# II. Design of Main Building

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

1.1 COLUMN AXIAL LOAD ( 1 ) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| A-101 | ROOF | SLAB | A=11.6×4.0= 46.4 | 0.595 | 0.535 | | 27.6 | 24.8 |
| | FL+27.1 | PARAPET | L=11.6+4.0= 15.6 | 0.12 | | | 1.9 | 1.9 |
| | ∫ | SIDING | A=15.6×(1.8+0.9)+6.85×4.3= 71.6 | 0.045 | | | 3.2 | 3.2 |
| | FL+21.0 | COLUMN | L= 6.1 | 0.2 | | | 1.2 | 1.2 |
| | h=6.1 | TRUSS | L= 11.0 | 0.25 | | | 2.8 | 2.8 |
| | | | | | | | 36.7 | 33.9 |
| | FL+21.0 | SIDING | A=6.85×10.0= 68.5 | 0.045 | | | 3.1 | 3.1 |
| | ∫ | COLUMN | L= 10.0 | 0.25 | | | 2.5 | 2.5 |
| | FL+11.0 | CRANE GIRDER | L= 4.0 | 0.35 | | | 1.4 | 1.4 |
| | h=10.0 | | | | | | 7.0 | 7.0 |
| | | | | | | | (43.7) | (40.9) |
| | FL+11.0 | SLAB | A=2.85×4.0= 11.4 | 2.225 | 0.8 | | 25.4 | 9.1 |
| | ∫ | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | FL+5.5 | | | | | | 26.8 | 10.5 |
| | h=5.5 | | | | | | (70.5) | (51.4) |
| | FL+5.5 | SLAB | A= 11.4 | 1.225 | 1.15 | | 14.0 | 13.1 |
| | ∫ | P.C. PANEL | A=6.85×5.5= 37.7 | 0.29 | | | 10.9 | 10.9 |
| | FL±0 | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 26.3 | 25.4 |
| | | | | | | | (96.8) | (76.8) |
| A-102 | ROOF | SLAB | A=11.6×6.8= 78.9 | 0.595 | 0.535 | | 46.9 | 42.2 |
| | FL+27.1 | PARAPET | L= 6.8 | 0.12 | | | 0.8 | 0.8 |
| | ∫ | SIDING | A=6.8×(6.1+0.9)= 47.6 | 0.045 | | | 2.1 | 2.1 |
| | FL+21.0 | COLUMN | L= 6.1 | 0.2 | | | 1.2 | 1.2 |
| | h=6.1 | TRUSS | L= 11.0 | 0.25 | | | 2.8 | 2.8 |
| | | | | | | | 53.8 | 49.1 |
| | FL+21.0 | SIDING | A=6.8×10.0= 68.0 | 0.045 | | | 3.1 | 3.1 |
| | ∫ | COLUMN | L= 10.0 | 0.25 | | | 2.5 | 2.5 |
| | FL+11.0 | CRANE GIRDER | L= 6.8 | 0.35 | | | 2.4 | 3.4 |
| | h=10.0 | | | | | | 8.0 | 8.0 |
| | | | | | | | (61.8) | (57.1) |
| | FL+11.0 | SLAB | A=2.85×6.8= 19.4 | 2.225 | 0.8 | | 43.2 | 15.5 |
| | ∫ | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | FL+5.5 | | | | | | 44.6 | 16.9 |
| | h=5.5 | | | | | | (106.4) | (74.0) |
| | FL+5.5 | SLAB | A= 19.4 | 1.225 | 1.15 | | 23.8 | 22.3 |
| | ∫ | P.C. PANEL | A=6.8×5.5= 37.4 | 0.29 | | | 10.8 | 10.8 |
| | FL±0 | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 36.0 | 34.5 |
| | | | | | | | (142.4) | (108.5) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
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COLUMN AXIAL LOAD ( 2 )
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| A-103 | FL+27.1 ~ FL+21.0 | | SAME AS A-102 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+11.0 | | SAME AS A-102 | | | | 8.0<br>(61.8) | 8.0<br>(57.1) |
| | FL+11.0 ~ FL+5.5 | | SAME AS A-102 | | | | 44.6<br>(106.4) | 16.9<br>(74.0) |
| | FL+5.5 ~ FL±0 | | SAME AS A-102 | | | | 36.0<br>(142.4) | 34.5<br>(108.5) |
| A-104 | FL+27.1 ~ FL+21.0 | | SAME AS A-102 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+11.0 | | SAME AS A-102 | | | | 8.0<br>(61.8) | 8.0<br>(57.1) |
| | FL+11.0 ~ FL+5.5 | SLAB | A= 2.85×3.4 = 9.7 | 2.225 | 0.8 | | 21.6 | 7.8 |
| | | GRATING | A= 9.7 | 0.325 | 0.225 | | 3.2 | 2.2 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 26.2<br>(88.0) | 11.4<br>(68.5) |
| | FL+5.5 ~ FL±0 | GRATING | A= 2.85×6.8 = 19.4 | 0.325 | 0.225 | | 6.3 | 4.4 |
| | | P.C. PANEL | A= 6.8×5.5 = 37.4 | 0.29 | | | 10.8 | 10.8 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 18.5<br>(106.5) | 16.6<br>(85.1) |
| A-105 | FL+27.1 ~ FL+21.0 | | SAME AS A-102 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+11.0 | | SAME AS A-102 | | | | 8.0<br>(61.8) | 8.0<br>(57.1) |
| | FL+11.0 ~ FL+5.5 | SLAB | A= 2.85×3.4 = 9.7 | 2.225 | 0.8 | | 21.6 | 7.8 |
| | | GRATING | A= 9.7 | 0.325 | 0.225 | | 3.2 | 2.2 |
| | | EXC. CUBICLE | 1/4×4.0 | | | | 1.0 | 1.0 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 27.2<br>(89.0) | 12.4<br>(69.5) |
| | FL+5.5 ~ FL±0 | | SAME AS A-104 | | | | 18.5<br>(107.5) | 16.6<br>(86.1) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
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## COLUMN AXIAL LOAD (3) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| A-106 | FL+27.1 S FL+21.0 | | | | | | | |
| | | | SAME AS A-102 | | | | 53.8 | 49.1 |
| | FL+21.0 S FL+11.0 | | | | | | | |
| | | | SAME AS A-102 | | | | 8.0 | 8.0 |
| | | | | | | | (61.8) | (57.1) |
| | FL+11.0 S FL+5.5 | SLAB | A=2.85×6.8= 19.4 | 2.225 | 0.8 | | 43.2 | 15.5 |
| | | EXC. CUBICLE | 1/4×4.0 | | | | 1.0 | 1.0 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 45.6 | 17.9 |
| | | | | | | | (107.4) | (75.0) |
| | FL+5.5 S FL±0 | SLAB | A= 19.4 | 2.225 | 1.15 | | 23.8 | 22.3 |
| | | I.P.B. | L=2.3×3= 6.9 | 1.0 | | | 6.9 | 6.9 |
| | | P.C. PANEL | A=6.8×5.5= 37.4 | 0.29 | | | 10.8 | 10.8 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 42.9 | 41.4 |
| | | | | | | | (150.3) | (116.4) |
| A-107 | FL+27.1 S FL+21.0 | SLAB | A=11.6×8.4= 97.4 | 0.595 | 0.535 | | 58.0 | 52.1 |
| | | PARAPET | L= 8.4 | 0.12 | | | 1.0 | 1.0 |
| | | SIDING | A=8.4×(6.1+0.9)= 58.8 | 0.045 | | | 2.6 | 2.6 |
| | | COLUMN | L= 6.1 | 0.2 | | | 1.2 | 1.2 |
| | | TRUSS | L= 11.0 | 0.25 | | | 2.8 | 2.8 |
| | | | | | | | 65.6 | 59.7 |
| | FL+21.0 S FL+11.0 | SIDING | A=8.4×10.0= 84.0 | 0.045 | | | 3.8 | 3.8 |
| | | COLUMN | L= 10.0 | 0.25 | | | 2.5 | 2.5 |
| | | CRANE GIRDER | L= 8.4 | 0.35 | | | 2.9 | 2.9 |
| | | | | | | | 9.2 | 9.2 |
| | | | | | | | (74.8) | (68.9) |
| | FL+11.0 S FL+5.5 | SLAB | A=2.85×8.9= 23.9 | 2.225 | 0.8 | | 53.2 | 19.1 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 54.6 | 20.5 |
| | | | | | | | (129.4) | (89.4) |
| | R+5.5 S FL±0 | SLAB | A= 23.9 | 1.225 | 1.15 | | 29.3 | 27.5 |
| | | P.C. PANEL | A=8.4×5.5= 46.2 | 0.29 | | | 13.4 | 13.4 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 44.1 | 42.3 |
| | | | | | | | (173.5) | (131.7) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
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## COLUMN AXIAL LOAD (4)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| A-108 | FL+27.1 ~ FL+21.0 | SLAB | A=11.6×10.0= 116.0 | 0.595 | 0.535 | | 69.0 | 62.1 |
| | | PARAPET | L= 10.0 | 0.12 | | | 1.2 | 1.2 |
| | | SIDING | A=10.0×(6.1+0.9)= 70.0 | 0.045 | | | 3.2 | 3.2 |
| | | COLUMN | L= 6.1 | 0.2 | | | 1.2 | 1.2 |
| | | TRUSS | L= 11.0 | 0.25 | | | 2.8 | 2.8 |
| | | | | | | | 77.4 | 70.5 |
| | FL+21.0 ~ FL+11.0 | SIDING | A=10.0×10.0= 100.0 | 0.045 | | | 4.5 | 4.5 |
| | | COLUMN | L= 10.0 | 0.25 | | | 2.5 | 2.5 |
| | | CRANE GIRDER | L= 10.0 | 0.35 | | | 3.5 | 3.5 |
| | | | | | | | 10.5 | 10.5 |
| | | | | | | | (87.9) | (81.0) |
| | FL+11.0 ~ FL+5.5 | SLAB | A=2.85×5.5= 15.7 | 1.925 | 1.35 | | 22.4 | 21.2 |
| | | HAND RAIL | L= 2.85 | 0.035 | | | 0.1 | 0.1 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | SHUTTER | A=5.0×10.0= 50.0 | 0.1 | | | 5.0 | 5.0 |
| | | | | | | | 28.9 | 27.7 |
| | | | | | | | (116.8) | (108.7) |
| | FL+5.5 ~ FL±0 | STAIR | A= 15.7 | 0.43 | 0.36 | | 6.8 | 5.7 |
| | | HAND RAIL | L= 2.85 | 0.035 | | | 0.1 | 0.1 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | P.C. PANEL | A=5.0×5.5= 27.5 | 0.29 | | | 8.0 | 8.0 |
| | | | | | | | 16.8 | 15.2 |
| | | | | | | | (133.1) | (123.9) |
| A-201 | | SAME AS A-108 | | | | | | |
| A-202 | | SAME AS A-107 | | | | | | |
| A-203 | | SAME AS A-106 | | | | | | |
| A-204 | | SAME AS A-105 | | | | | | |
| A-205 | | SAME AS A-104 | | | | | | |
| A-206 | | SAME AS A-103 | | | | | | |
| A-207 | | SAME AS A-102 | | | | | | |
| A-208 | | SAME AS A-101 | | | | | | |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

## COLUMN AXIAL LOAD (5) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| B-101 | FL+11.0 ~ FL+5.5 | SIDING | A=5.25x14.3= 75.1 | 0.045 | | | 3.4 | 3.4 |
| | | SLAB | A=5.25x4.0= 21.0 | 2.225 | 0.8 | | 46.7 | 16.8 |
| | | COLUMN | L= 5.5 | 0.2 | | | 1.1 | 1.1 |
| | | | | | | | 51.2 | 21.3 |
| | FL+5.5 ~ FL±0 | SLAB | A= 21.0 | 1.225 | 1.15 | | 25.7 | 24.2 |
| | | P.C.PANEL | A=5.25x5.5= 28.9 | 0.29 | | | 8.4 | 8.4 |
| | | COLUMN | L= 5.5 | 0.2 | | | 1.1 | 1.1 |
| | | | | | | | 35.2 | 33.7 |
| | | | | | | | (86.4) | (55.0) |
| B-102 | FL+11.0 ~ FL+5.5 | SLAB | A=5.25x6.8= 35.7 | 2.225 | 0.8 | | 79.4 | 28.6 |
| | | COLUMN | L= 5.5 | 0.2 | | | 1.1 | 1.1 |
| | | | | | | | 80.5 | 29.7 |
| | FL+5.5 ~ FL±0 | SLAB | A= 35.7 | 1.225 | 1.15 | | 43.7 | 41.1 |
| | | COLUMN | L= 5.5 | 0.2 | | | 1.1 | 1.1 |
| | | | | | | | 44.8 | 42.2 |
| | | | | | | | (125.3) | (71.9) |
| B-103 | FL+11.0 ~ FL+5.5 | SLAB | A=3.3x6.8= 22.4 | 2.225 | 0.8 | | 49.8 | 17.9 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 50.9 | 19.0 |
| | FL+5.5 ~ FL±0 | SLAB | A= 22.4 | 1.225 | 1.15 | | 27.4 | 25.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 28.5 | 26.9 |
| | | | | | | | (79.4) | (45.9) |
| B-104 | FL+11.0 ~ FL+5.5 | SLAB | A=3.3x3.4= 11.2 | 2.225 | 0.8 | | 24.9 | 9.0 |
| | | GRATING | A= 11.2 | 0.325 | 0.255 | | 3.6 | 2.9 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 29.6 | 13.0 |
| | FL+5.5 ~ FL±0 | GRATING | A=2.0x6.8= 13.6 | 0.325 | 0.255 | | 4.4 | 3.5 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 5.5 | 4.6 |
| | | | | | | | (35.1) | (17.6) |
| B-105 | FL+11.0 ~ FL+5.5 | SLAB | A= 11.2 | 2.225 | 0.8 | | 24.9 | 9.0 |
| | | GRATING | A= 11.2 | 0.325 | 0.255 | | 3.6 | 2.9 |
| | | EXC.CUBICLE | 1/4x4.0 | | | | 1.0 | 1.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 30.6 | 14.0 |
| | FL+5.5 ~ FL±0 | | SAME AS B-104 | | | | 5.5 | 4.6 |
| | | | | | | | (36.1) | (18.6) |

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COLUMN AXIAL LOAD (6)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| B-106 | FL+11.0 s FL+5.5 | SLAB | A=3.3×6.8= 22.4 | 2.225 | 0.8 | | 49.8 | 17.9 |
| | | EXC. CUBICLE | 1/4 × 4.0 | | | | 1.0 | 1.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 51.9 | 20.0 |
| | FL+5.5 s FL±0 | SLAB | A= 22.4 | 1.225 | 1.15 | | 27.4 | 25.8 |
| | | I.P.B. | L=5.3×3= 15.9 | 1.0 | | | 15.9 | 15.9 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 44.4 | 42.8 |
| | | | | | | | (96.3) | (62.8) |
| B-107 | FL+11.0 s FL+5.5 | SLAB | A=3.3×3.0+5.25×5.4= 38.3 | 2.225 | 0.8 | | 85.2 | 30.6 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 86.3 | 31.7 |
| | FL+5.5 s FL±0 | SLAB | A= 38.3 | 1.225 | 1.15 | | 46.9 | 44.0 |
| | | NO.1 M/C | 1/2 × 18.5 | | | | 9.3 | 9.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 57.3 | 54.4 |
| | | | | | | | (143.6) | (86.1) |
| B-108 | FL+11.0 s FL+5.5 | SLAB | A=4.0×5.4= 21.6 | 2.225 | 0.8 | | 48.1 | 17.3 |
| | | STAIR | A=1.2×5.4= 6.5 | 0.43 | 0.36 | | 2.8 | 2.3 |
| | | HAND RAIL | L= 5.25 | 0.035 | | | 0.2 | 0.2 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 52.2 | 20.9 |
| | FL+5.5 s FL±0 | SLAB | A= 21.6 | 1.225 | 1.15 | | 26.5 | 24.8 |
| | | STAIR | A= 6.5 | 0.43 | 0.36 | | 2.8 | 2.3 |
| | | HANDRAIL | L= 5.25 | 0.035 | | | 0.2 | 0.2 |
| | | COMMON M/C | 1/2 × 16 | | | | 8.0 | 8.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 38.6 | 36.4 |
| | | | | | | | (90.8) | (57.3) |
| B-201 | FL+11.0 s FL+5.5 | | SAME AS B-108 | | | | 52.2 | 20.9 |
| | FL+5.5 s FL±0 | SLAB | A= 21.6 | 1.225 | 1.15 | | 26.5 | 24.8 |
| | | STAIR | A= 6.5 | 0.43 | 0.36 | | 2.8 | 2.3 |
| | | HAND RAIL | L= 5.25 | 0.035 | | | 0.2 | 0.2 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 30.6 | 28.4 |
| | | | | | | | (82.8) | (49.3) |
| B-202 | | | SAME AS B-107 | | | | | |
| B-203 | | | SAME AS B-106 | | | | | |
| B-204 | | | SAME AS B-105 | | | | | |

