

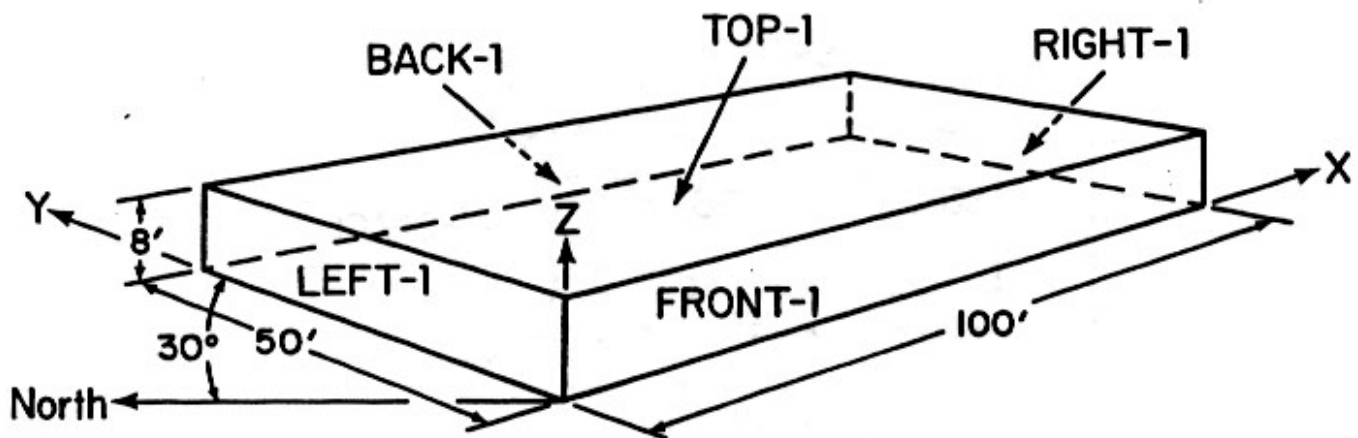
Appendix B

Example of DOE-2 Input and Output

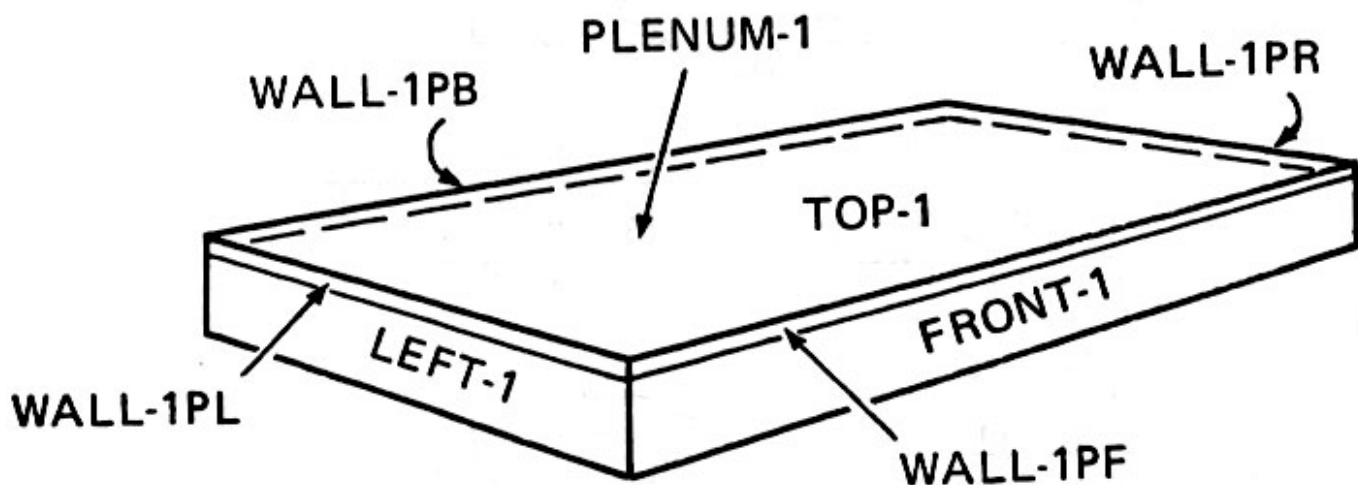
This Appendix gives a sample input and output of a DOE-2 run with annotations that direct you to items of interest. This run is similar to the one shown in the introductory section of this manual, but with the following modifications:

