BASIC SKETCH OF THEORY

and

PHYSICAL CHARACTERISTICS OF THE OFFICE FURNITURE

The furniture has the characteristics described in the following sections:

1. THE KEY ELEMENTS
2. CUSTOMER VARIABLES AND BUILDER VARIABLES
3. PRICE OF VARIABLES.
4. MANUFACTURING OF ELEMENTS
5. SPEED OF PRODUCTION.
6. FRANCHISED LOCAL PRODUCTION SHOPS
7. CUTTABLE MODIFIABLE MATERIALS

1. THE FIFTY KEY ELEMENTS

The system consists of about fifty key elements, which are listed below:

1. DOORWAY. A thick doorway.

2. PLATFORM. An elevated wood platform.

3. FLAT CEILING. A flat ceiling with simple geometrical pattern.

4. DOMED OR VAULTED CEILING. A gently domed or vaulted ceiling.

5. COLUMNS. Simple columns, arising out of wall, and stiff and fairly thick.

6. WALL TRELLIS. A valance to the top of the columns, with diamond bracing in it.

7. THICK WALL. A thick enclosure for individual or group work space, with built-in shelves, drawers, cupboards, counter tops...

BOOKCASE

8. OPEN SHELVES. A wall cabinet like bookcase.

9. FRIEZE. A thing which goes around the wall below the ceiling -- with ornaments, or painted decorations on it.

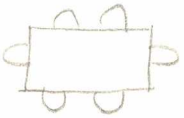
10. LOW WALL. A platform thick wall, about 2 feet high.

11. DESK. A partly enclosed desk, with shelves and drawers at the back of the desk section.

12. LAYOUT TABLE. A larger table, like desk, but deeper, and backed with open shelves.

13. COMPUTER TABLE. A half closed hemispherical space for a computer, with side tables.

14. √TABLE. A conference table, just right for ~~four~~ CONFERENCE people to sit around and talk.



15. CHAIR. An ordinary chair.

16. ARMCHAIR. A more comfortable chair.

17. FOOTREST.

18. SMALL CABINET. A thing like a tool cabinet, that goes below a desk or table.

19. COUNTER WITH DRAWERS. A counter top with shelves underneath it, or drawers.

20. HIGH COUNTER. A higher counter, on legs, with a series of vertical compartments, like record cabinet, and with bookshelves above it.

~~21. WALL SURFACE. A solid blank wall.~~

22. SMALL COMPARTMENTS. A series of small compartments with doors, high on wall.

23. √ built-in CUPBOARD CHEST. A tall chest with enclosed compartments and drawers.

24. SEAT. A long bench with cushions.

25. FILING CABINET. A long and narrow cabinet with filing drawers.

26. STANDING STOOL. a slightly sloping highstool with side seat, for extreme comfort and back posture.

27. CURTAINS. A curtain-like enclosure, on a wall opening or in between columns.

28. BLACKBOARD. A real slate blackboard for drawing, writing.

29. WHITEBOARD. A polished white board for drawing, writing with magic markers.

30. INFORMATION BOARD. A wall board, made of cork or other soft material, appropriate for pinning up paper.

31. MOVABLE LIGHT. Table and desk lights.

out 32. FIXED LIGHTS. Wall and ceiling lights.

33. MAILBOX CABINET. An open cabinet with individual mailboxes.

34. LADDER. A library-like ladder to reach storage compartments, high on walls.

35. ROLLING SIDE TABLE. A side movable table, for auxiliary uses.

Built-in

? 36. DRAWERS. A chest of drawers, built in a thick wall, ~~or movable.~~

? 37. FLOOR. A hardwearing floor surface with simple patterns that can be made uniquely for the space.

38. ALCOVE. A small place, part of a group workspace, for private discussions phone calls...with built-in furniture.

? 39. INTERIOR WINDOW. A wall opening between workplaces, with glazed or solid window.

40. SLIDING DOOR. A sliding door, single or double, with window.

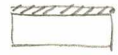
41. SOFA. A comfortable upholstered couch, with pillows.

Built in

? 42. CUPBOARDS. A chest of shelved cupboards, ~~or movable~~.

built-in + thick wall

43. BUILT IN SHELVES. Set of shelves built into a thick wall.



44. LONG HANGING LIGHTS. Long light in splayed shade, for intense work area.

45. CEILING LIGHT. Flat lit panel let into ceiling.

46. SEAT CHEST. A seat with hinged seat portions, and storage underneath.

47. Working counter

48. Lounge table with benches

49. Desk chair

50. Waste basket

2. CUSTOMER VARIABLES AND BUILDER VARIABLES

MANY ASPECTS OF each of these elements are VARIABLE.

Thus, for example, desk can be made with the following variables:

CUSTOMER VARIABLES.

1. Top length
2. Top width
3. Height
4. Height of back.
5. Number of vertical divisions in in back.
6. Number of horzontal division in back.

BUILDER VARIABLES.

7. Thickness of top.
8. Leg thickness.
9. Frame height
10. Size of insert in top.
11. Thickness of vertical dividers on backdrop.
12. Thickness of shelves on backdrop.

There are two kinds of variables here, customer variables, and builder variables.

The customer variables can be specified by customer.

The builder variables will be specified, as a function of the values chosen by the customer. Some of these may be specified by a mathematical function, and will be modified automatically by manufacturer, as a function of those values specified by customer.

Other builder variables, will be fixed by builder or installer, at the time of installation. The builder variables, are intended to make the piece of furniture harmonious, once customer choices of dimensions have been made.

Each element in the system of elements, has a specified two-part system of variables, like the above one.

3. PRICE OF VARIABLES.

The system is designed so that there is no penalty for choosing variables. Each element of furniture has a fixed price, and the key part of the deal, is simply that you can get the element you want, at whatever size you choose.

4. MANUFACTURING OF ELEMENTS

The elements are manufactured in shops whjich function in a way quite similar to that used by a wood window shop. It is set ofup with a system of materials, jigs, etc, so that it can produce custom items, with dimensions chosen by customer, at no special increase of price.

5. SPEED OF PRODUCTION.

It is also essential that the customer does not have to wait for long delivery time. He can get any element, at the dimensions he wants, within a few days of his order... perhaps no more than seven days.

This is essential, to make the process of custom furnishing, compatible with rapid turn around and change in the office. If waiting time is too long, people will be completely inhibited from custom finishing their offices, and will prefer a system of modular parts, no matter how ugly and inconvenient they are.

6. FRANCHISED LOCAL PRODUCTION SHOPS

It also means that the items must be manufactured in local shops, under franchise. If they have to go through shipping warehousing, etc, from Michigan, it can never be done in 7 days, with the necessary level of flexibility.

Thus we imply a series of local franchises, or some other similar mechanism, not yet discussed.

7. CUTTABLE MODIFIABLE MATERIALS

The materials of all elements are made in such a way that they can be joined.

This does NOT mean, joined by bolts, or fasteners.

It means, that the different elements can be joined by glue, nails, and/or other permanent and flexible couplings, just the way that one can cut, nail and glue wood.