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COLUMN AXIAL LOAD (7)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| B-205 | | | SAME AS B-104 | | | | | |
| B-206 | | | SAME AS B-103 | | | | | |
| B-207 | | | SAME AS B-102 | | | | | |
| B-208 | | | SAME AS B-101 | | | | | |
| D-101 | FL+11.0 ~ FL+5.5 | SIDING | A=6.0×14.3= 85.8 | 0.045 | | | 3.9 | 3.9 |
| | | SLAB | A=6.0×4.0= 24.0 | 1.425 | 1.35 | | 34.2 | 32.4 |
| | | M.S.P. | L= 5.0 | 1.0 | | | 5.0 | 5.0 |
| | | H.R.P. | L= 5.0 | 1.0 | | | 5.0 | 5.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 49.2 | 47.4 |
| | FL+5.5 ~ FL±0 | SLAB | A= 24.0 | 1.225 | 1.15 | | 29.4 | 27.6 |
| | | P.C. PANEL | A=6.0×5.5= 33.0 | 0.29 | | | 9.6 | 9.6 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 40.1 | 38.3 |
| | | | | | | | (89.3) | (85.7) |
| D-102 | FL+11.0 ~ FL+5.5 | SLAB (O.H) | A=6.0×2.3= 13.8 | 2.225 | 0.8 | | 30.7 | 11.0 |
| | | SLAB (OTHER) | A=6.0×3.4= 20.4 | 1.425 | 1.35 | | 29.1 | 27.5 |
| | | GRATING | A=6.0×2.0= 12.0 | 0.325 | 0.255 | | 3.9 | 3.1 |
| | | M.S.P. | L= 6.8 | 1.0 | | | 6.8 | 6.8 |
| | | H.R.P. | L= 6.8 | 1.0 | | | 6.8 | 6.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 78.4 | 56.3 |
| | FL+5.5 ~ FL±0 | SLAB | A=6.0×7.7= 46.2 | 1.225 | 1.15 | | 56.6 | 53.1 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 57.7 | 54.2 |
| | | | | | | | (136.1) | (110.5) |
| D-103 | FL+11.0 ~ FL+5.5 | SLAB | A=6.0×6.0= 36.0 | 2.225 | 0.8 | | 80.1 | 28.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 81.2 | 29.9 |
| | FL+5.5 ~ FL±0 | SLAB | A= 36.0 | 1.225 | 1.15 | | 44.1 | 41.4 |
| | | No.1 M/C | 1/2×18.5 | | | | 9.3 | 9.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 54.5 | 51.8 |
| | | | | | | | (135.7) | (81.7) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (8)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| D-108 | FL+11.0 ~ FL+5.5 | SLAB (O.H) | A=6.0×5.4= 32.4 | 2.225 | 0.8 | | 72.1 | 25.9 |
| | | SLAB (OTHER) | A=6.0×4.6= 27.6 | 1.425 | 1.35 | | 39.3 | 37.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | HAND RAIL | L=2.0×5.0= 8.0 | 0.035 | | | 0.3 | 0.3 |
| | | | | | | | 112.8 | 64.6 |
| | FL+5.5 ~ FL±0 | SLAB | A=32.4+27.6= 60.0 | 1.225 | 1.15 | | 73.5 | 69.0 |
| | | COMMON M/C | 1/2×16.0 | | | | 8.0 | 8.0 |
| | | COMMON P/C | 1/2×5.5 | | | | 2.8 | 2.8 |
| | | HAND RAIL | L= 8.0 | 0.035 | | | 0.3 | 0.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 85.7 | 81.2 |
| | | | | | | | (198.5) | (145.8) |
| D-201 | FL+11.0 ~ FL+5.5 | | SAME AS D-108 | | | | 112.8 | 64.6 |
| | FL+5.5 ~ FL±0 | SLAB | A= 60.0 | 1.225 | 1.15 | | 73.5 | 69.0 |
| | | HAND RAIL | L= 8.0 | 0.035 | | | 0.3 | 0.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 74.9 | 70.4 |
| | | | | | | | (187.7) | (135.0) |
| D-202 | | | SAME AS D-107 | | | | | |
| D-207 | | | SAME AS D-102 | | | | | |
| D-208 | | | SAME AS D-101 | | | | | |
| F-101 | FL+11.0 ~ FL+5.5 | SIDING | A=5.75×14.3= 82.2 | 0.045 | | | 3.7 | 3.7 |
| | | SLAB | A=5.75×4.0= 23.0 | 1.425 | 1.35 | | 32.8 | 31.1 |
| | | C.R.P | L= 5.0 | 1.0 | | | 5.0 | 5.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 42.6 | 40.9 |
| | FL+5.5 ~ FL±0 | SLAB | A= 23.0 | 1.225 | 1.15 | | 28.2 | 26.5 |
| | | P.C. PANEL | A=5.75×5.5= 31.6 | 0.29 | | | 9.2 | 9.2 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 38.5 | 36.8 |
| | | | | | | | (81.1) | (77.7) |
| F-102 | FL+11.0 ~ FL+5.5 | SLAB (O.H.) | A=5.75×3.4= 19.6 | 2.225 | 0.8 | | 43.6 | 15.7 |
| | | SLAB (OTHER) | A= 19.6 | 1.425 | 1.35 | | 27.9 | 26.5 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | C.R.P | L= 6.8 | 1.0 | | | 6.8 | 6.8 |
| | | | | | | | 79.4 | 50.1 |
| | FL+5.5 ~ FL±0 | SLAB | A=5.75×6.8= 39.1 | 1.225 | 1.15 | | 47.9 | 45.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 49.0 | 56.1 |
| | | | | | | | (128.4) | (106.2) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

## COLUMN AXIAL LOAD (9) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| F-103 | FL+11.0 ~ FL+5.5 | SLAB | A=5.75×10.0+3.75×5.8= 27.5 | 2.225 | 0.8 | | 61.2 | 22.0 |
| | | C.R.P. | L= 6.8 | 1.0 | | | 6.8 | 6.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 69.1 | 29.9 |
| | FL+5.5 ~ FL±0 | SLAB | A= 27.5 | 1.225 | 1.15 | | 33.7 | 31.6 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 34.8 | 32.7 |
| | | | | | | | (103.9) | (62.6) |
| F-104 | FL+11.0 ~ FL+5.5 | SLAB | A=3.75×3.4= 12.8 | 2.225 | 0.8 | | 28.5 | 10.2 |
| | | GRATING | A= 12.8 | 0.325 | 0.255 | | 4.2 | 3.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 33.8 | 14.6 |
| | FL+5.5 ~ FL±0 | GRATING | A=3.75×6.8 = 25.5 | 0.325 | 0.255 | | 8.3 | 6.5 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 9.4 | 7.6 |
| | | | | | | | (43.2) | (22.2) |
| F-105 | | | SAME AS F-104 | | | | | |
| F-106 | FL+11.0 ~ FL+5.5 | SLAB | A=3.75×3.4+1.25×3.4= 17.0 | 2.225 | 0.8 | | 37.8 | 13.6 |
| | | GRATING | A=1.5×3.4 = 5.1 | 0.325 | 0.255 | | 1.7 | 1.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 40.6 | 16.0 |
| | FL+5.5 ~ FL±0 | | SAME AS F-103 | | | | 34.8 | 32.7 |
| | | | | | | | (75.4) | (48.7) |
| F-107 | FL+11.0 ~ FL+5.5 | SLAB | A=3.75×3.4+5.75×6.0= 43.5 | 2.225 | 0.8 | | 96.8 | 34.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 97.9 | 35.9 |
| | FL+5.5 ~ FL±0 | SLAB | A= 43.5 | 1.225 | 1.15 | | 53.3 | 50.0 |
| | | NO.2 P/C | 1/2×16.5 | | | | 8.3 | 8.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 62.7 | 59.4 |
| | | | | | | | (160.6) | (95.3) |
| F-108 | FL+11.0 ~ FL+5.5 | SLAB (O.H) | A=5.75×5.0 = 28.8 | 2.225 | 0.8 | | 64.1 | 23.0 |
| | | SLAB (OTHER) | A= 28.8 | 1.425 | 1.35 | | 41.0 | 38.9 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 106.2 | 63.0 |
| | FL+5.5 ~ FL±0 | SLAB | A=5.75×10.0= 57.5 | 1.225 | 1.15 | | 70.4 | 66.1 |
| | | COMMON P/C | 1/2×(5.5+18.5) | | | | 12.0 | 12.0 |
| | | COLUMN | | | | | 82.4 | 78.1 |
| | | | | | | | (188.6) | (141.1) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

## COLUMN AXIAL LOAD (10) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| F-201 | FL+11.0 ~ FL+5.5 | | SAME AS F-108 | | | | 106.2 | 63.0 |
| | FL+5.5 ~ FL±0 | SLAB | A=5.75×10.0= 57.5 | 1.225 | 1.15 | | 70.4 | 66.1 |
| | | C/C | 1/2×4.0 | | | | 2.0 | 2.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 73.5 | 69.2 |
| | | | | | | | (179.7) | (132.2) |
| F-202 | | | SAME AS F-107 | | | | | |
| F-203 | FL+11.0 ~ FL+5.5 | SLAB | A=3.75×6.8= 25.5 | 2.225 | 0.8 | | 56.7 | 20.4 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 57.8 | 21.5 |
| | FL+5.5 ~ FL±0 | | SAME AS F-106 | | | | 34.8 | 32.7 |
| | | | | | | | (92.6) | (54.2) |
| F-204 | | | SAME AS F-109 | | | | | |
| F-205 | | | SAME AS F-105 | | | | | |
| F-206 | FL+11.0 ~ FL+5.5 | SLAB | A=5.75×10+3.75×2.4+2.25×3.4= 22.4 | 2.225 | 0.8 | | 49.8 | 17.9 |
| | | GRATING | A=1.5×3.4= 5.1 | 0.325 | 0.255 | | 1.7 | 1.3 |
| | | C.R.P | L= 6.8 | 1.0 | | | 6.8 | 6.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 59.4 | 27.1 |
| | FL+5.5 ~ FL±0 | | SAME AS F-103 | | | | 34.8 | 32.7 |
| | | | | | | | (94.2) | (59.8) |
| F-207 | | | SAME AS F-102 | | | | | |
| F-208 | | | SAME AS F-101 | | | | | |

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NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (11)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| G-101 | FL+27.1 ~ FL+21.0 | | SAME AS A-101 | | | | 36.7 | 33.9 |
| | FL+21.0 ~ FL+16.0 | SLAB | A=5.0×4.0= 20.0 | 0.635 | 0.535 | | 12.7 | 10.7 |
| | | PARAPET | L=5.0+4.0= 9.0 | 0.12 | | | 1.1 | 1.1 |
| | | SIDING | A=7.75×5.0= 38.8 | 0.045 | | | 1.7 | 1.7 |
| | | CRANE GIRDER | L= 4.0 | 0.35 | | | 1.4 | 1.4 |
| | | COLUMN | L= 5.0 | 0.25 | | | 1.3 | 1.3 |
| | | | | | | | 18.2 | 16.2 |
| | | | | | | | (54.9) | (50.1) |
| | FL+16.0 ~ FL+11.0 | SLAB | A= 20.0 | 1.29 | 0.665 | | 25.8 | 13.3 |
| | | SIDING | A=7.75×5.0= 38.8 | 0.045 | | | 1.7 | 1.7 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 28.8 | 16.3 |
| | | | | | | | (83.7) | (66.4) |
| | FL+11.0 ~ FL+5.5 | SLAB | A=7.75×4.0= 31.0 | 1.425 | 1.35 | | 44.2 | 41.9 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 95.6 | 43.3 |
| | | | | | | | (129.3) | (109.7) |
| | FL+5.5 ~ FL±0 | SLAB | A= 31.0 | 1.225 | 1.15 | | 38.0 | 35.7 |
| | | P.C. PANEL | A=7.75×5.5= 42.6 | 0.29 | | | 12.4 | 12.4 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 51.8 | 49.5 |
| | | | | | | | (181.1) | (159.2) |
| G-102 | FL+27.1 ~ FL+21.0 | | SAME AS A-102 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+16.0 | SLAB | A=5.0×3.4= 17.0 | 0.635 | 0.535 | | 10.8 | 9.1 |
| | | SLAB (CRANE) | A= 17.0 | 1.035 | 0.69 | | 17.6 | 11.7 |
| | | PARAPET | L= 6.8 | 0.12 | | | 0.8 | 0.8 |
| | | CRANE GIRDER | L= 6.8 | 0.35 | | | 2.4 | 2.4 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 32.9 | 25.3 |
| | | | | | | | (86.7) | (74.4) |
| | FL+16.0 ~ FL+11.0 | SLAB | A=5.0×6.8= 34.0 | 1.29 | 0.665 | | 43.9 | 22.6 |
| | | NO.4 LP | 1/2×11 | | | | 5.5 | 5.5 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 50.7 | 29.4 |
| | | | | | | | (137.4) | (103.8) |
| | FL+11.0 ~ FL+5.5 | SLAB (O.H) | A=2.75×6.8= 18.7 | 2.225 | 0.8 | | 41.6 | 15.0 |
| | | SLAB (OTHER) | A=5.0×6.8= 34.0 | 1.425 | 1.35 | | 48.5 | 45.9 |
| | | NO.3 LP | 1/4×12.0 | | | | 3.0 | 3.0 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 94.5 | 65.3 |
| | | | | | | | (231.9) | (169.1) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