- the input is "three dimensional", i.e., the X,Y,Z coordinates of walls and the X,Y coordinates of windows and doors are specified;
- instead of one single zone the floor space has been separated into five zones, a core zone and four perimeter zones;
- there is a return air plenum;
- there is a time-of-day electric rate structure;
- additional output reports are shown; and
- the input and output have been annotated to highlight important features.

XBL 79I-36

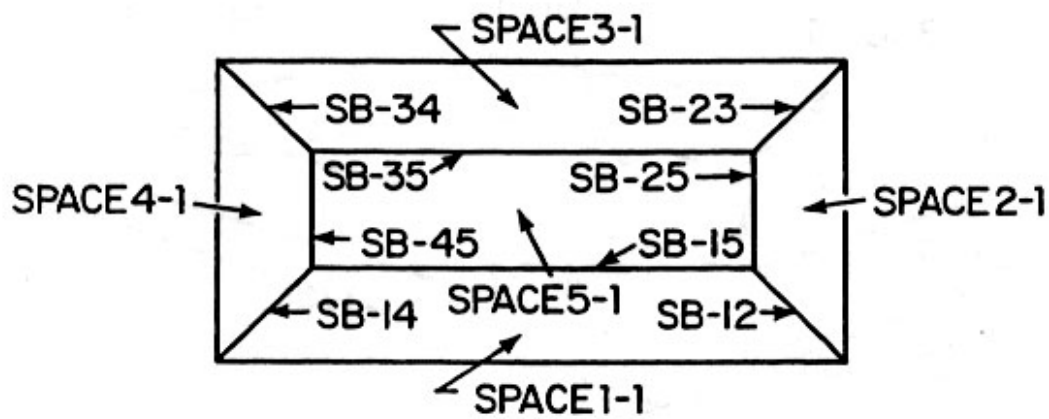


Isometric view of basic building showing orientation. FRONT-1, RIGHT-1, etc., are u-names (user-defined names) for the front wall, right-hand wall, etc. The building coordinate axes (X, Y, and Z) are shown. The building is oriented 30° from true North.