It does not mean, however, that the material is mainly wood. We believe that wood should be reserved only for certain rather narrow functions, like dashboard of Jaguar.

This has a great deal of effect on the actual materials. It means thast the whole system of materials, must also have a system of tools and procedures, which make modification and construction very simple, and like a work of CRAFT, not "installation".

An example:

SMALL LAYOUT TABLE

CRITICAL FEATURES

1. The table consists of two elements: the top tray and the structural frame.

2. The top frame overhangs considerably beyond the frame.

3. The overhang is NOT the same all around it; it overhangs more on the two sides than on the front and the back.

4. The table has casters; it has been thought of as a small movable table.

5. The lattice work on the two sides is extremely critical for the character of the table. The shapes on the lattice work are RHOMBS; not squares placed on a diagonal fashion.

SMALL LAYOUT TABLE

VARIABLES

VARIABLES TO BE CONTROLLED BY THE CUSTOMER

There are two variables to be defined by the customer:
1. The height of the small layout table. [H]
2. The width of the top. [W]

VARIABLES TO BE CONTROLLED BY THE BUILDER

Dimensions:

Depth of top.	[D]
Width of frame.	[W1]
Depth of frame.	[D1]
Leg thickness.	[l]
Height of bottom shelf.	[h]
Dimension of rail.	[r]
Top thickness.	[t] ???
Shelf thickness.	[s] ???
Valance dimensions	[v] ???

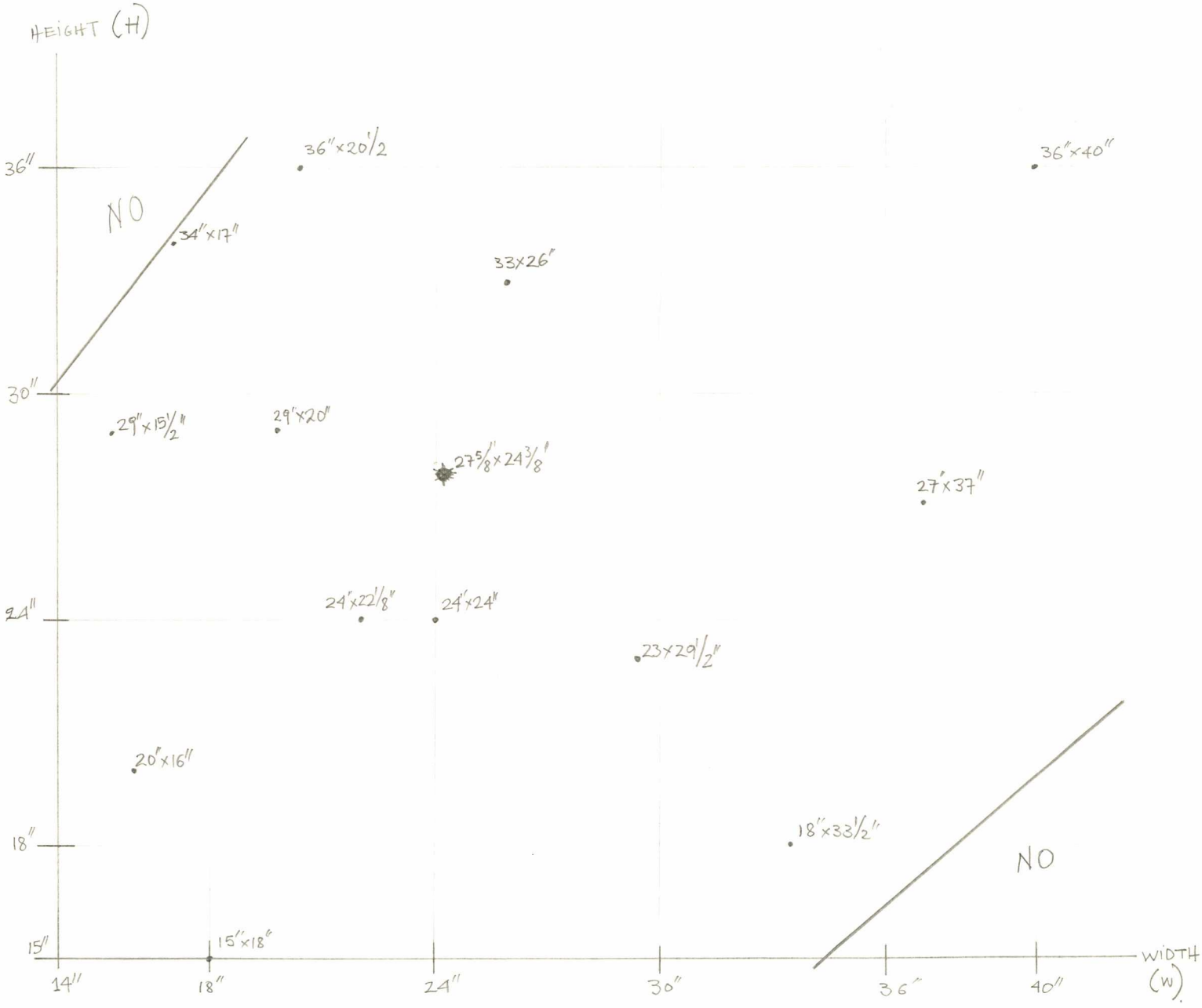
Features:

Existence of bottom shelf.
Existence of valance.
Configuration of lattice.

RANGE OF DIMENSIONAL VARIATION

The height of the small layout table varies from 15" to 36". The width of its top varies from 14" to 40".

The following is a chart that shows the extent of the dimensional variation of the layout table. The sample table that CES has built is 27 5/8" by 24 3/8". It stands somewhere in the center of the chart. The other dots on the chart represent small layout tables of different sizes and proportions; on the basis of their study fundamental relationships and ratios will be established, which will show how the variables to be controlled by the builder will be computed on the basis of the variables defined by the customer.