## COLUMN AXIAL LOAD (12) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (G-102) | FL+5.5 ~ FL±0 | SLAB | A=7.75×6.8= 52.7 | 1.225 | 1.15 | | 64.6 | 60.6 |
| | | No.2 LP | 1/4×12.0 | | | | 3.0 | 3.0 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 69.0 | 65.0 |
| | | | | | | | (300.9) | (234.1) |
| G-103 | FL+27.1 ~ FL+21.0 | | SAME AS A-103 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+16.0 | SLAB | A=5.0×6.8= 34.0 | 1.035 | 0.69 | | 35.2 | 23.5 |
| | | PARAPET | L= 6.8 | 0.12 | | | 0.8 | 0.8 |
| | | CRANE GIRDER | L= 6.8 | 0.35 | | | 2.4 | 2.4 |
| | | DEAERATOR COLUMN | 1/4×264.0 | | | | 66.0 | 66.0 |
| | | | | | | | 1.3 | 1.3 |
| | | | | | | | 105.7 | 94.0 |
| | | | | | | | (159.5) | (143.1) |
| | FL+16.0 ~ FL+11.0 | | SAME AS G-102 | | | | 50.7 | 29.4 |
| | | | | | | | (210.2) | (172.5) |
| | FL+11.0 ~ FL+5.5 | | SAME AS G-102 | | | | 94.5 | 65.3 |
| | | | | | | | (304.7) | (237.8) |
| | FL+5.5 ~ FL±0 | | SAME AS G-102 | | | | 69.0 | 65.0 |
| | | | | | | | (373.7) | (302.8) |
| G-104 | FL+27.1 ~ FL+21.0 | | SAME AS A-104 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+16.0 | | SAME AS G-103 | | | | 105.7 | 94.0 |
| | | | | | | | (159.5) | (143.1) |
| | FL+16.0 ~ FL+11.0 | SLAB | A=5.0×6.8= 34.0 | 1.29 | 0.665 | | 43.9 | 22.6 |
| | | No.8 HP | 1/4×50.0 | | | | 12.5 | 12.5 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 57.7 | 36.4 |
| | | | | | | | (217.2) | (179.5) |
| | FL+11.0 ~ FL+5.5 | SLAB (O.H.) | A=2.75×3.4= 9.4 | 2.225 | 0.8 | | 20.9 | 7.5 |
| | | SLAB (OTHER) | A=5.0×6.8= 34.0 | 1.425 | 1.35 | | 48.5 | 45.9 |
| | | GRATING | A= 9.4 | 0.325 | 0.255 | | 3.1 | 2.4 |
| | | No.7 HP | 1/2×45 | | | | 22.5 | 22.5 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 96.4 | 79.7 |
| | | | | | | | (313.6) | (259.2) |
| | FL+5.5 ~ FL±0 | SLAB | A=5.0×6.8+2.75×0.9= 36.5 | 1.225 | 1.15 | | 44.7 | 42.0 |
| | | GRATING | A=2.75×5.9= 16.2 | 0.325 | 0.255 | | 5.3 | 4.1 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 51.4 | 47.5 |
| | | | | | | | (365.0) | (306.7) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (13)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| G-105 | FL+27.1 ~ FL+21.0 | | SAME AS A-105 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+16.0 | | SAME AS G-102 | | | | 32.9<br>(86.7) | 25.3<br>(74.4) |
| | FL+16.0 ~ FL+11.0 | | SAME AS G-104 | | | | 57.7<br>(144.4) | 36.4<br>(110.8) |
| | FL+11.0 > FL+5.5 | | SAME AS G-104 | | | | 96.4<br>(240.8) | 79.7<br>(190.5) |
| | FL+5.5 ~ FL±0 | | SAME AS G-104 | | | | 51.4 | 42.5 |
| | | No.1 C/C | 1/2 × 7.0 | | | | 3.5 | 3.5 |
| | | | | | | | 54.9<br>(295.7) | 51.0<br>(241.5) |
| G-106 | FL+27.1 ~ FL+21.0 | | SAME AS A-106 | | | | 53.8 | 49.1 |
| | FL+21.0 > FL+16.0 | SLAB | A=5.0×6.8= 34.0 | 0.635 | 0.535 | | 21.6 | 18.2 |
| | | PARAPET | L= 6.8 | 0.12 | | | 0.8 | 0.8 |
| | | CRANEGIRDER | L= 6.8 | 0.35 | | | 2.4 | 2.4 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 26.1<br>(79.9) | 22.7<br>(71.8) |
| | FL+16.0 > FL+11.0 | SLAB | A=5.0×6.8= 34.0 | 1.29 | 0.665 | | 43.9 | 22.6 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 45.2<br>(125.1) | 23.9<br>(95.7) |
| | FL+11.0 > FL+5.5 | SLAB (O.H.) | A=2.75×3.4= 9.4 | 2.225 | 0.8 | | 20.9 | 7.5 |
| | | SLAB (OTHER) | A=5.0×6.8+1.25×3.4= 38.3 | 1.925 | 1.35 | | 54.6 | 51.7 |
| | | GRATING | A=1.5×3.4= 5.1 | 0.325 | 0.255 | | 1.7 | 1.3 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 78.6<br>(203.7) | 61.9<br>(157.6) |
| | FL+5.5 ~ FL±0 | SLAB | A=7.75×6.8= 52.7 | 1.225 | 1.15 | | 64.6 | 60.6 |
| | | No.1 C/C | 1/2 × 7.0 | | | | 3.5 | 3.5 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 69.5<br>(273.2) | 65.5<br>(222.1) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (14)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| G-107 | FL+27.1 S FL+21.0 | | SAME AS A-107 | | | | 65.6 | 59.7 |
| | FL+21.0 S FL+16.0 | SLAB | A=5.0×8.4= 42.0 | 0.635 | 0.535 | | 26.7 | 22.5 |
| | | PARAPET | L= 8.4 | 0.12 | | | 1.0 | 1.0 |
| | | CRANE GIRDER | L= 8.4 | 0.35 | | | 2.9 | 2.9 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 31.9 | 27.7 |
| | | | | | | | (97.5) | (87.4) |
| | FL+16.0 S FL+11.0 | SLAB | A=5.0×3.4= 17.0 | 0.71 | 0.61 | | 12.1 | 10.4 |
| | | BLOCK WALL | A=5.0×(5.0+5.0)= 50.0 | 0.4 | | | 20.0 | 20.0 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | SLAB (N.) | A=5.0×5.0= 25.0 | 0.985 | | | 24.6 | 24.6 |
| | | | | | | | 58.0 | 56.3 |
| | | | | | | | (155.5) | (143.7) |
| | FL+11.0 S FL+5.5 | SLAB (O.H.) | A=2.75×5.0+2.75×3.4= 48.1 | 2.225 | 0.8 | | 107.0 | 38.5 |
| | | SLAB (OTHER) | A=5.0×3.4= 17.0 | 1.425 | 1.35 | | 24.2 | 23.0 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 132.6 | 62.9 |
| | | | | | | | (288.1) | (206.6) |
| | FL+5.5 S FL±0 | SLAB | A=7.75×8.4= 65.1 | 1.225 | 1.15 | | 79.7 | 74.9 |
| | | 1-3 C/C & N0.7 P/C | 9.0+1/2×11.5 | | | | 12.3 | 12.3 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 93.4 | 88.6 |
| | | | | | | | (381.5) | (295.2) |
| G-108 | FL+27.1 S FL+21.0 | | SAME AS A-108 | | | | 77.4 | 70.5 |
| | FL+21.0 S FL+16.0 | SLAB | A=5.0×10.0= 50.0 | 0.635 | 0.535 | | 31.8 | 26.8 |
| | | PARAPET | L= 10.0 | 0.12 | | | 1.2 | 1.2 |
| | | CRANE GIRDER | L= 10.0 | 0.35 | | | 3.5 | 3.5 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 37.8 | 32.8 |
| | | | | | | | (115.2) | (103.3) |
| | FL+16.0 S FL+11.0 | SLAB | A= 50.0 | 0.985 | | | 49.3 | 49.3 |
| | | BLOCK WALL | A=5.0×10.0= 50.0 | 0.4 | | | 20.0 | 20.0 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 70.6 | 70.6 |
| | | | | | | | (185.8) | (173.9) |
| | FL+11.0 S FL+5.5 | SLAB | A=7.75×10.0= 77.5 | 2.225 | 0.8 | | 172.4 | 62.0 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 173.8 | 63.4 |
| | | | | | | | (359.6) | (237.3) |
| | FL+5.5 S FL±0 | SLAB | A= 77.5 | 1.225 | 1.15 | | 94.9 | 89.1 |
| | | COMMON P/C | 1/2×18.5 | | | | 9.3 | 9.3 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 105.6 | 99.8 |
| | | | | | | | (465.2) | (337.1) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (15) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| G-201 | FL+27.1 ~ FL+21.0 | | SAME AS G-108 | | | | 77.4 | 70.5 |
| | FL+21.0 ~ FL+16.0 | | SAME AS G-108 | | | | 37.8<br>(115.2) | 32.8<br>(103.3) |
| | FL+16.0 ~ FL+11.0 | | SAME AS G-108 | | | | 70.6<br>(185.8) | 70.6<br>(173.9) |
| | FL+11.0 ~ FL+5.5 | | SAME AS G-108 | | | | 173.8<br>(359.6) | 63.4<br>(237.3) |
| | FL+5.5 ~ FL±0 | SLAB | A= 72.5 | 1.225 | 1.15 | | 94.9 | 89.1 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 96.3<br>(455.9) | 90.5<br>(327.8) |
| G-202 | FL+27.1 ~ FL+21.0 | | SAME AS G-107 | | | | 65.6 | 59.7 |
| | FL+21.0 ~ FL+16.0 | | SAME AS G-107 | | | | 31.9<br>(97.5) | 27.7<br>(87.4) |
| | FL+16.0 ~ FL+11.0 | SLAB | A=5.0×5.4 = 27.0 | 0.985 | | | 26.6 | 26.6 |
| | | STAIR | A=5.0×3.0 = 15.0 | 0.43 | 0.36 | | 6.5 | 5.4 |
| | | BLOCK WALL | A=5.0×(5.0×2+5.0) = 75.0 | 0.4 | | | 30.0 | 30.0 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | | | | | | 64.4<br>(161.9) | 63.3<br>(150.7) |
| | FL+11.0 ~ FL+5.5 | SLAB (O.H) | A=5.0×2.0+2.25×8.4 = 33.1 | 2.225 | 2.8 | | 73.6 | 26.5 |
| | | SLAB (OTHER) | A=5.0×3.4 = 17.0 | 1.425 | 1.35 | | 24.2 | 23.0 |
| | | STAIR | A=5.0×3.0 = 15.0 | 0.43 | 0.36 | | 6.5 | 5.4 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 105.7<br>(267.6) | 56.3<br>(207.0) |
| | FL+5.5 ~ FL±0 | SLAB | A=7.75×8.4-5.0×3.0 = 50.1 | 1.225 | 1.15 | | 61.4 | 57.6 |
| | | STAIR | A=5.0×3.0 = 15.0 | 0.43 | 0.36 | | 6.5 | 5.4 |
| | | NO.2 P/C | 1/2 × 16.5 | | | | 8.3 | 8.3 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 77.6<br>(345.2) | 72.7<br>(279.7) |
| G-203 | FL+27.1 ~ FL+21.0 | | SAME AS G-106 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+16.0 | | SAME AS G-106 | | | | 26.1<br>(79.9) | 22.7<br>(71.8) |
| | FL+16.0 ~ FL+11.0 | | SAME AS G-106 | | | | 45.2<br>(125.1) | 23.9<br>(95.7) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (16)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (G-203) | FL+11.0 ~ FL+5.5 | | SAME AS G-102 | | | | 94.5<br>(219.6) | 65.3<br>(161.0) |
| | FL+5.5 ~ FL±0 | | SAME AS G-106 | | | | 69.5<br>(289.1) | 65.5<br>(226.5) |
| G-204 | FL+27.1 ~ FL+21.0 | | SAME AS G-203 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+16.0 | | SAME AS G-105 | | | | 32.9<br>(86.7) | 25.3<br>(74.4) |
| | FL+16.0 ~ FL+11.0 | | SAME AS G-105 | | | | 57.7<br>(144.4) | 36.4<br>(110.8) |
| | FL+11.0 ~ FL+5.5 | | SAME AS G-103 | | | | 94.5<br>(238.9) | 65.3<br>(176.1) |
| | FL+5.5 ~ FL±0 | | SAME AS G-105 | | | | 54.9<br>(293.8) | 51.0<br>(227.1) |
| G-205 | | | SAME AS G-104 | | | | | |
| G-206 | FL+27.1 ~ FL+21.0 | | SAME AS G-103 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+16.0 | | SAME AS G-103 | | | | 105.7<br>(159.5) | 94.0<br>(143.1) |
| | FL+16.0 ~ FL+11.0 | | SAME AS G-103 | | | | 50.7<br>(210.2) | 29.4<br>(172.5) |
| | FL+11.0 ~ FL+5.5 | | SAME AS G-106 | | | | 78.6 | 61.9 |
| | | No.7 H.P. | 1/2.×45 | | | | 22.5 | 22.5 |
| | | | | | | | 101.1<br>(311.3) | 84.4<br>(256.9) |
| | FL+5.5 ~ FL±0 | | SAME AS G-103 | | | | 69.0<br>(320.3) | 65.0<br>(321.9) |
| G-207 | FL+27.1 ~ FL+21.0 | | SAME AS G-102 | | | | 53.8 | 49.1 |
| | FL+21.0 ~ FL+16.0 | | SAME AS G-102 | | | | 32.9<br>(86.7) | 25.3<br>(74.4) |
| | FL+16.0 ~ FL+11.0 | | SAME AS G-102 | | | | 50.7<br>(137.4) | 29.4<br>(103.8) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (17)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (G-207) | FL+11.0 ~ FL+5.5 | SLAB (O.H) | A=2.75×6.8= 18.7 | 2.225 | 0.8 | | 41.6 | 15.0 |
| | | SLAB (OTHER) | A=5.0×6.8= 39.0 | 1.425 | 1.35 | | 48.5 | 45.9 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 91.5 | 62.3 |
| | | | | | | | (228.9) | (166.1) |
| | FL+5.5 ~ FL±0 | | | | | | 69.0 | 65.0 |
| | | | SAME AS G-102 | | | | (297.9) | (231.1) |
| G-208 | | | SAME AS G-101 | | | | | |
| H-101 | FL+21.0 ~ FL+16.0 | SLAB | A=5.6×4.0= 22.4 | 0.595 | 0.535 | | 13.3 | 12.0 |
| | | PARAPET | L=5.6×2+4.0= 15.2 | 0.12 | | | 1.8 | 1.8 |
| | | SIDING | L=15.2×3.0= 45.6 | 0.045 | | | 2.1 | 2.1 |
| | | STAIR | A= 22.4 | 0.43 | 0.36 | | 9.6 | 8.1 |
| | | SIDING | A=5.0×(4.0+5.6)= 48.0 | 0.045 | | | 2.2 | 2.2 |
| | | COLUMN | L= 5.0 | 0.2 | | | 1.0 | 1.0 |
| | | | | | | | 30.0 | 27.2 |
| | FL+16.0 ~ FL+11.0 | STAIR | A= 22.4 | 0.43 | 0.36 | | 9.6 | 8.1 |
| | | SIDING | A= 48.0 | 0.045 | | | 2.2 | 2.2 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 12.8 | 11.3 |
| | | | | | | | (42.8) | (38.5) |
| | FL+11.0 ~ FL+5.5 | STAIR | A= 22.4 | 0.43 | 0.36 | | 9.6 | 8.1 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 10.7 | 9.2 |
| | | | | | | | (53.5) | (47.7) |
| | FL+5.5 ~ FL±0 | STAIR | A= 22.4 | 0.43 | 0.36 | | 9.6 | 8.1 |
| | | P.C. PANEL | A=5.5×(4.0+5.6)= 52.8 | 0.29 | | | 15.3 | 15.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 26.0 | 24.5 |
| | | | | | | | (79.5) | (72.2) |
| H-102 | FL+21.0 ~ FL+16.0 | SLAB | A=5.6×3.4= 19.0 | 0.635 | 0.535 | | 12.1 | 10.2 |
| | | SLAB (DEAF) | A= 19.0 | 1.035 | 0.69 | | 19.7 | 13.1 |
| | | PARAPET | L= 6.8 | 0.12 | | | 0.8 | 0.8 |
| | | SIDING | A=5.9×6.8= 40.1 | 0.045 | | | 1.8 | 1.8 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 35.4 | 26.9 |
| | FL+16.0 ~ FL+11.0 | SLAB | A=5.6×6.8= 38.1 | 1.29 | 0.665 | | 49.1 | 25.3 |
| | | SIDING | A= 40.1 | 0.045 | | | 1.8 | 1.8 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 51.9 | 28.1 |
| | | | | | | | (87.3) | (55.0) |
| | FL+11.0 ~ FL+5.5 | SLAB | A= 38.1 | 1.425 | 1.35 | | 54.3 | 51.4 |
| | | NO.3 LP | 3 1/4×12.0 | | | | 3.0 | 3.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 58.4 | 55.5 |
| | | | | | | | (145.7) | (110.5) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (18)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (H-102) | FL+5.5 ~ FL±0 | SLAB | A= 38.1 | 1.225 | 1.15 | | 46.7 | 43.8 |
| | | NO.2 LP | 1/4 x 12.0 | | | | 3.0 | 3.0 |
| | | R.C. PANEL | A= 5.5 x 6.8 = 37.4 | 0.29 | | | 10.8 | 10.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 61.6 | 58.7 |
| | | | | | | | (207.3) | (169.2) |
| H-103 | FL+21.0 ~ FL+16.0 | SLAB | A= 38.1 | 1.035 | 0.69 | | 38.9 | 26.3 |
| | | PARAPET | L= 6.8 | 0.12 | | | 0.8 | 0.8 |
| | | DEAERATOR | 1/4 x 264.0 | | | | 66.0 | 66.0 |
| | | SIDING | A= 5.9 x 6.8 = 40.1 | 0.045 | | | 1.8 | 1.8 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 109.0 | 95.9 |
| | FL+16.0 ~ FL+11.0 | | SAME AS H-102 | | | | 51.9 | 28.1 |
| | | | | | | | (160.9) | (124.0) |
| | FL+11.0 ~ FL+5.5 | | SAME AS H-102 | | | | 58.4 | 55.5 |
| | | | | | | | (219.3) | (179.5) |
| | FL+5.5 ~ FL±0 | | SAME AS H-102 | | | | 61.6 | 58.7 |
| | | | | | | | (280.9) | (238.2) |
| H-104 | FL+21.0 ~ FL+16.0 | | SAME AS H-103 | | | | 109.0 | 95.9 |
| | FL+16.0 ~ FL+11.0 | | SAME AS H-102 | | | | 51.9 | 28.1 |
| | | NO.8 HP | 1/4 x 50.0 | | | | 12.5 | 12.5 |
| | | | | | | | 64.4 | 40.6 |
| | | | | | | | (173.4) | (136.5) |
| | FL+11.0 ~ FL+5.5 | SLAB | A= 28.1 | 1.925 | 1.35 | | 54.3 | 51.4 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 55.4 | 52.5 |
| | | | | | | | (228.8) | (189.0) |
| | FL+5.5 ~ FL±0 | SLAB | A= 38.1 | 1.225 | 1.15 | | 46.7 | 43.8 |
| | | NO.6 HP | 1/2 x 36.0 | | | | 18.0 | 18.0 |
| | | P.C. PANEL | A= 37.4 | 0.29 | | | 10.8 | 10.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 76.6 | 73.7 |
| | | | | | | | (305.4) | (262.7) |
| H-105 | FL+21.0 ~ FL+16.0 | | SAME AS H-102 | | | | 35.4 | 26.9 |
| | FL+16.0 ~ FL+11.0 | | SAME AS H-104 | | | | 64.4 | 40.6 |
| | | | | | | | (99.8) | (67.5) |
| | FL+11.0 ~ FL+5.5 | | SAME AS H-104 | | | | 55.4 | 52.5 |
| | | | | | | | (155.2) | (120.0) |
| | FL+5.5 ~ FL±0 | | SAME AS H-104 | | | | 76.6 | 73.7 |
| | | | | | | | (231.8) | (193.7) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (19)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| H-106 | FL+21.0 ~ FL+16.0 | SLAB | A=7.0×4.0= 28.0 | 0.595 | 0.535 | | 16.7 | 15.0 |
| | | PARAPET | L=(7.0+4.0)×2= 22.0 | 0.12 | | | 2.6 | 2.6 |
| | | SIDING | A=22.0×3.0= 66.0 | 0.045 | | | 3.0 | 3.0 |
| | | SLAB | A=5.0×6.8= 34.0 | 0.635 | 0.535 | | 21.6 | 18.2 |
| | | STAIR | A=7.0×3.0= 21.0 | 0.43 | 0.36 | | 9.0 | 7.6 |
| | | SIDING | A=5.0×(6.4+2.8)= 46.0 | 0.045 | | | 2.1 | 2.1 |
| | | PARAPET | L=34×3+7.0= 17.2 | 0.12 | | | 2.1 | 2.1 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 58.1 | 51.6 |
| | FL+16.0 ~ FL+11.0 | SLAB | A= 34.0 | 1.29 | 0.665 | | 43.9 | 22.6 |
| | | STAIR | A= 21.0 | 0.43 | 0.36 | | 9.0 | 7.6 |
| | | BLOCK WALL | A=5.0×(8.0+4.0×2)= 80.0 | 0.4 | | | 32.0 | 32.0 |
| | | SIDING | A= 46.0 | 0.045 | | | 2.1 | 2.1 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 88.0 | 65.3 |
| | | | | | | | (146.1) | (116.9) |
| | FL+11.0 ~ FL+5.5 | SLAB | A= 34.0 | 1.425 | 1.35 | | 48.5 | 45.9 |
| | | STAIR | A= 21.0 | 0.43 | 0.36 | | 9.0 | 7.6 |
| | | BLOCK WALL | A=5.5×(8.0+4.0×2)= 88.0 | 0.4 | | | 35.2 | 35.2 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 93.8 | 89.8 |
| | | | | | | | (239.9) | (206.7) |
| | FL+5.5 ~ FL±0 | SLAB | A= 39.0 | 1.225 | 1.15 | | 41.7 | 39.1 |
| | | STAIR | A= 21.0 | 0.43 | 0.36 | | 9.0 | 7.6 |
| | | BLOCK WALL | A= 80.0 | 0.4 | | | 32.0 | 32.0 |
| | | P.C. PANEL | A=5.5×(6.4+2.8)= 50.6 | 0.29 | | | 14.7 | 14.7 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 98.5 | 94.5 |
| | | | | | | | (338.4) | (301.2) |
| H-107 | FL+21.0 ~ FL+16.0 | SLAB (N/C) | A=5.0×8.4= 42.0 | 0.635 | 0.535 | | 26.7 | 22.5 |
| | | SLAB | A=7.0×8.4= 58.8 | 0.765 | 0.665 | | 45.0 | 39.1 |
| | | FENCE | L= 8.4 | 0.11 | | | 0.9 | 0.9 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 73.6 | 63.5 |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (20)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (H-107) | FL+16.0 ~ FL+11.0 | SLAB (CON) | A= 5.0X3.4+3.0X8.4= 42.2 | 0.71 | 0.61 | | 30.0 | 25.7 |
| | | SLAB (ELE) | A= 4.0×8.4= 33.6 | 0.88 | | | 29.6 | 29.6 |
| | | BLOCK WALL | A=5.0×(8.4×2+5.0)= 109.0 | 0.4 | | | 43.6 | 43.6 |
| | | WALL | A=3.0×4.0= 12.0 | 0.036 | | | 0.4 | 0.4 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | SLAB (A/C) | A= 5.0×5.0= 25.0 | 0.985 | | | 24.6 | 24.6 |
| | | | | | | | 129.2 | 124.9 |
| | | | | | | | (202.8) | (188.4) |
| | FL+11.0 ~ FL+5.5 | SLAB | A= 5.0×8.4= 42.0 | 1.925 | 1.35 | | 59.9 | 56.7 |
| | | COMPUTER | A= 7.0×6.9= 48.3 | 0.925 | | | 44.7 | 44.7 |
| | | CENT. CONT. | A= 7.0×1.5= 10.5 | 0.905 | 0.73 | | 9.5 | 7.7 |
| | | BLOCK WALL | A=5.0×(8.4×2+2.0×2)= 104.0 | 0.35 | | | 36.4 | 36.4 |
| | | WALL (CONC) | A=3.0×8.4= 25.2 | 0.026 | | | 0.7 | 0.7 |
| | | WALL (W) | A=3.0×7.0= 21.0 | 0.036 | | | 0.8 | 0.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | CHR. FLOOR | A=7.0×8.4= 58.8 | 0.195 | | | 11.5 | 11.5 |
| | | | | | | | 164.6 | 159.6 |
| | | | | | | | (367.4) | (348.0) |
| | FL+5.5 ~ FL±0 | SLAB | A= 42.0 | 1.225 | 1.15 | | 51.5 | 48.3 |
| | | CONTRAL PM. | A=7.0×8.4= 58.8 | 1.025 | 0.975 | | 60.3 | 57.3 |
| | | WALL | A=3.0×8.4= 25.2 | 0.026 | | | 0.7 | 0.7 |
| | | BLOCK WALL | A=5.5×(8.4×2+2.0×2)= 114.4 | 0.35 | | | 40.0 | 40.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 153.6 | 147.4 |
| | | | | | | | (521.0) | (495.4) |
| H-108 | FL+21.0 ~ FL+16.0 | | | | | | | |
| | | SLAB (A/C) | A=5.0×10.0= 50.0 | 0.625 | 0.535 | | 31.8 | 26.8 |
| | | SLAB | A=7.0×10.0= 70.0 | 0.765 | 0.665 | | 53.6 | 46.6 |
| | | FENCE | L= 10.0 | 0.11 | | | 1.1 | 1.1 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 87.5 | 75.5 |
| | FL+16.0 ~ FL+11.0 | SLAB | A=7.0×10.0= 70.0 | 0.88 | | | 61.6 | 61.6 |
| | | SLAB (A/C) | A=5.0×10.0= 50.0 | 0.985 | | | 49.3 | 49.2 |
| | | BLOCK WALL | A=5.0×(10.0×2)= 100.0 | 0.4 | | | 40.0 | 40.0 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 151.9 | 151.9 |
| | | | | | | | (239.4) | (227.4) |
| | FL+11.0 ~ FL+5.5 | SLAB | A=5.0×10.0= 50.0 | 1.925 | 1.35 | | 71.3 | 67.5 |
| | | CENT. CONT. | A=7.0×10.0= 70.0 | 0.905 | 0.73 | | 63.4 | 51.1 |
| | | CHR. FLOOR | A= 70.0 | 0.195 | | | 13.7 | 13.7 |
| | | BLOCK WALL | A=5.0×10.0×2= 100.0 | 0.35 | | | 35.0 | 35.0 |
| | | WALL | A=3.0×10.0= 30.0 | 0.028 | | | 0.8 | 0.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 185.3 | 169.2 |
| | | | | | | | (424.7) | (396.6) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (2/) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (H-108) | FL+5.5 ~ FL±0 | SLAB | A=5.0x11.0= 50.0 | 1.225 | 1.15 | | 61.3 | 57.5 |
| | | CONTROL RM | A=7.0x5.0= 35.0 | 1.025 | 0.975 | | 35.9 | 34.1 |
| | | BATTERY RM | A= 35.0 | 1.025 | 0.975 | | 35.9 | 34.1 |
| | | BLOCK WALL | A=5.5x10.1x1.5= 82.5 | 0.4 | | | 33.0 | 33.0 |
| | | WALL | A=3.0x(5.0x3)= 45.0 | 0.026 | | | 1.2 | 1.2 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 168.4 | 161.0 |
| | | | | | | | (593.1) | (557.6) |
| H-201 | FL+21.0 ~ FL+16.0 | SAME AS H-108 | | | | | 87.5 | 75.5 |
| | FL+16.0 ~ FL+11.0 | SLAB (CON) | A=7.0x6.5= 45.5 | 0.71 | 0.61 | | 32.3 | 27.8 |
| | | SLAB (A/C) | A=5.0x10.0= 50.0 | 0.985 | | | 49.3 | 49.3 |
| | | SLAB | A=7.0x3.5= 24.5 | 0.88 | | | 21.6 | 21.6 |
| | | BLOCK WALL | A=5.0x10.0x2= 100.0 | 0.4 | | | 40.0 | 40.0 |
| | | WALL | A=2.0x4.0= 12.0 | 0.036 | | | 0.4 | 0.4 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 144.6 | 140.1 |
| | | | | | | | (232.1) | (215.6) |
| | FL+11.0 ~ FL+5.5 | SAME AS H-108 | | | | | 157.4 | 150.0 |
| | | | | | | | (389.5) | (365.6) |
| | FL+5.5 ~ FL±0 | SLAB | A=5.0x10.0= 50.0 | 1.225 | 1.15 | | 61.3 | 57.5 |
| | | LABO | A=7.0x5.0= 35.0 | 0.855 | 0.705 | | 29.9 | 24.7 |
| | | BATTERY RM | A= 35.0 | 1.025 | 0.975 | | 35.9 | 34.1 |
| | | BLOCK WALL | A=5.5x10.0x1.5+2.0x2)=104.5 | 0.4 | | | 41.8 | 41.8 |
| | | WALL | A=3.0x2.0x2= 12.0 | 0.026 | | | 1.1 | 1.1 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 171.1 | 160.3 |
| | | | | | | | (560.6) | (525.9) |
| H-202 | FL+21.0 ~ FL+16.0 | SAME AS H-107 | | | | | 23.6 | 63.5 |
| | FL+16.0 ~ FL+11.0 | SLAB (A/C) | A=5.0x5.0= 25.0 | 0.985 | | | 24.6 | 24.6 |
| | | SLAB (CON) | A=5.0x3.4+7.0x8.4= 75.8 | 0.71 | 0.61 | | 53.8 | 46.2 |
| | | BLOCK WALL | A=5.0x(8.4x2+4.0+5.0)= 129.0 | 0.4 | | | 51.6 | 51.6 |
| | | WALL | A=3.0x(5.0+4.0)= 27.0 | 0.36 | | | 9.7 | 9.7 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 140.7 | 133.1 |
| | | | | | | | (214.3) | (196.6) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (22)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (H-202) | FL+11.0 ~ FL+5.5 | ..... | ..... | ..... | ..... | ..... | 164.6 | 159.6 |
| | | ..... | SAME AS H-107 | ..... | ..... | ..... | (378.9) | (356.2) |
| | FL+5.5 ~ FL±0 | SLAB | A=5.0x8.4= 42.0 | 1.225 | 1.15 | ..... | 51.5 | 48.3 |
| | | LABO | A=7.0x8.4= 58.8 | 0.855 | 0.705 | ..... | 50.3 | 41.5 |
| | | WALL | A=3.0x8.4= 25.2 | 0.026 | ..... | ..... | 0.7 | 0.7 |
| | | BLOCK WALL | A=5.5x(0.4x2+2.0x2)= 114.4 | 0.35 | ..... | ..... | 40.0 | 40.0 |
| | | COLUMN | ..... | ..... | ..... | ..... | 1.1 | 1.1 |
| | | ..... | ..... | ..... | ..... | ..... | 143.6 | 131.6 |
| | | ..... | ..... | ..... | ..... | ..... | (522.5) | (487.8) |
| H-203 | FL+21.0 ~ FL+16.0 | SLAB (ROOF) | A=5.0x6.8= 34.0 | 0.635 | 0.535 | ..... | 21.6 | 18.2 |
| | | SLAB (TOWER) | A=7.0x4.0= 28.0 | 0.765 | 0.665 | ..... | 21.4 | 10.6 |
| | | FENCE | L=3.4+7.6= 11.0 | 0.11 | ..... | ..... | 1.2 | 1.2 |
| | | PARAPET | L=2.8+6.4= 9.2 | 0.12 | ..... | ..... | 1.1 | 1.1 |
| | | SIDING | A=5.9x9.2= 54.3 | 0.045 | ..... | ..... | 2.4 | 2.4 |
| | | COLUMN | ..... | ..... | ..... | ..... | 1.0 | 1.0 |
| | | ..... | ..... | ..... | ..... | ..... | 48.7 | 42.5 |
| | FL+16.0 ~ FL+11.0 | SLAB (LAV) | A=7.0x3.4= 23.8 | 0.79 | 0.72 | ..... | 18.8 | 17.1 |
| | | SLAB | A=5.0x6.8= 34.0 | 1.29 | 0.665 | ..... | 43.9 | 22.6 |
| | | BLOCK WALL | A=5.0x(7.0x2+3.4x5)= 155.0 | 0.4 | ..... | ..... | 62.0 | 62.0 |
| | | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | | COLUMN | ..... | ..... | ..... | ..... | 1.0 | 1.0 |
| | | SIDING | A=5.9x9.2= 46.9 | 0.045 | ..... | ..... | 2.1 | 2.1 |
| | | ..... | ..... | ..... | ..... | ..... | 127.8 | 109.8 |
| | | ..... | ..... | ..... | ..... | ..... | (176.5) | (147.3) |
| | FL+11.0 ~ FL+5.5 | ..... | SAME AS H-106 | ..... | ..... | ..... | 93.8 | 89.8 |
| | | N0.3 L.P. | 1/4 x12.0 | ..... | ..... | ..... | 3.0 | 3.0 |
| | | ..... | ..... | ..... | ..... | ..... | 96.8 | 92.8 |
| | | ..... | ..... | ..... | ..... | ..... | (273.3) | (240.12) |
| | FL+5.5 ~ FL±0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | | ..... | SAME AS H-106 | ..... | ..... | ..... | 98.5 | 94.5 |
| | | ..... | ..... | ..... | ..... | ..... | (371.8) | (339.6) |
| | | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| H-204 | FL+21.0 ~ FL+16.0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | | ..... | SAME AS H-105 | ..... | ..... | ..... | 35.9 | 27.4 |
| | FL+16.0 ~ FL+11.0 | ..... | ..... | ..... | ..... | ..... | 64.4 | 40.6 |
| | | ..... | SAME AS H-105 | ..... | ..... | ..... | (100.3) | (68.0) |
| | FL+11.0 ~ FL+5.5 | ..... | SAME AS H-105 | ..... | ..... | ..... | 55.4 | 32.5 |
| | | N0.3 L.P. | 1/4 x12.0 | ..... | ..... | ..... | 3.0 | 3.0 |
| | | ..... | ..... | ..... | ..... | ..... | 58.4 | 55.5 |
| | | ..... | ..... | ..... | ..... | ..... | (158.7) | (123.5) |
| | FL+5.5 ~ FL±0 | ..... | ..... | ..... | ..... | ..... | 76.6 | 73.7 |
| | | ..... | SAME AS H-105 | ..... | ..... | ..... | (235.3) | (197.2) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (23)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| H-205 | | | | | | | | |
| | | | SAME AS H-104 | | | | | |
| H-206 | FL+21.0 ~ FL+16.0 | | | | | | | |
| | | | SAME AS H-103 | | | | 109.0 | 95.9 |
| | FL+16.0 ~ FL+11.0 | | | | | | 51.9 | 28.1 |
| | | | SAME AS H-103 | | | | (160.9) | (124.0) |
| | FL+11.0 ~ FL+5.5 | | | | | | 55.4 | 52.5 |
| | | | SAME AS H-104 | | | | (216.3) | (176.5) |
| | FL+5.5 ~ FL±0 | | | | | | 61.6 | 58.7 |
| | | | SAME AS H-103 | | | | (277.9) | (235.2) |
| H-207 | FL+21.0 ~ FL+16.0 | | | | | | | |
| | | | SAME AS H-102 | | | | 35.4 | 26.9 |
| | FL+16.0 ~ FL+11.0 | | | | | | 51.9 | 28.1 |
| | | | SAME AS H-102 | | | | (87.3) | (55.0) |
| | FL+11.0 ~ FL+5.5 | SLAB | A=5.6×6.8= 38.1 | 1.125 | 1.35 | | 54.3 | 51.4 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 55.4 | 52.5 |
| | | | | | | | (142.7) | (107.5) |
| | FL+5.5 ~ FL±0 | | | | | | 61.6 | 58.7 |
| | | | SAME AS H-102 | | | | (204.3) | (166.2) |
| H-208 | | | | | | | | |
| | | | SAME AS H-101 | | | | | |
| K-106 | FL+21.0 ~ FL+16.0 | SLAB | A=7.6×4.0= 30.4 | 0.765 | 0.665 | | 23.3 | 20.2 |
| | | PARAPET | L=7.6+9.0= 11.6 | 0.12 | | | 1.4 | 1.4 |
| | | SIDING | A=5.9×11.6= 68.4 | 0.045 | | | 3.1 | 3.1 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 28.8 | 25.7 |
| | FL+16.0 ~ FL+11.0 | SLAB | A= 30.4 | 0.88 | | | 26.8 | 26.8 |
| | | WALL | A=3.0×(3.4+7.0)= 31.2 | 0.028 | | | 0.9 | 0.9 |
| | | SIDING | A=5.0×11.6= 58.0 | 0.045 | | | 2.6 | 2.6 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 31.3 | 31.3 |
| | | | | | | | (60.1) | (57.0) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (24)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (K-106) | FL+11.0 ~ FL+5.5 | COMPUTER | A= 30.4 | 0.925 | | | 28.1 | 28.1 |
| | | WALL | A= 31.2 | 0.028 | | | 0.9 | 0.9 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | CHR FLOOR | A= 30.4 | 0.195 | | | 5.9 | 5.9 |
| | | | | | | | 36.0 | 36.0 |
| | | | | | | | (96.1) | (93.0) |
| | FL+5.5 ~ FL±0 | SLAB | A= 30.4 | 1.025 | 0.975 | | 31.2 | 29.6 |
| | | WALL | A= 31.2 | 0.028 | | | 0.9 | 0.9 |
| | | P.C.PANEL | A=5.5×(3.0+2.6)= 63.8 | 0.29 | | | 18.5 | 18.5 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 51.7 | 50.1 |
| | | | | | | | (147.8) | (143.1) |
| K-107 | FL+21.0 ~ FL+16.0 | SLAB | A=7.6×8.4= 66.1 | 0.765 | 0.665 | | 50.6 | 44.0 |
| | | PARAPET | L= 8.4 | 0.12 | | | 1.0 | 1.0 |
| | | SIDING | A=5.9×8.4= 49.6 | 0.045 | | | 2.2 | 2.2 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 54.8 | 48.2 |
| | FL+16.0 ~ FL+11.0 | SLAB | A=7.6×3.4= 25.8 | 0.88 | | | 22.7 | 22.7 |
| | | SLAB | A=7.6×5.0= 38.0 | 0.88 | | | 33.4 | 33.4 |
| | | BLOCK WALL | A=5.0×7.6= 53.2 | 0.35 | | | 18.6 | 18.6 |
| | | WALL | A=3.0×(8.4+7.6)= 48.0 | 0.028 | | | 1.3 | 1.3 |
| | | SIDING | A=5.0×8.4= 42.0 | 0.045 | | | 1.9 | 1.9 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 78.9 | 78.9 |
| | | | | | | | (133.7) | (127.1) |
| | FL+11.0 ~ FL+5.5 | COMPUTER | A=7.6×6.9= 52.4 | 0.925 | | | 48.5 | 48.5 |
| | | CENT. CONT | A=2.0×1.5= 11.4 | 0.915 | 0.73 | | 10.3 | 8.3 |
| | | WALL (S) | A=3.0×8.4= 25.2 | 0.028 | | | 0.7 | 0.7 |
| | | WALL (W) | A=3.0×7.0= 21.0 | 0.038 | | | 0.8 | 0.8 |
| | | CHR FLOOR | A=7.6×8.4= 63.8 | 0.195 | | | 12.4 | 12.4 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 73.8 | 71.8 |
| | | | | | | | (207.5) | (198.9) |
| | FL+5.5 ~ FL±0 | SLAB | A= 63.8 | 1.025 | 0.975 | | 65.4 | 62.2 |
| | | WALL | A=3.0×8.4= 25.2 | 0.028 | | | 0.7 | 0.7 |
| | | P.C.PANEL | A=5.5×8.4= 46.2 | 0.29 | | | 13.4 | 13.4 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 80.6 | 77.4 |
| | | | | | | | (288.1) | (276.3) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (25)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| K-108 | FL+21.0 | SLAB | A=7.6×10.0= 76.0 | 0.595 | 0.535 | | 45.2 | 40.7 |
| | FL+16.0 | PARAPET | L= 10.0 | 0.12 | | | 1.2 | 1.2 |
| | | SIDING | A=5.9×10.0= 59.0 | 0.045 | | | 2.7 | 2.7 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 50.1 | 45.6 |
| | FL+16.0 | SLAB | A= 76.0 | 0.88 | | | 66.9 | 66.9 |
| | ~ | WALL | A=3.0×10.0= 30.0 | 0.028 | | | 0.8 | 0.8 |
| | FL+11.0 | SIDING | A=5.0×10.0= 37.0 | 0.045 | | | 2.3 | 2.3 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 71.0 | 71.0 |
| | | | | | | | (121.1) | (116.6) |
| | FL+11.0 | SLAB | A= 76.0 | 0.905 | 0.73 | | 68.8 | 55.5 |
| | ~ | WALL | A= 30.0 | 0.028 | | | 0.8 | 0.8 |
| | FL+5.5 | CH.PL FLOOR | A= 76.0 | 0.195 | | | 14.8 | 14.8 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 85.5 | 72.2 |
| | | | | | | | (206.6) | (188.8) |
| | FL+5.5 | SLAB | A= 76.0 | 1.025 | 0.975 | | 77.9 | 74.1 |
| | ~ | WALL | A=3.0×(7.0×2+10.0)= 72.0 | 0.028 | | | 2.0 | 2.0 |
| | FL±0 | P.C. PAVEL | A=5.5×10.0= 55.0 | 0.29 | | | 16.0 | 16.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 97.0 | 93.2 |
| | | | | | | | (303.6) | (282.0) |
| K-201 | FL+21.0 | | | | | | | |
| | ~ | | SAME AS K-108 | | | | 50.1 | 45.6 |
| | FL+16.0 | | | | | | | |
| | FL+16.0 | SLAB(ION) | A=7.6×6.5= 49.4 | 0.71 | 0.61 | | 35.1 | 30.1 |
| | ~ | SLAB | A=7.6×3.5= 26.6 | 0.88 | | | 23.4 | 23.4 |
| | FL+11.0 | WALL | A=3.0×(10.0+7.0)= 51.0 | 0.036 | | | 1.8 | 1.8 |
| | | SIDING | A=5.0×10.0= 50.0 | 0.045 | | | 2.3 | 2.3 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 63.6 | 58.6 |
| | | | | | | | (113.7) | (104.2) |
| | FL+11.0 | | | | | | | |
| | ~ | | SAME AS K-108 | | | | 85.5 | 72.2 |
| | FL+5.5 | | | | | | (199.2) | (176.4) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (26)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| (K-201) | FL+5.5 ~ FL±0 | SLAB | A=7.6×5.0= 38.0 | 1.025 | 0.975 | | 39.0 | 37.1 |
| | | LAB | A= 38.0 | 0.855 | 0.705 | | 32.5 | 26.8 |
| | | WALL | A=3.0×(7.0×2+1.0)= 72.0 | 0.028 | | | 2.0 | 2.0 |
| | | P.C.PANEL | A=5.5×10.0= 55.0 | 0.29 | | | 16.0 | 16.0 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 90.6 | 83.0 |
| | | | | | | | (289.8) | (259.4) |
| K-202 | FL+21.0 ~ FL+16.0 | | SAME AS K-107 | | | | 54.8 | 48.2 |
| | FL+16.0 ~ FL+11.0 | SLAB | A=7.6×8.4= 63.8 | 0.71 | 0.61 | | 45.3 | 38.9 |
| | | WALL (S) | A=3.0×8.4= 25.2 | 0.028 | | | 0.7 | 0.7 |
| | | WALL (W) | A=3.0×(7.0+3.4×2)= 41.4 | 0.036 | | | 1.5 | 1.5 |
| | | SIDING | A=5.0×8.4= 42.0 | 0.045 | | | 1.9 | 1.9 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 50.4 | 44.0 |
| | | | | | | | (105.2) | (92.2) |
| | FL+11.0 ~ FL+5.5 | | SAME AS K-107 | | | | 73.8 | 71.8 |
| | | | | | | | (179.0) | (164.0) |
| | FL+5.5 ~ FL±0 | SLAB | A=7.6×8.4= 63.8 | 0.855 | 0.705 | | 54.5 | 45.0 |
| | | WALL | A=3.0×8.4= 25.2 | 0.028 | | | 0.7 | 0.7 |
| | | P.C.PANEL | A=5.5×8.4= 46.2 | 0.29 | | | 13.4 | 13.4 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 69.7 | 60.2 |
| | | | | | | | (248.7) | (224.2) |
| K-203 | FL+21.0 ~ FL+16.0 | | SAME AS K-106 | | | | 28.8 | 25.7 |
| | FL+16.0 ~ FL+11.0 | SLAB | A= 30.4 | 0.71 | 0.61 | | 21.6 | 18.5 |
| | | WALL (S) | A=3.0×(3.4+7.0)= 31.2 | 0.028 | | | 0.9 | 0.9 |
| | | WALL (W) | A=3.0×3.4= 10.2 | 0.036 | | | 0.4 | 0.4 |
| | | SIDING | A=5.0×11.6= 58.0 | 0.045 | | | 2.6 | 2.6 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 26.5 | 23.9 |
| | | | | | | | (55.3) | (49.1) |
| | FL+11.0 ~ FL+5.5 | SLAB | A=7.6×4.0= 30.4 | 1.24 | 1.17 | | 37.7 | 35.6 |
| | | BLOCK WALL | A=5.0×(7.0×2+3.512)= 105.0 | 0.36 | | | 37.8 | 37.8 |
| | | WALL | A=3.0×7.0= 21.0 | 0.026 | | | 0.5 | 0.5 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 77.1 | 75.0 |
| | | | | | | | (132.4) | (124.1) |
| | FL+5.5 ~ FL±0 | SLAB | A=7.6×4.0= 30.4 | 0.855 | 0.705 | | 26.0 | 21.4 |
| | | WALL | A=3.0×(3.4+7.0)= 31.2 | 0.028 | | | 0.9 | 0.9 |
| | | P.C.PANEL | A=5.5×(4.0+7.6)= 63.8 | 0.29 | | | 18.5 | 18.5 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 46.5 | 41.9 |
| | | | | | | | (178.9) | (166.0) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD ( / )
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit: m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| | | In case of UNIT I only | | | | | | |
| A-201 | FL+27.1 ~ FL+21.0 | SLAB | A=11.6×10.6= 123.0 | 0.595 | 0.535 | | 73.2 | 65.8 |
| | | PARAPET | L=11.6+10.6= 22.2 | 0.12 | | | 2.7 | 2.7 |
| | | SIDING | A=22.2×(1.8+0.9)+8.5×4.3=96.5 | 0.045 | | | 4.3 | 4.3 |
| | | COLUMN | L= 6.1 | 0.2 | | | 1.2 | 1.2 |
| | | TRUSS | L= 11.0 | 0.25 | | | 2.8 | 2.8 |
| | | | | | | | 84.2 | 76.8 |
| | FL+21.0 ~ FL+11.0 | SIDING | A=8.5×10.0= 85.0 | 0.045 | | | 3.8 | 3.8 |
| | | COLUMN | L= 10.0 | 0.25 | | | 2.5 | 2.5 |
| | | CRANE GIRDER | L= 5.0 | 0.35 | | | 1.8 | 1.8 |
| | | | | | | | 8.1 | 8.1 |
| | | | | | | | (92.3) | (84.9) |
| | FL+11.0 ~ FL+5.5 | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | SHUTTER | A=5.0×10.1= 50.0 | 0.1 | | | 5.0 | 5.0 |
| | | SIDING | A=2.9×5.5= 16.0 | 0.045 | | | 0.7 | 0.7 |
| | | | | | | | 7.1 | 7.1 |
| | | | | | | | (99.4) | (92.0) |
| | FL+5.5 ~ FL±0 | SIDING | A=2.9×5.5= 16.0 | 0.045 | | | 0.7 | 0.7 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 2.1 | 2.1 |
| | | | | | | | (101.5) | (94.1) |
| B-201 | FL+11.0 ~ FL+5.5 | SIDING | A=5.25×14.3= 75.1 | 0.045 | | | 3.4 | 3.4 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 4.5 | 4.5 |
| | FL+5.5 ~ FL±0 | SIDING | A=5.25×5.5= 28.9 | 0.045 | | | 1.3 | 1.3 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 2.4 | 2.4 |
| | | | | | | | (6.9) | (6.9) |
| D-201 | FL+11.0 ~ FL+5.5 | SIDING | A=6.0×19.3= 85.8 | 0.045 | | | 3.9 | 3.9 |
| | | SLAB | A=3.0×5.6= 16.8 | 1.425 | 1.35 | | 23.9 | 22.7 |
| | | HAND RAIL | L= 5.0 | 0.035 | | | 0.2 | 0.2 |
| | | COLUMN | L= 5.5 | 0.2 | | | 1.1 | 1.1 |
| | | | | | | | 29.1 | 27.9 |
| | FL+5.5 ~ FL±0 | SLAB | A=5.6×3.6= 20.2 | 1.225 | 1.15 | | 24.7 | 23.2 |
| | | HAND RAIL | L= 5.0 | 0.035 | | | 0.2 | 0.2 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 26.0 | 24.5 |
| | | | | | | | (55.1) | (52.4) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