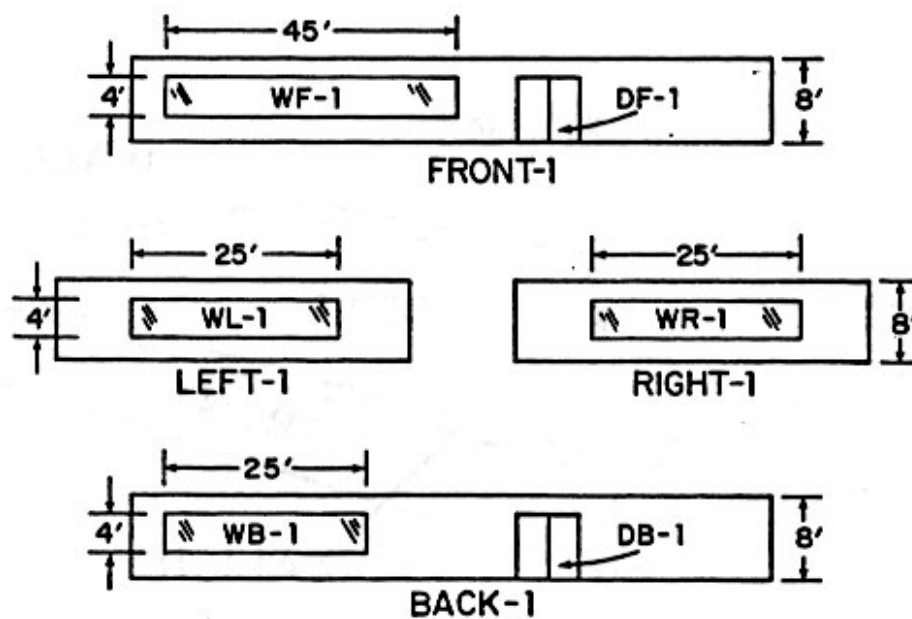


XBL 79I-37A

Basic building showing plenum and its walls (u-named WALL-1PF, WALL-1PL, etc.).



Plan view showing zoning and u-names of spaces and interior walls.



Elevations showing placement of windows and doors

Sample Input

(U-names are italicized)

INPUT LOADS ..
 TITLE LINE-1 *SIMPLE STRUCTURE, CHICAGO *
 LINE-2 *EXAMPLE FOR DOE-2 BASICS MANUAL* ..

ABORT ERRORS ..
 DIAGNOSTIC WARNINGS ..
 RUN-PERIOD JAN 1 1974 THRU DEC 31 1974 ..
 LOADS-REPORT VERIFICATION = (LV-D)
 SUMMARY = (LS-C, LS-D) ..

\$ CHICAGO LOCATION

BUILDING-LOCATION LATITUDE = 42.0 LONGITUDE = 88.0
 ALTITUDE = 610 TIME-ZONE = 6
 AZIMUTH = 30 ..

Building is oriented 30 degrees from true North

\$ CONSTRUCTION AND GLASS-TYPE

WA-1-2 - LAYERS MATERIAL = (WD01, PM03, IN02, GP01) ..
 RB-1-1 - LAYERS MATERIAL = (RG01, BR01, IN46, WD01)
 INSIDE-FILM-RES = .76 ..

These are building material code words.
 They were selected from the DOE-2 library

A user-chosen name (u-name) that is assigned, then referenced

MALL-1 - CONSTRUCTION LAYERS = WA-1-2 ..
 ROOF-1 - CONSTRUCTION LAYERS = RB-1-1 ..
 CLING-1 - CONSTRUCTION U-VALUE = 0.27 ..
 SB-U - CONSTRUCTION U-VALUE = 1.5 ..
 FLOOR-1 - CONSTRUCTION U-VALUE = 0.05 ..

W-1 - GLASS-TYPE SHADING-COEF = .45 PANES = 2 ..

\$ OCCUPANCY SCHEDULE

OCCUPY-1 - SCHEDULE THRU DEC 31
 (MON, FRI) (1, 8) (0) (9, 11) (1)
 (12, 14) (.8, .4, .8) (15, 18) (1)
 (19, 21) (.5, .1, .1) (22, 24) (0)
 (SAT, HOL) (1, 24) (0.0) ..

Hours 1 to 8 (midnight to 8 am) are at zero occupancy
 Hours 15 to 18 (2 pm to 6 pm) are at full occupancy

\$ LIGHTING SCHEDULE

LIGHTS-1 - SCHEDULE THRU DEC 31 "Weekdays"; same as (MON,FRI)
 (WD) (1,8) (.05) (9,14) (.9,95,1,.95,.8,.9)
 (15,18) (1,.) (19,21) (.6,2,.2)
 (22,24) (.05)
 (WEH) (1,24) (.05) .. "Weekends and Holidays"; same as (SAT, HOL)

Comment lines start with \$; they are ignored by the program

\$ OFFICE EQUIPMENT SCHEDULE

EQUIP-1 - SCHEDULE THRU DEC 31
 (WD) (1,8) (.02) (9,14) (.8)
 (15,20) (.8,7,.5,.5,.3,.3)
 (21,24) (0.2)
 (WEH) (1,24) (.02) ..

