1. 填表資訊

|  |  |
| --- | --- |
| 填表員工編號 | 123 |
| 填表員工姓名 | 123 |
| 填表時間 | 2018/06/23 13:11 |

1. 設計條件

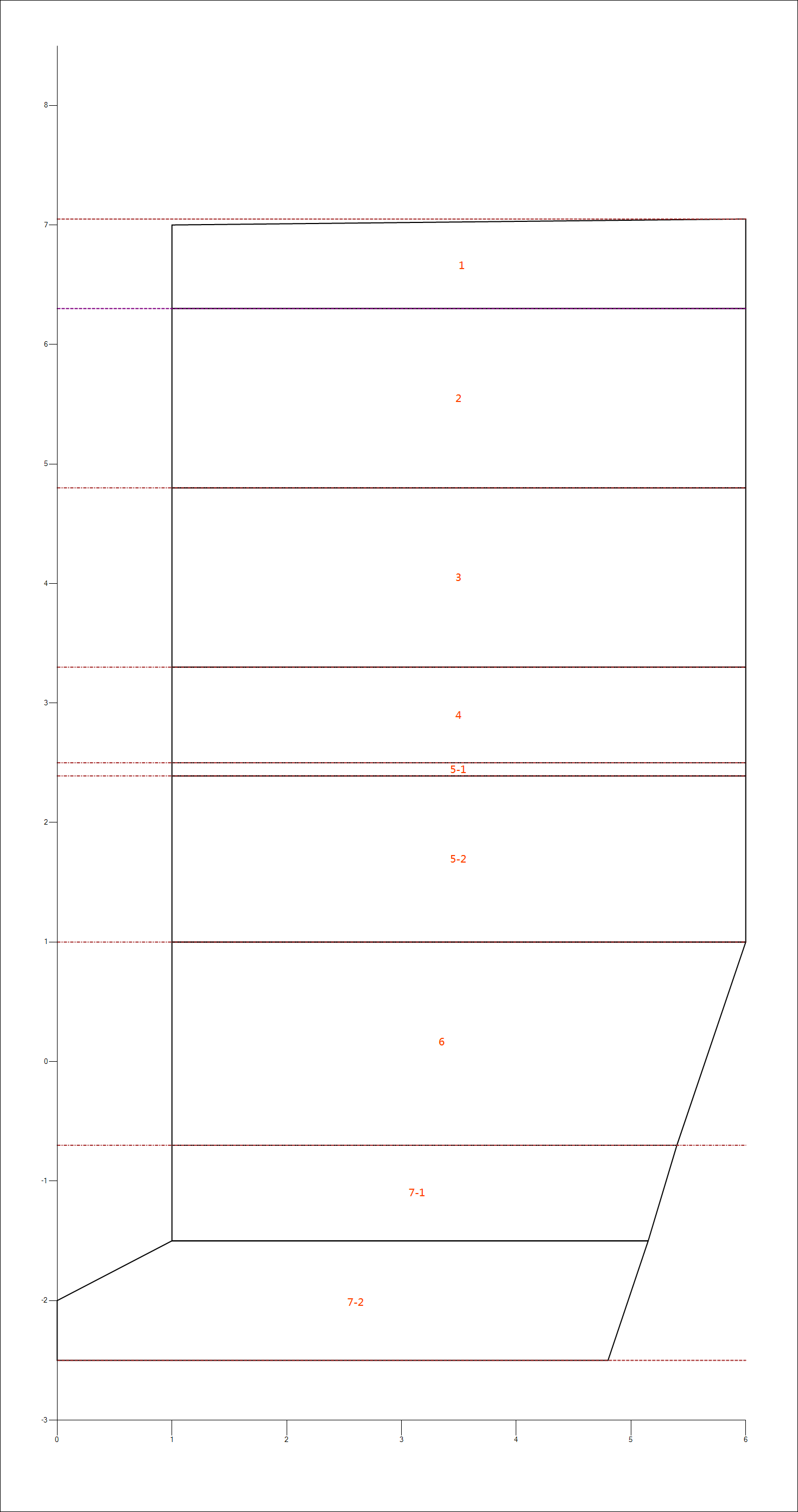
|  |  |
| --- | --- |
| 設計潮位高(*HWL*) | 6.3 |
| 設計潮位低(*LWL*) | -0.8 |
| 殘留水位(*RWL*) | 2.39 |
| 平時上載荷重(*Q*) | 1 |
| 地震時上載荷重() | 0.5 |
| 船舶牽引力() | 2.5 |
| 陸上設計震度(*k*) | 0.16 |
| 水中設計震度(*k’*) | 0.32 |
| 水單位重() | 1.03 |
| 繫船柱突出高度 | 0.25 |
| 背填料內摩擦角() | 35 |
| 背填料壁面摩擦角() | 15 |
| 背填料水平傾斜角() | 0 |
| 入土深度(*U*) | 1 |
| 拋石厚度(*D*) | 0.5 |
| 地盤基礎內摩擦角() | 35 |
| 土壤凝聚力(*C*) | 0 |
| Meyerhof土壤承載力係數 | 25.5 |
| Meyerhof土壤承載力係數 | 35.1 |
| Meyerhof土壤承載力係數 | 23.2 |
| 平時滑動安全係數 | 1.2 |
| 平時傾倒安全係數 | 1.2 |
| 平時地盤承載力安全係數 | 2.5 |
| 地震時滑動安全係數 | 1 |
| 地震時傾倒安全係數 | 1.1 |
| 地震時地盤承載力安全係數 | 1.5 |
| 土壤重(陸上) | 1.8 |
| 土壤重(水中) | 1 |

