Section 7. Illustrative Criteria Applications

7-1 GENERAL. The illustrative criteria applications in this section are for the following types and sizes of facilities.

Example	Size (gross floor area)
1 - Joint Club	15,649 s.f.
2 - Officers Club, Small	1,273
3 - Officers Club, Medium	7,806
4 - Officers Club, Large	25,494
5 - NCO Club, Small	9,217
6 - NCO Club, Medium	17,609
7 - NCO Club, Large	26,051

JOINT CLUB

7-2.1 STEP A - SPACE PROGRAM: The space program shown in Figure 7-1 provides for a single facility incorporating two functionally separate clubs sharing a common kitchen. Half of the program area for each generic space is provided for each' club (thus each, dub has dining room of 13,053 s.f.). However, the kitchen and mechanical spaces are shared. The military strengths served are: Officers Club, 150-250; NCO Club, 401-750. Based on DOD 4270.1-M, a pool is provided for only the Officers' Club.

Figure 7-1 Space Program for Joint Club

Generic Space	Program Area	% Gross Area
1 - Entry	809	5.2
2 - Dining Room	2,106	13.4
3 - Bar	1 ,343	8.6
4 - Kitchen	3,383	21.6
5 - Multi-use	3,507.5	22.4
6 - Party Rooms		
7 - Recreation Room (Q)	643.5	4. 1
8 - Recreation Room (N)		
9 - Administration	612.5	3.9
10 - Rest Rooms	661.5	4.2
11 - Storage	357	2.3
12 - Maintenance	24	.2
13 - Mechanical	637.5	4. 1
14 - Lockers	(incorporated in staff restrooms)	
Net Usable	14,084.5	90
Gross Area	15,649	100

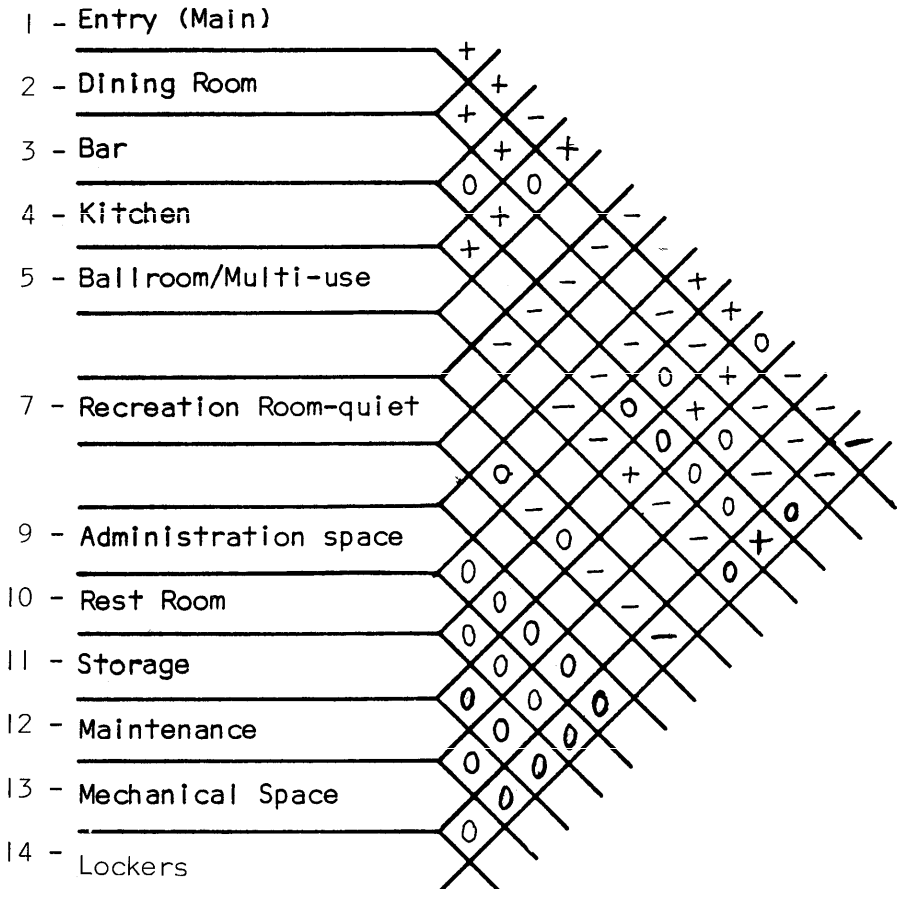
*Dining Room Occupancy: 75 @ 14 s.f./seat
Multi-Use Occupancy: 116 - bingo
134 - banquet

Net usable: gross area ratio: 0.90

For basis upon which the space program is developed, see Sections 2 and 3.

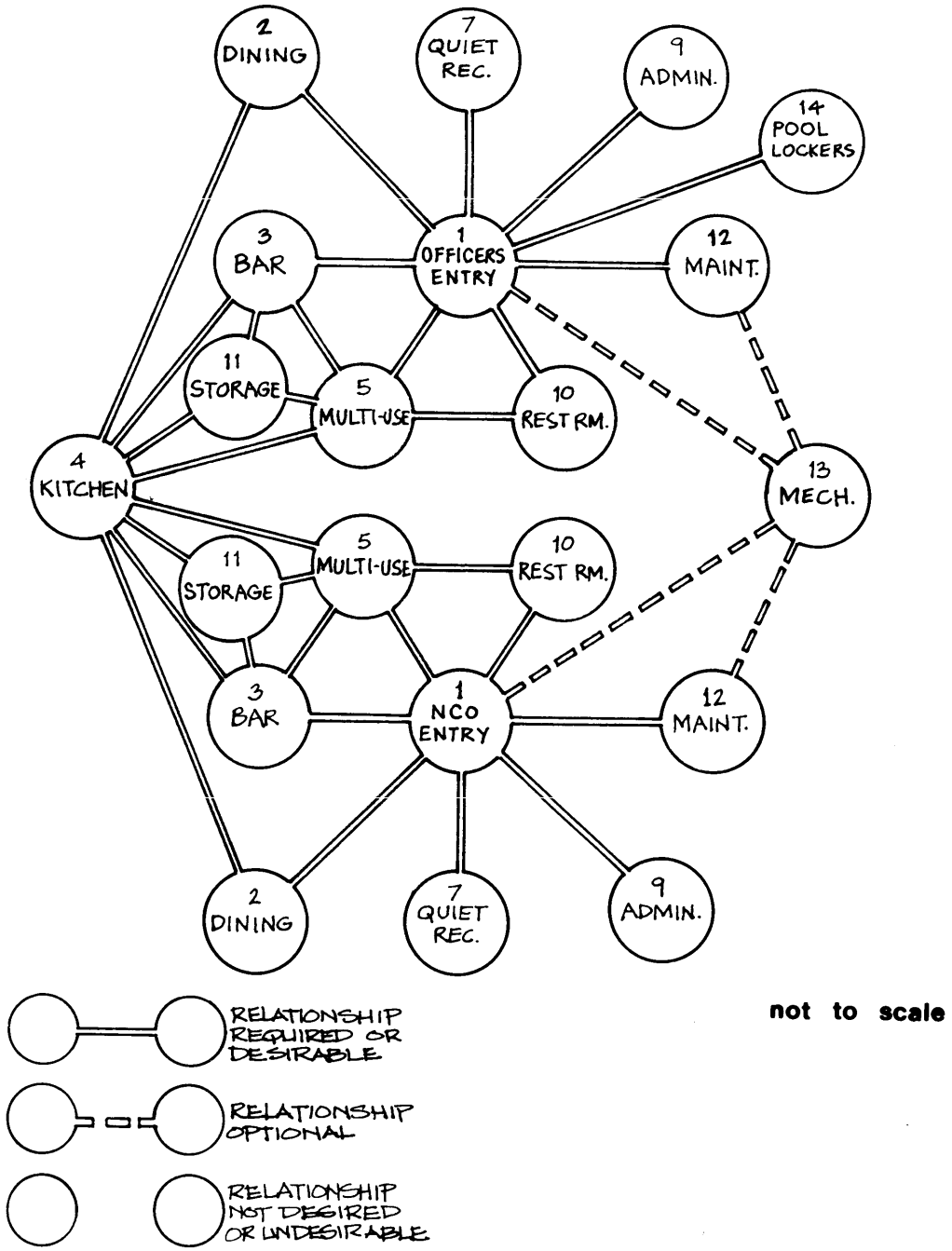
7-2.2 STEP B - AFFINITY MATRIX: The affinity matrix shown in Figure 7-2 indicates relationships-between the generic spaces as being desirable (+), of no consequence (0), or undesirable (-). This is based upon use patterns, acoustic compatibility, mutual support for functional operation, sanitary or other reasons. The matrix is intended to denote the desirability of adjacency or separation per se, and along with the space program, is part of the problem statement generated by the using service.

