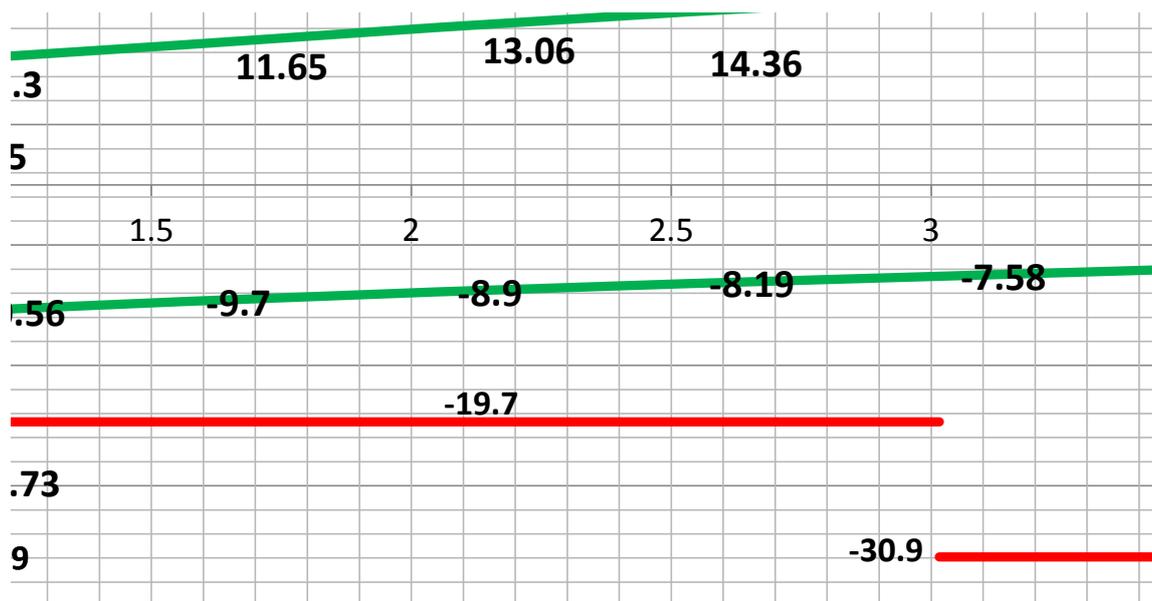






— 4  $\Phi$  1" + 1  $\Phi$  3/4" ó 23.84 cm<sup>2</sup>
— 2  $\Phi$  1" ó 11.49 cm<sup>2</sup>  
— 2  $\Phi$  1" + 1  $\Phi$  1/2" ó 11.49 cm<sup>2</sup>
— 2  $\Phi$  1" +





— ESTRIBOS 3/8" : 1 @5, 12@10,

— ESTRIBOS 3/8"

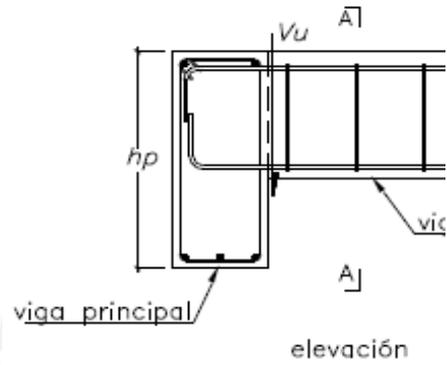
|            |              |       |         |              |       |
|------------|--------------|-------|---------|--------------|-------|
|            |              | 0     | 8       | M            | 9.56  |
| desde 5.50 | As requerido |       | corrido | As requerido | 6.15  |
|            | As col       | 11.36 | 3 Ø 5/8 | As col       | 8     |
|            | As           |       |         | M            |       |
|            | Msumi ØMn    | 12.21 |         | Msumi ØMn    | 12.21 |

24.9

baston  
2 Ø 3/4  
de hasta  
2.0 a 6.0

|            |              |           |
|------------|--------------|-----------|
|            |              | 0         |
| desde 5.30 | As requerido | corrido   |
|            | As col       | 6 3 Ø 5/8 |
|            | As           |           |
|            | Msumi ØMn    | 13.09     |

1 Ø 3/4  
de 2.0 a 5.20



b                      d                      raiz 210  
30                      44                      14.5

| Ø    | Area(cm2) |
|------|-----------|
| 1/4" | 0.34      |
| 3/8" | 0.71      |
| 1/2" | 1.27      |
| 5/8" | 1.99      |
| 3/4" | 2.84      |
| 1"   | 5.00      |