\$ INFILTRATION SCHEDULE

INFIL-SCH - SCHEDULE THRU MAR 31 (ALL) (1,24) (1)
 THRU OCT 31 (ALL) (1,24) (0)
 THRU DEC 31 (ALL) (1,24) (1) .. Infiltration is on only during winter

\$ SET DEFAULT VALUES

SET-DEFAULT FOR SPACE FLOOR-WEIGHT = 70 .. Assigns default values for later use
 SET-DEFAULT FOR WINDOW HEIGHT = 4.0
 GLASS-TYPE = W-1 ..

\$ GENERAL SPACE CONDITIONS

OFFICE - SPACE-CONDITIONS PEOPLE-SCHEDULE PEOPLE-1
 NUMBER-OF-PEOPLE - 50 Maximum number of people; is multiplied each hour by
 PEOPLE-HEAT-GAIN - 400 OCCUPY-1 schedule value
 LIGHTING-SCHEDULE - LIGHTS-1
 LIGHTING-TYPE - REC-FLOOR-RV
 LIGHT-TO-SPACE - .80
 LIGHTING-W/SQFT - 1.5
 EQUIP-SCHEDULE - EQUIP-1
 EQUIPMENT-W/SQFT - 1
 INF-METHOD - AIR-CHANGE
 AIR-CHANGES/HR - 0.25
 INF-SCHEDULE - INFIL-SCH .. The previously-defined infiltration schedule is referenced here

\$ SPECIFIC SPACE DETAILS

\$ PLENUM

PLENUM-1 - SPACE

ZONE-TYPE - PLENUM AREA - 5000
VOLUME - 10000 FLOOR-WEIGHT - 5 ..

WALL-1PF - EXTERIOR-WALL

HEIGHT - 2 WIDTH - 100

X - 0 Y - 0 Z - 0

AZIMUTH - 180

CONSTRUCTION - WALL-1 ..

Location of lower left corner of wall in the space coordinate system

WALL-1PR - EXTERIOR-WALL

HEIGHT - 2 WIDTH - 50

X - 0 Y - 0 Z - 0

AZIMUTH - 90

CONSTRUCTION - WALL-1 ..

WALL-1PB - EXTERIOR-WALL

HEIGHT - 2 WIDTH - 100

X - 0 Y - 0 Z - 0

AZIMUTH - 0

CONSTRUCTION - WALL-1 ..

WALL-1PL - EXTERIOR-WALL

HEIGHT - 2 WIDTH - 50

X - 0 Y - 0 Z - 0

AZIMUTH - 270

CONSTRUCTION - WALL-1 ..

TOP-1 - ROOF

HEIGHT - 50 WIDTH - 100

X - 0 Y - 0 Z - 10

AZIMUTH - 180

TILT - 0 GND-REFLECTANCE - 0

CONSTRUCTION - ROOF-1 ..

Tilt = 0 gives a horizontal roof; the tilt of the walls in this space (WALL-1PF, etc.) defaults to 90 deg, so they are vertical

\$ OCCUPIED SPACES

SPACE1-1 - SPACE

SPACE-CONDITIONS - OFFICE

AREA - 1056 VOLUME - 8448

NUMBER-OF-PEOPLE - 11 ..

Assigns the general conditions called "OFFICE" to the space

FRONT-1 - EXTERIOR-WALL

HEIGHT - 8

WIDTH - 100

X - 0 Y - 0 Z - 0 AZIMUTH - 180

CONSTRUCTION - WALL-1 ..

WF-1 - WINDOW WIDTH = 45 OVERHANG-A = 1 OVERHANG-B = .5
OVERHANG-W = 47 OVERHANG-D = 4 .. Input for a 4ft x 47ft overhang on the south window

CI-1 - INTERIOR-WALL AREA = 1056 NEXT-TO PLENUM-1
CONSTRUCTION = CLANG-1 ..

FI-1 - UNDERGROUND-FLOOR AREA = 1056 CONSTRUCTION = FLOOR-1 ..

SB12 - INTERIOR-WALL AREA = 135.7 NEXT-TO SPACE2-1
CONSTRUCTION = SB-U ..

