PROJECT: STEEL BUILDING DESIGN CASE STUDY
SUBJECT: GRAVITY LOADS (LOAD TABLES)

TYPICAL FLOOR DEAD LOAD (LB/FT^2)	TO SLAB	TO JOISTS	TO GIRDERS	TO COLUMNS
SLAB (4-3/4" Light WT. Concrete) (Lightweight Concrete Density = 96 PCF)	38	38	38	38
MECH./ELEC./PIPING (common practice = 10 psf)	10	10	10	10
CEILING SYSTEM (Table C3-1, ASCE 7-02) (Acoustical fiber board & Mechnical Duct allowance)	5	5	5	5
JOISTS (Assume 11 LB/L.F. @ 3' O.C.)	-	3.5	3.5	3.5
GIRDERS (Assume 85 LB/L.F. @ 36' O.C.)	-	-	2.5	2.5
COLUMNS (36'*30' = 1080 FT.^{2}) (Assume 150LB./L.F.* 13')/1080FT.^{2}	-	-	-	2
TOTAL FLOOR DEAD LOAD (LB/FT^2) =	53	56.5	59	61
ROOF DEAD LOAD (LB/FT^2)	**TO SLAB**	**TO JOISTS**	**TO GIRDERS**	**TO COLUMNS**
ROOF DECK (Table C3-1, ASCE 7-02) (Metal, 18 gage)	3	3	3	3
RIGID INSULATION (Table C3-1, ASCE 7-02) (2" thick)	3	3	3	3
MECH./ELEC./PIPING & CEILING SYSTEM (Assume 10 psf)	10	10	10	10
ROOFING (Table C3-1, ASCE 7-02) (Five-ply felt & gravel)	6	6	6	6
JOISTS (Assume 11 LB/L.F. @ 3' O.C.)	-	3.5	3.5	3.5
GIRDERS (Assume 85 LB/L.F. @ 36' O.C.)	-	-	2.5	2.5
COLUMNS (36'*30' = 1080 FT.^{2}) (Assume 150LB./L.F.* 13')/1080FT.^{2}	-	-	-	2
TOTAL ROOF DEAD LOAD (LB/FT^2) =	22	25.5	28	30
PENTHOUSE DEAD LOADS (EQUIPMENT)	-	100	100	100
TYPICAL FLOOR LIVE LOAD	80	80	80	80
ROOF LIVE LOAD	20	20	20	20

Red font indicates user input

NOTES:

** ENGINEERING JUDGMENT IS REQUIRED FOR LOAD DETERMINATION. FOR MINIMUM DESIGN DEAD LOADS AND WEIGHTS OF BUILDING MATERIALS SEE ASCE 7-02 TABLE C3-1 & 2.*
ASCE 7-02CALLS FOR A 100 PSF LIVE LOAD ALLOWANCE ON FIRST FLOOR OFFICE BUILDING CORRIDORS. HOWEVER, THIS WAS IGNORED SINCE THE FIRST FLOOR SLAB IS CONSTRUCTED ON GRADE.
ASCE 7-02 CALLS FOR A 100 PSF LIVE LOAD ALLOWANCE FOR STAIRS AND EXITWAYS.

** USE OF FLOOR SPACE IS ONE OF THE FOLLOWING:*
OFFICE LOADING + PARTITION ALLOWANCE = 50 + 20 = 70 PSF
CORRIDOR LOADING = 80 PSF
USE THE MAXIMUM, 80 PSF, THROUGHOUT FOR LAYOUT FLEXIBILITY.

** ASCE 7-02 calls for a 20 psf roof live load*

** EXTERIOR WALL SYSTEM LOAD = 15 PSF*
(GRAVITY LOADS TO FOUNDATION, LATERAL LOAD TO EACH FLOOR LEVEL)

** CMU WALL SYSTEM AROUND STAIRWELL : 8" X 8" X 16" WITH 24" O.C. GROUT SPACING = 51 PSF*