..5 CM      ..10 CM      ..15 CM      ..20 CM      ..25 CM      ..30 CM  
1                      1                      6                      6                      RESTO  
DE 2.00 A 5.40

D/4

10 x long

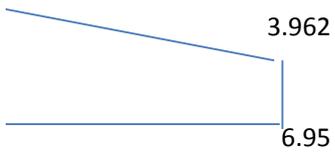
24 x estribo

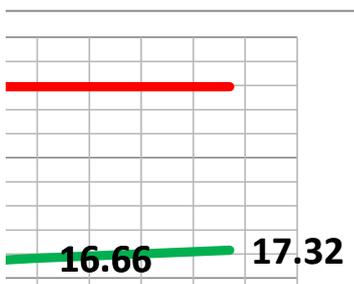
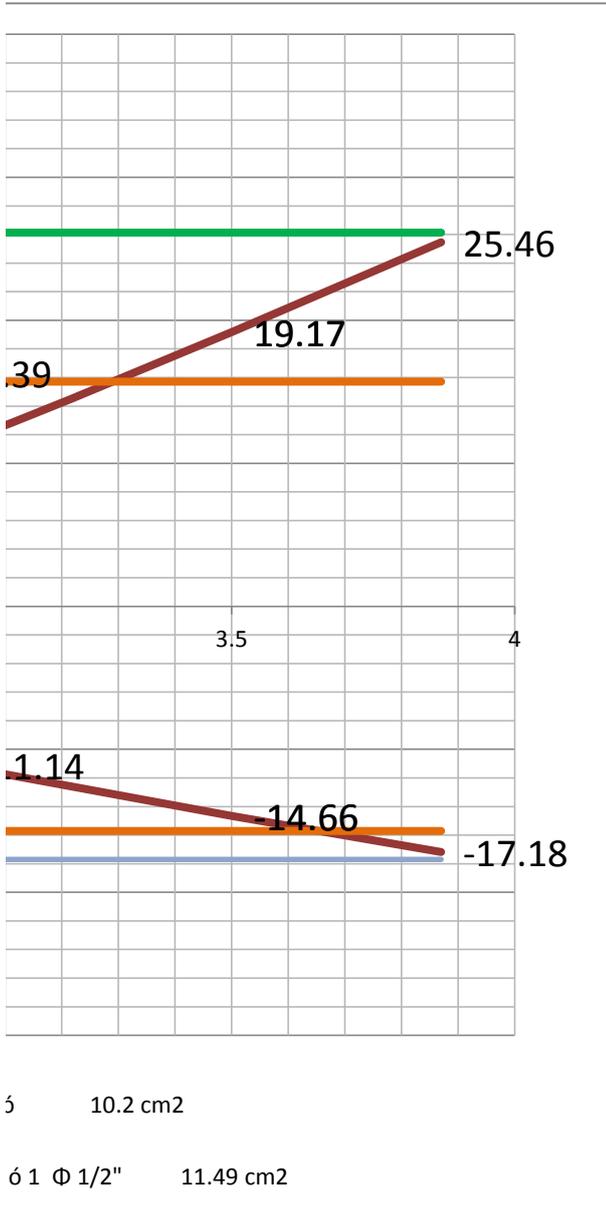
90