Figure 7-2 Affinity Matrix for Joint Club



7-2.3 STEP C - AFFINITY DIAGRAM (NO SCALE)

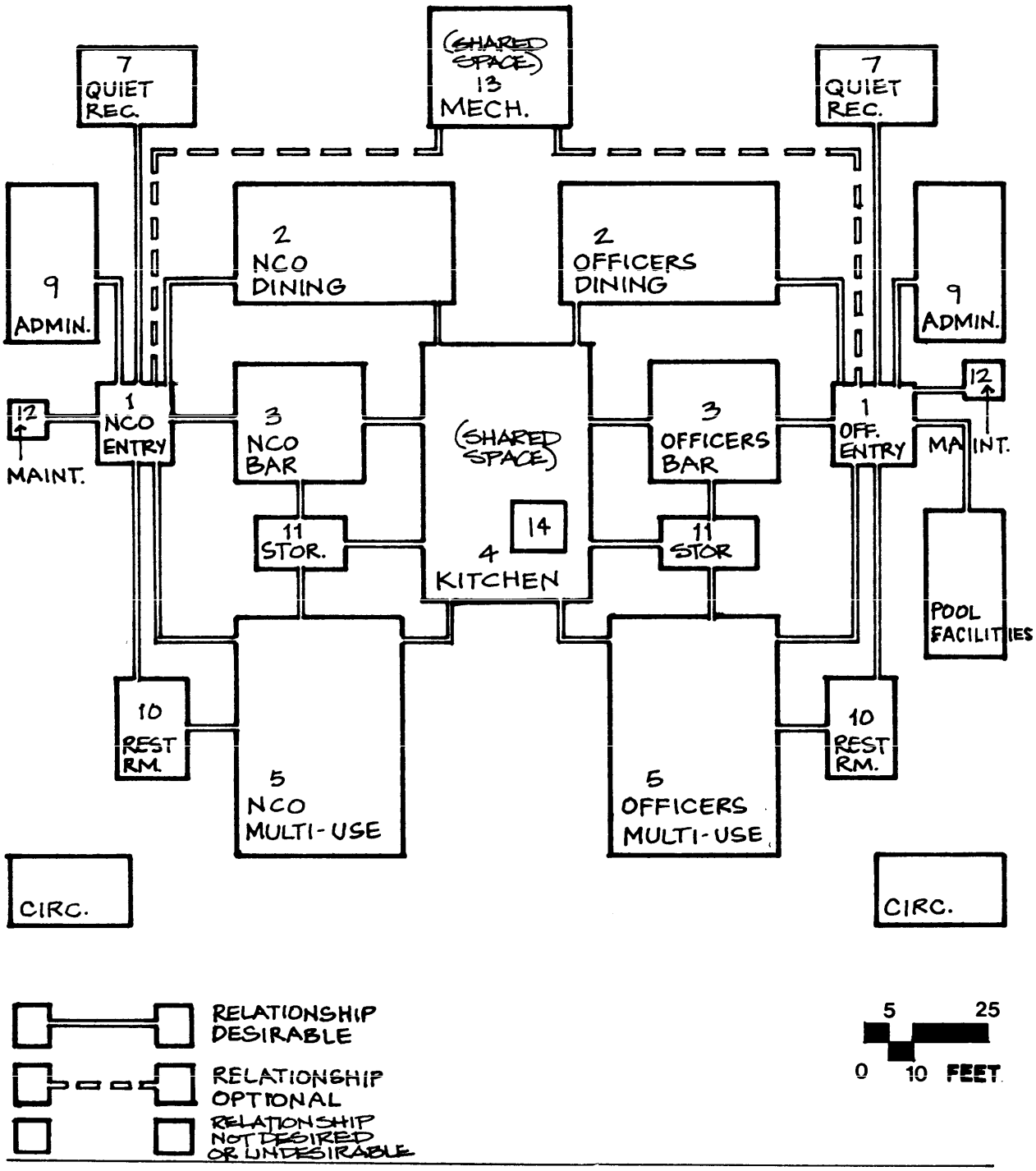
Figure 7-3 Affinity Diaqram for Joint Club (no scale)



not to scale

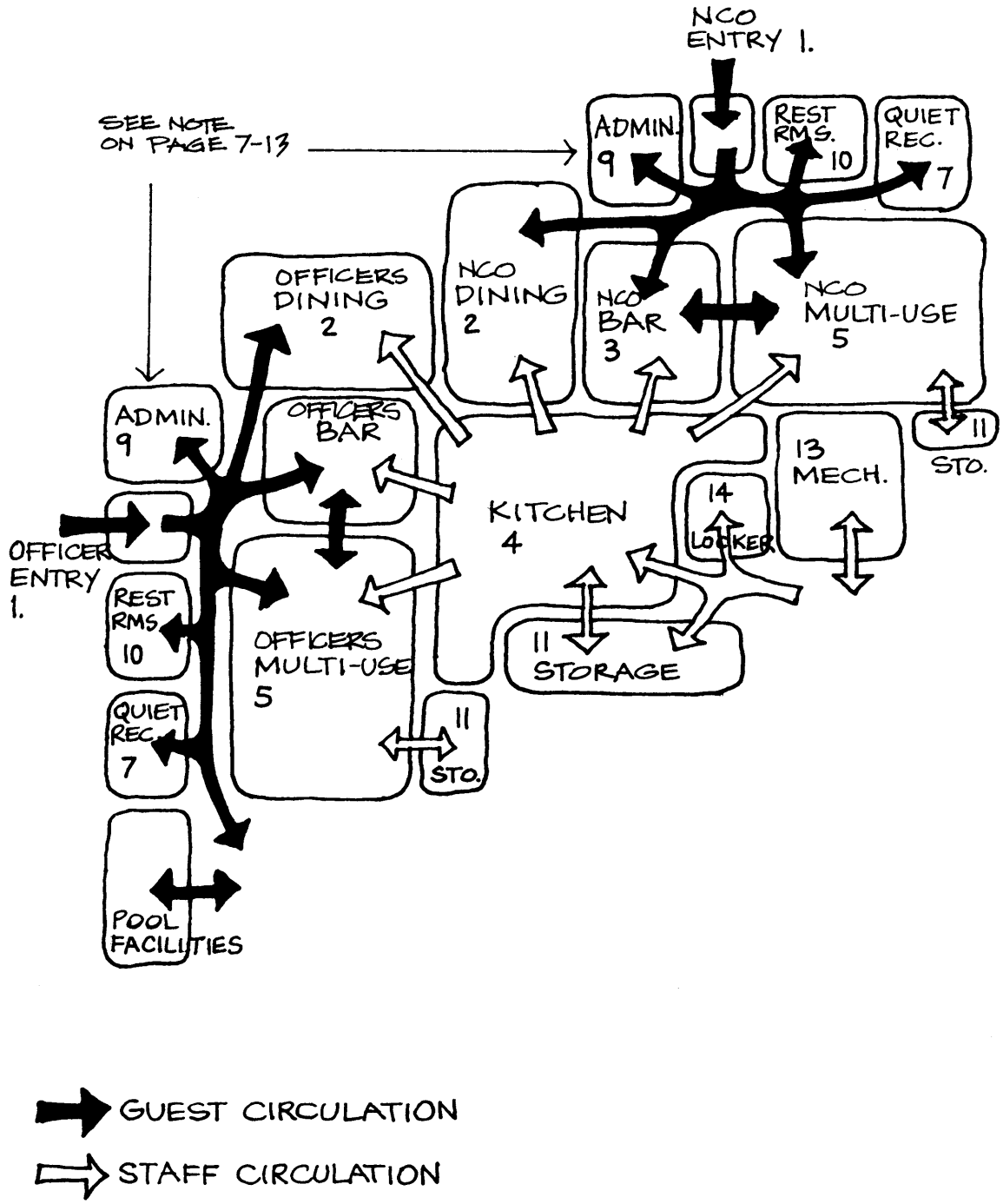
7-2.4 STEP D - AFFINITY DIAGRAM (TO SCALE)

Figure 7-4 Affinity Diagram for Joint Club (to scale)



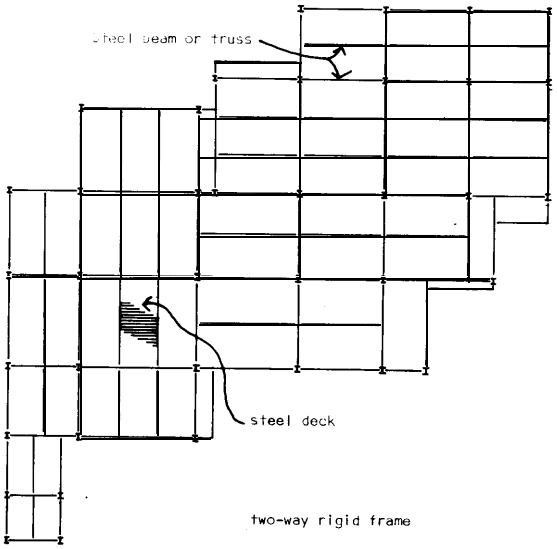
7-2.5 STEP E - PLANNING DIAGRAM

Figure 7-5 Planning Diagram for Joint Club



7-2.6 STEP F - STRUCTURAL FRAMING

7-2.6.1 Structure: Two-way rigid frame, chosen for maximum flexibility of interior space division.



7-2.7 STEP G - SUBSYSTEM CHOICES

7-2,7.1 H.V.A.C.: System appropriate to climate. Separate systems for each club might be appropriate. Peak loads will tend to occur in both clubs simultaneously, so possibility of diversity is unlikely.

7-2.7.2 Envelope: Non-load bearing masonry or insulated panel, since structural frame carries all vertical loads.

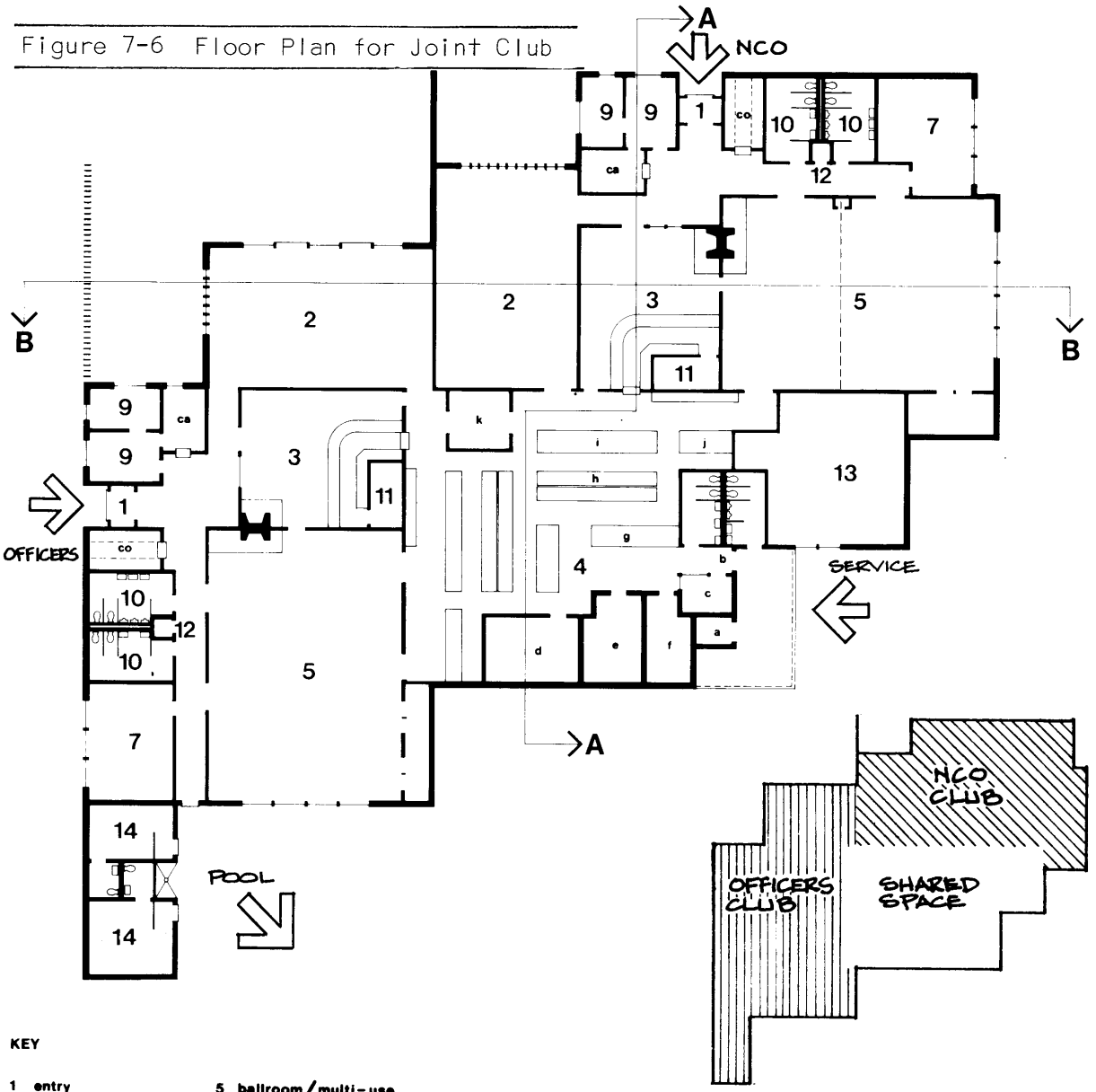
7-2.7.3 Interior partitions: Non-load bearing replaceable partitions. Partition between officers and NCO dining room should provide high standard of sound separation. Operable walls in multi-use room.