1. 壁體自重及抵抗彎矩

壁體自重 

抵抗彎矩 

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 檢討面  Sec. | 分區 | 面積  A(*m*2) | 單位體重 | 壁體自重 | 力臂 | 抵抗彎矩 |
| I | 1 | 3.63 | 2.30 | 8.34 | 2.53 | 21.08 |
|  | 2 | 7.50 | 1.25 | 9.38 | 2.50 | 23.44 |
| EL+4.8 | 計 |  |  | 17.71 | 2.51 | 44.52 |
|  |  |  |  | 17.71 | 2.51 | 44.52 |
| II | 3 | 7.50 | 1.25 | 9.38 | 2.50 | 23.44 |
| EL+3.3 | 計 |  |  | 27.09 | 2.51 | 67.96 |
|  |  |  |  | 27.09 | 2.51 | 67.96 |
| III | 4 | 4.00 | 2.30 | 9.20 | 2.50 | 23.00 |
| EL+2.5 | 計 |  |  | 36.29 | 2.51 | 90.96 |
|  |  |  |  | 36.29 | 2.51 | 90.96 |
| IV | 5-1 | 0.55 | 1.25 | 0.69 | 2.50 | 1.72 |
| EL+2.39 | 計 |  |  | 36.98 | 2.51 | 92.68 |
|  |  |  |  | 36.98 | 2.51 | 92.68 |
| V | 5-2 | 6.95 | 0.70 | 4.87 | 2.50 | 12.16 |
| EL+1 | 計 |  |  | 41.84 | 2.51 | 104.84 |
|  |  |  |  | 41.84 | 2.51 | 104.84 |
| VI | 6 | 7.99 | 1.27 | 10.15 | 2.35 | 23.88 |
| EL-0.7 | 計 |  |  | 51.99 | 2.48 | 128.72 |
|  |  |  |  | 51.99 | 3.48 | 180.71 |
| VII | 7-1 | 3.42 | 1.27 | 4.34 | 3.14 | 13.63 |
|  | 7-2 | 4.73 | 1.27 | 6.00 | 2.60 | 15.62 |
| EL-2.5 | 計 |  |  | 62.33 | 3.37 | 209.95 |