## COLUMN AXIAL LOAD (2) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| F-201 | FL+11.0 ~ FL+5.5 | SIDING | A=5.75×19.3= 111.0 | 0.045 | | | 5.0 | 5.0 |
| | | SLAB | A=5.25×5.6= 32.2 | 1.425 | 1.35 | | 45.9 | 43.5 |
| | | | | | | | 1.1 | 1.1 |
| | | | | | | | 52.0 | 49.6 |
| | FL+5.5 ~ FL±0 | SLAB | A= 32.2 | 1.225 | 1.15 | | 39.4 | 37.0 |
| | | SIDING | A=5.75×5.5= 31.6 | 0.045 | | | 1.4 | 1.4 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | | | | | | 41.9 | 39.5 |
| | | | | | | | (93.9) | (89.1) |
| G-201 | FL+27.1 ~ FL+21.0 | | SAME AS A-201 | | | | 84.2 | 76.8 |
| | FL+21.0 ~ FL+16.0 | SLAB | A=5.0×10.0= 50.0 | 0.665 | 0.565 | | 33.3 | 28.3 |
| | | PARAPET | L= 10.0 | 0.12 | | | 1.2 | 1.2 |
| | | SIDING | A=5.0×(3.2+4.9)= 33.0 | 0.045 | | | 1.5 | 1.5 |
| | | CRANE GIRDER | L= 5.0 | 0.35 | | | 1.8 | 1.8 |
| | | COLUMN | L= 5.0 | 0.25 | | | 1.3 | 1.3 |
| | | | | | | | 39.1 | 34.1 |
| | | | | | | | (123.3) | (110.9) |
| | FL+16.0 ~ FL+11.0 | SLAB | A=5.0×10.0= 50.0 | 0.85 | | | 42.5 | 42.5 |
| | | BLOCK WALL | A=5.0×10.0= 50.0 | 0.4 | | | 20.0 | 20.0 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | SIDING | A= 33.0 | 0.045 | | | 1.5 | 1.5 |
| | | | | | | | 65.3 | 65.3 |
| | | | | | | | (188.6) | (176.2) |
| | FL+11.0 ~ FL+5.5 | SLAB | A=5.0×10.0+2.8×5.0= 69.0 | 1.425 | 1.35 | | 91.2 | 86.9 |
| | | SIDING | A=5.5×(3.2+4.9)= 36.3 | 0.045 | | | 1.6 | 1.6 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 94.2 | 89.9 |
| | | | | | | | (282.8) | (265.6) |
| | FL+5.5 ~ FL±0 | SLAB | A= 69.0 | 1.225 | 1.15 | | 78.4 | 73.6 |
| | | SIDING | | | | | 1.6 | 1.6 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 81.4 | 76.6 |
| | | | | | | | (364.2) | (342.2) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