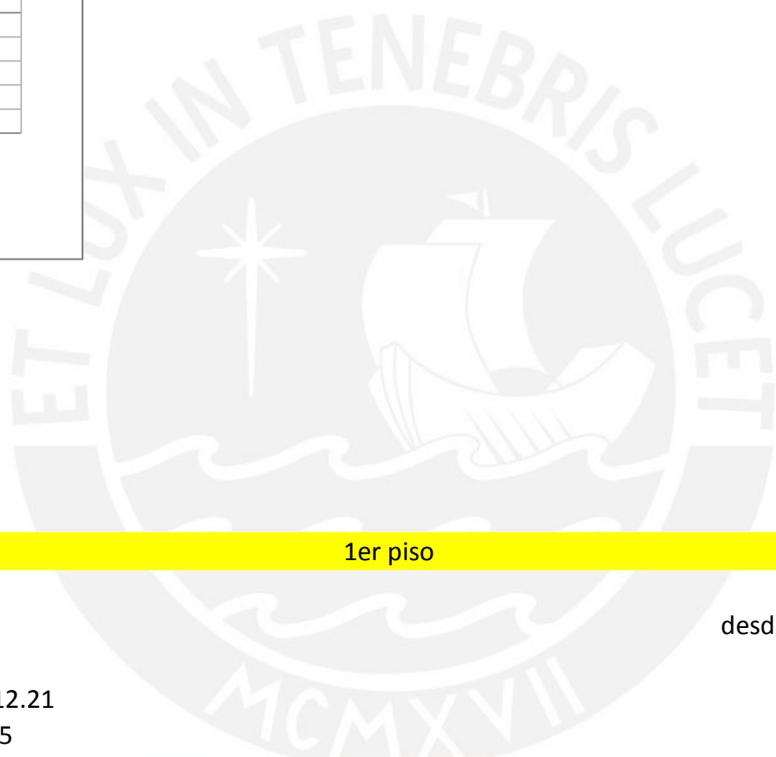
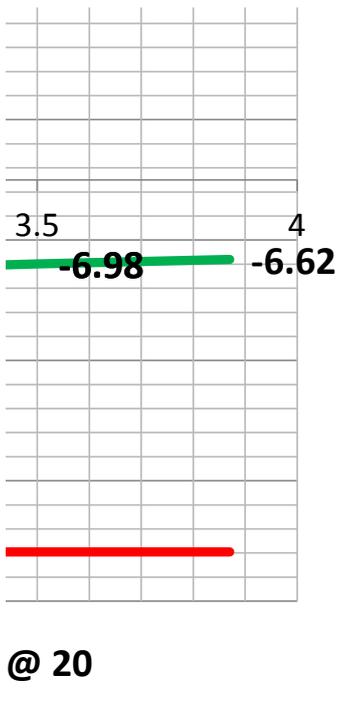
120

|          |          |          |          |          |         |
|----------|----------|----------|----------|----------|---------|
| 52483.2  | 26241.6  | 17494.4  | 13120.8  | 10496.64 | 8747.2  |
| 44610.72 | 22305.36 | 14870.24 | 11152.68 | 8922.144 | 7435.12 |
| 8617     | 8617     | 8617     | 8617     | 8617     | 8617    |
| 53228    | 30923    | 23488    | 19770    | 17540    | 16053   |









**1er piso**

|           |          |         |            |            |            |
|-----------|----------|---------|------------|------------|------------|
| corrido   | baston   |         |            |            | desde 5.50 |
| 3Ø 5/8    | 1Ø 5/8   |         |            |            |            |
|           | 9.33     | 12.21   |            |            |            |
|           | 20+75=95 |         |            |            |            |
|           |          | 10.52   |            |            |            |
| M         | 23.12    | 13.048  | 24.86      |            |            |
| As        | 16.99    | corrido | baston     | baston     |            |
| As col    | 17.04    | 3 Ø 3/4 | 2 Ø 3/4    | 1 Ø 3/4    |            |
| M suminis |          |         | de hasta   | de hasta   |            |
|           |          |         | 1.90 a 6.0 | 1.90 a 6.0 |            |
|           |          |         | 20.86      | 24.58      |            |

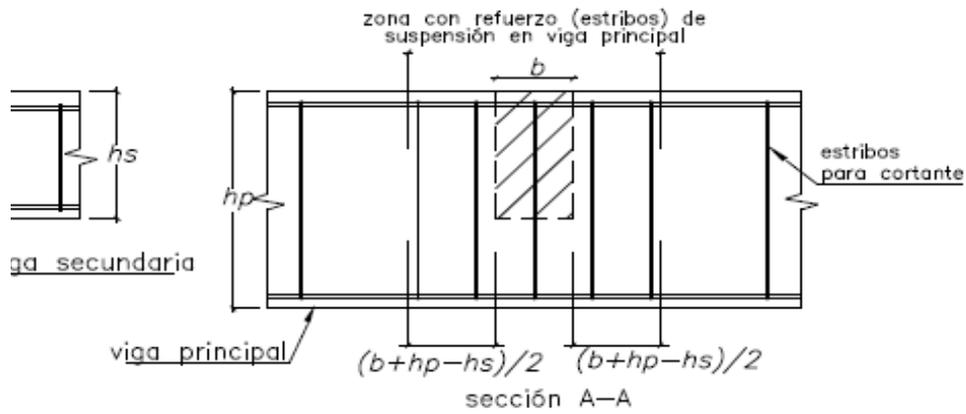


Fig. 11.5.8 Refuerzo de suspensión.