1. 地震力及傾倒彎矩

地震力 

設計震度*k*

傾倒彎矩

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 檢討面  Sec. | 分區 | 面積  A(*m*2) | 單位體重 | 地震力 | 力臂 | 傾倒彎矩 |
| I | 1 | 3.63 | 2.30 | 1.33 | 1.86 | 2.48 |
|  | 2 | 7.50 | 1.25 | 1.50 | 0.75 | 1.13 |
| EL+4.8 | 計 |  |  | 2.83 | 1.27 | 3.61 |
|  |  |  |  | 2.83 | 2.77 | 7.86 |
| II | 3 | 7.50 | 1.25 | 1.50 | 0.75 | 1.13 |
| EL+3.3 | 計 |  |  | 4.33 | 2.07 | 8.99 |
|  |  |  |  | 4.33 | 2.87 | 12.45 |
| III | 4 | 4.00 | 2.30 | 1.47 | 0.40 | 0.59 |
| EL+2.5 | 計 |  |  | 5.81 | 2.25 | 13.04 |
|  |  |  |  | 5.81 | 2.36 | 13.68 |
| IV | 5-1 | 0.55 | 1.25 | 0.11 | 0.05 | 0.01 |
| EL+2.39 | 計 |  |  | 5.92 | 2.31 | 13.69 |
|  |  |  |  | 5.92 | 3.70 | 21.91 |
| V | 5-2 | 6.95 | 0.70 | 0.78 | 0.70 | 0.54 |
| EL+1 | 計 |  |  | 6.69 | 3.35 | 22.45 |
|  |  |  |  | 6.69 | 5.05 | 33.83 |
| VI | 6 | 7.99 | 1.27 | 1.62 | 0.87 | 1.41 |
| EL-0.7 | 計 |  |  | 8.32 | 4.24 | 35.24 |
|  |  |  |  | 8.32 | 6.04 | 50.21 |
| VII | 7-1 | 3.42 | 1.27 | 0.69 | 1.40 | 0.98 |
|  | 7-2 | 4.73 | 1.27 | 0.96 | 0.49 | 0.47 |
| EL-2.5 | 計 |  |  | 9.97 | 5.18 | 51.66 |

1. 土壓水平分力及傾倒彎矩

**(一)土壓強度：**

1. 平時

|  |  |
| --- | --- |
| 設計震度 | 0 |
| 土壓係數 | 0.25 |

1. 地震時

陸上：

|  |  |
| --- | --- |
| 設計震度 | 0.16 |
| 土壓係數 | 0.35 |

水中

|  |  |
| --- | --- |
| 設計震度 | 0.32 |
| 土壓係數 | 0.49 |

**(二)土壓水平力及傾倒彎矩：**

|  |  |
| --- | --- |
| 水平分力 |  |
| 傾倒彎矩 |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 檢討面 | 分區 | 平 |  | 時 | 地 | 震 | 時 |
|  |  | 水平分力 | 力臂 | 傾倒彎矩 | 水平分力 | 力臂 | 傾倒彎矩 |
| I |  | 1.63 | 0.87 | 1.42 | 1.91 | 0.82 | 1.57 |
| EL+4.8 | 計 | 1.63 | 0.87 | 1.42 | 1.91 | 0.82 | 1.57 |
|  |  | 1.63 | 2.37 | 3.87 | 1.91 | 2.32 | 4.44 |
| II |  | 2.30 | 0.70 | 1.60 | 2.98 | 0.69 | 2.06 |
| EL+3.3 | 計 | 3.93 | 1.39 | 5.47 | 4.89 | 1.33 | 6.50 |
|  |  | 3.93 | 2.19 | 8.61 | 4.89 | 2.13 | 10.41 |
| III |  | 1.62 | 0.39 | 0.63 | 2.14 | 0.39 | 0.83 |
| EL+2.5 | 計 | 5.55 | 1.67 | 9.24 | 7.03 | 1.60 | 11.24 |
|  |  | 5.55 | 1.78 | 9.85 | 7.03 | 1.71 | 12.02 |
| IV |  | 0.24 | 0.05 | 0.01 | 0.39 | 0.05 | 0.02 |
| EL+2.39 | 計 | 5.79 | 1.70 | 9.86 | 7.42 | 1.62 | 12.04 |
|  |  | 5.79 | 3.09 | 17.91 | 7.42 | 3.01 | 22.36 |
| V |  | 3.32 | 0.68 | 2.26 | 6.28 | 0.68 | 4.26 |
| EL+1 | 計 | 9.12 | 2.21 | 20.17 | 13.71 | 1.94 | 26.62 |
|  |  | 9.12 | 3.91 | 35.67 | 13.71 | 3.64 | 49.92 |
| VI |  | 4.70 | 0.83 | 3.89 | 8.94 | 0.83 | 7.40 |
| EL-0.7 | 計 | 13.81 | 2.86 | 39.56 | 22.64 | 2.53 | 57.32 |
|  |  | 13.81 | 4.66 | 64.42 | 22.64 | 4.33 | 98.08 |
| VII |  | 5.73 | 0.88 | 5.04 | 10.96 | 0.88 | 9.63 |
| EL-2.5 | 計 | 19.54 | 3.56 | 69.46 | 33.60 | 3.21 | 107.71 |