SB14 - INTERIOR-WALL LIKE SB12 NEXT-TO SPACE4-1 ..

SB15 - INTERIOR-WALL AREA = 608 NEXT-TO SPACE5-1
CONSTRUCTION = SB-U ..

SPACE2-1 - SPACE SPACE-CONDITIONS = OFFICE
AREA = 456 VOLUME = 3648
NUMBER-OF-PEOPLE = 5 ..

RIGHT-1 - EXTERIOR-WALL HEIGHT = 8 WIDTH = 50
X = 100 Y = 0 Z = 0 AZIMUTH = 90
CONSTRUCTION = WALL-1 ..

WR-1 - WINDOW WIDTH = 25 ..

C2-1 - INTERIOR-WALL AREA = 456 NEXT-TO PLENUM-1
CONSTRUCTION = CLANG-1 ..

F2-1 - UNDERGROUND-FLOOR AREA = 456 CONSTRUCTION = FLOOR-1 ..

SB23 - INTERIOR-WALL AREA = 135.7 NEXT-TO SPACE3-1
CONSTRUCTION = SB-U ..

SB25 - INTERIOR-WALL AREA = 208 NEXT-TO SPACE5-1
CONSTRUCTION = SB-U ..

SPACE3-1 - SPACE LIKE SPACE1-1 ..

BACK-1 - EXTERIOR-WALL HEIGHT = 8 WIDTH = 100
X = 100 Y = 50 Z = 0 AZIMUTH = 0

Notice the input hierarchy: space, then wall in that space, then window in that wall

This is the ceiling of SPACE2-1. It is shared by the plenum.
(The plenum also shares the ceilings of the other four occupied spaces)

Copies the SPACE-CONDITIONS, VOLUME, AREA, and NUMBER-OF-PEOPLE data from SPACE1-1 and applies them to SPACE3-1. The walls and floor from SPACE1-1 are not copied.

WB-1	- WINDOW	CONSTRUCTION = WALL-1 ..
		WIDTH = 45 ..
C3-1	- INTERIOR-WALL	AREA = 1056 NEXT-TO PLENUM-1
		CONSTRUCTION = CLNG-1 ..
F3-1	- UNDERGROUND-FLOOR	AREA = 1056
		CONSTRUCTION = FLOOR-1 ..
SB34	- INTERIOR-WALL	AREA = 135.8 NEXT-TO SPACE4-1
		CONSTRUCTION = SB-U ..
SB35	- INTERIOR-WALL	AREA = 608 NEXT-TO SPACE5-1
		CONSTRUCTION = SB-U ..
SPACE4-1	- SPACE	SPACE-CONDITIONS = OFFICE
		AREA = 456 VOLUME = 3648
		NUMBER-OF-PEOPLE = 5 ..
LEFT-1	- EXTERIOR-WALL	HEIGHT = 8 WIDTH = 50
		X = 0 Y = 50 Z = 0 AZIMUTH = 270
		CONSTRUCTION = WALL-1 ..
WL-1	- WINDOW	WIDTH = 25 ..
C4-1	- INTERIOR-WALL	AREA = 456 NEXT-TO PLENUM-1
		CONSTRUCTION = CLNG-1 ..
F4-1	- UNDERGROUND-FLOOR	AREA = 456
		CONSTRUCTION = FLOOR-1 ..
SB45	- INTERIOR-WALL	AREA = 208 NEXT-TO SPACE5-1
		CONSTRUCTION = SB-U ..
SPACE5-1	- SPACE	SPACE-CONDITIONS = OFFICE
		AREA = 1976 VOLUME = 15808
		NUMBER-OF-PEOPLE = 20 ..
C5-1	- INTERIOR-WALL	AREA = 1976 NEXT-TO PLENUM-1
		CONSTRUCTION = CLNG-1 ..

F5-1 - UNDERGROUND-FLOOR AREA - 1976 CONSTRUCTION - FLOOR-1 ..

END ..
COMPUTE LOADS ..

INPUT SYSTEMS ..