$$\phi Ah fy \geq Vu \frac{hs}{hp}$$

hs 50cm  
 hp 50cm  
 Vu 16800 kg

Ah 4.71 cm<sup>2</sup>

Av 1.42

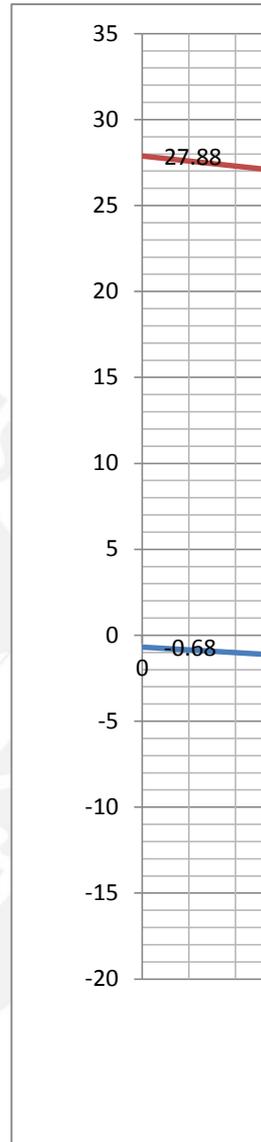
3.31400166 4

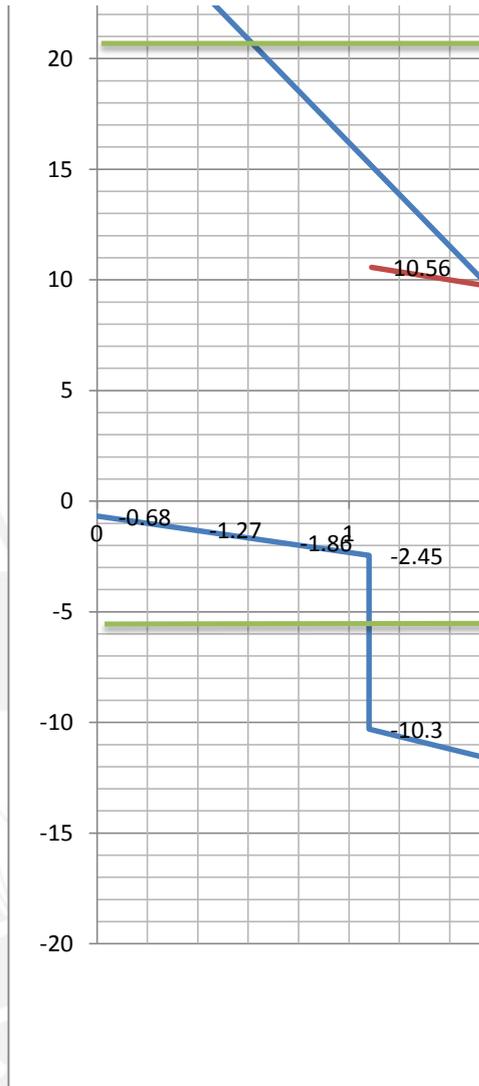
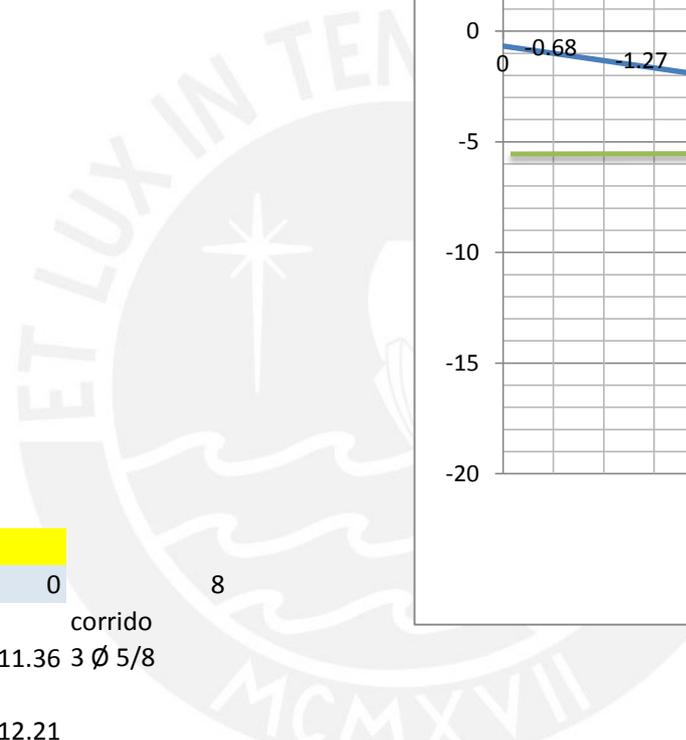
Estribos x  
 cara 2