1. 土壓垂直分力及抵抗彎矩

|  |  |
| --- | --- |
| 垂直分力 |  |
| 抵抗彎矩 |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 檢討面 | 平 |  | 時 | 地 | 震 | 時 |
|  | 垂直分力 | 力臂 | 抵抗彎矩 | 垂直分力 | 力臂 | 抵抗彎矩 |
| I | 0.44 | 5.00 | 2.18 | 0.51 | 5.00 | 2.56 |
| II | 1.05 | 5.00 | 5.26 | 1.31 | 5.00 | 6.55 |
| III | 1.49 | 5.00 | 7.43 | 1.88 | 5.00 | 9.42 |
| IV | 1.55 | 5.00 | 7.76 | 1.99 | 5.00 | 9.94 |
| V | 2.44 | 5.00 | 12.21 | 3.67 | 5.00 | 18.36 |
| VI | 3.70 | 5.00 | 18.50 | 6.07 | 5.00 | 30.34 |
| VII | 5.23 | 5.15 | 26.96 | 9.00 | 5.15 | 46.37 |

1. 殘留水壓及傾倒彎矩

|  |
| --- |
| (1)平時與地震時之殘留水壓力相同 |
| (2)殘留水壓力強度 |
| (3)傾倒彎矩 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 檢討面 | 分區 | 殘留水壓 | 力臂 | 傾倒彎矩 |
| I |  |  |  |  |
| II |  |  |  |  |
| III |  |  |  |  |
| IV |  | 0.00 | 0.00 | 0.00 |
| EL+2.39 | 計 | 0.00 | 非數值 | 0.00 |
|  |  | 0.00 | 0.00 | 0.00 |
| V |  | -0.67 | 4.83 | -3.25 |
| EL+1 | 計 | -0.67 | 4.83 | -3.25 |
|  |  | 0.00 | 0.00 | 0.00 |
| VI |  | 2.63 | 0.51 | 1.35 |
| EL-0.7 | 計 | 1.95 | -0.98 | -1.91 |
|  |  | 1.95 | 0.82 | 1.61 |
| VII |  | 5.75 | 0.90 | 5.17 |
| EL-2.5 | 計 | 7.70 | 0.88 | 6.78 |

1. 地震時之動水壓及傾倒彎矩

|  |  |
| --- | --- |
| (1)設計震度 | 0.32 |
| (2)動水壓力 |  |
| (3)作用力矩 |  |
| (4)傾倒彎矩 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 檢討面 | 動水壓合力 | 力矩 | 傾倒彎矩 |
| I |  |  |  |
| II |  |  |  |
| III |  |  |  |
| IV | 0.00 | 0.00 | 0.00 |
| V | 0.19 | 0.56 | 0.10 |
| VI | 0.92 | 1.24 | 1.13 |
| VII | 2.30 | 1.96 | 4.50 |

