* 1. General Information
     1. Design Code : ACI318M-11
     2. Unit System : N, mm
  2. Material
     1. f'c : 25.00MPa
     2. Fy : 400MPa
     3. Fys : 400MPa
  3. Length
     1. : 3.500m
     2. : 3.500m
     3. : 1.000
     4. : 1.000
  4. Section

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Wall ID** | **Thickness (mm)** | **Cover (mm)** | **Start Point**  **X(mm)** | **Start Point**  **Y(mm)** | **End Point**  **X(mm)** | **End Point**  **Y(mm)** |
| W01 | 200 | 20.00 | 0.000 | 3,100 | 1,050 | 3,100 |
| W02 | 200 | 20.00 | 2,450 | 3,100 | 3,500 | 3,100 |
| W03 | 200 | 20.00 | 750 | 1,100 | 750 | 3,100 |
| W04 | 200 | 20.00 | 2,750 | 1,100 | 2,750 | 3,100 |
| W05 | 200 | 20.00 | 750 | 1,100 | 2,750 | 1,100 |
| W06 | 200 | 20.00 | 1,950 | 0.000 | 1,950 | 1,100 |



* 1. Reinforcement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Wall ID** | **Vert. Rebar** | **Hori. Rebar** | **End Rebar** | **Arrangement** |
| W01 | #3@450 | #3@300 | 4-#4@100 | Divide equally by nearest space |
| W02 | #3@450 | #3@300 | 4-#4@100 | Divide equally by nearest space |
| W03 | #3@450 | #3@300 | 4-#4@100 | Divide equally by nearest space |
| W04 | #3@450 | #3@300 | 4-#4@100 | Divide equally by nearest space |
| W05 | #3@450 | #3@300 | 4-#4@100 | Divide equally by nearest space |
| W06 | #8@450 | #7@300 | 4-#4@100 | Divide equally by nearest space |

* 1. Load Combinations
     1. W01

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General** | | | **Forces** | | | | | **Factors** | | |
| **No** | **CHK** | **Name** | **(kN)** | **(kN·m)** | **(kN·m)** | **(kN)** | **(kN)** |  |  |  |
| - | PM | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| - | VN | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| 1 | Yes | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |

* + 1. W02

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General** | | | **Forces** | | | | | **Factors** | | |
| **No** | **CHK** | **Name** | **(kN)** | **(kN·m)** | **(kN·m)** | **(kN)** | **(kN)** |  |  |  |
| - | PM | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| - | VN | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| 1 | Yes | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |

* + 1. W03

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General** | | | **Forces** | | | | | **Factors** | | |
| **No** | **CHK** | **Name** | **(kN)** | **(kN·m)** | **(kN·m)** | **(kN)** | **(kN)** |  |  |  |
| - | PM | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| - | VN | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| 1 | Yes | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |

* + 1. W04

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General** | | | **Forces** | | | | | **Factors** | | |
| **No** | **CHK** | **Name** | **(kN)** | **(kN·m)** | **(kN·m)** | **(kN)** | **(kN)** |  |  |  |
| - | PM | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| - | VN | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| 1 | Yes | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |

* + 1. W05

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General** | | | **Forces** | | | | | **Factors** | | |
| **No** | **CHK** | **Name** | **(kN)** | **(kN·m)** | **(kN·m)** | **(kN)** | **(kN)** |  |  |  |
| - | PM | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| - | VN | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| 1 | Yes | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |

* + 1. W06

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General** | | | **Forces** | | | | | **Factors** | | |
| **No** | **CHK** | **Name** | **(kN)** | **(kN·m)** | **(kN·m)** | **(kN)** | **(kN)** |  |  |  |
| - | PM | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| - | VN | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |
| 1 | Yes | LCB1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.850 | 0.850 | 0.600 |

* + 1. Design Force

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **CHK** | **Name** | **(kN)** | **(kN·m)** | **(kN·m)** |
| - | PM |  | 0.000 | 0.000 | 0.000 |
| 1 | Yes |  | 0.000 | 0.000 | 0.000 |

* 1. Check Slenderness Ratio
     1. Calculate radii of gyration
        + 924mm
        + 941mm
     2. Calculate slenderness ratio
        + 0.625
        + 0.625
        + 3.786 < 26.50 → Not Slender
        + 3.719 < 26.50 → Not Slender
  2. Check Magnified Moment
     1. Calculate moment magnification factor
        + 1.000
        + 1.000
  3. Check Minimum Moment
     1. Calculate minimum eccentricity
        + 53.27mm
        + 56.86mm
     2. Calculate minimum moment
        + 0.000kN·m
        + 0.000kN·m
  4. Check Design Moment
     1. Calculate design moment
        + 0.000kN·m
        + 0.000kN·m
        + 0.000kN·m
  5. Check Design Parameter
     1. Calculate rebar ratio
        + 1,780,000mm² 9,290mm²
        + 0.0100 0.0800
        + 0.00522
     2. Calculate eccentricity
        + 179,605mm
        + 179,605mm
        + 254,000mm
        + Rotation angle of neutral axis = 0.000°
     3. Calculate concentric axial load capacity
        + 40,823kN
        + 32,658kN
        + -3,845kN
  6. Check Moment Capacity
     1. Calculate capacity of compression stress block
        + 0.850
        + 1,895mm 1,610mm
        + 20,006kN
        + 15,084kN·m
        + -454kN·m
     2. Calculate capacity of rebar
        + 869kN
        + 2,454kN·m
        + -44.07kN·m
     3. Calculate nominal capacity for neutral axis
        + 20,875kN
        + 17,538kN·m
        + -498kN·m
        + 17,545kN·m
     4. Calculate strength reduction factor
        + 0.0020 0.0050
        + -0.003000
        + ø = 0.000
     5. Calculate axial load and moment capacities
        + 0.000kN
        + 0.000kN·m
        + 0.000kN·m
        + 0.000kN·m