7-2.7.4 Ceiling: Grid and panel type, suspended. Kitchen may use direct application to structure.

7-2.7.5 Lighting: Systems appropriate to design requirements.

7-2.8 STEP H - FLOOR PLAN

Figure 7-6 Floor Plan for Joint Club



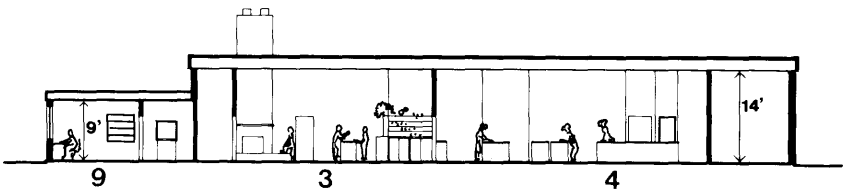
KEY

1 entry
co coatroom
2 dining
3 bar
4 kitchen
a waste holding
b check-in
c chef's office
d dry storage
e refrigerated storage
f freezer storage
g preparation area
h cooking area
i serving area
j banquet make-up
k dishwashing

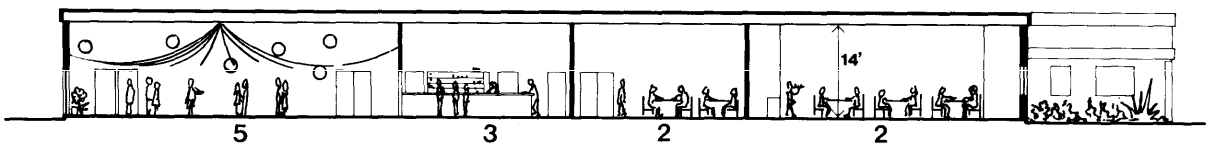
5 ballroom/multi-use
7 quiet recreation
9 administration
ca cashier
10 restrooms
11 storage
12 maintenance
13 mechanical
14 locker room

7-2.9 STEP 1 - SECTIONS

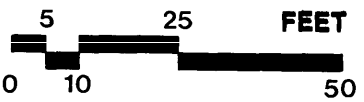
Figure 7-7 Sections for Joint Club



Section A – A

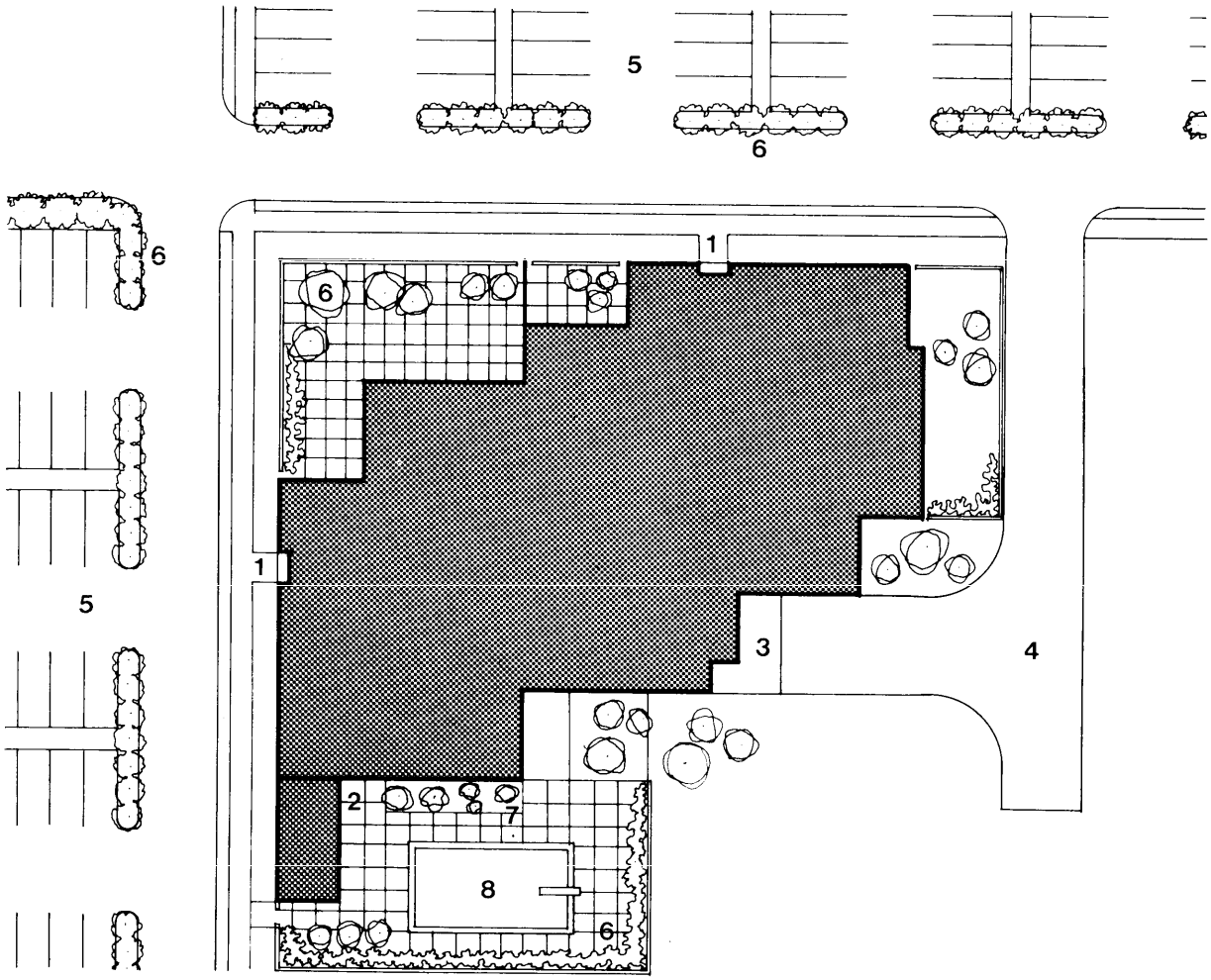


Section B – B



7-2.10 STEP J - SITE PLAN

Figure 7-8 Site Plan for Joint Club



KEY

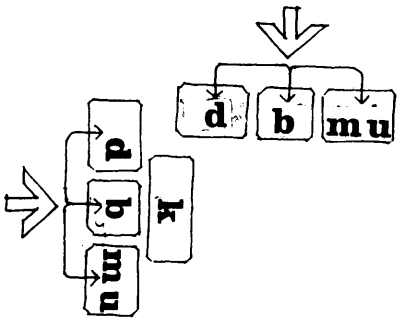
1 main entry
2 secondary entry
3 service entry
4 service access
5 parking
6 screen planting
7 intimate planting
8 officers pool

N
assumed

10 50 FEET
0 25 100

7-2.11 STEP K - DESIGN ANALYSIS

7-2.11.1 Plan type: Combination of two in-line plans.



7-2.11.2 Design assumptions: No specific view or orientation.

7-2.11.3 Planning objectives: Building. Provide for complete separation between officers and NCO's within the club.

7-2.11.4 Planning evaluation: Building.

A. Good separation between officers and NCO's.

B. Two dining rooms well located for service, yet separation preserved.

7-2.11.5 Planning objectives: Site. Provide separate entries and parking to officers' and NCOs' clubs.

7-2.12 STEP L - PLANNING ALTERNATIVES

7-2.12.1 Administration space: The example floor plan for this facility shows separate administration areas for this officers and NCO club. Construction economies, and possibly also operating economies, can be realized if these spaces are consolidated into one administration area serving the two clubs. However, such an arrangement is dependent upon a management decision that places the clubs under a single management.

7-2.12.2 Storage: Additional economy may be achieved by providing a central storage area serving both clubs.

7-2.13 STEP M - UTILITY & THERMAL LOADS

7-2.13.1 Building data

A.	Gross floor area	15,649 s.f.
B.	Max. population at one time	550
C.	Max. meals served/day	800

7-2.13.2 Utility loads

A.	Electrical: Light and power	465 kva
B.	Water: Max. flow rate, cold water	96 gpm
	Max. flow rate, hot water	96 gpm
	Total flow per day	8,000 gal.
C.	Sewage: Total gallons per day	8,000 gal.