COLUMN AXIAL LOAD (3)
[柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| G-202 | FL+21.0 S FL+16.0 | SLAB | A=5.0x8.4= 42.0 | 0.665 | 0.565 | | 27.9 | 23.7 |
| | | PARAPET | L= 8.4 | 0.12 | | | 1.0 | 1.0 |
| | | SIDING | A=5.9x8.4= 49.6 | 0.045 | | | 2.2 | 2.2 |
| | | COLUMN | L= 5.0 | 0.25 | | | 1.3 | 1.3 |
| | | | | | | | 32.4 | 28.2 |
| | FL+16.0 S FL+11.0 | SLAB | A=5.0x8.4= 42.0 | 0.85 | | | 35.7 | 35.7 |
| | | BLOCK WALL | A=5.0x(5.0+5.0)= 50.0 | 0.4 | | | 20.0 | 20.0 |
| | | COLUMN | | | | | 1.3 | 1.3 |
| | | SIDING | A=5.0x8.4= 42.0 | 0.045 | | | 1.9 | 1.9 |
| | | | | | | | 58.9 | 58.9 |
| | | | | | | | (91.3) | (87.1) |
| | FL+11.0 S FL+5.5 | SLAB | A=5.6x8.4= 47.0 | 1.425 | 1.35 | | 67.0 | 63.5 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | SIDING | A=5.5x8.4= 46.2 | 0.045 | | | 2.1 | 2.1 |
| | | | | | | | 70.5 | 67.0 |
| | | | | | | | (161.8) | (154.1) |
| | FL+5.5 S FL±0 | SLAB | A= 47.0 | 1.225 | 1.15 | | 57.6 | 54.1 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | SIDING | | | | | 2.1 | 2.1 |
| | | | | | | | 61.1 | 57.6 |
| | | | | | | | (222.9) | (211.7) |