$(b+hp-hs)/2$  12.5

@ 7.5







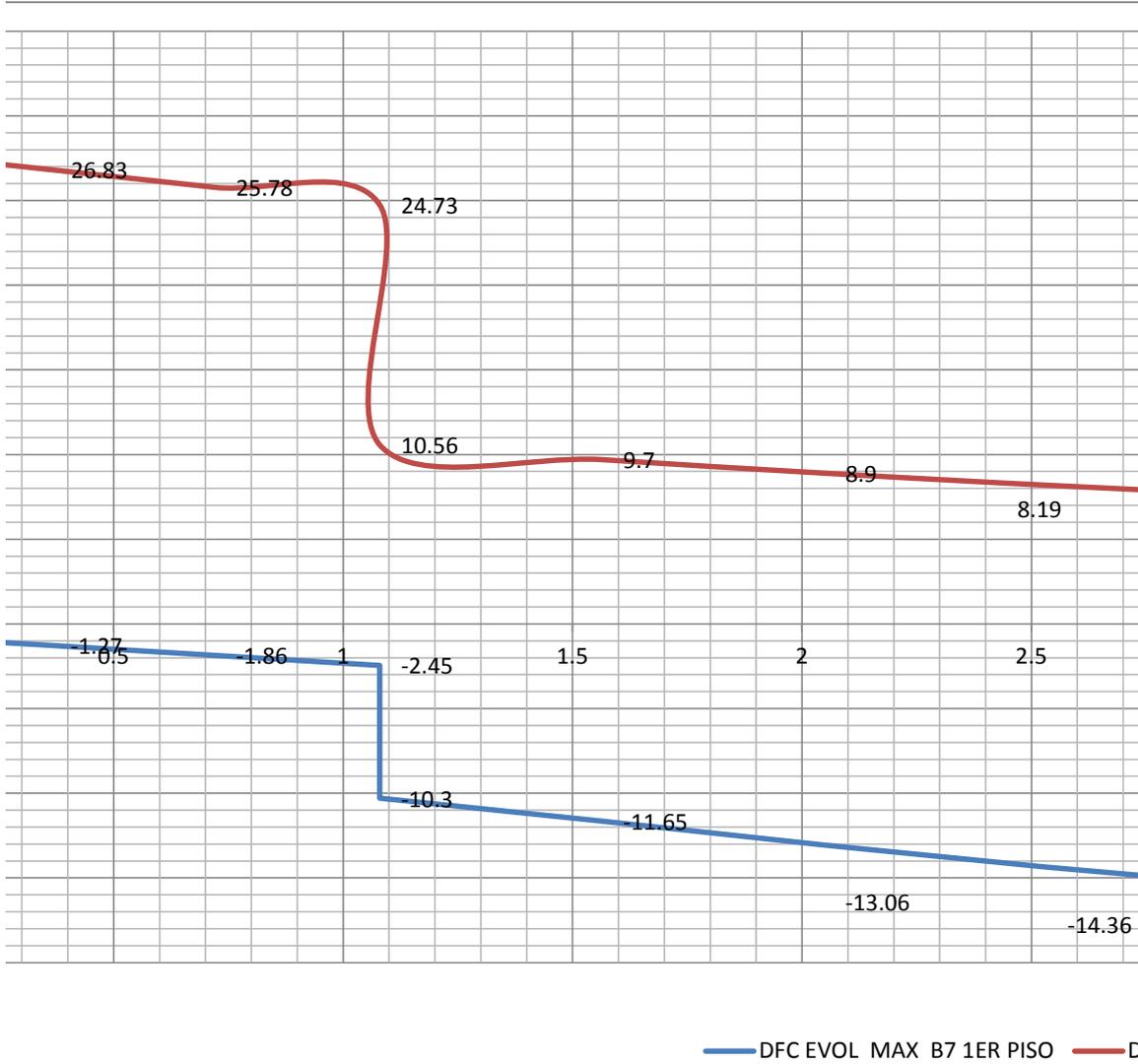
|              |       |         |
|--------------|-------|---------|
|              | 0     | 8       |
| As requerido |       | corrido |
| As col       | 11.36 | 3 Ø 5/8 |
| As           |       |         |
| Msumi ØMn    | 12.21 |         |