7-2.13.3 Heating and cooling loads

A.	Heating: Load	463 MBTU/hr.
B.	Air conditioning: Tons of refrigeration	59 tons

7-2.13.4 Design assumptions

All policy and design criteria per DOD 4270.1-M.

A. Estimates are for plans shown.

B. 40° North latitude.

C. Heat load in kitchen not included in heat gain calculations.

D. Mechanical room ventilated only.

E. Single glazing, standard glass.

F. 20% outside air assumed for ventilation

G. Assumed perimeter heat loss: 40 BTU/hr./ft.

H. Sewage demand based on 10 gpd per person, max. occupancy.

I. Lighting load assumed 2.5 watts/s.f.

7-3 SMALL OFFICERS CLUB

7-3.1 STEP A - SPACE PROGRAM: The space program shown in Figure 7-9 provides a club that is planned as a single space-arranged as a cafe and cocktail bar. Such a facility might be an annex to a main club, or be provided on a small installation, and would probably be remodeled from available existing space. With these assumptions, planning design process steps C, D, E, F, and G do not apply, and are omitted. The military strength served is 29 officers.

Figure 7-9 Space Program for Small Officers Club

	Generic Space	Program Area	% Gross Area
1 -	Entry	56.5	4.4
2 -	Dining Room	474.5	37.3
3 -	Bar	300	23.6
4 -	Kitchen	216	16.9
5 -	Multi-use	---	---
6 -	Party Rooms	---	---
7 -	Rec. Room (Q)	---	---
8 -	Rec. Room (N)	---	---
9 -	Administration	---	---
10 -	Rest Rooms	88	7
1 1 -	Storage	10	.8
12 -	Maintenance	---	---
13 -	Mechanical	---	---
14 -	Lockers	---	---
	Net Usable	1,145	90
	Gross Area	1 ,276	I 00

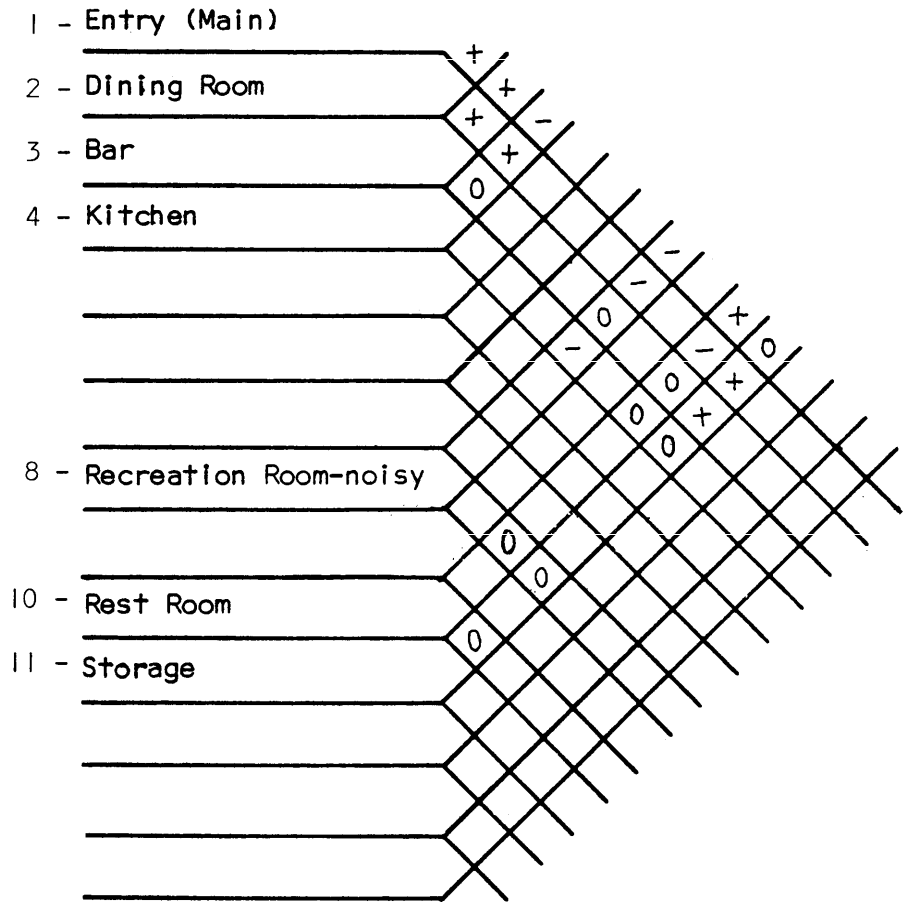
Dining Room Occupancy: 34 @ 14 s.f./seat

Net usable: gross area ratio: 0.90

For basis upon which this space program is developed, see Sections 2 and 3.

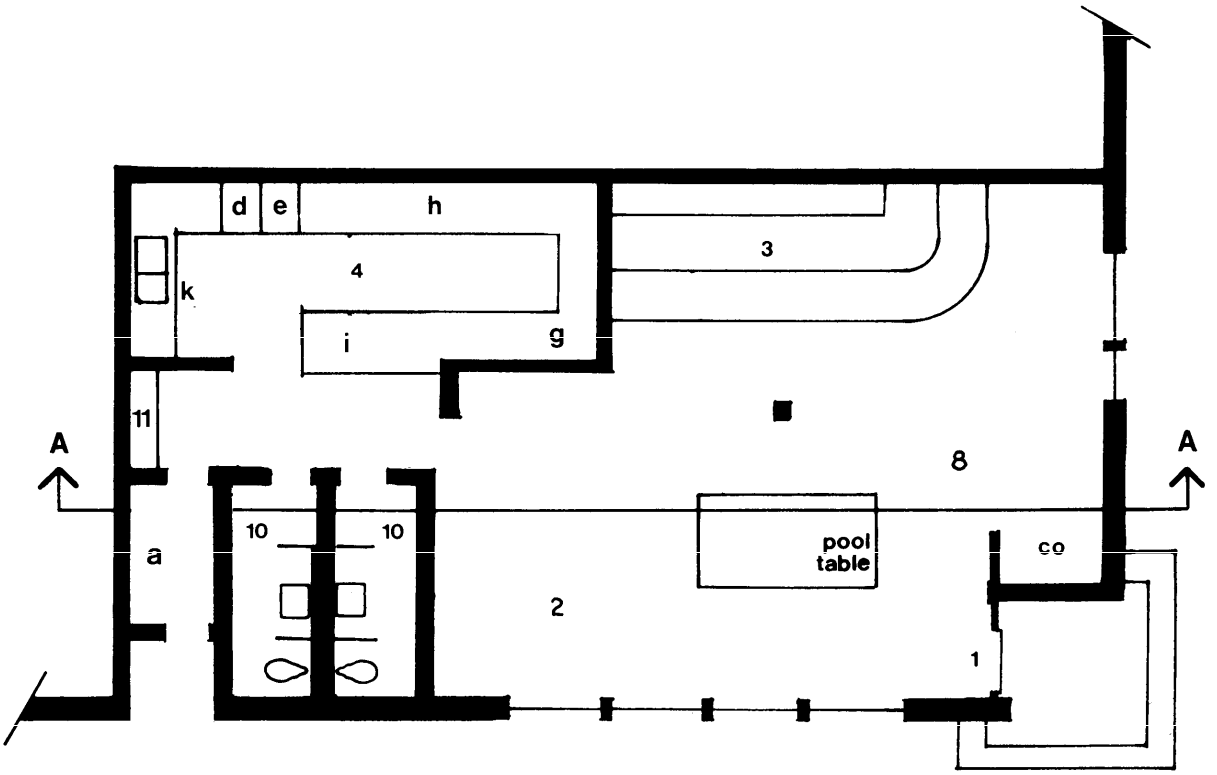
7-3.2 STEP B - AFFINITY MATRIX: The affinity matrix shown in Figure 7-10 indicates relationships between the generic spaces as being desirable (+), of no consequence (0), or undesirable (-). This is based upon use patterns, acoustic compatibility, mutual support for functional operation, sanitary or other reasons. The matrix is intended to denote the desirability of adjacency or separation per se, and along with the space program, is part of the problem statement generated by the using service.

Figure 7-10 Affinity Matrix for Small Officers Club



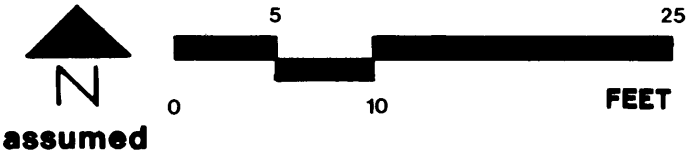
7-3.3 STEP H - FLOOR PLAN

Figure 7-11 Floor Plan for Small Officers Club



KEY

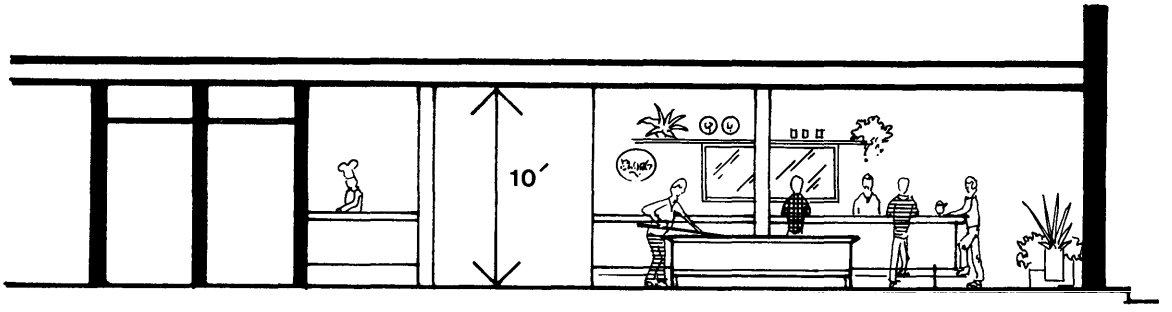
1 entry
co coatroom
2 dining
3 bar
4 kitchen
a waste holding
d dry storage
e refrigerated storage
g preparation area
h cooking area
i serving area
k dishwashing
8 noisy recreation
10 restrooms
11 storage