NOTE : UW --- UNIT WEIGHT [単位荷重]
PA --- FOR PARMANENT CONDITION [長期]
SE --- FOR SEISMIC CONDITION [地震時]
ML --- MACHINE LOAD [機械荷重]

## COLUMN AXIAL LOAD (4) [柱軸力]

| LOCATION | LEVEL | NAME OF LOAD | AREA OR LENGTH (Unit:m2 or m) | UW PA | UW SE | ML | COLUMN AXIAL LOAD PA (ton) | COLUMN AXIAL LOAD SE (ton) |
|---|---|---|---|---|---|---|---|---|
| G-203 | FL+21.0 ~ FL+16.0 | SLAB | A=5.6×4.0= 22.4 | 0.665 | 0.565 | | 14.9 | 12.7 |
| | | PARAPET | L=5.0+4.0= 9.6 | 0.12 | | | 9.7 | 9.7 |
| | | SIDING | A=9.6×(5.0+0.9)= 56.6 | 0.045 | | | 2.5 | 2.5 |
| | | COLUMN | L= 7.0 | 0.25 | | | 1.8 | 1.8 |
| | | | | | | | 28.9 | 26.7 |
| | FL+16.0 ~ FL+11.0 | SLAB | A= 22.4 | 1.29 | 0.665 | | 28.9 | 19.9 |
| | | SIDING | A=9.6×5.0= 48.0 | 0.045 | | | 2.2 | 2.2 |
| | | COLUMN | L= 5.0 | 0.25 | | | 1.3 | 1.3 |
| | | | | | | | 32.4 | 18.4 |
| | | | | | | | (61.3) | (45.1) |
| | FL+11.0 ~ FL+5.5 | SLAB | A= 22.4 | 1.425 | 1.35 | | 31.9 | 30.2 |
| | | SIDING | A= 48.0 | 0.045 | | | 2.2 | 2.2 |
| | | COLUMN | | | | | 1.4 | 1.4 |
| | | | | | | | 35.5 | 33.8 |
| | | | | | | | (96.8) | (78.9) |
| | FL+5.5 ~ FL±0 | SLAB | A= 22.4 | 1.225 | 1.15 | | 27.4 | 25.8 |
| | | SIDING | A=9.6×5.5= 52.8 | 0.045 | | | 2.4 | 2.4 |
| | | COLUMN | L= 5.5 | 0.25 | | | 1.4 | 1.4 |
| | | | | | | | 31.2 | 29.6 |
| | | | | | | | (128.0) | (108.5) |
| H-203 | FL+21.0 ~ FL+16.0 | SLAB (ROOF) | A=5.0×4.0= 20.0 | 0.635 | 0.535 | | 12.7 | 10.7 |
| | | SLAB (TONER) | A=7.6×4.0= 30.4 | 0.765 | 0.665 | | 23.3 | 20.2 |
| | | FENCE | L=3.4+7.6= 11.0 | 0.11 | | | 1.2 | 1.2 |
| | | PARAPET | L= 12.0 | 0.12 | | | 1.4 | 1.4 |
| | | SIDING | A=5.0×12.0= 60.0 | 0.045 | | | 2.7 | 2.7 |
| | | COLUMN | L= 5.0 | 0.2 | | | 1.0 | 1.0 |
| | | | | | | | 42.3 | 37.2 |
| | FL+16.0 ~ FL+11.0 | SLAB (CON) | A=5.0×3.4= 17.0 | 0.71 | 0.61 | | 12.1 | 10.4 |
| | | SLAB (LAV) | A=7.0×3.4= 23.8 | 0.79 | 0.72 | | 18.8 | 17.1 |
| | | BLOCK WALL | A=5.0×(7.0×2+3.8×5)= 155.0 | 0.4 | | | 62.0 | 62.0 |
| | | SIDING | A=5.0×12.0= 60.0 | 0.045 | | | 2.7 | 2.7 |
| | | COLUMN | | | | | 1.0 | 1.0 |
| | | | | | | | 96.6 | 93.2 |
| | | | | | | | (138.9) | (130.2) |
| | FL+11.0 ~ FL+5.5 | SLAB | A=7.0×4.0= 28.0 | 0.905 | 0.73 | | 25.3 | 20.4 |
| | | SLAB | A=5.0×4.0= 20.0 | 1.425 | 1.35 | | 28.5 | 27.0 |
| | | BLOCK WALL | A=5.0×(3.4×2+9.0)= 79.0 | 0.35 | | | 27.7 | 27.7 |
| | | COLUMN | | | | | 1.1 | 1.1 |
| | | SIDING | A=5.5×12.0= 66.0 | 0.045 | | | 3.0 | 3.0 |
| | | | | | | | 85.6 | 79.2 |
| | | | | | | | (224.5) | (209.4) |
| | FL+5.5 ~ FL±0 | SLAB | A=5.0×4.0 20.0 | 1.225 | 1.15 | | 24.5 | 23.0 |
| | | STAIR | A=2.0×7.0= 14.0 | 0.43 | 0.36 | | 6.0 | 5.0 |
| | | BLOCK WALL | A=5.0×(8.0+4.0×2)= 80.0 | 0.4 | | | 32.0 | 32.0 |
| | | SIDING | A=5.5×5.5= 30.3 | 0.045 | | | 1.4 | 1.4 |
| | | COLUMN | L= 5.5 | 0.2 | | | 1.1 | 1.1 |
| | | P.C PANEL | A=6.4×5.5= 35.2 | 0.29 | | | 10.2 | 10.2 |
| | | | | | | | 75.2 | 72.7 |
| | | | | | | | (299.7) | (282.1) |

## 1.2 SEISMIC LOAD [地震荷重]

| ITEM | | CALCULATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ZONE FACTOR (Z) | | Z = 1.0 | | | | | | | | | |
| STANDARD SHEAR COEFFICIENT (Co) | | Co = 0.1 | | | | | | | | | |
| GROUND CONDITION (Tc) | | Tc = 0.8 | | | | | | | | | |
| | Hard | Tc = 0.4 ☐ | | | | | | | | | |
| | Medium | Tc = 0.6 ☐ | | | | | | | | | |
| | Soft | Tc = 0.8 ☑ | | | | | | | | | |
| DIRECTION | | X DIRECTION ( LONG SPAN) | | | | | Y DIRECTION ( SHORT SPAN) | | | | |
| NATURAL PERIOD OF BUILDING (T) | | T = 0.39 | | | | | T = 0.57 | | | | |
| | Heigh h= 27.1 m | Length of Span D= m | | | | | Length of Span D= 32.0 m | | | | |
| | T=0.03*h | = | | | | | = | | | | |
| | T=0.05*h/4√D | = | | | | | = 0.57 | | | | |
| | T=h/70 | = 0.39 | | | | | = | | | | |
| CHARACTERISTICS OF VIBRATION OF THE BUILDING (Rt) | | Rt = 1.0 | | | | | Rt = 1.0 | | | | |
| | | T | Rt | | | | T | Rt | | | |
| Rt=1 | | | = | | | | | = | | | |
| | Tc | - | - | | | | Tc | - | - | | |
| Rt=1-0.2*(T/Tc-1)^2 | | | = | | | | | = | | | |
| | 2*Tc | - | - | | | | 2*Tc | - | - | | |
| Rt=1.6*Tc/T | | | = | | | | | = | | | |
| 2*T/(1+3*T) | | = 0.359 | | | | | = 0.421 | | | | |
| SEISMIC LOAD FOR EACH FLOOR (Qi) | | | | | | | | | | | |
| | STORY | Wi | α i | Ai | Ci | Qi | Wi | α i | Ai | Ci | Qi |
| | RF | 1,638.4 | 0.11 | 2.04 | 0.20 | 327.7 | | 0.11 | 2.22 | 0.22 | 360.9 |
| | 5TH | 3605.6 | 0.25 | 1.63 | 0.16 | 576.9 | | 0.25 | 1.74 | 0.17 | 613.0 |
| | 4TH | 5539.1 | 0.38 | 1.45 | 0.15 | 830.1 | | 0.38 | 1.52 | 0.15 | 830.1 |
| | 3RD | 9779.7 | 0.67 | 1.20 | 0.12 | 1173.6 | | 0.67 | 1.23 | 0.12 | 1173.6 |
| | MEZ | 14581.5 | 1.00 | 1.00 | 0.1 | 1458.2 | | 1.00 | 1.00 | 0.1 | 1458.2 |

NOTE: $\alpha i = Wi/\Sigma W$

$Ai = 1 + (1/\sqrt{\alpha i} - \alpha i)*2*T/(1 + 3*T)$

$Ci = Z*Rt*Ai*Co$

# TABLE OF COLUMN LOAD FOR EACH FLOOR (SEISMIC CONDITION)

FL+27.1~21.0

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | 33.9 | | | | 33.9 | | | 67.8 |
| 102 | 49.1 | | | | 49.1 | | | 98.2 |
| 103 | 49.1 | | | | 49.1 | | | 98.2 |
| 104 | 49.1 | | | | 49.1 | | | 98.2 |
| 105 | 49.1 | | | | 49.1 | | | 98.2 |
| 106 | 49.1 | | | | 49.1 | | | 98.2 |
| 107 | 59.7 | | | | 59.7 | | | 119.4 |
| 108 | 70.5 | | | | 70.5 | | | 141.0 |
| 201 | 70.5 | | | | 70.5 | | | 141.0 |
| 202 | 59.7 | | | | 59.7 | | | 119.4 |
| 203 | 49.1 | | | | 49.1 | | | 98.2 |
| 204 | 49.1 | | | | 49.1 | | | 98.2 |
| 205 | 49.1 | | | | 49.1 | | | 98.2 |
| 206 | 49.1 | | | | 49.1 | | | 98.2 |
| 207 | 49.1 | | | | 49.1 | | | 98.2 |
| 208 | 33.9 | | | | 33.9 | | | 67.8 |
| TOTAL | 819.2 | | | | 819.2 | | | 1,638.4 |

FL+21.0~16.0

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | 40.9 | | | | 50.1 | 27.2 | | 118.2 |
| 102 | 57.1 | | | | 74.4 | 26.9 | | 158.4 |
| 103 | 57.1 | | | | 143.1 | 95.9 | | 296.1 |
| 104 | 57.1 | | | | 193.1 | 95.9 | | 296.1 |
| 105 | 57.1 | | | | 74.4 | 26.9 | | 158.4 |
| 106 | 57.1 | | | | 71.8 | 51.6 | 25.7 | 206.2 |
| 107 | 68.9 | | | | 87.4 | 63.5 | 48.2 | 268.0 |
| 108 | 81.0 | | | | 103.3 | 75.5 | 45.6 | 305.4 |
| 201 | 81.0 | | | | 103.3 | 75.5 | 45.6 | 305.4 |
| 202 | 68.9 | | | | 87.4 | 63.5 | 48.2 | 268.0 |
| 203 | 57.1 | | | | 71.8 | 42.5 | 25.7 | 197.1 |
| 204 | 57.1 | | | | 74.4 | 27.4 | | 158.9 |
| 205 | 57.1 | | | | 143.1 | 95.9 | | 296.1 |
| 206 | 57.1 | | | | 143.1 | 95.9 | | 291.1 |
| 207 | 57.1 | | | | 74.4 | 26.9 | | 158.4 |
| 208 | 40.9 | | | | 50.7 | 27.2 | | 118.8 |
| TOTAL | 952.6 | | | | 1,495.8 | 918.2 | 239.0 | 3,605.6 |

## TABLE OF COLUMN LOAD FOR EACH FLOOR (SEISMIC CONDITION)

FL+16.0~11.0

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | 40.9 | | | | 66.4 | 38.5 | | 145.8 |
| 102 | 57.1 | | | | 103.8 | 55.0 | | 215.9 |
| 103 | 57.1 | | | | 172.5 | 124.0 | | 353.6 |
| 104 | 57.1 | | | | 179.5 | 136.5 | | 373.1 |
| 105 | 57.1 | | | | 110.8 | 67.5 | | 235.4 |
| 106 | 57.1 | | | | 95.7 | 116.9 | 57.0 | 326.7 |
| 107 | 68.9 | | | | 143.7 | 188.4 | 127.1 | 528.1 |
| 108 | 81.0 | | | | 173.9 | 227.4 | 116.6 | 598.9 |
| 201 | 81.0 | | | | 173.9 | 215.6 | 104.2 | 574.7 |
| 202 | 68.9 | | | | 150.7 | 196.6 | 92.2 | 508.4 |
| 203 | 57.1 | | | | 95.7 | 147.3 | 49.1 | 349.2 |
| 204 | 57.1 | | | | 110.8 | 68.0 | | 235.9 |
| 205 | 57.1 | | | | 179.5 | 136.5 | | 373.1 |
| 206 | 57.1 | | | | 172.5 | 124.0 | | 353.6 |
| 207 | 57.1 | | | | 103.8 | 55.0 | | 215.9 |
| 208 | 40.9 | | | | 66.4 | 38.5 | | 145.8 |
| | | | | | | | | |
| TOTAL | 952.6 | | | | 2.099.6 | 1.935.7 | 546.2 | 5.534.1 |