0.000 < 1.000 → O.K

0.000 < 1.000 → O.K

![](data:None;base64,)

* 1. Check Shear Capacity

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Wall ID** | **LCB** |  |  |  |  |  |  |
| W01 | LCB1 | 0.000 | 170 | 119 | 450 / 450 | 300 / 300 | OK(0.000) |
| W02 | LCB1 | 0.000 | 170 | 119 | 450 / 450 | 300 / 300 | OK(0.000) |
| W03 | LCB1 | 0.000 | 324 | 227 | 450 / 450 | 300 / 300 | OK(0.000) |
| W04 | LCB1 | 0.000 | 324 | 227 | 450 / 450 | 300 / 300 | OK(0.000) |
| W05 | LCB1 | 0.000 | 324 | 227 | 450 / 450 | 300 / 300 | OK(0.000) |
| W06 | LCB1 | 0.000 | 178 | 370 | 450 / 450 | 300 / 300 | OK(0.000) |

* 1. Check Shear Capacity : W01
     1. Calculate maximum shear strength
        + 0.750
        + 840mm
        + 697kN
        + 523kN

→ O.K

* + 1. Calculate shear strength by concrete
       - 227kN
       - 227kN
    2. Calculate maximum space
       - 450mm
       - 450mm (by Rho)
       - 450mm
       - 450
       - 300mm (by Rho)
       - 300mm
    3. Calculate shear strength

→ O.K

→ O.K

* + - * 170kN
      * 119kN
      * 289kN

→ O.K

* + 1. Calculate rebar ratio
       - 0.00150 0.00492
       - 0.00250 0.00237

→ O.K

→ N.G

* 1. Check Shear Capacity : W02
     1. Calculate maximum shear strength
        + 0.750
        + 840mm
        + 697kN
        + 523kN

→ O.K

* + 1. Calculate shear strength by concrete
       - 227kN
       - 227kN
    2. Calculate maximum space
       - 450mm
       - 450mm (by Rho)
       - 450mm
       - 450
       - 300mm (by Rho)
       - 300mm
    3. Calculate shear strength

→ O.K

→ O.K

* + - * 170kN
      * 119kN
      * 289kN

→ O.K

* + 1. Calculate rebar ratio
       - 0.00150 0.00492
       - 0.00250 0.00237

→ O.K

→ N.G

* 1. Check Shear Capacity : W03
     1. Calculate maximum shear strength
        + 0.750
        + 1,600mm
        + 1,328kN
        + 996kN

→ O.K

* + 1. Calculate shear strength by concrete
       - 432kN
       - 432kN
    2. Calculate maximum space
       - 450mm
       - 450mm (by Rho)
       - 450mm
       - 450
       - 300mm (by Rho)
       - 300mm
    3. Calculate shear strength

→ O.K

→ O.K

* + - * 324kN
      * 227kN
      * 551kN

→ O.K

* + 1. Calculate rebar ratio
       - 0.00150 0.00329
       - 0.00250 0.00237

→ O.K

→ N.G

* 1. Check Shear Capacity : W04
     1. Calculate maximum shear strength
        + 0.750
        + 1,600mm
        + 1,328kN
        + 996kN

→ O.K

* + 1. Calculate shear strength by concrete
       - 432kN
       - 432kN
    2. Calculate maximum space
       - 450mm
       - 450mm (by Rho)
       - 450mm
       - 450
       - 300mm (by Rho)
       - 300mm
    3. Calculate shear strength

→ O.K

→ O.K

* + - * 324kN
      * 227kN
      * 551kN

→ O.K

* + 1. Calculate rebar ratio
       - 0.00150 0.00329
       - 0.00250 0.00237

→ O.K

→ N.G

* 1. Check Shear Capacity : W05
     1. Calculate maximum shear strength
        + 0.750
        + 1,600mm
        + 1,328kN
        + 996kN

→ O.K

* + 1. Calculate shear strength by concrete
       - 432kN
       - 432kN
    2. Calculate maximum space
       - 450mm
       - 450mm (by Rho)
       - 450mm
       - 450
       - 300mm (by Rho)
       - 300mm
    3. Calculate shear strength

→ O.K

→ O.K

* + - * 324kN
      * 227kN
      * 551kN

→ O.K

* + 1. Calculate rebar ratio
       - 0.00150 0.00329
       - 0.00250 0.00237

→ O.K

→ N.G

* 1. Check Shear Capacity : W06
     1. Calculate maximum shear strength
        + 0.750
        + 880mm
        + 730kN
        + 548kN

→ O.K

* + 1. Calculate shear strength by concrete
       - 238kN
       - 238kN
    2. Calculate maximum space
       - 450mm
       - 450mm (by Rho)
       - 450mm
       - 450
       - 300mm (by Rho)
       - 300mm
    3. Calculate shear strength

→ O.K

→ O.K

* + - * 178kN
      * 370kN
      * 548kN

→ O.K

* + 1. Calculate rebar ratio
       - 0.00150 0.00469
       - 0.00250 0.01290

→ O.K

→ O.K