

|                                                                                                                                      |                                       |           |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------|
|  <b>Universidad de Cartagena</b><br>Fundada en 1827 | NIT 900269791-8                       | Versión 1 |
|                                                                                                                                      | UN LEGADO DE EXPERIENCIA Y EXCELENCIA |           |
|                                                                                                                                      | PATINODROMOS                          | 5/5/2015  |

|                 |                  |        |                |                |                         |
|-----------------|------------------|--------|----------------|----------------|-------------------------|
| <b>CUBIERTA</b> | Espesor de placa | B      | f <sub>c</sub> | f <sub>y</sub> | <b>REGRESAR AL MENU</b> |
|                 | 0.10 m           | 1.00 m | 24.6 Mpa       | 420.0 Mpa      |                         |

|                                                                                                     |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|--|--|--|--|--|
| <b>Refuerzo con mallas para PLANTA CUBIERTA, La malla general es <math>\phi</math> 6mm. c..0.15</b> |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|--|--|--|--|--|

|                          |                               |                         |                      |                      |                       |
|--------------------------|-------------------------------|-------------------------|----------------------|----------------------|-----------------------|
| Recubrimiento            | 0.03                          | $\rho$ min              | 0.0018               | $\rho$ max           | 0.0187                |
|                          |                               | As min                  | 1.80 cm <sup>2</sup> | As max               | 13.07 cm <sup>2</sup> |
| <b>Esfuerzo cortante</b> | <b>Accion como losa en 2d</b> | <b>Accion como viga</b> |                      | $\phi$ Mn $\rho$ max | 2.81 Ton-m            |
| $\phi$ vc                | 124 Ton/m <sup>2</sup>        | 62 Ton/m <sup>2</sup>   |                      |                      |                       |

|                      |                       |                |                              |                              |
|----------------------|-----------------------|----------------|------------------------------|------------------------------|
| <b>MALLA GENERAL</b> | <b>Area de Diseño</b> | <b>Cuantía</b> | <b>Observación</b>           | <b><math>\phi</math>Mn/m</b> |
| $\phi$ 6mm. c..0.15  | 1.88 cm <sup>2</sup>  | 0.00188        | Cumple con la cuantía mínima | 0.49 Ton-m                   |

| NOMBRE        | $\phi$ Mn min | $\phi$ Mn max | $\rho$ diseño | nota                              | As                    | Delta As              | Detalle               |
|---------------|---------------|---------------|---------------|-----------------------------------|-----------------------|-----------------------|-----------------------|
| MALLA GENERAL | 0.00 Ton-m    | 0.49 Ton-m    | 0.0027        | No requiere refuerzo a compresión | 1.88 cm <sup>2</sup>  | -                     | -                     |
| MALLA 1       | 0.50 Ton-m    | 0.69 Ton-m    | 0.0039        | No requiere refuerzo a compresión | 2.72 cm <sup>2</sup>  | 0.84 cm <sup>2</sup>  | $\phi$ 4mm. c..0.15   |
| MALLA 2       | 0.70 Ton-m    | 0.75 Ton-m    | 0.0042        | No requiere refuerzo a compresión | 2.95 cm <sup>2</sup>  | 1.06 cm <sup>2</sup>  | $\phi$ 4.5mm. c..0.15 |
| MALLA 3       | 0.76 Ton-m    | 0.81 Ton-m    | 0.0046        | No requiere refuerzo a compresión | 3.19 cm <sup>2</sup>  | 1.31 cm <sup>2</sup>  | $\phi$ 5mm. c..0.15   |
| MALLA 4       | 0.82 Ton-m    | 0.87 Ton-m    | 0.0050        | No requiere refuerzo a compresión | 3.47 cm <sup>2</sup>  | 1.58 cm <sup>2</sup>  | $\phi$ 5.5mm. c..0.15 |
| MALLA 5       | 0.88 Ton-m    | 0.94 Ton-m    | 0.0054        | No requiere refuerzo a compresión | 3.77 cm <sup>2</sup>  | 1.88 cm <sup>2</sup>  | $\phi$ 6mm. c..0.15   |
| MALLA 6       | 0.95 Ton-m    | 1.02 Ton-m    | 0.0059        | No requiere refuerzo a compresión | 4.10 cm <sup>2</sup>  | 2.21 cm <sup>2</sup>  | $\phi$ 6.5mm. c..0.15 |
| MALLA 7       | 1.03 Ton-m    | 1.10 Ton-m    | 0.0064        | No requiere refuerzo a compresión | 4.45 cm <sup>2</sup>  | 2.57 cm <sup>2</sup>  | $\phi$ 7mm. c..0.15   |
| Mas barra 1   | 1.11 Ton-m    | 1.17 Ton-m    | 0.0068        | No requiere refuerzo a compresión | 4.74 cm <sup>2</sup>  | 2.85 cm <sup>2</sup>  | #3 c..0.25            |
| MALLA 8       | 1.18 Ton-m    | 1.19 Ton-m    | 0.0069        | No requiere refuerzo a compresión | 4.83 cm <sup>2</sup>  | 2.95 cm <sup>2</sup>  | $\phi$ 7.5mm. c..0.15 |
| MALLA 9       | 1.20 Ton-m    | 1.28 Ton-m    | 0.0075        | No requiere refuerzo a compresión | 5.24 cm <sup>2</sup>  | 3.35 cm <sup>2</sup>  | $\phi$ 8mm. c..0.15   |
| Mas barra 2   | 1.29 Ton-m    | 1.33 Ton-m    | 0.0078        | No requiere refuerzo a compresión | 5.45 cm <sup>2</sup>  | 3.57 cm <sup>2</sup>  | #3 c..0.2             |
| Mas barra 3   | 1.34 Ton-m    | 1.59 Ton-m    | 0.0095        | No requiere refuerzo a compresión | 6.64 cm <sup>2</sup>  | 4.76 cm <sup>2</sup>  | #3 c..0.15            |
| Mas barra 4   | 1.60 Ton-m    | 2.08 Ton-m    | 0.0129        | No requiere refuerzo a compresión | 9.02 cm <sup>2</sup>  | 7.13 cm <sup>2</sup>  | #3 c..0.1             |
| Mas barra 5   | 2.09 Ton-m    | 2.33 Ton-m    | 0.0148        | No requiere refuerzo a compresión | 10.33 cm <sup>2</sup> | 8.45 cm <sup>2</sup>  | #4 c..0.15            |
| Mas barra 6   | 2.34 Ton-m    | 2.98 Ton-m    | 0.0202        | Requiere refuerzo a compresión    | 14.16 cm <sup>2</sup> | 12.27 cm <sup>2</sup> | #5 c..0.15            |
| Mas barra 7   | 2.99 Ton-m    | 3.04 Ton-m    | 0.0208        | Requiere refuerzo a compresión    | 14.55 cm <sup>2</sup> | 12.67 cm <sup>2</sup> | #4 c..0.1             |
| Mas barra 8   | 3.05 Ton-m    | 3.80 Ton-m    | 0.0290        | Requiere refuerzo a compresión    | 20.29 cm <sup>2</sup> | 18.41 cm <sup>2</sup> | #5 c..0.1             |

