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| **Datos Iniciales** | |
| **UBICACIÓN** | Departamento Sololá, Sololá |
| **USO** | Bodega |
| **NIVELES** | 3 |
| La estructura se diseñará utilizando un sistema de marcos estructurales, aplicando el método AGIES como base para el análisis sísmico. | |
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| **Carga (kg/m2)** | **Viva** | **Sobre Losa** | **Bajo Losa** | **Sobre Carga** |
| **Techo** | 150 | 175 | 125 | 175 |
| **Entre Piso** | 250 | 175 | 125 | 275 |

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|  | **Vigas** |  |
| **Dirección** | Y | X |
| **Tipo** | V-A | V-1 |
| **Base (m)** | 0.3 | 0.3 |
| **Altura (m)** | 0.5 | 0.5 |
| **Area (m^2)** | 0.15 | 0.15 |

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| **Columnas** |  |
| **Tipo** | C-A |
| **Base (m)** | 0.45 |
| **Altura (m)** | 0.45 |
| **Área (m^2)** | 0.2 |

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| **Muros** |  |
| **W (kg/m2)** | 232.0377 |
| **Espesor t(m)** | 0.3 |
| **Longitud M1 (m)** | 1.5 |
| **Longitud M2 (m)** | 1.2 |
| **Área M1 (m^2)** | 0.45 |
| **Área M2 (m^2)** | 0.36 |

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| **Elevador** | |  | |
| **Lado Corto 1 (m)** | | 1.75 | |
| **Lado Corto 2 (m)** | | 1.75 | |
| **Lado Interno 1 (m)** | | 4.35 | |
| **Espesor (m)** | | 0.3 | |
| **Área (m^2)** | | 2.355 | |
| **Losas** |  | |
| **t Critico (m)** | 0.13 | |

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| **Datos de Concreto** |  |
| **F´c (kg/cm^2)** | 350 |
| **Peso Concreto W (kg)** | 2400 |
| **Modulo de elasticicdad** |  |
| **del concreto EC** | 282495.1 |
| **(kg/ m^2)** |  |
| **Modulo de Corte** |  |
| **EG = 40% EC** | 112998.05 |
| **(kg / m^2)** |  |
| **Peso en Toneladas** | 2.4 |

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|  | **NIVEL 1** |  |

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| **Elemento** | **Area (m^2)** | **Altura (m)** | **Peso del Concreto** | **No.** | **W** |
| **Columnas** | 0.2 | 3.75 | 2.4 | 9 | 16.2 |
| **Muro 1** | 0.45 | 3.75 | 2.4 | 6 | 24.3 |
| **Muro 2** | 0.36 | 3.75 | 2.4 | 6 | 19.44 |
| **Elevadores** | 2.355 | 3.75 | 2.4 | 1 | 21.195 |
| **Peso total de Col. (Ton)** |  |  |  |  | 81.135 |

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|  | PESO DE VIGAS |  |

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|  | **EJE Y** |  |  |  |  |
| **Eje** | **Base de Viga (m)** | **Altura de Viga (m)** | **Longitud (m)** | **Vol** | **Peso** |
| **A** | 0.3 | 0.5 | 3.23 | 0.4845 | 1.1628 |
| **A** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **A** | 0.3 | 0.5 | 3.3 | 0.495 | 1.188 |
| **B** | 0.3 | 0.5 | 4.28 | 0.642 | 1.5408 |
| **B** | 0.3 | 0.5 | 2.88 | 0.432 | 1.0368 |
| **B** | 0.3 | 0.5 | 4.28 | 0.642 | 1.5408 |
| **C** | 0.3 | 0.5 | 4.28 | 0.642 | 1.5408 |
| **C** | 0.3 | 0.5 | 2.88 | 0.432 | 1.0368 |
| **C** | 0.3 | 0.5 | 3.23 | 0.4845 | 1.1628 |
| **D** | 0.3 | 0.5 | 3.23 | 0.4845 | 1.1628 |
| **D** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |

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| Longitud total (m) | 39.05 | Peso total | 14.058 |
| **Área de Viga (m^2)** | 0.15 |  |  |