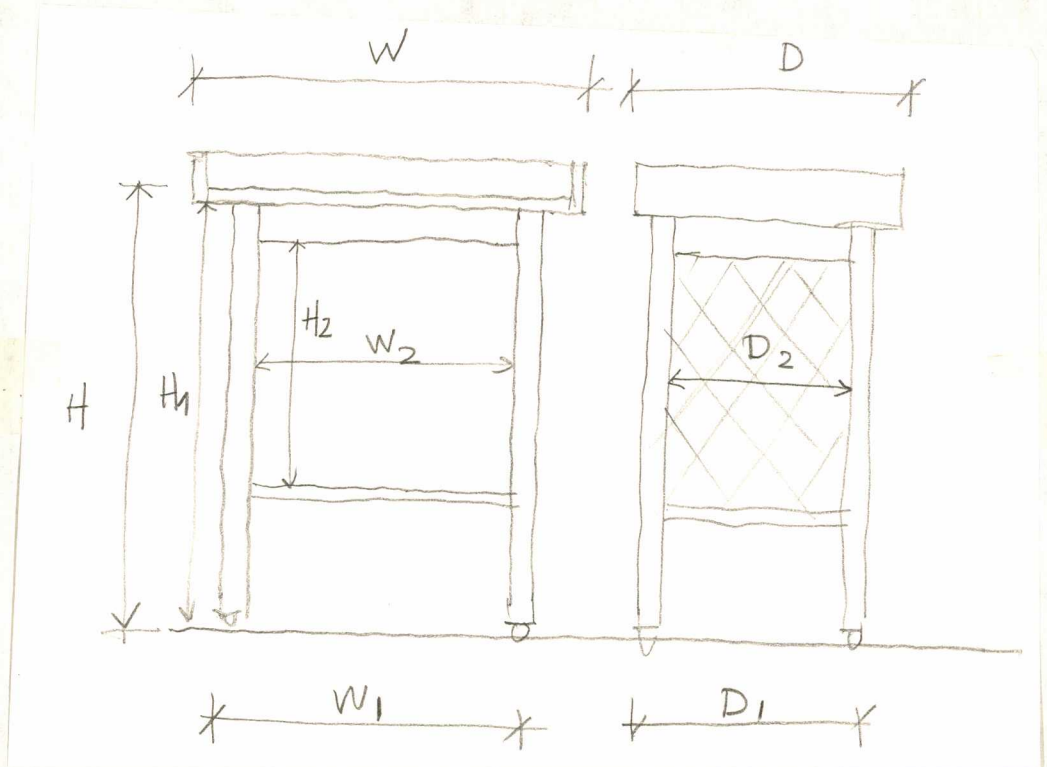

HEIGHT (H)
36"
30"
24"
18"
15"
14"
18"
24"
30"
36"
40"
WIDTH (W)
NO
NO
36"×20 1/2
36"×40"
34"×17"
33×26"
29"×15 1/2"
29"×20"
27 5/8"×24 3/8"
27"×37"
24"×22 1/8"
24"×24"
23×29 1/2"
20"×16"
18"×33 1/2"
15"×18"

SMALL LAYOUT TABLE

CRITICAL PROPORTIONS
IN TABLE BUILT BY CES.

Dimensions:	Height	[H] = 27 5/8"
	Width of top	[W] = 24 3/8"
	Depth of top	[D] = 16"
	Height of frame	[H1] = 26 5/8"
	Width of frame	[W1] = 19 3/4"
	Depth of frame	[D1] = 12 1/2"
	Height of opening	[H2] = 16 1/8"
	Width of opening	[W2] = 16 3/4"

Ratios:	H / W = 1.133
	D / W = 0.656
	D1/ W1 = 0.633
	H1/ W1 = 1.348
	H2/ W2 = 0.962
	H1/ D1 = 2.13
	H2/ W2 = 0.849 H/W



SMALL LAYOUT TABLE

BASIC OBSERVATIONS CONCERNING THE CONFIGURATION, RATIOS AND PROPORTIONS, AS DIMENSIONS CHANGE:

1. Small layout tables which are either too low and too wide, at the same time, (their width is more than twice their height), or which are too high and too narrow, at the same time, (their height is more than twice their width), are to be excluded from the production line. Their geometry is too ungraceful.

2. Very low tables, lower than 18" do not have a bottom shelf and a valance around the top.

Instead, the lattice work is on all sides of the table.

3. The depth of the top is a function of its width. The ratio to be used is D/W=0.656.

However, this ratio does NOT work in cases where the WIDTH OF THE TABLE TOP IS SMALLER THAN 20".

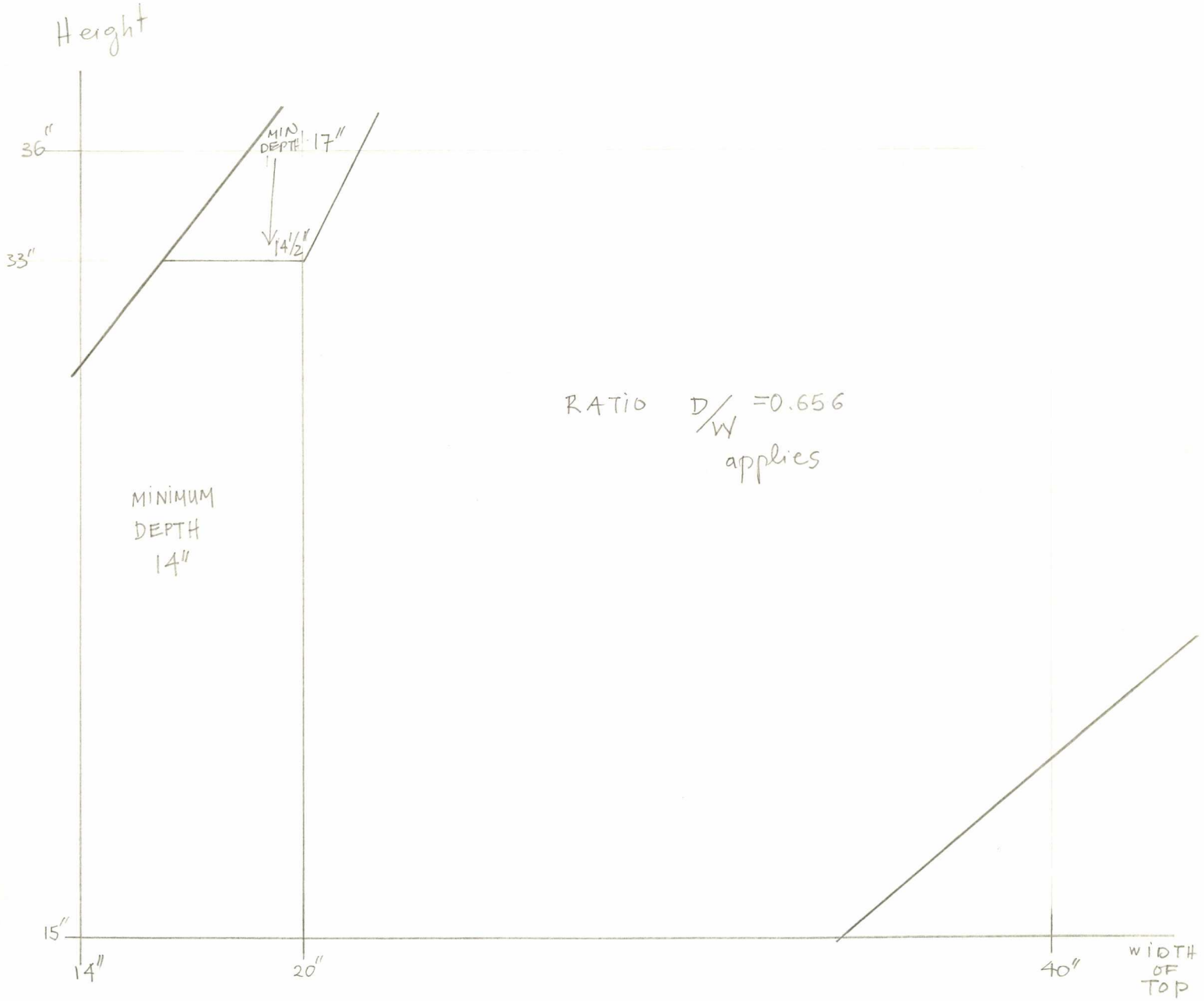
There are two lower limits to the depth of the top:
- the minimum depth of the top is 14"; it applies to the small tables whose height does not exceed 33".