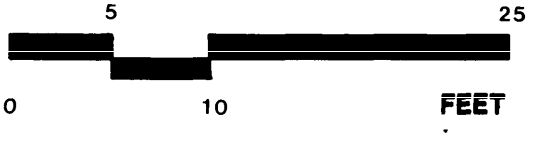
SMALL OFFICERS CLUB

7-3.4 STEP I - SECTION

Figure 7-12 Section for Small Officers Club

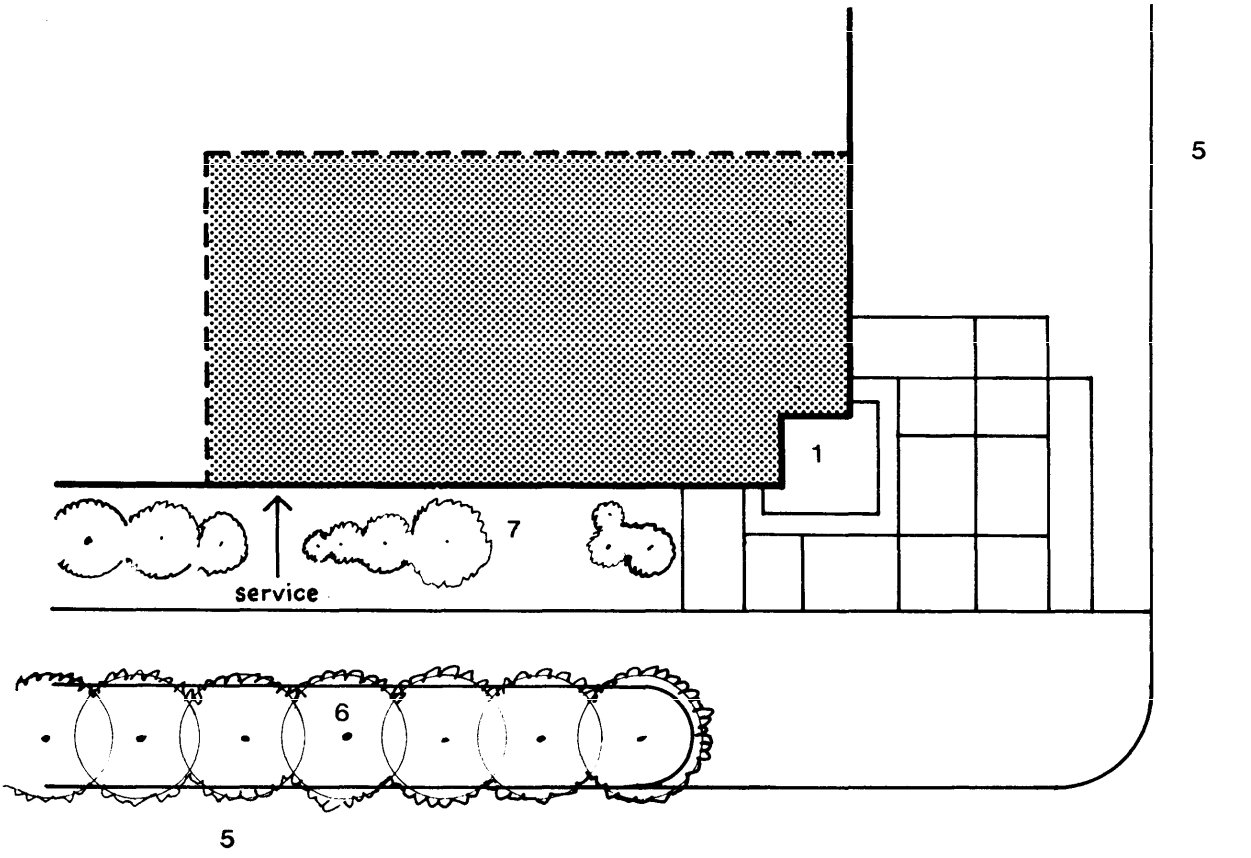


Section A – A



7-3.5 STEP J - SITE PLAN

Figure 7-13 Site Plan for Small Officers Club



KEY

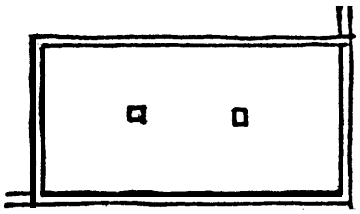
1 main entry
5 parking
6 screen planting
7 intimate planting

N
assumed

5 25
0 10 FEET

7-3.6 STEP K - DESIGN ANALYSIS

7-3.6.1 Plan type: single space, remodel.



7-3.6.2 Design assumptions

A. Remodel existing building.

B. Accept existing structure.

C. Corner location.

7-3.6.3 Planning objectives: Building.

A. Maximum utilization of space.

B. Aim for atmosphere of traditional San Francisco or New Orleans sty e single room bar/cafe.

7-3.6.4 Planning evaluation: Building.

A. Single multi-use open space maximizes space utilization.

B. Existing structure accommodated without deterrent to function.

C. Good possibility for attractive atmosphere.

7-3.7 STEP L - PLANNING ALTERNATIVES

Figure 7-14 Alternative 1 for Small Officers Club

Objective: Club designed as free standing structure.

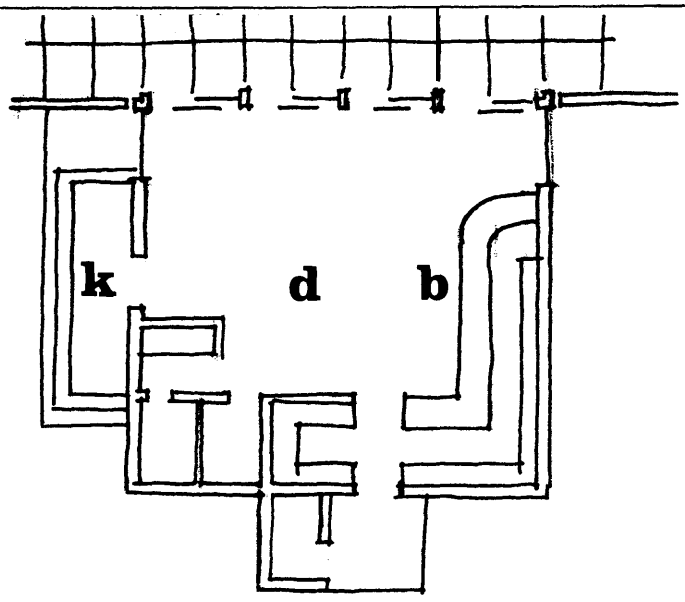
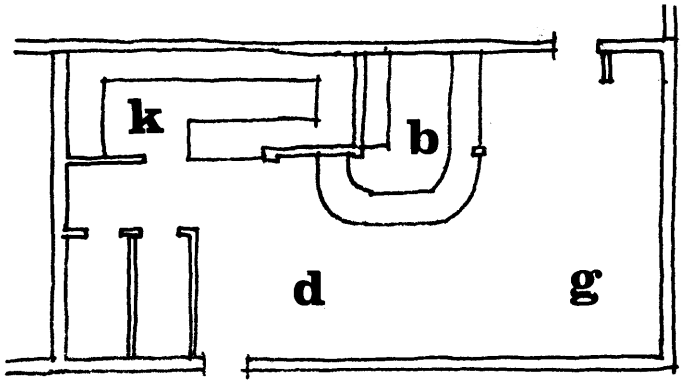


Figure 7-15 Alternative 2 for Small Officers Club

Objective: Club with entry from existing building and from street.



7-3.8 STEP M - UTILITY & THERMAL LOADS

7-3.8.1 Building data

A.	Gross floor area	1,273 s.f.
B.	Max. population at one time	52
C.	Max. meals served/day	100

7-3.8.2 Utility loads

A.	Electrical :	Light and power	49 kva
B.	Water:	Max. flow rate, cold water	32 gpm
		Max. flow rate, hot water	32 gpm
		Total flow per day	1,000 gal.
C.	Sewage:	Total gall ons per day	1,000 gal.

7-3.8.3 Heating and cool ing loads

A.	Heating:	Load	40 MBTU/hr.
B.	Air conditioning:	Tons of refrigeration	5.75 tons

7-3.8.4 Design assumptions

All policy and design criteria per DOD 4270.1-M.

A. Estimates are for plans shown.

B. 400 North latitude

C. Heat load in kitchen not included in heat gain calculations.

D. Single glazing, standard glass.

E. 20% outside air assumed for ventilation

F. Assumed perimeter heat loss: 40 BTU/hr./ft.

G. Sewage demand based on 10 gpd per person, max. occupancy.

H. Lighting load assumed 2.5 watts/s.f.

7-4.1 STEP A - SPACE PROGRAM: The space program shown in Figure 7-16 is based on a need to seat 75 for dining, plus simultaneous banquet facilities in a flexible multi-use room that provides for all meeting and party functions. The military strength served is 151-250 officers.

Figure 7-16 Space Program for Medium Officers Club

Generic Space	Program Area	$ Gross Area
1 - Entry	318	4. 1
2 - Dining Room	1,045.5	13.4
3 - Bar	659.5	8.4
4 - Kitchen	1,557	20
5 - Multi-use	1,775	22.7
6 - Party Rooms	- - -	- - -
7 - Rec. Room (Q)	- - -	- - -
8 - Rec. Room (N)	- - -	- - -
9 - Administration	309	3.9
10 - Rest Rooms	235	3
1 1 - Storage	252	3.2
12 - Maintenance	12	.2
13 - Mechanical	333	4.3
14 - Lockers	529	6.8
Net Usable	7,025	90
Gross Area	7,806	100

Dining Room Occupancy: 74 @ 14 sq. ft./seat
Ballroom Occupancy: 120 - bingo
138 - banquet