1. 船舶牽引力及傾倒彎矩

|  |  |
| --- | --- |
| (1)船舶牽引力 | 2.5 |
| (2)繫船柱突出高度 | 0.25 |
| (3)作用力矩 |  |
| (4)傾倒彎矩 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 檢討面 | 船舶牽引力 | 力臂 | 傾倒彎矩 |
| I | 2.5 | 2.50 | 6.25 |
| II | 2.5 | 4.00 | 10.00 |
| III | 2.5 | 4.80 | 12.00 |
| IV | 2.5 | 4.91 | 12.28 |
| V | 2.5 | 6.30 | 15.75 |
| VI | 2.5 | 8.00 | 20.00 |
| VII | 2.5 | 9.80 | 24.50 |

1. 垂直力及抵抗彎矩 總和表

(1)平時

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 檢討面 | 垂直力 | | | 抵抗彎矩 | | |
|  | 壁體自重 | 垂直土壓 | 計 | 壁體自重 | 垂直土壓 | 計 |
| I | 17.71 | 0.44 | 18.15 | 44.52 | 2.18 | 46.70 |
| II | 27.09 | 1.05 | 28.14 | 67.96 | 5.26 | 73.22 |
| III | 36.29 | 1.49 | 37.77 | 90.96 | 7.43 | 98.39 |
| IV | 36.98 | 1.55 | 38.53 | 92.68 | 7.76 | 100.44 |
| V | 41.84 | 2.44 | 44.28 | 104.84 | 12.21 | 117.05 |
| VI | 51.99 | 3.70 | 55.69 | 128.72 | 18.50 | 147.22 |
| VII | 62.33 | 5.23 | 67.57 | 209.95 | 26.96 | 236.91 |

(2)地震時

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 檢討面 | 垂直力 | | | 抵抗彎矩 | | |
|  | 壁體自重 | 垂直土壓 | 計 | 壁體自重 | 垂直土壓 | 計 |
| I | 17.71 | 0.51 | 18.22 | 44.52 | 2.56 | 47.08 |
| II | 27.09 | 1.31 | 28.40 | 67.96 | 6.55 | 74.51 |
| III | 36.29 | 1.88 | 38.17 | 90.96 | 9.42 | 100.38 |
| IV | 36.98 | 1.99 | 38.96 | 92.68 | 9.94 | 102.62 |
| V | 41.84 | 3.67 | 45.51 | 104.84 | 18.36 | 123.20 |
| VI | 51.99 | 6.07 | 58.05 | 128.72 | 30.34 | 159.05 |
| VII | 62.33 | 9.00 | 71.34 | 209.95 | 46.37 | 256.32 |

1. 水平力及傾倒彎矩 總和表
2. 平時

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 檢討面 | 水平力 | | | | 傾倒彎矩 | | | |
|  | 土壓 | 殘留水壓 | 牽引力 | 計 | 土壓 | 殘留水壓 | 牽引力 | 計 |
| I | 1.63 | 0.00 | 2.5 | 4.13 | 1.42 | 0.00 | 6.25 | 7.67 |
| II | 3.93 | 0.00 | 2.5 | 6.43 | 5.47 | 0.00 | 10.00 | 15.47 |
| III | 5.55 | 0.00 | 2.5 | 8.05 | 9.24 | 0.00 | 12.00 | 21.24 |
| IV | 5.79 | 0.00 | 2.5 | 8.29 | 9.86 | 0.00 | 12.28 | 22.14 |
| V | 9.12 | -0.67 | 2.5 | 10.94 | 20.17 | -3.25 | 15.75 | 32.67 |
| VI | 13.81 | 1.95 | 2.5 | 18.27 | 39.56 | -1.91 | 20.00 | 57.65 |
| VII | 19.54 | 7.70 | 2.5 | 29.74 | 69.46 | 6.78 | 24.50 | 100.74 |