- however, in the cases where the small layout table gets taller than 33", 14" deep top is not enough. A small layout table, 36" high with a 20" wide top, should at least have a top 17" deep. Therefore, when the height of the table varies between 33" and 36", then the minimum dimension of its depth should vary between 14" and 17", proportionately.

4. The thickness of legs varies as follows:

- the thickness of the legs will vary between 1 1/4" and 3". The thickness of the legs is not only a function of the height of the table, but of its width as well. A low and wide table could have as thick legs as a tall table.

DEFINITION OF DEPTH (D)



5. A critical aspect of the table is the size and proportions of its front opening, between the rail and the bottom shelf. We will refer to its proportions as H2/W2; (H2 is the height of the opening and W2 is the width of the opening). In the table CES has built H2/W2 is Ø.962. This ratio can be followed only for tables which are very close in dimensions with the table that was built. In all other tables we have to think of the proportions of the opening as a function of the proportions of the table as a whole --in other words the ratio H2/W2 will have to be defined as a function of the ratio H/W. In the table CES made, H2/W2=Ø.849H/W. The same ratio could be used in all other tables; it has been tried, and it seems that it works well.

DOORWAY

CRITICAL FEATURES

1. The doorway is always part of a thick wall. We tried different dimensions concerning the thickness of the wall; 15" seemed to be unneccessarily too thick. At the same time, less than 13" seemed to be not sufficient enough to support a large opening.

2. The doorways are arched; the shape of the arch is semi-circular. It became clear in the different full-size sketches that we made that an arch which is elliptical or flatter than a semi-circle is too particular to be the archetypal shape of the doorway.

However, an arch which is more than a semi-circle --an elongated semi-circle-- which sits perpendicular to the pillaster capitals might also work.

The shape of the arch has to be really simple. It might be neccessary to develop even simpler doorways than the arched ones; like a simple rectangular opening with no arch. This will become clear by the end of the first experimental phase of the project.

3. The doorway has two pillasters, with capitals, on top of which the arch sits. This feature of the doorway will remain unchanged regardless of the shape of the upper part of the doorway --arched or not arched.

4. One of the most critical dimensions on the configuration of the doorway is the distance between the floor and the capitals. In the experiments we have done, and in the actual doorways we have built it became clear that this distance should not be less than 62". 65" seems to be more correct.

DOORWAY

VARIABLES

VARIABLES TO BE CONTROLLED BY THE CUSTOMER

The only variable to be controlled by the customer is the WIDTH (W) of the doorway.

VARIABLES TO BE CONTROLLED BY THE BUILDER.

Height of doorway. [H]
Width of wall pillasters. [w]
Size of pillaster capital. [c]
Distance between floor and top of capital [h]
h = H-[(W-2)/2]

YET IT IS NOT COMPLETELY CLEAR WHETHER THE SHAPE OF THE ARCH IS ALWAYS SEMI-CIRCULAR, OR NOT. IF THE ARCH HAS ALWAYS THE SAME SHAPE, THEN THIS IS NOT A VARIABLE. HOWEVER, IN CASE THE SHAPE OF THE ARCH VARIES, THEN THE QUESTION IS WHO HAS THE FINAL DECISION ON IT, THE CUSTOMER OR THE BUILDER.

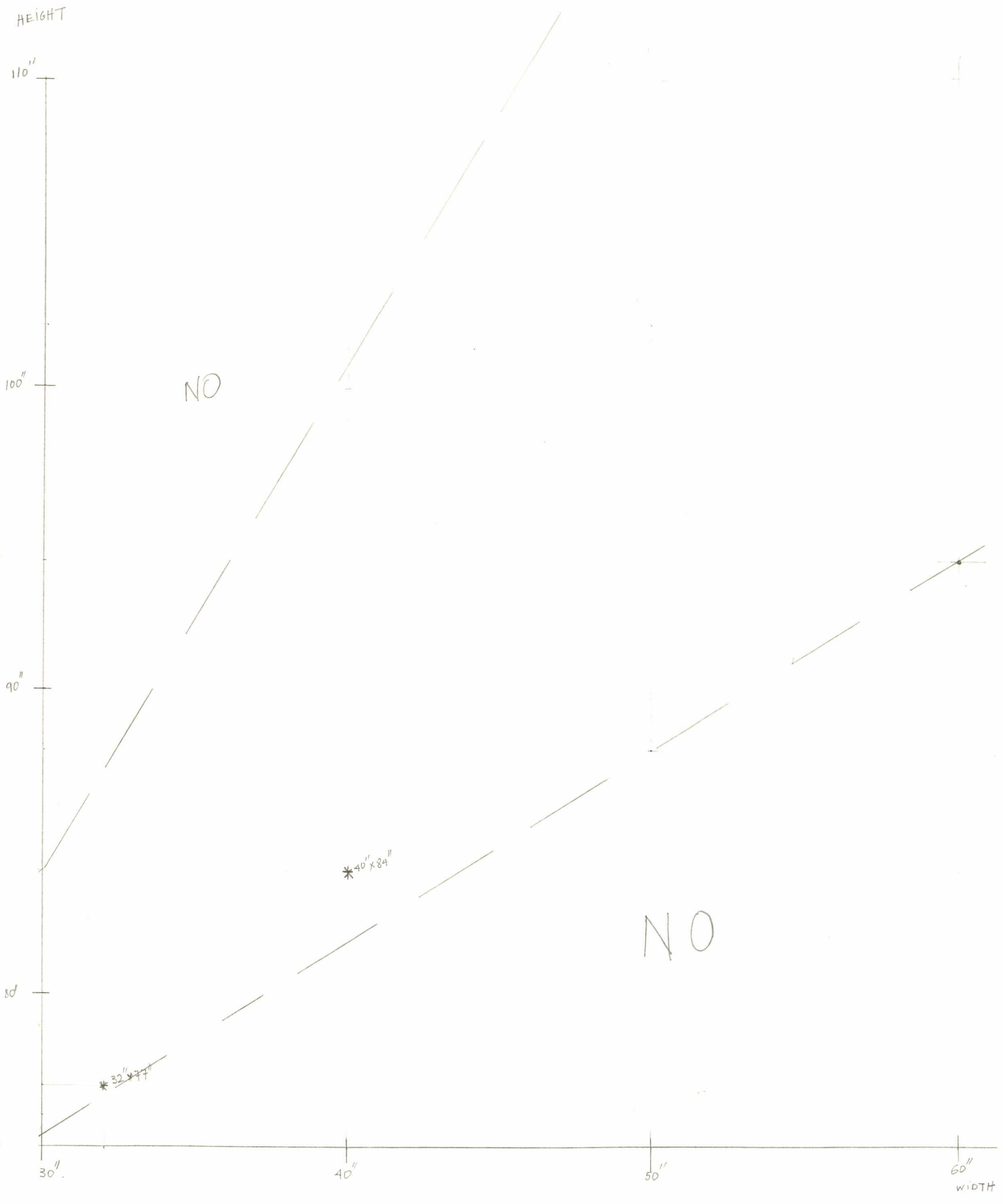
RANGE OF DIMENSIONAL VARIATION.