FL+11.0~5.5

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | 51.4 | 21.3 | 47.4 | 40.9 | 109.7 | 47.7 | | 318.4 |
| 102 | 74.0 | 29.7 | 56.3 | 50.1 | 169.1 | 110.5 | | 489.7 |
| 103 | 74.0 | 19.0 | | 29.9 | 237.8 | 179.5 | | 540.2 |
| 104 | 68.5 | 13.0 | | 14.6 | 259.2 | 189.0 | | 544.3 |
| 105 | 69.5 | 14.0 | | 14.6 | 190.5 | 120.0 | | 408.6 |
| 106 | 75.0 | 20.0 | | 16.0 | 157.6 | 206.7 | 93.0 | 568.3 |
| 107 | 89.4 | 31.7 | 29.9 | 35.9 | 206.6 | 348.0 | 198.9 | 940.4 |
| 108 | 108.7 | 20.9 | 64.6 | 63.0 | 237.3 | 396.6 | 188.8 | 1.079.9 |
| 201 | 108.7 | 20.9 | 64.6 | 63.0 | 237.3 | 365.6 | 176.4 | 1.036.5 |
| 202 | 89.4 | 31.7 | 29.9 | 35.9 | 207.0 | 356.2 | 164.0 | 914.1 |
| 203 | 75.0 | 20.0 | | 21.5 | 161.0 | 240.1 | 129.1 | 641.7 |
| 204 | 69.5 | 14.0 | | 14.6 | 176.1 | 123.5 | | 397.7 |
| 205 | 68.5 | 13.0 | | 14.6 | 259.2 | 189.0 | | 544.3 |
| 206 | 74.0 | 19.0 | | 27.1 | 256.9 | 176.5 | | 553.5 |
| 207 | 74.0 | 29.7 | 56.3 | 50.1 | 166.1 | 107.5 | | 483.7 |
| 208 | 51.4 | 21.3 | 47.4 | 40.9 | 109.7 | 47.7 | | 318.4 |
| | | | | | | | | |
| TOTAL | 1.221.0 | 339.2 | 396.4 | 532.7 | 3.141.1 | 3.204.1 | 945.2 | 9.779.7 |

FORM 04

# TABLE OF COLUMN LOAD FOR EACH FLOOR (SEISMIC CONDITION)

FL+5.5 ~ ±0

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | 76.8 | 55.0 | 85.7 | 77.7 | 159.2 | 72.2 | | 526.6 |
| 102 | 108.5 | 71.9 | 110.5 | 106.2 | 234.1 | 169.2 | | 800.4 |
| 103 | 108.5 | 45.9 | | 62.6 | 302.8 | 238.2 | | 758.0 |
| 104 | 85.1 | 17.6 | | 22.2 | 306.7 | 262.7 | | 694.3 |
| 105 | 86.1 | 18.6 | | 22.2 | 241.5 | 193.7 | | 562.1 |
| 106 | 116.4 | 62.8 | | 48.7 | 223.1 | 301.2 | 143.1 | 895.3 |
| 107 | 131.7 | 86.1 | 81.7 | 95.3 | 295.2 | 495.4 | 276.3 | 1,461.7 |
| 108 | 123.9 | 57.3 | 145.8 | 141.1 | 337.1 | 557.6 | 282.0 | 1,644.8 |
| 201 | 123.9 | 49.3 | 135.0 | 132.2 | 327.8 | 525.9 | 259.4 | 1,553.5 |
| 202 | 131.7 | 86.1 | 81.7 | 95.3 | 279.7 | 487.8 | 224.2 | 1,386.5 |
| 203 | 116.4 | 62.8 | | 54.2 | 226.5 | 334.6 | 166.0 | 960.5 |
| 204 | 86.1 | 18.6 | | 22.2 | 227.1 | 197.2 | | 551.2 |
| 205 | 85.1 | 17.6 | | 22.2 | 306.7 | 262.7 | | 694.3 |
| 206 | 108.5 | 45.9 | | 59.8 | 321.9 | 235.2 | | 771.3 |
| 207 | 108.5 | 71.9 | 110.5 | 106.2 | 231.1 | 166.2 | | 794.4 |
| 208 | 76.8 | 55.0 | 85.7 | 77.7 | 159.2 | 72.2 | | 526.6 |
| TOTAL | 1,674.0 | 822.4 | 836.6 | 1,145.8 | 4,179.7 | 4,572.0 | 1,351.0 | 14,581.5 |

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | |
| 102 | | | | | | | | |
| 103 | | | | | | | | |
| 104 | | | | | | | | |
| 105 | | | | | | | | |
| 106 | | | | | | | | |
| 107 | | | | | | | | |
| 108 | | | | | | | | |
| 201 | | | | | | | | |
| 202 | | | | | | | | |
| 203 | | | | | | | | |
| 204 | | | | | | | | |
| 205 | | | | | | | | |
| 206 | | | | | | | | |
| 207 | | | | | | | | |
| 208 | | | | | | | | |
| TOTAL | | | | | | | | |

FORM 04

SEISMIC LOAD
[地震荷重]

UNIT-1 only.

| ITEM | | CALCULATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ZONE FACTOR (Z) | | Z = 1.0 | | | | | | | | | |
| STANDARD SHEAR COEFFICIENT (Co) | | Co = 0.1 | | | | | | | | | |
| GROUND CONDITION (Tc) | | Tc = 0.8 | | | | | | | | | |
| | Hard | Tc = 0.4 ☐ | | | | | | | | | |
| | Medium | Tc = 0.6 ☐ | | | | | | | | | |
| | Soft | Tc = 0.8 ☑ | | | | | | | | | |
| DIRECTION | | X DIRECTION ( LONG SPAN) | | | | | Y DIRECTION ( SHORT SPAN) | | | | |
| NATURAL PERIOD OF BUILDING (T) | | T = 0.39 | | | | | T = 0.57 | | | | |
| | Heigh h= 27.1 m | Length of Span D= m | | | | | Length of Span D= 32.0 m | | | | |
| | T=0.03*h | = | | | | | = | | | | |
| | T=0.05*h/4√D | = | | | | | = 0.57 | | | | |
| | T=h/70 | = 0.39 | | | | | = | | | | |
| CHARACTERISTICS OF VIBRATION OF THE BUILDING (Rt) | | Rt = 1.0 | | | | | Rt = 1.0 | | | | |
| | | | T | Rt | | | | T | Rt | | |
| Rt=1 | | | | = | | | | | = | | |
| | | Tc | - | - | | | Tc | - | - | | |
| Rt=1-0.2*(T/Tc-1)^2 | | | | = | | | | | = | | |
| | | 2*Tc | - | - | | | 2*Tc | - | - | | |
| Rt=1.6*Tc/T | | | | = | | | | | = | | |
| 2*T/(1+3*T) | | = 0.359 | | | | | = 0.421 | | | | |
| SEISMIC LOAD FOR EACH FLOOR (Qi) | | | | | | | | | | | |
| | STORY | Wi | α i | Ai | Ci | Qi | Wi | α i | Ai | Ci | Qi |
| | RF | 992.8 | 0.10 | 2.10 | 0.21 | 204.3 | | 0.10 | 2.29 | 0.23 | 223.7 |
| | 5TH | 2,353.2 | 0.23 | 1.67 | 0.17 | 400.0 | | 0.23 | 1.78 | 0.18 | 423.6 |
| | 4TH | 3,958.2 | 0.39 | 1.43 | 0.14 | 554.1 | | 0.39 | 1.51 | 0.15 | 593.7 |
| | OPE | 6,958.1 | 0.68 | 1.19 | 0.12 | 835.0 | | 0.68 | 1.22 | 0.12 | 835.0 |
| | MEZ | 10,193.5 | 1.00 | 1.00 | 0.1 | 1,019.4 | | 1.00 | 1.00 | 0.1 | 1,019.4 |

NOTE: $\alpha i = Wi/\Sigma W$

$Ai = 1 + (1/\sqrt{\alpha i} - \alpha i)*2*T/(1 + 3*T)$

$Ci = Z*Rt*Ai*Co$

# TABLE OF COLUMN LOAD FOR EACH FLOOR (SEISMIC CONDITION)

FL+27.1 ~ 21.0

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 101 | 33.9 | | | | 33.9 | | | 67.8 |
| 102 | 49.1 | | | | 49.1 | | | 98.2 |
| 103 | 49.1 | | | | 49.1 | | | 98.2 |
| 104 | 49.1 | | | | 49.1 | | | 98.2 |
| 105 | 49.1 | | | | 49.1 | | | 98.2 |
| 106 | 49.1 | | | | 49.1 | | | 98.2 |
| 107 | 59.7 | | | | 59.7 | | | 119.4 |
| 108 | 70.5 | | | | 70.5 | | | 141.0 |
| 201 | 76.8 | | | | 76.8 | | | 153.6 |
| 202 | | | | | | | | |
| 203 | | | | | | | | |
| 204 | | | | | | | | |
| 205 | | | | | | | | |
| 206 | | | | | | | | |
| 207 | | | | | | | | |
| 208 | | | | | | | | |
| | | | | | | | | |
| TOTAL | 486.4 | | | | 486.4 | | | 972.8 |

FL+21.0 ~ 16.0

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 101 | 40.9 | | | | 50.1 | 27.2 | | 118.2 |
| 102 | 57.1 | | | | 74.4 | 26.9 | | 158.4 |
| 103 | 57.1 | | | | 143.1 | 95.9 | | 296.1 |
| 104 | 57.1 | | | | 143.1 | 95.9 | | 296.1 |
| 105 | 57.1 | | | | 74.4 | 26.9 | | 158.4 |
| 106 | 57.1 | | | | 71.8 | 51.6 | 25.7 | 206.2 |
| 107 | 68.9 | | | | 87.4 | 63.5 | 48.2 | 268.0 |
| 108 | 81.0 | | | | 103.3 | 75.5 | 45.6 | 305.4 |
| 201 | 84.9 | | | | 110.9 | 75.5 | 45.6 | 316.9 |
| 202 | | | | | 28.2 | 63.5 | 48.2 | 139.9 |
| 203 | | | | | 26.7 | 37.2 | 25.7 | 89.6 |
| 204 | | | | | | | | |
| 205 | | | | | | | | |
| 206 | | | | | | | | |
| 207 | | | | | | | | |
| 208 | | | | | | | | |
| | | | | | | | | |
| TOTAL | 561.2 | | | | 913.4 | 639.6 | 239.0 | 2353.2 |

FORM 04

# TABLE OF COLUMN LOAD FOR EACH FLOOR (SEISMIC CONDITION)

FL+16.0 ~ 11.0

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | 40.9 | | | | 66.4 | 38.5 | | 145.8 |
| 102 | 57.1 | | | | 103.8 | 55.0 | | 215.9 |
| 103 | 57.1 | | | | 172.5 | 124.0 | | 353.6 |
| 104 | 57.1 | | | | 179.5 | 136.5 | | 373.1 |
| 105 | 57.1 | | | | 110.8 | 67.5 | | 235.4 |
| 106 | 57.1 | | | | 95.7 | 116.9 | 57.0 | 326.7 |
| 107 | 68.9 | | | | 143.7 | 188.4 | 127.1 | 528.1 |
| 108 | 81.0 | | | | 173.9 | 227.4 | 116.1 | 598.4 |
| 201 | 84.9 | | | | 176.2 | 215.6 | 104.2 | 580.9 |
| 202 | | | | | 87.1 | 196.6 | 92.2 | 375.9 |
| 203 | | | | | 45.1 | 130.2 | 49.1 | 224.4 |
| 204 | | | | | | | | |
| 205 | | | | | | | | |
| 206 | | | | | | | | |
| 207 | | | | | | | | |
| 208 | | | | | | | | |
| TOTAL | 561.2 | | | | 1,354.7 | 1,496.6 | 545.7 | 3,958.2 |

FL+ 11.0 ~ 5.5

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | 51.4 | 21.3 | 47.4 | 40.9 | 109.7 | 47.7 | | 318.4 |
| 102 | 74.0 | 29.7 | 56.3 | 50.1 | 169.1 | 110.5 | | 489.7 |
| 103 | 74.0 | 19.0 | | 29.9 | 237.8 | 179.5 | | 540.2 |
| 104 | 68.5 | 13.0 | | 19.6 | 259.2 | 189.0 | | 544.3 |
| 105 | 69.5 | 14.0 | | 14.6 | 190.5 | 120.0 | | 408.6 |
| 106 | 75.0 | 20.0 | | 16.0 | 157.6 | 206.7 | 93.0 | 568.3 |
| 107 | 89.4 | 31.7 | 29.9 | 35.9 | 206.6 | 348.0 | 198.9 | 940.4 |
| 108 | 108.7 | 20.9 | 64.6 | 63.0 | 237.3 | 396.6 | 188.8 | 1,079.9 |
| 201 | 92.0 | 4.5 | 27.9 | 49.6 | 265.6 | 365.6 | 176.4 | 981.6 |
| 202 | | | | | 154.1 | 356.2 | 164.0 | 674.3 |
| 203 | | | | | 78.9 | 209.4 | 124.1 | 412.4 |
| 204 | | | | | | | | |
| 205 | | | | | | | | |
| 206 | | | | | | | | |
| 207 | | | | | | | | |
| 208 | | | | | | | | |
| TOTAL | 702.5 | 174.1 | 226.1 | 314.6 | 2,066.4 | 2,529.2 | 945.2 | 6,958.1 |

FORM 04

# TABLE OF COLUMN LOAD FOR EACH FLOOR (SEISMIC CONDITION)

FL+5.5~10

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | 76.8 | 55.0 | 85.7 | 77.7 | 159.2 | 72.2 | | 526.6 |
| 102 | 108.5 | 71.9 | 110.5 | 106.2 | 234.1 | 169.2 | | 800.4 |
| 103 | 108.5 | 45.9 | | 62.6 | 302.8 | 238.2 | | 758.0 |
| 104 | 85.1 | 17.6 | | 22.2 | 306.7 | 262.7 | | 694.3 |
| 105 | 86.1 | 18.6 | | 22.2 | 241.5 | 193.7 | | 562.1 |
| 106 | 116.4 | 62.8 | | 48.7 | 223.1 | 301.2 | 143.1 | 895.3 |
| 107 | 131.7 | 86.1 | 81.7 | 95.3 | 295.2 | 495.4 | 276.3 | 1,461.7 |
| 108 | 123.9 | 57.3 | 145.8 | 141.1 | 337.1 | 557.6 | 282.0 | 1,644.8 |
| 201 | 94.1 | 6.9 | 52.4 | 89.1 | 342.2 | 525.9 | 259.4 | 1,370.0 |
| 202 | | | | | 211.7 | 487.8 | 224.2 | 923.7 |
| 203 | | | | | 108.5 | 282.1 | 166.0 | 556.6 |
| 204 | | | | | | | | |
| 205 | | | | | | | | |
| 206 | | | | | | | | |
| 207 | | | | | | | | |
| 208 | | | | | | | | |
| TOTAL | 931.1 | 422.1 | 476.1 | 665.1 | 2,762.1 | 3586.0 | 1,351.0 | 10,193.5 |

| | A | B | D | F | G | H | K | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | |
| 102 | | | | | | | | |
| 103 | | | | | | | | |
| 104 | | | | | | | | |
| 105 | | | | | | | | |
| 106 | | | | | | | | |
| 107 | | | | | | | | |
| 108 | | | | | | | | |
| 201 | | | | | | | | |
| 202 | | | | | | | | |
| 203 | | | | | | | | |
| 204 | | | | | | | | |
| 205 | | | | | | | | |
| 206 | | | | | | | | |
| 207 | | | | | | | | |
| 208 | | | | | | | | |
| TOTAL | | | | | | | | |



70

NOTE: Ki --- HORIZONTAL STIFFNESS OF EACH FRAME AT EACH FLOOR
Qi --- SEISMIC SHEAR FORCE OF EACH FRAME AT EACH FLOOR (ton)
Pi --- SEISMIC LOAD OF EACH FRAME AT EACH FLOOR (ton)
Σ --- SUMMATION OF ALL FRAMES AT EACH FLOOR