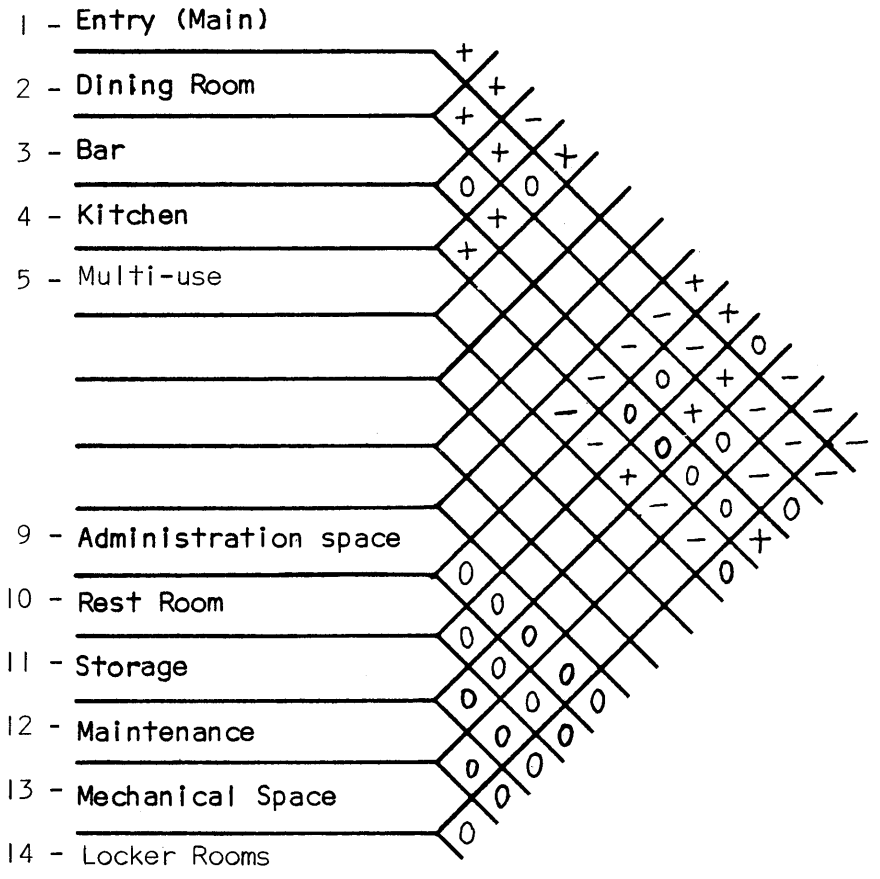
Net usable: gross area ratio: 0.90

For basis upon which this space program is developed, see Sections 2 and 3.

MEDIUM OFFICERS CLUB

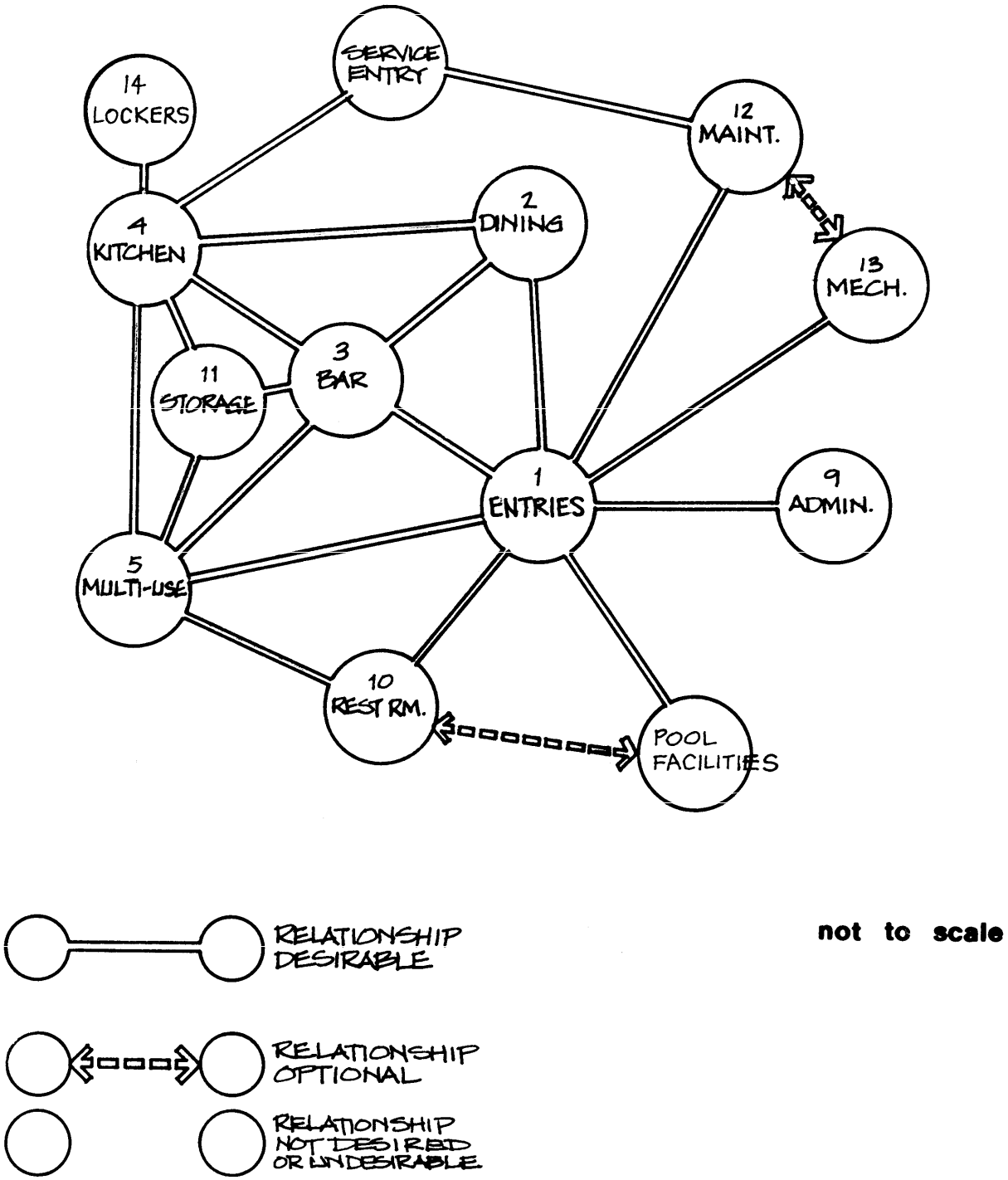
7-4.2 STEP B - AFFINITY MATRIX: The affinity matrix shown in Figure 7-17 indicates relationships between the generic spaces as being. desirable (=), of no consequence (0), or undesirable (-). This is based upon use patterns, acoustic compatibility, mutual support for functional operation, sanitary or other reasons. The matrix is intended to denote the desirability of adjacency or separation per se, and along with the space program, is part of the problem statement generated by the using service.

Figure 7-17 Affinity Matrix for Medium Officers Club



7-4.3 STEP C - AFFINITY DIAGRAM (NO SCALE)

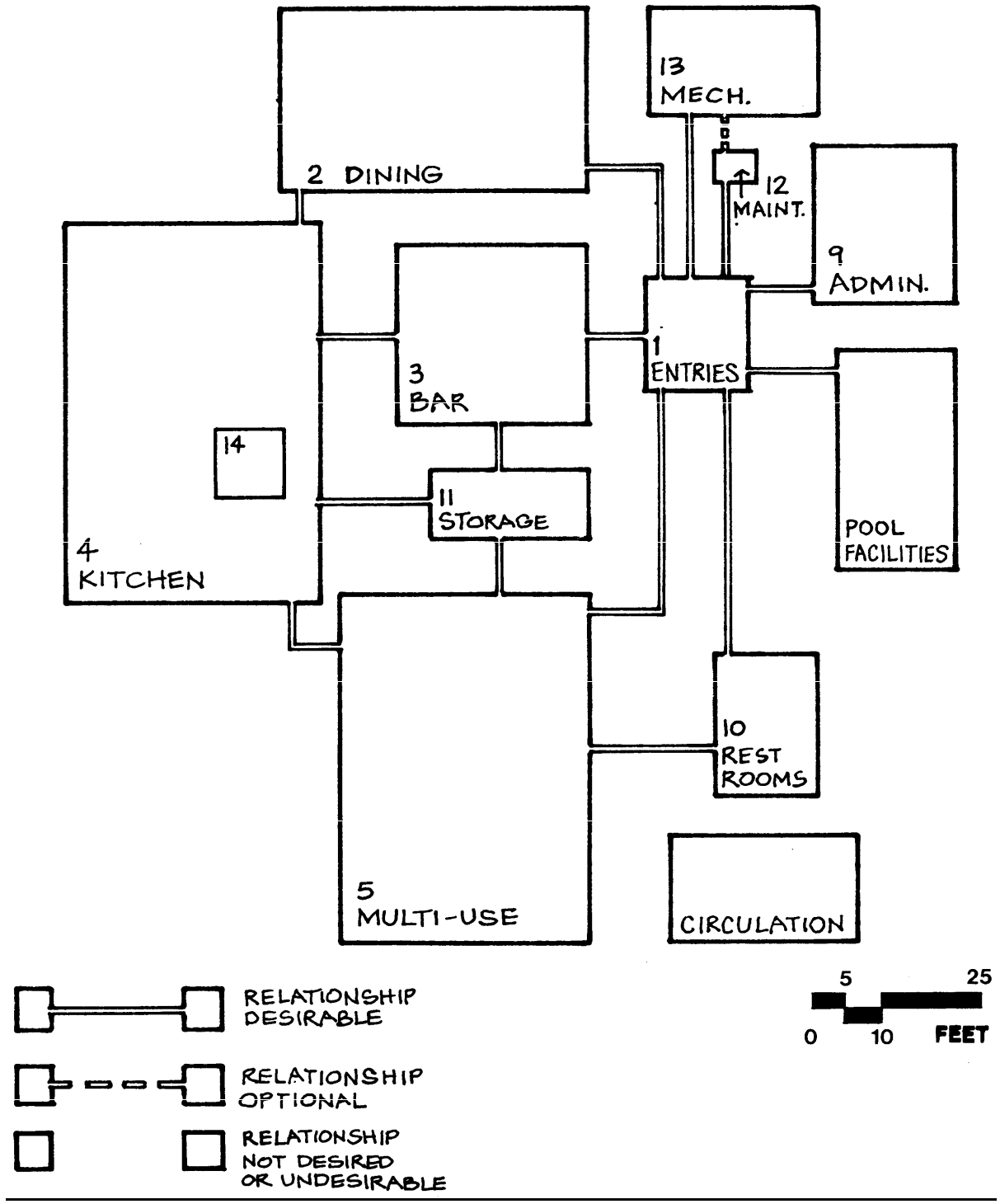
Figure 7-18 Affinity Diagram for Medium Officers Club (no scale)