The width of the doorway varies from 30" to 60"; the height of the doorway varies from 75" to 110".

The following is a chart that shows the extent of the dimensional variation of the doorway. CES has built so far two doorways: the one, 32" by 77", is a sample of a very small doorway; the other, 40" by 84" is a medium size doorway.

The equation 65"+(W-2)/2 defines the minimum height for any given width of the doorway, given that the arch is semi-circular, and its diameter is 2" smaller than the width of the doorway. (As it has been mentioned in the previous page, 65" is the minimum distance between the floor and the top of the pillasters' capital.)

The maximum height of any given width of the doorway depends on the height of the ceiling, as well as on good shape for the doorway.


HEIGHT
110"
100"
90"
80"
NO
NO
*40" x 84"
*32" x 77"
30"
40"
50"
60"
WIDTH

FRIEZE

CRITICAL FEATURES

1. The frieze is an ornamented boundary zone that goes around the wall, below the ceiling. It has color and decorations on it.

2. The height of the frieze is extremely important. Certainly, it depends on the height of the wall and on its length. However, the frieze should be felt as a substantial boundary between the wall and the ceiling, not as a thin band.

The frieze CES built is for a rather low ceiling height --91". The height of the frieze is 21". At some point, we thought that a frieze 21" high would look too heavy and overwhelming in such a low ceiling; therefore, we tried a frieze 15" high. After, we have looked at both of them on a full scale mock-up it became clear that the low one was devoid of the power and feeling of the high frieze.

3. The ornament on the frieze, CES has built, is extremely simple --a series of connected X-bracings. Initially, we had tried a more complicate form of X-bracing, and it seemed to induce a strange quality for office spaces.

4. Yet, it is not completely clear, whether or not the X-bracing ornament will be the only one. Probably, other kinds of ornaments will have to be developed, as well. The criterion for the geometry of the ornament on the frieze should be SIMPLICITY.

FRIEZE

VARIABLES

VARIABLES TO BE CONTROLLED BY THE CUSTOMER

Dimensions: Length of frieze [L]

The customer will have to provide the builder with information concerning the height of the wall, where the frieze will be built.

Features: Type of ornament [O]

VARIABLES TO BE CONTROLLED BY THE BUILDER

Dimensions: Height of frieze [H]
Width of frieze boundary [w]

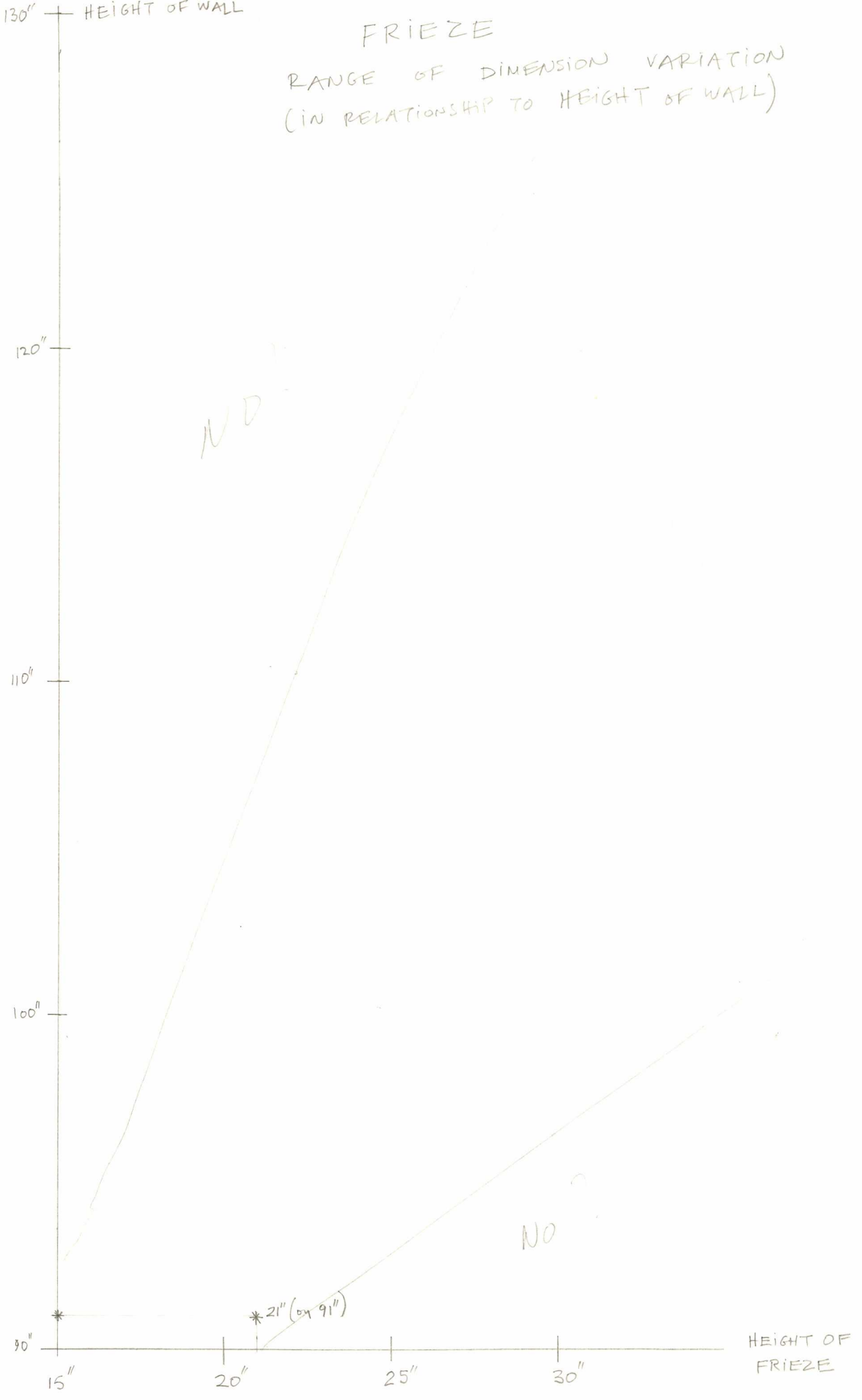
Features: Precise configuration and dimensions of ornament.

RANGE OF DIMENSIONAL VARIATION

The height of the frieze could vary between 15" and 30". [or is 20" the minimum??????] The height of the frieze will be determined as a function of the height of the wall. The following chart shows the range of dimensional variation of the frieze in relationship to the height of the wall. The frieze CES has built is marked with an asterisk on the chart.