DISTRIBUTION OF SEISMIC LOAD
[地震力の架構への配分]

| ITEM | FLOOR | X DIRECTION ( LONG SPAN ) Σ Ki | Σ Qi | Σ Pi | Σ Qi/Σ K | Y DIRECTION ( SHORT SPAN ) Σ Ki | Σ Qi | Σ Pi | Σ Qi/Σ K | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| WHOLE FRAME | RF | 1156.8 | 327.7 | | 0.283 | | 360.4 | | | |
| | 5TH | 2290.4 | 576.9 | | 0.252 | 4263.8 | 613.0 | 252.6 | 0.144 | |
| | 4TH | 2871.8 | 830.1 | | 0.289 | 4537.6 | 830.1 | 217.1 | 0.183 | |
| | OPE | 3862.2 | 1173.6 | | 0.304 | 5764.8 | 1173.6 | 343.5 | 0.204 | |
| | MEZ | 3765.4 | 1458.2 | | 0.387 | 3807.2 | 1458.2 | 284.6 | 0.383 | |

| LINE ※ DIRECTION | | A | B | D | F | G | H | K | 101 208 | 102 207 | 103 206 | 104 205 | 105 204 | 106 203 | 107 202 | 108 201 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ki ~~Qi~~ | RF | 578.4 | | | | 578.4 | | | | | | | | | | |
| | 5TH | 710.4 | | | | | 1032.4 | 647.6 | 355.8 | | 516.5 | 516.5 | | 387.3 | 355.8 | |
| | 4TH | 861.0 | | | | | 1299.2 | 711.6 | 273.8 | 273.8 | 355.8 | 355.8 | 355.8 | 298.0 | | 355.8 |
| | OPE | 785.0 | 662.0 | | 662.0 | | 1140.6 | 612.6 | 429.8 | 324.6 | 407.5 | 235.7 | 235.7 | 521.3 | 171.8 | 556.0 |
| | MEZ | 649.6 | 453.6 | | 453.6 | 909.8 | 1086.6 | 212.2 | 469.3 | 295.9 | 131.9 | | | 414.7 | 295.9 | 295.9 |
| LINE ¥ DIRECTION | | | | | | | | | | | | | | | | |
| ~~Ki~~ Qi | RF | 163.7 | | | | 163.7 | | | 14.9 | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 | 26.3 | 31.0 |
| | 5TH | 179.0 | | | | | 260.2 | 138.0 | 51.2 | | 74.4 | 74.4 | | 55.8 | 51.2 | |
| | 4TH | 248.8 | | | | | 375.5 | 205.7 | 50.1 | 50.1 | 65.1 | 65.1 | 65.1 | 54.5 | | 65.1 |
| | OPE | 238.6 | 201.2 | | 201.2 | | 346.7 | 186.2 | 87.7 | 66.2 | 83.1 | 48.1 | 48.1 | 106.3 | 35.0 | 113.4 |
| | MEZ | 251.4 | 175.5 | | 175.5 | 352.1 | 420.5 | 82.1 | 179.7 | 113.3 | 50.5 | | | 158.8 | 113.3 | 113.3 |

NOTE: Ki --- HORIZONTAL STIFFNESS OF EACH FRAME AT EACH FLOOR
Qi --- SEISMIC SHEAR FORCE OF EACH FRAME AT EACH FLOOR (ton)
Pi --- SEISMIC LOAD OF EACH FRAME AT EACH FLOOR (ton)
Σ --- SUMMATION OF ALL FRAMES AT EACH FLOOR

DISTRIBUTION OF SEISMIC LOAD
[地震力の架構への配分] UNIT-1 only

| ITEM | FLOOR | X DIRECTION ( LONG SPAN ) Σ Ki | Σ Qi | Σ Pi | Σ Qi/Σ K | Y DIRECTION ( SHORT SPAN ) Σ Ki | Σ Qi | Σ Pi | Σ Qi/Σ K | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| WHOLE FRAME | RF | 578.4 | 204.3 | | 0.353 | | 223.7 | | | |
| | 5TH | 1,692.8 | 400.0 | | 0.236 | 2,875.0 | 423.6 | | 0.147 | |
| | 4TH | 2,117.7 | 554.1 | | 0.262 | 2,922.6 | 593.7 | | 0.203 | |
| | OPE | 2,491.9 | 835.0 | | 0.335 | 3,787.9 | 835.0 | | 0.220 | |
| | MEE | 2,548.0 | 1,019.4 | | 0.400 | 2,482.3 | 1,019.4 | | 0.411 | |

| LINE X DIRECTION | FLOOR | A | B | D | F | G | H | K | | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 201 | 202 | 203 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ki ~~Qi~~ | RF | 289.2 | | | | 289.2 | | | | | | | | | | | | | |
| | 5TH | 355.2 | | | | | 790.0 | 547.6 | | 355.8 | | 516.5 | 516.5 | | 387.3 | 355.8 | | 355.8 | 387.3 |
| | 4TH | 430.5 | | | | | 975.6 | 711.6 | | 273.8 | 273.8 | 355.8 | 355.8 | 355.8 | 298.0 | | 355.8 | | 298.0 |
| | OPE | 392.5 | 331.0 | | 331.0 | | 824.8 | 612.6 | | 429.8 | 324.6 | 407.5 | 235.7 | 235.7 | 521.3 | 171.8 | 556.0 | | 349.5 |
| | MEE | 329.8 | 226.8 | | 226.8 | 683.0 | 874.4 | 212.2 | | 969.3 | 295.9 | 131.9 | | | 414.7 | 295.9 | 295.9 | | 282.8 |
| LINE Y DIRECTION | | | | | | | | | | | | | | | | | | | |
| ~~Ki~~ Qi | RF | 102.2 | | | | 102.2 | | | | 15.6 | 22.6 | 22.6 | 22.6 | 22.6 | 22.6 | 27.5 | 22.5 | 22.5 | |
| | 5TH | 83.8 | | | | | 186.4 | 129.2 | | 52.3 | | 75.9 | 75.9 | | 56.9 | 52.3 | | 52.3 | 56.9 |
| | 4TH | 112.8 | | | | | 255.6 | 186.4 | | 55.6 | 55.6 | 72.2 | 72.2 | 72.2 | 60.5 | | 72.2 | | 60.5 |
| | OPE | 131.5 | 110.9 | | 110.9 | | 276.3 | 205.2 | | 94.6 | 71.4 | 89.7 | 51.9 | 51.9 | 114.7 | 37.8 | 122.3 | | 76.9 |
| | MEE | 129.9 | 90.7 | | 90.7 | 273.2 | 349.8 | 84.9 | | 192.9 | 121.6 | 54.2 | | | 170.4 | 121.6 | 121.6 | | 116.2 |

HORIZONTAL STIFFNESS OF VERTICAL BRACE
[鉛直ブレースの水平剛性]

| LINE | FLOOR | NUMBER | TYPE | MEMBER SIZE | AREA (cm2) | L1 (cm) | L2 (cm) | L3 (cm) | J (t/cm) |
|---|---|---|---|---|---|---|---|---|---|
| Y | Direction | | | | | | | | |
| | 5TH | | K | H-300² | 119.8 | 500 | 500 | 707 | 355.8 |
| | | | K | H-350² | 173.9 | 500 | 500 | 707 | 516.5 |
| | | | K | H-300² | 119.8 | 700 | 500 | 860 | 387.3 |
| | 4TH | | K | H-250² | 92.18 | 500 | 500 | 707 | 273.8 |
| | | | K | H-300² | 119.8 | 500 | 500 | 707 | 355.8 |
| | | | K | H-250² | 92.18 | 700 | 500 | 860 | 298.0 |
| | OPE | | N | 2L-130x12 | 59.52 | 450 | 550 | 711 | 70.5 |
| | | | X | 2L-120x8 | 37.52 | 450 | 550 | 711 | 88.9 |
| | | | X | 2L-120x8 | 37.52 | 550 | 550 | 778 | 101.3 |
| | | | X | 2L-120x8 | 37.52 | 600 | 550 | 814 | 105.2 |
| | | | K | H-250² | 92.18 | 500 | 550 | 743 | 235.7 |
| | | | K | H-300² | 119.8 | 700 | 550 | 890 | 349.5 |
| | MEZ | | N | H-200² | 63.53 | 450 | 650 | 791 | 54.7 |
| | | | X | 2L-120x8 | 37.52 | 450 | 650 | 791 | 64.6 |
| | | | X | 2L-120x8 | 37.52 | 550 | 650 | 851 | 77.2 |
| | | | X | 2L-120x8 | 37.52 | 600 | 650 | 885 | 82.0 |
| | | | K | H-300² | 119.8 | 500 | 650 | 820 | 228.1 |
| | | | K | H-300² | 119.8 | 700 | 650 | 955 | 282.8 |
| | | | | | | | | | |
| | | | | | | | | | |
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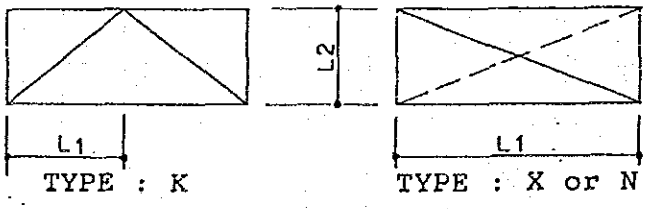
NOTE:




$L3 = \sqrt{L1*L1+L2*L2}$
(Length of Brace)

J = 2*A*E*L1^2/L3^3
(TYPE : K or X)

J = A*E*L1^2/L3^3
(TYPE : N)

E -- Young Modulus (t/cm2)
(2100 for steel)

HORIZONTAL STIFFNESS OF VERTICAL BRACE
[鉛直ブレースの水平剛性]

| LINE | FLOOR | NUMBER | TYPE | MEMBER SIZE | AREA (cm2) | L1 (cm) | L2 (cm) | L3 (cm) | J (t/cm) |
|---|---|---|---|---|---|---|---|---|---|
| X Direction | | | | | | | | | |
| A,G | RF | | X | 2L-120x8 | 37.52 | 680 | 610 | 914 | 95.6 |
| | | | X | 2L-120x8 | 37.52 | 1000 | 610 | 1171 | 98.0 |
| A,H | 5TH | | X | 2L-120x8 | 37.52 | 680 | 500 | 844 | 121.2 |
| A | | | X | 2L-120x8 | 37.52 | 1000 | 500 | 1118 | 112.8 |
| H,K | | | K | H-250² | 92.18 | 500 | 500 | 707 | 273.8 |
| A,H | 4TH | | X | 2L-130x9 | 45.48 | 680 | 500 | 844 | 146.9 |
| A | | | X | 2L-130x9 | 45.48 | 1000 | 500 | 1118 | 136.7 |
| H,K | | | K | H-300² | 119.8 | 500 | 500 | 707 | 355.8 |
| A,H | OPE | | X | 2L-130x9 | 45.48 | 680 | 550 | 875 | 132.0 |
| A | | | X | 2L-130x9 | 45.48 | 1000 | 550 | 1141 | 128.5 |
| B,F | | | K | H-250² | 92.18 | 340 | 550 | 647 | 165.5 |
| H,K | | | K | H-300² | 119.8 | 500 | 550 | 743 | 306.3 |
| A,K,H | MEZ | | X | 2L-130x9 | 45.48 | 680 | 650 | 941 | 106.1 |
| A | | | X | 2L-130x9 | 45.48 | 1000 | 650 | 1193 | 112.6 |
| B,F,G | | | K | H-250² | 92.18 | 340 | 650 | 734 | 113.4 |
| G | | | K | H-300² | 119.8 | 500 | 650 | 820 | 228.1 |
| H | | | K | H-358² | 173.9 | 500 | 650 | 820 | 331.1 |
| | | | | | | | | | |
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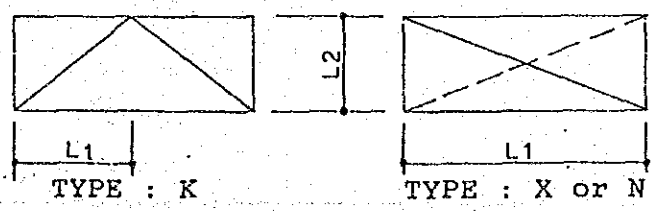
NOTE:




TYPE : K　　TYPE : X or N

$L3 = \sqrt{L1*L1+L2*L2}$
(Length of Brace)

J = 2*A*E*L1^2/L3^3
(TYPE : K or X)

J = A*E*L1^2/L3^3
(TYPE : N)

E -- Young Modulus (t/cm2)
(2100 for steel)

## 2. Design of crane support girder

### (1) Design Condition

- Dead load : 45.0 ton (including 16.5 ton trolley)

  Main hook : 60.0 ton

  Aux hook : 15.0 ton

- The beam for the crane girder will be a simple beam each for 6.8 m span and 10.0 m span.

- Maximum wheel load (P)

  Due to the previous calculation, the maximum wheel load is 25.2 ton / wheel

- Stress of Girder

  a. 6.8 m span

  $M_{x1} = 67.3$ t·m, $M_y = 5.6$ t·m, $N = 8.9$ t

  $M_{x2} = \frac{1}{8} \times 0.36 \times \overline{6.8}^2 = 2.1$ T·m

  Girder D.L 306.9 kg/m
  Rail D.L 50
  356.9 kg/m

  b. 10.0 m span

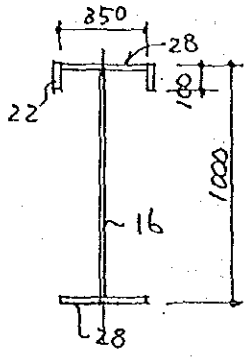
  $M_{x1} = 155.1$ t·m, $M_y = 12.9$ t·m, $N = 10.1$ t

  $M_{x2} = \frac{1}{8} \times 0.522 \times 10^2 = 6.5$ T·m

  Girder D.L 472 kg/m
  Rail D.L 50
  522 kg/m

(2) Design of cross section

a. 6.8 m span




$A = 391.0\ cm^2$ , $ix = 40.9\ cm$ , $iy = 13.3\ cm$

$Zc = 14,571\ cm^3$ $\quad Ix = 654.677\ cm^4$

$Zt = 11,888\ cm^3$ $\quad ib = 12.4\ cm$

$Zy = 1,282\ cm^3$ $\quad Iy = 25,267\ cm^4$

$\lambda_b = \frac{l_b}{i_b} = 55$ $\quad f_b = 1.6\ t/cm^2$

$\lambda_c = \frac{l_k}{i_y} = 51.1$ $\quad f_c = 1.37\ t/cm^2$

$$\sigma_{bxt} = \frac{67.3 + 2.1}{11,888} \times 10^2 = 0.58\ t/cm^2$$

$$\sigma_{bxc} = \frac{67.3 + 2.1}{14571} \times 10^2 = 0.48\ "$$

$$\sigma_{by} = \frac{5.6 \times 10^2}{1282} = 0.44\ "$$

$$\sigma_t = \sigma_c = \frac{8.912}{391.0} = 0.01\ "$$

Compression side : $\frac{0.48}{1.6} + \frac{0.44}{1.6} + \frac{0.01}{1.37} = 0.58 < 1.0$

Tension side : $\frac{0.58}{1.6} + \frac{0.01}{1.6} = 0.37 < 1.0$

Deflection : $\delta = \frac{5 \times 0.15 \times 680^4}{384 \times 2100 \times 654.677} = 0.3\ cm$

$$\frac{\delta}{l} = \frac{0.3}{680} = \frac{1}{2266} < \frac{1}{1000}$$



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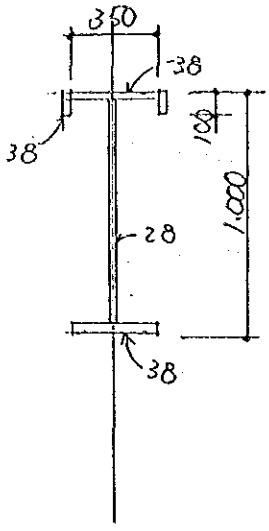
b. 10 m span




$A = 600.7\ cm^2$, $i_x = 39.4\ cm$, $i_y = 14.2\ cm$

$Z_c = 21091\ cm^3$, $I_x = 934,560\ cm^4$

$Z_t = 16,781\ cm^3$, $i_b = 13.1\ cm$

$Z_y = 1985\ cm^3$, $I_y = 42,295\ cm^4$

$\lambda_b = \frac{l_b}{i_b} = 76.$ $\quad f_b = 1.6\ t/cm^2$

$\lambda_c = \frac{l_k}{i_y} = 70.4$ $\quad f_c = 1.2\ t/cm^2$

$\sigma_{bxt} = \frac{155.1 + 6.5}{16,781} \times 10^2 = 0.96\ t/cm^2$

$\sigma_{bxc} = \frac{155.1 + 6.5}{21,091} \times 10^2 = 0.77$ "

$\sigma_{by} = \frac{12.9 \times 10^2}{1985} = 0.65$ "

$\sigma_t = \sigma_c = \frac{10.1/2}{600.7} = 0.008$ "

Compression side : $\frac{0.77}{1.6} + \frac{0.65}{1.6} + \frac{0.008}{1.2} = 0.89 < 1.0$

Tension side : $\frac{0.96}{1.6} + \frac{0.008}{1.6} = 0.61 < 1.0$

Deflection : $\delta = \frac{5 \times 0.1 \times 1000^4}{384 \times 2100 \times 934,560} = 0.66\ cm$

$\frac{\delta}{l} = \frac{0.66}{1000} = \frac{1}{1515} < \frac{1}{1000}$