MEDIUM OFFICERS CLUB

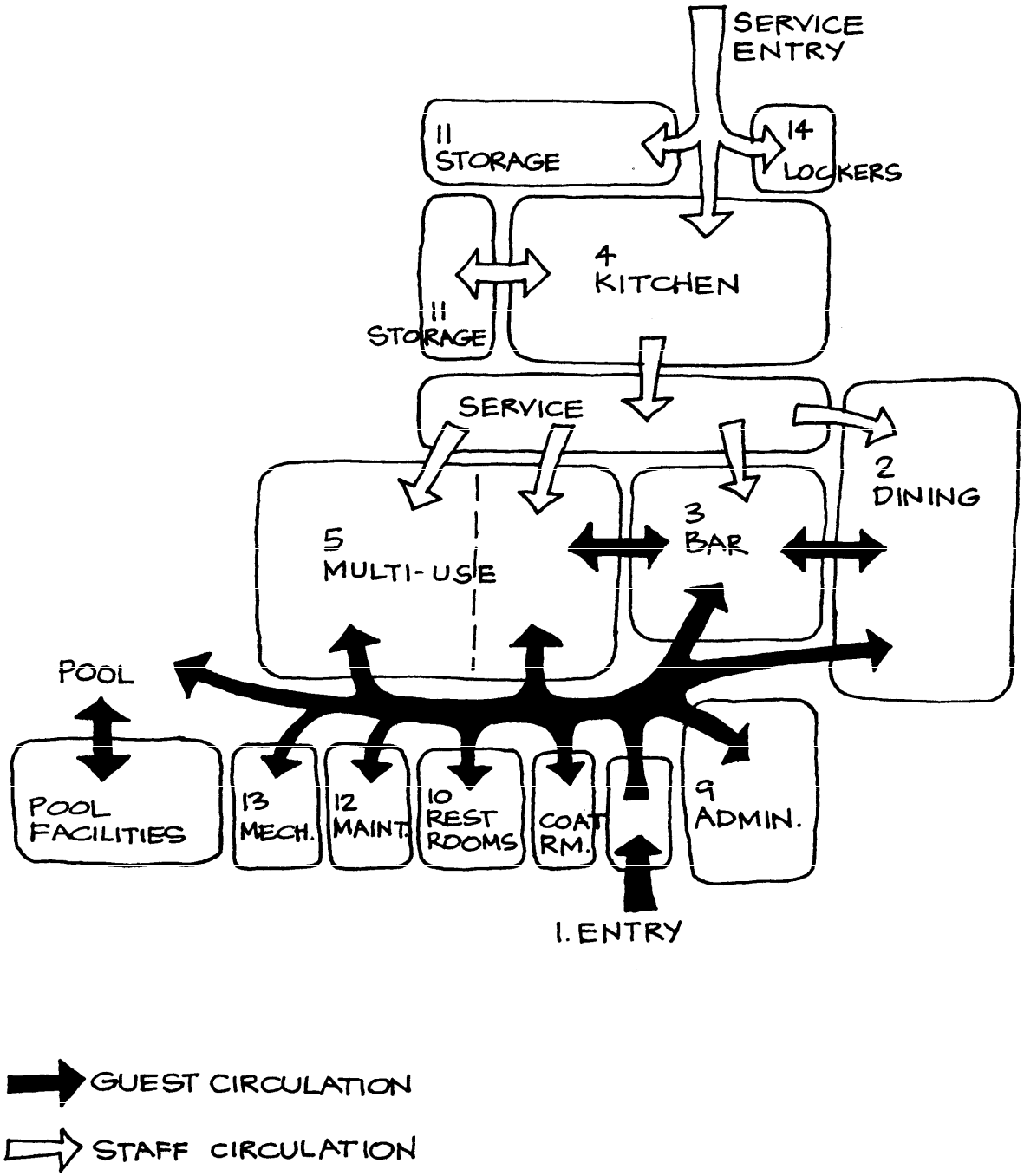
7-4.4 STEP D - AFFINITY DIAGRAM (TO SCALE)

Figure 7-19 Affinity Diagram for Medium Officers Club (to scale)



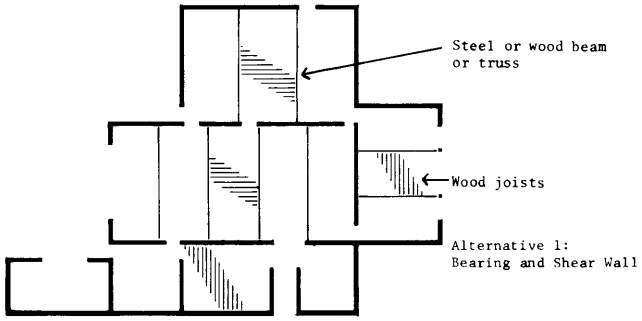
7-4.5 STEP E - PLANNING DIAGRAM

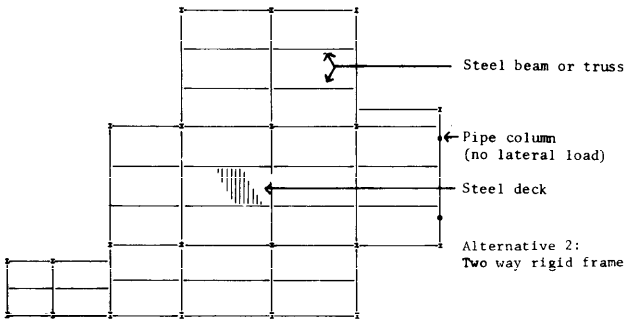
Figure 7-20 Planning Diagram for Medium Officers Club



7-4.6 STEP F - STRUCTURAL FRAMING

7-4.6.1 Structure: Bearing and shear wall, or two-way rigid frame. Bearing and shear wall design most economical, particularly in seismic areas, but not flexible for change or expansion.





7-4.7 STEP G - SUBSYSTEM CHOICES

7-4.7.1 H.V.A.C.: System appropriate to climate.

7-4.7.2 Envelope: Masonry or concrete for load bearing and shear wall structure. Non-load bearing masonry or insulated panel infill for rigid frame structure.

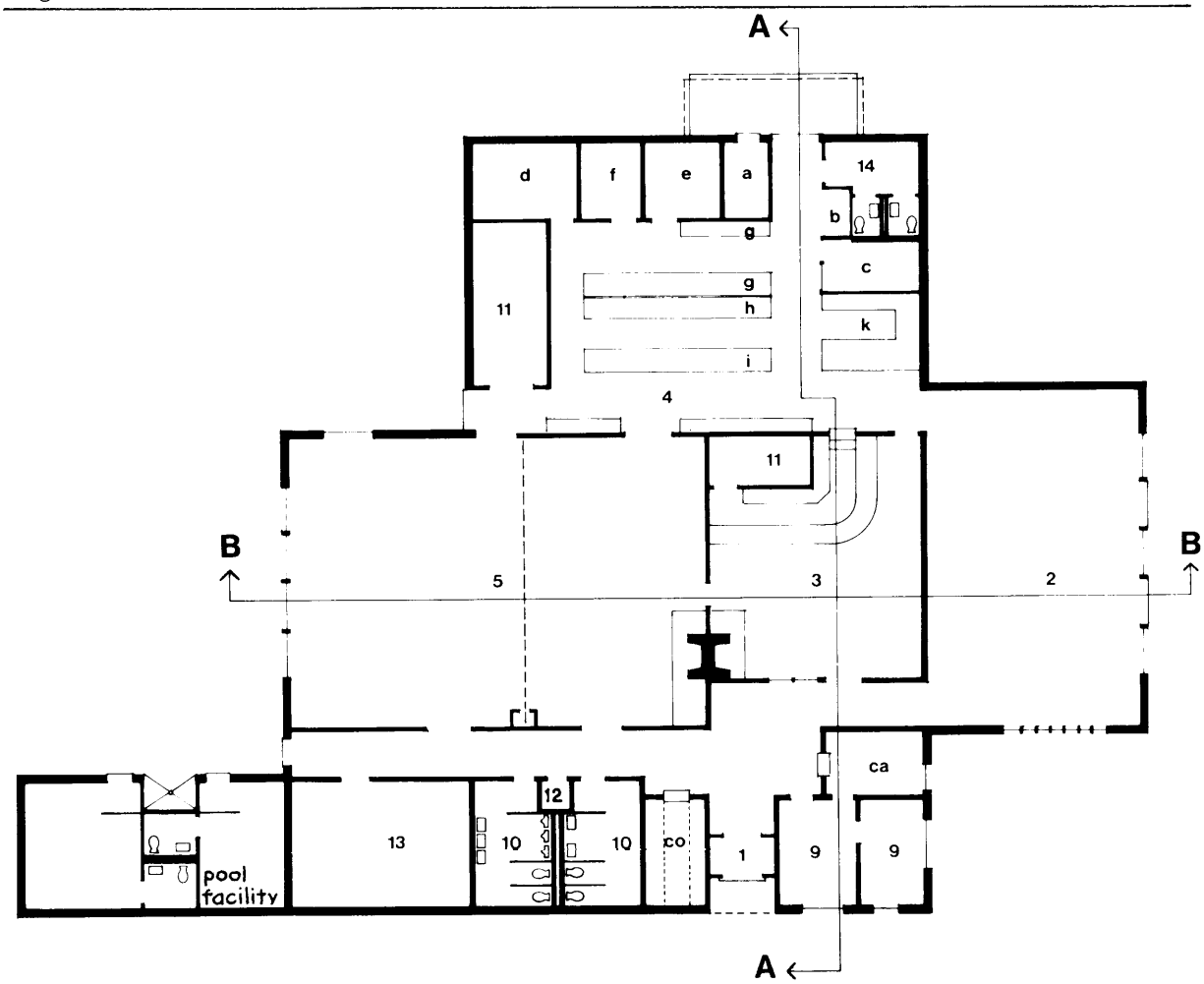
7-4.7.3 Interior partitions: Non-load bearing replaceable partitions.

7-4.7.4 Ceiling: Systems appropriate to design requirements.

7-4.7.5 Lighting: Systems appropriate to design requirements.