FRIEZE

RANGE OF DIMENSION VARIATION
(IN RELATIONSHIP TO HEIGHT OF WALL)



SLIDING DOOR

CRITICAL FEATURES

1. The minimum thickness of a wall with a sliding door is 5 3/4".

2. The door is solid and it is made out of panels.

3. The sliding door could be single or double, depending on the width of the opening.

SLIDING DOOR

VARIABLES

VARIABLES TO BE CONTROLLED BY THE CUSTOMER

Dimensions: Width of opening [W]

Features: Window or no window
Single or double

VARIABLES TO BE CONTROLLED BY THE BUILDER

Dimensions: Height of door [H]
Size of window [w]

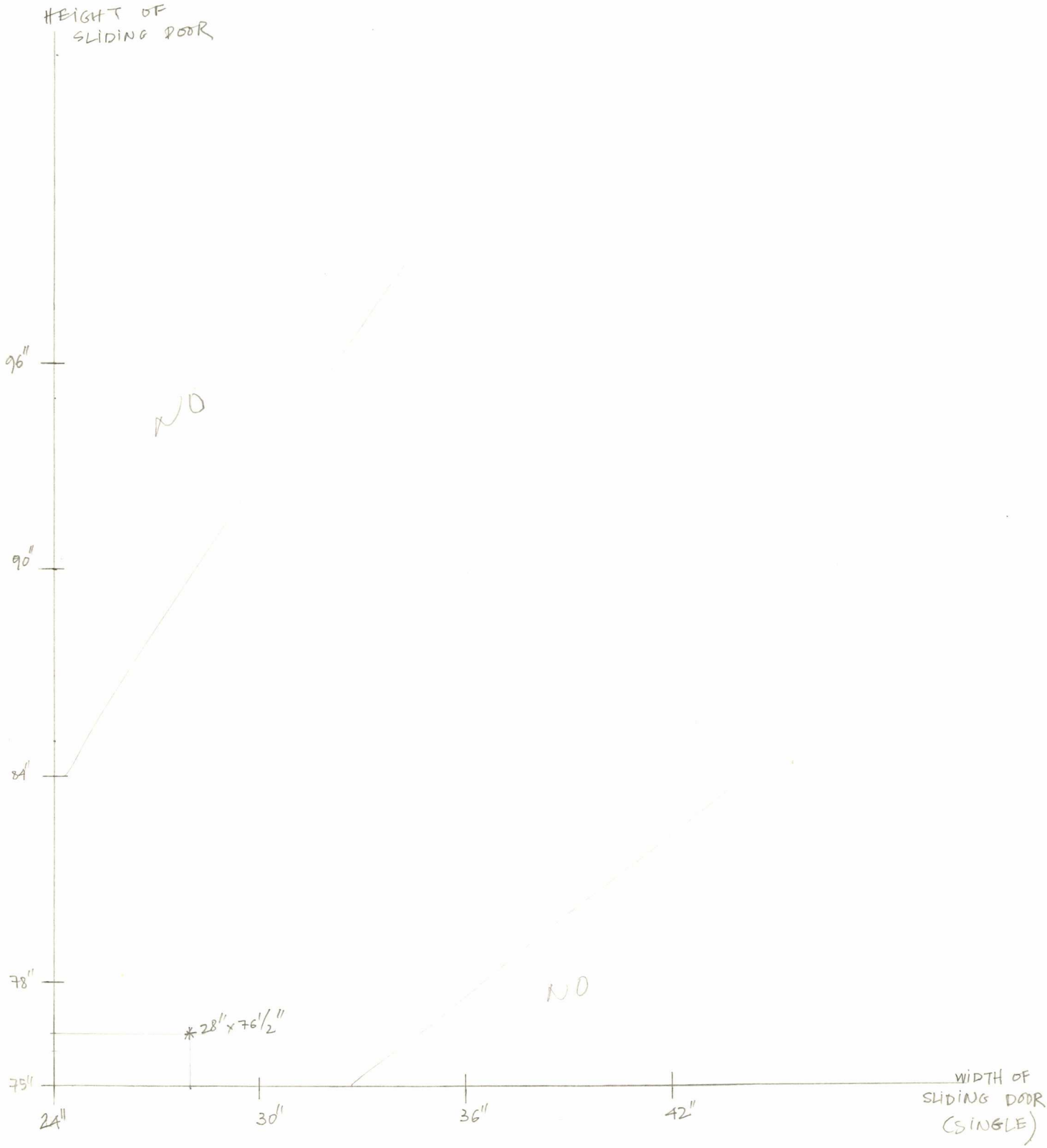
Features: Detailed configuration and dimensions of door members.

RANGE OF DIMENSIONAL VARIATION

The width of the sliding door could vary from 24" to 42". These limits refer to a single sliding door. The height of the door could vary between 75" and 96". The following is a chart that shows the dimensional variation on the sliding door. The door built by CES, 28" by 76 1/2" is marked by an asterisk.

SLIDING DOOR

RANGE OF DIMENSIONAL VARIATION



THICK WALL

CRITICAL FEATURES

1. The thick wall is an enclosure appropriate both for the individual and the group workspace.

2. The thick wall extends always from floor to ceiling.

3. The thick wall has built-in shelves, drawers, cupboards. Therefore, its depth is one of its most crucial features; a wall less than 13 1/2" deep becomes meaningless.

4. The structuring element of the thick wall, which repeats itself, is the bay. Each bay is defined by vertical ribs, which extend from floor to ceiling.

5. The width of the bays could vary from 17" to about 38" (clear opening between ribs). It is according to the particular situation in the office that the width of the bays will be defined. However, the bays within the same wall should be of equal width, unless there is a particular and serious reason for not being so. In any case, the size of the bays will not be standardized.

6. The thick wall has a base and a top, with substantial height each one of them. Both the base and the top of the wall are always solid. However, wherever neccessary, the top of the wall could be sudstituted by the frieze or the small compartments.

7. The ribs of the thick wall are not visible at its top part; but, they are visible from that point downwards, until they reach the floor. We have reached this conclusion after a series of experiements; we tried a configuration in which the ribs were visible all the way from floor to ceiling; and then, we tried another one, in which the ribs were just visible in the main part of the wall, between the base and the top. None of them was as coherent as the one in which the ribs are just covered on the top part of the wall.

8. All built-ins --shelves, drawers, cupboards-- extend between the two ribs of the bay. Therefore, the width of the bay defines approximately the width of the shelves, drawers and cupboards.

9. The depth of the built-in shelves is not neccessarily the same as that of the wall. Quite often, the depth of the shelves is less than that of the wall, especially when the depth of the wall is more than 13" and the opening of the bay rather small. In this case, there is a back for the shelves, different from the back side of the wall.