SYSTEMS-REPORT SUMMARY - (SS-A) ..

\$ SYSTEMS SCHEDULES

FAN-SCHED - SCHEDULE THRU DEC 31
(WD) (1.6) (0) (7.8) (-999) (9.18) (1) (19.24) (0)
(WEH) (1.24) (0) ..
In the fan schedule, -999 indicates an optimum start period from 6am to 8 am

HEAT-SCHED - SCHEDULE THRU DEC 31
(WD) (1.8) (55) (9.18) (70) (19.24) (55)
(WEH) (1.24) (55) ..
The heating setpoint of the thermostat is 70F during the day and 55F at night

COOL-SCHED - SCHEDULE THRU DEC 31
(WD) (1.8) (99) (9.18) (78) (19.24) (99)
(WEH) (1.24) (99) ..
The cooling setpoint is 78F during the day

COOLOFF - SCHEDULE THRU DEC 31 (ALL) (1.24) (60) ..
HEATOFF - SCHEDULE THRU DEC 31 (ALL) (1.24) (60) ..
R1 - DAY-RESET-SCH SUPPLY-HI = 60 SUPPLY-LO = 52
OUTSIDE-LO = 30 OUTSIDE-HI = 75 ..
SAT-RESET - RESET-SCHEDULE THRU DEC 31 (ALL) R1 ..
Cooling is available year round when outside temperature is higher than 60F
Heating is available when outside temperature is lower than 60F

\$ ZONE DESCRIPTION

CONTROL - ZONE-CONTROL DESIGN-HEAT-T = 70
DESIGN-COOL-T = 78
HEAT-TEMP-SCH = HEAT-SCHED
COOL-TEMP-SCH = COOL-SCHED
THERMOSTAT-TYPE = REVERSE-ACTION ..

SPACE1-1 - ZONE ZONE-CONTROL = CONTROL
SIZING-OPTION = ADJUST-LOADS
OA-CFM/PER = 20 ..
The minimum ventilation rate per person

The ZONE u-names here in SYSTEMS match the SPACE u-names in LOADS

SPACE2-1	- ZONE	LIKE SPACE1-1	..
SPACE3-1	- ZONE	LIKE SPACE1-1	..
SPACE4-1	- ZONE	LIKE SPACE2-1	..
SPACE5-1	- ZONE	LIKE SPACE1-1	..
PLENUM-1	- ZONE	ZONE-TYPE	= PLENUM
		SIZING-OPTION	= ADJUST-LOADS
		DESIGN-HEAT-T	= 50
		DESIGN-COOL-T	= 95 ..

\$ SYSTEM DESCRIPTION

S-CONT	- SYSTEM-CONTROL	COOLING-SCHEDULE	= COOLOFF
		HEATING-SCHEDULE	= HEATOFF
		HEAT-SET-T	= 65
		COOL-CONTROL	= RESET
		COOL-RESET-SCH	= SAT-RESET
		MIN-SUPPLY-T	= 60 ..

A variable-air-volume system (VAVS) has been selected

SYST-1	- SYSTEM	SYSTEM-TYPE	= VAVS
		SYSTEM-CONTROL	= S-CONT
		FAN-SCHEDULE	= FAN-SCHED
		FAN-CONTROL	= SPEED
		SUPPLY-STATIC	= 5.5
		SUPPLY-EFF	= .55
		NIGHT-CYCLE-CTRL	= CYCLE-ON-ANY
		REHEAT-DELTA-T	= 58
		MIN-CFM-RATIO	= .3
		ECONO-LIMIT-T	= 65
		RETURN-AIR-PATH	= PLENUM-ZONES
		PLENUM-NAMES	= (PLENUM-1)
		ZONE-NAMES	= (SPACE5-1, SPACE1-1, SPACE2-1, SPACE3-1, SPACE4-1, PLENUM-1)

Assignment of spaces (zones) to the VAVS system

END ..
COMPUTE SYSTEMS ..

INPUT PLANT ..