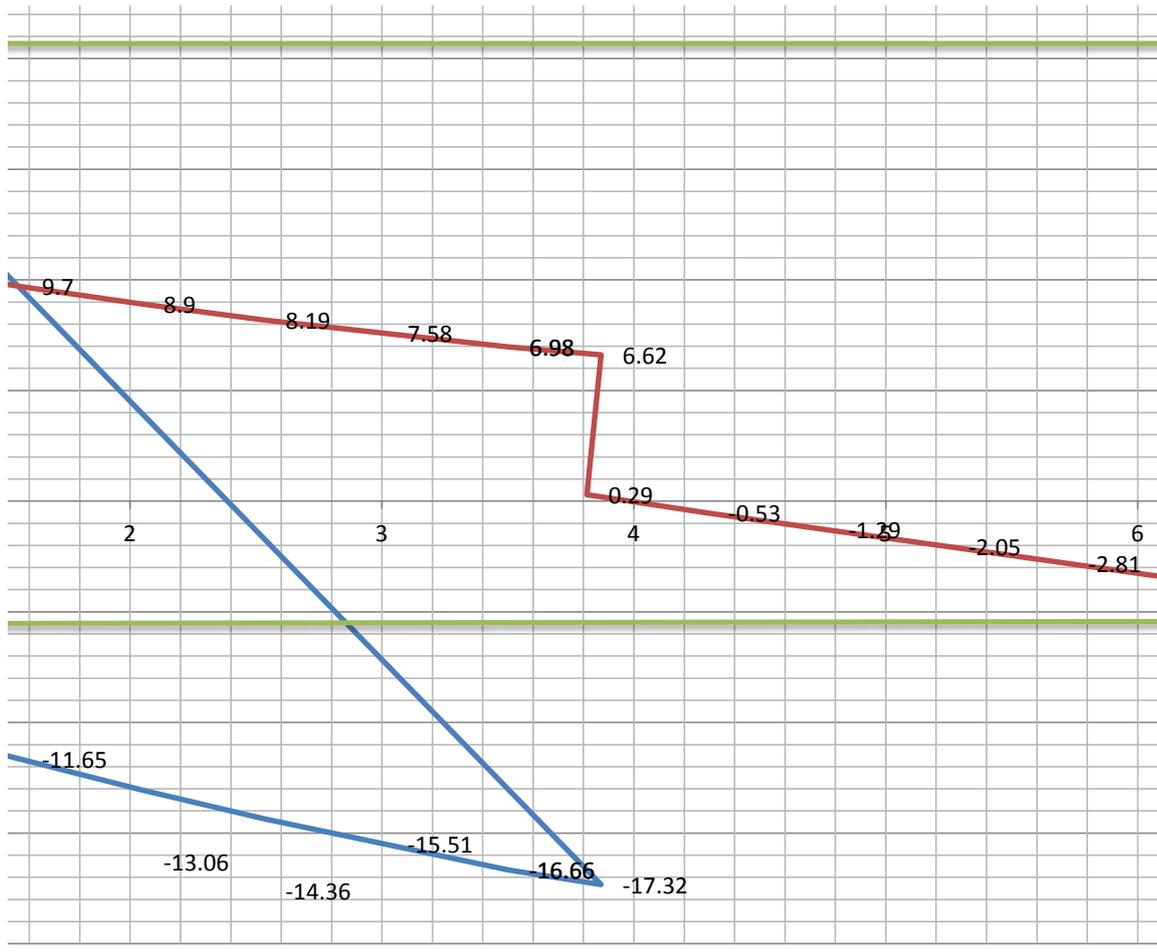
| Ø    | Area(cm2) |   |       |
|------|-----------|---|-------|
| 1/4" | 0.34      |   | 0     |
| 3/4" | 2.84      | 3 | 8.52  |
| 1/2" | 1.27      |   | 0     |
| 5/8" | 2.00      | 0 | 0     |
| 3/4" | 2.84      | 3 | 8.52  |
| 1"   | 5.00      |   | 0     |
|      |           |   | 17.04 |











— DFC EVOL MAX B7 AZOTEA  
 — DFC ENVOL MIN B7 AZOTEA