10. The depth of the thick wall has to be the same from floor to ceiling. We have reached this conclusion after we had tried another type of thick wall, in which the lower part, about 42" from the floor, was wider than the rest of the wall. however, it was not as pleasant to be next to this wall, with differentiated depth, as it was to stand next to the other, completely straight, thick wall.

THICK WALL

VARIABLES

VARIABLES TO BE CONTROLLED BY THE CUSTOMER

Dimensions of wall:

- Length [L]
- Height [H]

(The height of the wall is the same as the height of the existing space, from floor to ceiling).

Features of wall:

- Number of bays ????
- Type of built-ins:
  - shelves
  - drawers
  - cupboards
- Approximate location of built-ins, on the wall ?????

Dimensions of built-ins:

- Depth of shelves [d1]
- Depth of drawers/cupboards [d2]
- Number of shelves [s-#]
- Number of drawers [d-#]
- Number of cupboards [c-#]

VARIABLES TO BE CONTROLLED BY THE BUILDER

Dimensions of wall:

- Depth of wall [D]
- Width of bays [W]
- Height of base [h1]
- Height of top [h2]
- Width of rib [w]

Features of wall:

- Precise configuration of wall

Dimensions of built-ins:

- Height of shelves [s-h]
- Height of drawers [d-h]
- Height of cupboards [c-h]
- Width of cupboard door [c-w]
- Thickness of shelves [s-t]
- .....

RANGE OF DIMENSIONAL VARIATION

The HEIGHT OF THE THICK WALL will always be the same as the height of the existing space. We can assume that the height will vary between 90" and 130".

The DEPTH OF THE THICK WALL will vary between 13 1/2" and 15". (Probably 16" could be the maximum ???????).

The WIDTH OF THE BAY in the thick wall will vary between 17" and 38" (clear opening between ribs).

The WIDTH OF THE RIB will vary according to the height of the wall and the width of the bay. The minimum dimension of the front face of the rib is 6".

The HEIGHT OF THE TOP AND THE HEIGHT OF THE BASE will vary in proportion with the height of the wall and the width of the bays. However, there is no variation of these dimensions within the same wall, or within the same space. The minimum height of the base is 11 1/4" and the minimum height of the top is 17 1/4".

The thick wall that CES has built is of the smallest possible height, and has only built-in shelves.
The following are the dimensions of the wall:

Height	[H]	91"
Depth	[D]	15"
Width of bays	[W]	17", 24", 32"
Width of ribs	[w]	6"
Height of base	[h1]	11 1/4"
Height of top	[h2]	17 1/4"
Depth of shelves	[s-d]	10 1/2"
Thickness of shelf	[s-t]	3/4"

SMALL COMPARTMENTS

CRITICAL FEATURES

1. The shape of each compartment is more vertical than horizontal.

2. The compartments are placed on the upper part of the wall, below the ceiling, and they create a continuous band on the wall.

3. The small compartments should extend from one end of the wall to the other, unless there is a serious reason for not being so.

4. The small compartments should be extremely simple in their geometry.

5. The width of each compartment is not defined on the basis of dividing the total lenght of the wall, where the compartments will be, by the number of the compartments. The width of the compartment is a function of its height; because, the shape of the door has to be a coherent and well proportioned entity in itself. Therefore, in quite a lot of cases there will be some left over spaces in the end of the wall, where the compartments are. In cases where the left over spaces are too small, they will be just enclosed, in the form of thin boundary zones at the end of the line of the compartments. In other cases, the left over space might be enough for another compartment, though of smaller size than the rest; this is another way of completing the line of the small compartments to fit in the wall.

SMALL COMPARTMENTS

VARIABLES

VARIABLES TO BE DEFINED BY THE CUSTOMER

Dimensions:	Total lenght	[L]
	Height ?????????	[H]

VARIABLES TO BE DEFINED BY THE BUILDER

Dimensions:	Number of compartments	[#]
	Depth of compartments	[D]
	Width of door	[w]
	Height of door	[h]
	Thickness of top	[t1]
	Thickness of bottom	[t2]
	Thickness of dividers	[t3]

RANGE OF DIMENSIONAL VARIATION

The height of the small compartments will vary from 15" the minimum to 30" the maximum.

The depth of the small compartments will vary from 13" to 18".

The width of the doors of the small compartments is proportional to its height. In any case, the width of each door will vary between 11" and 19".

The small compartments that CES has built are of two sizes: the larger ones are 19 3/4" high and 15 3/4"deep, with the doors 18 1/4" by 15 3/4"; the smaller ones are 17 1/2" high and 15 3/4" deep, with the doors 16" by 14 1/2". In both cases, the thickness of the bottom ,top and dividers is 3/4".

COLUMNS

CRITICAL FEATURES

1. The columns are square, stiff and fairly thick.

2. The columns are always used as a way to create separation between spaces, and at the same time, preserve a considerable degree of connectedness between them. Therefore, the columns should create a continuous enclosure, in the form of a series of bays --a kind of column wall. This enclosure could take different schemes:
- it could just be a series of columns and bays, extending from floor to ceiling, with a beam and/or frieze on top, or
- a series of columns and bays with a low wall, built in between, or
- a series of columns arising out of a low wall, or
- a series of columns and bays, with the bays closed-off with a kind of trellis, or some fabric, in the form of curtains, or beads, or....

3. It took us a series of experiments until we came up with a good sized column. All our experiments referred to 91" high columns. In the beginning we tried a column 4 1/2" by 4 1/2"; that was too thin. Then we tried another, considerably thicker column, about 12" by 12"; that one was too heavy. Finally, for a 91" high column, a thickness 6 1/4" by 6 1/4" was the best.

4. The column has a base and a capital; the capital of the column should be very simple, something that one can see being repeated again and again in an office environment, and not get disturbed by it. In our experiments we had tried a series of different capitals; capitals which overhung considerably on the two sides of the column, with a shape on the sides; capitals which were fairly tall with a trapezoid shape; capitals with rounded sides, and so on.... All of them, though promising

by themselves, were too complicated, and even slightly pretensious, when seen in an office space. Finally, we decided that a very simple sqaure capital, which overhangs all around the column was the best form.

5. In the context of the CES experimental project two different configurations of the column wall have been tried, so far:
- a series of columns extending from floor to ceiling, with a beam on top, and the bays in between completely open.
- a series of columns arising out of a low wall, with fabric --in the form of curtains-- in between the columns, to provide for the required degree of privacy.

6. The beam is an indispensable part of the column; there is no ccolumns without a beam on top, to connect them.

7. In a series of columns, which form a continuous surface, the width of all the bays is the same, unless there is particular situation that asks for differentiation on the width of the bays.

8. The width of the beam is always the same as the depth of the capital. ???????

9. Both the capital and the base of the column are square in section, as the column is square as well.???????

10. Columns on top of low wall do not have base.

COLUMNS

VARIABLES

VARIABLES TO CONTROLLED BY THE CUSTOMER

Dimensions:	Height of existing space	[H]
	Total lenght of wall with columns	[L]
	Number of columns	[N]

VARAIBLES TO BE CONTROLLED BY THE BUILDER

Dimensions:	Width of bay	[W]
	Height of column	[h]
	Thickness of column	[t]
	Height of base	[h1]
	Width of base	[w1]
	Depth of base	[d1]????
	Height of capital	[h2]
	Width of capital	[w2]
	Depth of capital	[d2]????
	Height of beam	[h3]
	Width of beam	[w3]????