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|  | **EJE X** |  |  |  |  |
| **Eje** | **Base de Viga (m)** | **Altura de Viga (m)** | **Longitud (m)** | **Vol** | **Peso** |
| **1** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **1** | 0.3 | 0.5 | 4.35 | 0.6525 | 1.566 |
| **1** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **2** | 0.3 | 0.5 | 4.775 | 0.71625 | 1.719 |
| **2** | 0.3 | 0.5 | 4.35 | 0.6525 | 1.566 |
| **2** | 0.3 | 0.5 | 4.775 | 0.71625 | 1.719 |
| **3** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **3** | 0.3 | 0.5 | 4.35 | 0.6525 | 1.566 |
| **3** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **4** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **4** | 0.3 | 0.5 | 3.23 | 0.4845 | 1.1628 |
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| Longitud total (m) | 44.48 | Peso total | 16.0128 |

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| **Área de Viga (m^2)** | 0.15 |
| **Peso del Concreto** | 2.4 |

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| Peso Total de Vigas | 30.0708 |

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| Longitud total de vigas x y Y | 79.18 |

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|  | **PESO POR LOSA** |  |

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| Losa | Longitud Y (m) | Longitud X (m) | Area ( m^2) |
| 1 | 4.5 | 5 | 22.5 |
| 2 | 4.5 | 5 | 22.5 |
| 3 | 5 | 5 | 25 |
| 4 | 2.95 | 4.5 | 13.275 |
| 4 | 5 | 5 | 25 |
| 4 | 4.5 | 5 | 22.5 |
| 4 | 4.5 | 4.5 | 20.25 |

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| Área Total | 151.025 |
| Espesor de Losa (m) | 0.13 |

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| **Carga (kg/m2)** | **Viva** | **Sobre Losa** | **Bajo Losa** | **Sobre Carga** |
| **Techo** | 250 | 175 | 125 | 275 |
| **Carga (Ton/m^2)** | **Viva** | **Sobre Losa** | **Bajo Losa** | **Sobre Carga** |
| **Techo** | 0.25 | 0.175 | 0.125 | 0.275 |

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| **Peso del Concreto** | 2.4 |

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| **Wpropio (ton)** | 47.1198 |
| **WS/Losa (ton)** | 26.429375 |
| **WB/ Losa (ton)** | 18.878125 |
| **WS/C (ton)** | 41.531875 |
| **Peso de Carga Viva** | 37.75625 |
| **Peso por sismo** | 143.3982375 |
| **Carga Muerta Total** | 133.959175 |
| **Peso total de Losa** | 171.715425 |

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| Longitud muros (m) | 79.19 |
| Altura de Muros | 3.75 |
| Wm (Ton/m^2) | 0.18 |
| W total de Muros | 83.12 |

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| Peso Total por Nivel | 337.7240.75 |

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|  | **NIVEL 2** |  |

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| **Elemento** | **Area (m^2)** | **Altura (m)** | **Peso del Concreto** | **No.** | **W** |
| **Columnas** | 0.2 | 3.25 | 2.4 | 9 | 14.04 |
| **Muro 1** | 0.45 | 3.25 | 2.4 | 6 | 21.06 |
| **muro 2** | 0.36 | 3.25 | 2.4 | 6 | 16.848 |
| **Elevadores** | 2.355 | 3.25 | 2.4 | 1 | 18.369 |
| **Peso total de Col. (Ton)** |  |  |  |  | 70.317 |

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| **Elemento** | **Área (m^2)** | **Altura (m)** | **Peso del Concreto** | **No.** | **W** |
| **Columnas** | 0.2 | 3.25 | 2.4 | 9 | 14.04 |
| **Muro 1** | 0.45 | 3.25 | 2.4 | 6 | 21.06 |
| **muro 2** | 0.36 | 3.25 | 2.4 | 6 | 16.848 |
| **Elevadores** | 2.355 | 3.25 | 2.4 | 1 | 18.369 |
| **Peso total de Col. (Ton)** |  |  |  |  | 70.317 |

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|  | PESO DE VIGAS |  |

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|  | **EJE Y** |  |  |  |  |
| **Eje** | **Base de Viga (m)** | **Altura de Viga (m)** | **Longitud (m)** | **Vol** | **Peso** |
| **A** | 0.3 | 0.5 | 3.23 | 0.4845 | 1.1628 |
| **A** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **A** | 0.3 | 0.5 | 3.3 | 0.495 | 1.188 |
| **B** | 0.3 | 0.5 | 4.28 | 0.642 | 1.5408 |
| **B** | 0.3 | 0.5 | 2.88 | 0.432 | 1.0368 |
| **B** | 0.3 | 0.5 | 4.28 | 0.642 | 1.5408 |
| **C** | 0.3 | 0.5 | 4.28 | 0.642 | 1.5408 |
| **C** | 0.3 | 0.5 | 2.88 | 0.432 | 1.0368 |
| **C** | 0.3 | 0.5 | 3.23 | 0.4845 | 1.1628 |
| **D** | 0.3 | 0.5 | 3.23 | 0.4845 | 1.1628 |
| **D** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |

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| Longitud total (m) | 39.05 | Peso total | 14.058 |
| **Area de Viga (m^2)** | 0.15 |  |  |

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|  | **EJE X** |  |  |  |  |
| **Eje** | **Base de Viga (m)** | **Altura de Viga (m)** | **Longitud (m)** | **Vol** | **Peso** |
| **1** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **1** | 0.3 | 0.5 | 4.35 | 0.6525 | 1.566 |
| **1** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **2** | 0.3 | 0.5 | 4.775 | 0.71625 | 1.719 |
| **2** | 0.3 | 0.5 | 4.35 | 0.6525 | 1.566 |
| **2** | 0.3 | 0.5 | 4.775 | 0.71625 | 1.719 |
| **3** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **3** | 0.3 | 0.5 | 4.35 | 0.6525 | 1.566 |
| **3** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **4** | 0.3 | 0.5 | 3.73 | 0.5595 | 1.3428 |
| **4** | 0.3 | 0.5 | 3.23 | 0.4845 | 1.1628 |
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| Longitud total (m) | 44.48 | Peso total | 16.0128 |

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| **Área de Viga (m^2)** | 0.15 |
| **Peso del Concreto** | 2.4 |

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| Peso Total de Vigas | 30.0708 |

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| LONGITU TOTAL Y y Z | 79.18 |

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|  | **PESO POR LOSA** |  |

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| --- | --- | --- | --- |
| Losa | Longitud Y (m) | Longitud X (m) | Area ( m^2) |
| 1 | 4.5 | 5 | 22.5 |
| 2 | 4.5 | 5 | 22.5 |
| 3 | 5 | 5 | 25 |
| 4 | 2.95 | 4.5 | 13.275 |
| 5 | 5 | 5 | 25 |
| 6 | 4.5 | 5 | 22.5 |
| 7 | 4.5 | 4.5 | 20.25 |

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| --- | --- |
| Área Total | 151.025 |

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| Espesor de Losa (m) | 0.13 |

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| **Carga (kg/m2)** | **Viva** | **Sobre Losa** | **Bajo Losa** | **Sobre Carga** |
| **Techo** | 250 | 175 | 125 | 275 |
| **Carga (Ton/m^2)** | **Viva** | **Sobre Losa** | **Bajo Losa** | **Sobre Carga** |
| **Techo** | 0.25 | 1.75 | 0.125 | 0.275 |

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| **Peso del Concreto** | 2.4 |

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| --- | --- |
| **Wpropio (ton)** | 47.1198 |
| **WS/Losa (ton)** | 264.29375 |
| **WB/ Losa (ton)** | 18.878125 |
| **WS/C (ton)** | 41.531875 |
| **Peso de Carga Viva** | 37.75625 |
| **Peso por sismo** | 381.2626125 |
| **Carga Muerta Total** | 371.82355 |
| **Peso total de Losa** | 409.5798 |

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| --- | --- |
| Longitud muros (m)42.21 | 79.19 |
| Altura de Muros | 3.25 |
| Wm (Ton/m^2) | 0.18 |
| W total de Muros | 46.32615 |

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| Peso Total por Nivel |  | 527.9765625 |

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|  | **NIVEL 3** |  |

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| **Elemento** | **Area (m^2)** | **Altura (m)** | **Peso del Concreto** | **No.** | **W** |
| **Columnas 1 (EjeB)** | 0.2 | 4.375 | 2.4 | 4 | 8.4 |
| **Columnas 1 (EjeC)** | 0.2 | 3.18 | 2.4 | 3 | 4.5792 |
| **Columnas 1 (EjeA Y D)** | 0.2 | 1.625 | 2.4 | 2 | 1.56 |
| **Muro 1 (EjeY)** | 0.45 | 1.625 | 2.4 | 6 | 10.53 |
| **Muro 2 (EjeX)** | 0.36 | 1.625 | 2.4 | 6 | 8.424 |
| **Muro Inclinado** | 0.81 | 3.25 | 2.4 | 6 | 37.908 |
| **Elevadores** | 2.355 | 1.625 | 2.4 | 1 | 9.1845 |
| **Peso total de Col. (Ton)** |  |  |  |  | 80.5857 |