1. 地震時

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 檢討面 | 水平力 | | | | | 傾倒彎矩 | | | | |
|  | 土壓 | 殘留水壓 | 地震力 | 動水壓 | 計 | 土壓 | 殘留水壓 | 地震力 | 動水壓 | 計 |
| I | 1.91 | 0.00 | 2.83 | 0.00 | 4.74 | 1.57 | 0.00 | 3.61 | 0.00 | 5.18 |
| II | 4.89 | 0.00 | 4.33 | 0.00 | 9.22 | 6.50 | 0.00 | 8.99 | 0.00 | 15.49 |
| III | 7.03 | 0.00 | 5.81 | 0.00 | 12.84 | 11.24 | 0.00 | 13.04 | 0.00 | 24.29 |
| IV | 7.42 | 0.00 | 5.92 | 0.00 | 13.34 | 12.04 | 0.00 | 13.69 | 0.00 | 25.73 |
| V | 13.71 | -0.67 | 6.69 | 0.19 | 19.91 | 26.62 | -3.25 | 22.45 | 0.10 | 45.92 |
| VI | 22.64 | 1.95 | 8.32 | 0.92 | 33.83 | 57.32 | -1.91 | 35.24 | 1.13 | 91.79 |
| VII | 33.60 | 7.70 | 9.97 | 2.30 | 53.58 | 107.71 | 6.78 | 51.66 | 4.50 | 170.65 |

1. 壁體安全檢核

**(1)滑動及傾倒安定檢核**

|  |  |
| --- | --- |
| 滑動安全係數 |  |
| 傾倒安全係數 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 檢討面 | 區分 | 平 | 時 | 地 震 | 時 |
| -- | -- | 安全係數 | 判定 | 安全係數 | 判定 |
| I | 滑動 | 2.20 | OK | 1.92 | OK |
|  | 傾倒 | 6.09 | OK | 9.08 | OK |
| II | 滑動 | 2.19 | OK | 1.54 | OK |
|  | 傾倒 | 4.73 | OK | 4.81 | OK |
| III | 滑動 | 2.35 | OK | 1.49 | OK |
|  | 傾倒 | 4.63 | OK | 4.13 | OK |
| IV | 滑動 | 2.32 | OK | 1.46 | OK |
|  | 傾倒 | 4.54 | OK | 3.99 | OK |
| V | 滑動 | 2.02 | OK | 1.14 | OK |
|  | 傾倒 | 3.58 | OK | 2.68 | OK |
| VI | 滑動 | 1.52 | OK | 0.86 | NG |
|  | 傾倒 | 2.55 | OK | 1.73 | OK |
| VII | 滑動 | 1.36 | OK | 0.80 | NG |
|  | 傾倒 | 2.35 | OK | 1.50 | OK |

**(2)地盤承載力檢核**

A.壁體底部反力計算

|  |  |  |
| --- | --- | --- |
| 區分 | 平時 | 地震時 |
| 合力作用點*X* | 2.02 | 1.20 |
| 壁體底部寬 | 5.15 | 5.15 |
| 偏心量*e* | 0.56 | 1.37 |
| *e*與之關係 | e<=(b/6) | e>(b/6) |
| 壁體底部反力及分布寬()  ：最大反力  ：最小反力    當時：      ，  當時：  ，  ， | 最大反力P1=  21.67(t/m^2) | 最大反力P1=  39.60(t/m^2) |
| 最小反力P2=  4.57(t/m^2) | 最小反力P2=  0.00(t/m^2) |
| 壁體底部反力分佈寬=  5.15(m) | 壁體底部反力分佈寬=  3.60(m) |

B.基礎拋石底面容許承載力計算

|  |  |  |
| --- | --- | --- |
| 區分 | 平時 | 地震時 |
| 偏心傾斜荷重傾斜角 | 23.76° | 36.91° |
| 基礎拋石底面反力分佈寬 | b''=5.89(m) | b''=4.72(m) |
| 基礎拋石底面反力及  最大反力  最小反力 | R1= 19.46(t/m^2)  R2= 4.49(t/m^2) | R1= 30.76(t/m^2)  R2= 0.50(t/m^2) |
| 地盤之極限承載力      基礎地盤之容許承載力 | Qu=120.94(t/m^2)  qa=49.87(t/m^2) | Qu=107.35(t/m^2)  qa=73.07(t/m^2) |
| 判定 | OK | OK |