RANGE OF DIMENSIONAL VARIATION

In columns which extend from floor to ceiling the height of the column is the same as the height of the existing space minus the height of the beam or frieze on the top.

In columns which arise out of a low wall the height of the column is the same as the height of the existing space minus the height of the low wall and the height of beam or frieze on the top.

The thickness of the column will vary from 6 1/4" to 10 1/2" ?????? depending on its height.

The width of the bays between the columns will vary from 30" the minimum to 48" the maximum. ???????

The dimensions of the capital and the base of the column will vary according to the height and thickness of the column.

The height of the beam on top of the column will vary in relationship with the height of the column.

The following are the dimensions of the columns CES has built:

High columns:

Height of space:	(H) = 91"
Width of bays	(W) = 38"
Height of column	(h) = 87"
Height of beam	(h3)= 4"
Thickness of column	(t) = 6 1/4" by 6 1/4"
Height of base	(h1)= 7 3/4"
Width of base	(w1)= 7 1/4"
Height of capital	(h2)= 2 1/2"
Width of capital	(w2)= 8 1/2"
Width of beam	(w3)= 8 1/2"

Columns, arising out of low wall:

Height of column	(h) = 45"
Width of bays	(W) = 51", 72", 76 3/4"

All other dimensions are the same.

LOW WALL

CRITICAL FEATURES

1. The low wall is an enclosure appropriate primarily for individual work spaces, though it can be used for defining group work spaces.

2. In any case, neither an individual work space, nor a group workspace will be enclosed solely by low walls; when used by themselves, they do not provide the right amount of enclosure in a space.

3. The low wall is thick, usually with a wide top, which overhangs slightly.

4. The low wall does not usually extend above the height of the eyes of a sitting person.

5. The low wall can be used together with columns, in order to provide for a more substantial degree of enclosure.

LOW WALL

VARIABLES

VARIABLES TO BE CONTROLLED BY THE CUSTOMER

Dimensions:
- Length of wall: [L]
- Height of wall: [H]

VARIABLES TO BE CONTROLLED BY THE BUILDER

Dimensions:
- Depth of wall: [D]
- Thickness of top: [t]
- Depth of top: [d]

Features:
- Detailed articulation of wall, in terms of trims, baseboard, and so on...

DIMENSIONAL VARIATION

The height of the low wall varies from 24" to 48".

The depth of the low wall varies from 6 1/2" to 18".

The lenght of the low wall,in any particular workspace enclosed by it, is not more than 25% of the total perimeter of the space.

The depth of the low wall is NOT dependent on its height; however, we tend to think that the shorter the low wall gets, the more its depth should increase.

The low wall that CES has built is 42" high and 6 3/4" deep, with a top 1 1/2" thick and 7 1/2" deep, and a baseboard 5 1/4" high. (That particular low wall was built together with a series of columns on top of it, and its dimensions were decided in relationship with an existing handrail, since the handrail was incorporated in it.)

CUPBOARD CHEST

CRITICAL FEATURES

1. The cupboard chest combines the advantages of drawer and cupboard space. The cupboards could have shelves in them for storage of small items, or they could provide for a big space, appropriate for storage of large items --coats, machines, ...

2. The cupboard chest is a movable piece of furniture, VERTICAL in feeling, and therefore its proportions are crucial.

3. The cupboard chest shown in the drawing is just a particular design for one of them. However, it has a definite geometric structure which will have to be followed in all cupboard chests.

4. Each one of the entities of the chest, --the three drawers, and both cupboards-- is distinct, with good proportions, good shape, and a feeling of completeness.

5. The configuration of every cupboard chest is not the same. It is almost certain --though not tried yet-- that its basic dimensions, particular to every chest, will have a strong impact on its particular configuration .

6. The chest has no feet; instead it has a rather substantial base molding.

7. The cupboards may be single or double; they may be built both at the bottom and top of the chest with drawers in the middle. However, it seems essential that the top of the chest is occupied by cupboards than by drawers.

8. The cupboard doors are made out of a flat panel, sunken into a sharply edged frame.

9. The cupboard doors are bordered with vertical panels.

9. The drawers of the chest could start from the bottom of the chest, and they could be single or in pairs, depending on the width of the chest. When closed, they are always on the same plane with their frame.

10. The chest is characterized by symmetry. Not neccessarily an overall symmetry, but certainly local symmetries are crucial to its configuration.

CUPBOARD CHEST

VARIABLES

VARIABLES TO BE CONTROLLED BY THE CUSTOMER

Features:	Number of drawers	[d-#]
	Shelves or no shelves in cupboards	[s-?]
	Number of shelves enclosed by cupboards	[s-#]
Dimensions:	Width	[W]
	Average height of drawer	[d-h]

VARIABLES TO BE CONTROLLED BY THE BUILDER

Features:	Overall configuration of chest	
	Number of cupboards	[c-#]
	Location of cupboards	
	Location of drawers	
	Configuration of cupboard door	
Dimensions:	Height	[H]
	Depth	[D]
	Height of cupboard doors	[h1]
	Width of cupboard doors	[w1]
	Height of drawers	[h2]
	Height of base molding	[h3]
	Height of top molding	[h4]
	Size of panels next to cupboard doors	[f1]
	Size of frame for drawers	[f2]
	Frame of cupboard door	[f3]

RANGE OF DIMENSIONAL VARIATION

The height of the cupboard chest varies between 70" and 90".

The width of the chest varies between 20" and 50".

The depth of the cupboard chest varies between 12" and 22".

The cupboard chest that CES has designed has the following arrangement: a double cupboard, rather low, built at the bottom, another higher double cupboard built at the top, with a set of three drawers in between. The dimensions of the cupboard chest:

Height	[H]	= 90"
Width	[W]	= 41"
Depth	[D]	= 18 1/4"
Height of base cupboard	[h1]	= 16"
Height of top cupboard	[h1']	= 41"
Width of cupboards	[w1]	= 30"
Height of drawers	[h2]	= 8 1/2"
		7 1/2"
		7"
Height of base	[h3]	= 5"
Height of top molding	[h4]	= 1"
Width of vertical panels next to cupboard doors	[f1]	= 5 1/2"
Frame of drawers	[f2]	= 1"
Frame of cupboard door	[f3]	= 2 1/2"
		5 1/2"

PROPORTIONAL RELATIONSHIPS

Some equations have to be defined which will specify the height of the cupboard chest as a function of its width.

However, it is almost certain that there will be a series of equations, instead of one, since the heigth of the chest is not neccessarily proportional to its width --one can easily imagine equally beautiful chests of the same width but with different heights.

It seems likely that a new equation will have to be defined for every narrow spectrum of width variation.