7-4.8 STEP H - FLOOR PLAN

Figure 7-21 Floor Plan for Medium Officers Club



KEY

1 entry
co coatroom
2 dining
3 bar
4 kitchen
a waste holding
b check-in
c chef's office
d dry storage
e refrigerated storage
f freezer storage
g preparation area
h cooking area
i serving area
j banquet make-up
k dishwashing

5 ballroom/multi-use
9 administration
ca cashier
10 restrooms
11 storage
12 maintenance
13 mechanical
14 locker room

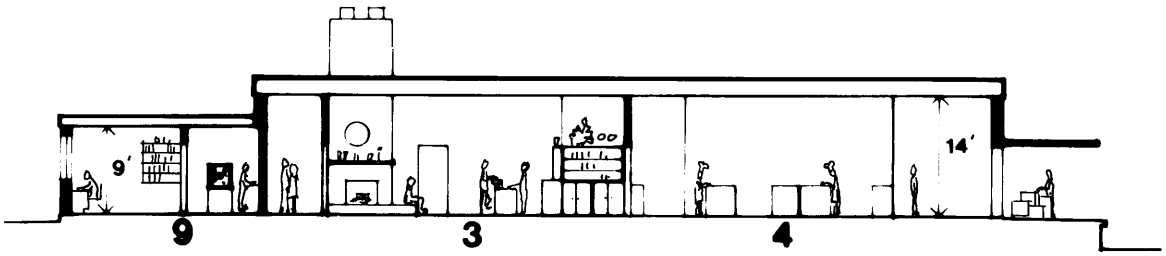
N
assumed

5 25 FEET
0 10 50

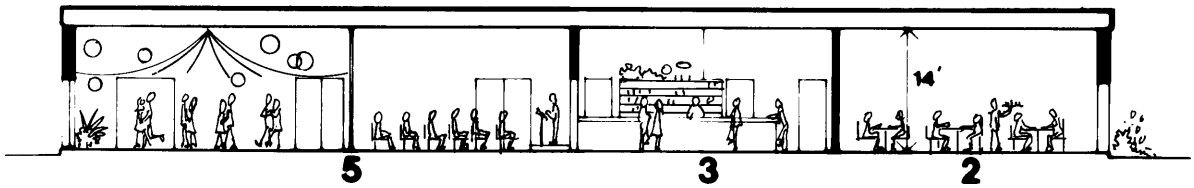
MEDIUM OFFICERS CLUB

7-4.9 STEP 1. - SECTIONS

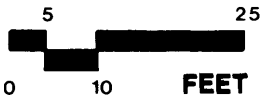
Figure 7-22 Sections for Medium Officers Club



Section A – A

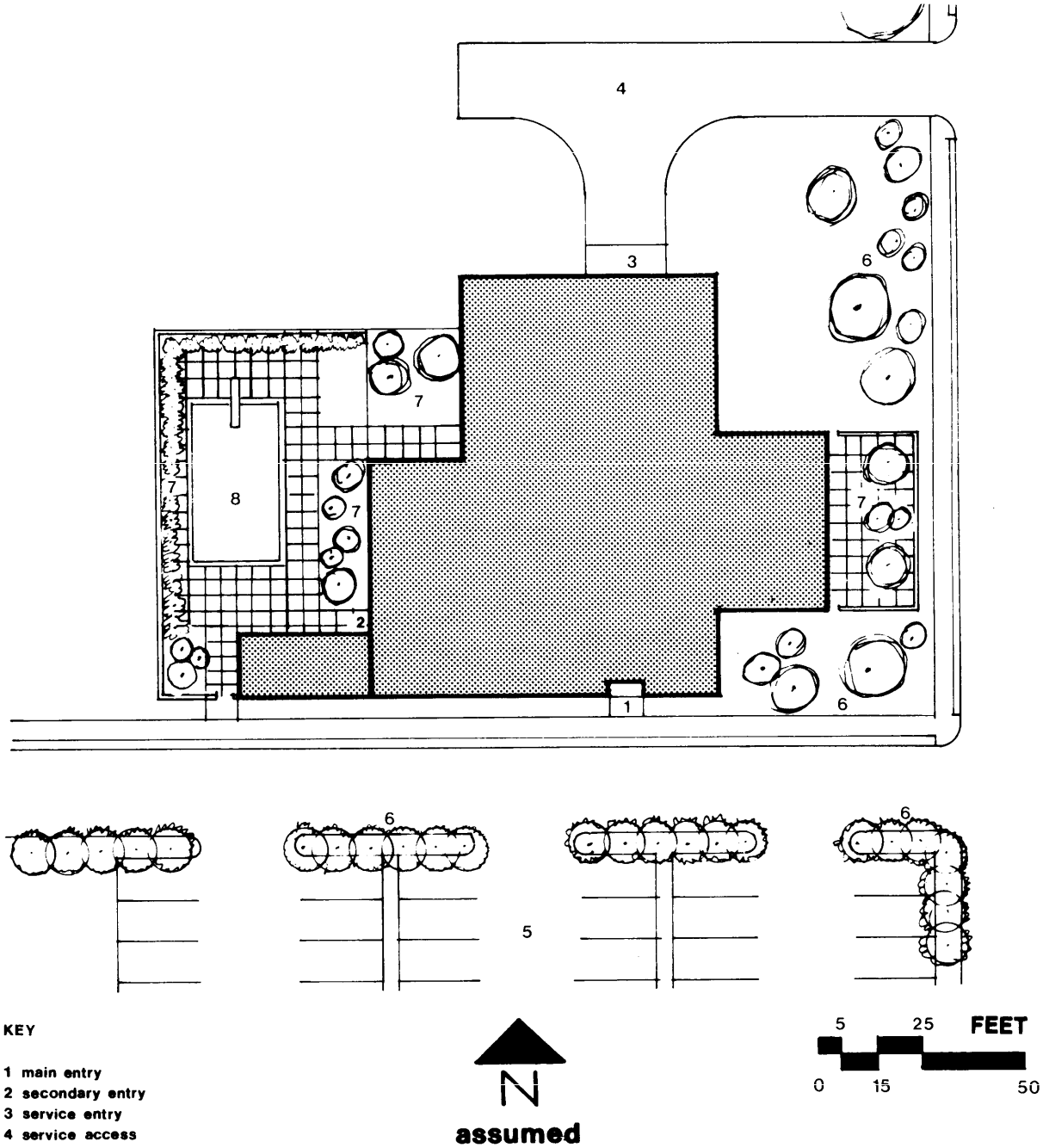


Section B – B



7-4.10 STEP J - SITE PLAN

Figure 7-23 Site Plan for Medium Officers Club



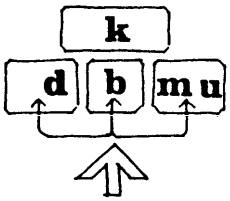
KEY

1 main entry
2 secondary entry
3 service entry
4 service access
5 parking
6 screen planting
7 intimate planting
8 pool

MEDIUM OFFICERS CLUB

7-4.11 STEP K - DESIGN ANALYSIS

7-4.11.1 Plan type: In-line plan.



7-4.11.2 Design assumptions:
View from bar and multi-use room important.

7-4.11.3 Planning objectives:
Building.

A. Orient dining room to private view.

B. Provide terrace oriented to view with convenient food and bar service.

C. Provide for easy expansion of dining room, multi-use room or both .

7-4.11.4 Planning evaluation:
Building.

A. Dining, multi-use room and kitchen expansion provision good .

B. Bar expansion possible only by remodeling dining and multi-use rooms, or building another bar.

C. Mechanical room in front relates well to pool.

D. Kitchen service to multi-use room, dining room, bar and outside patio excel lent.

E. Kitchen service to pool good.

F. Public circulation provides good access to all activity spaces.

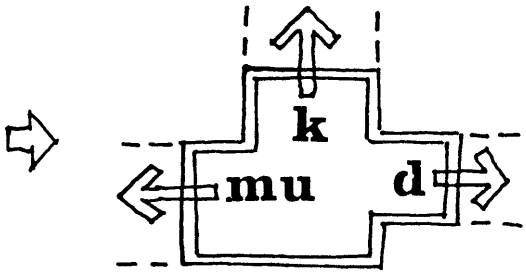


Figure 7-24 Alternative I for Medium Officers Club

Objectives: Provide side entry, provide multi-use storage.

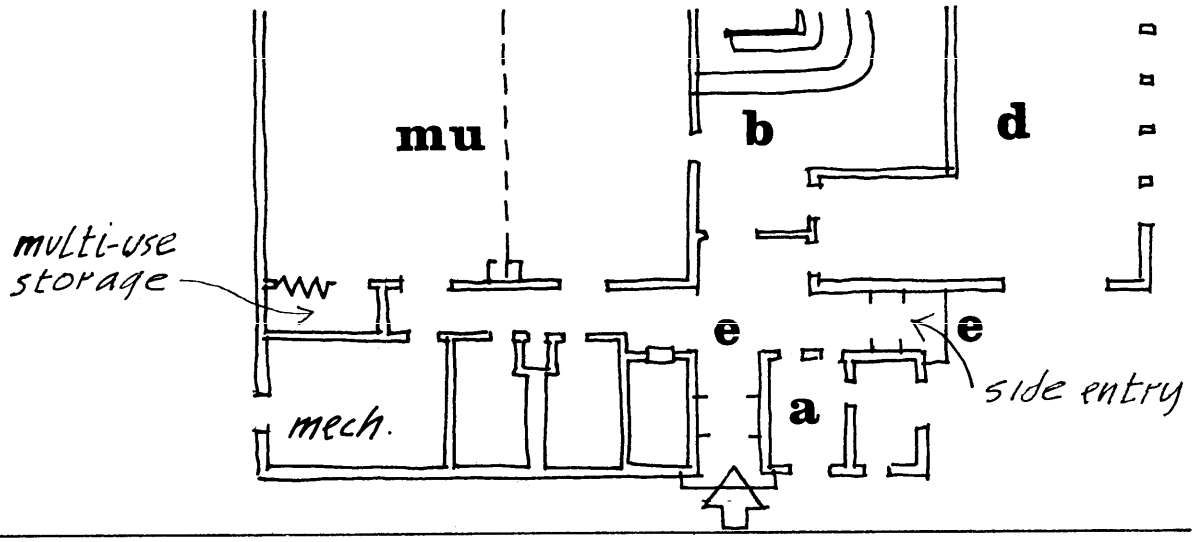
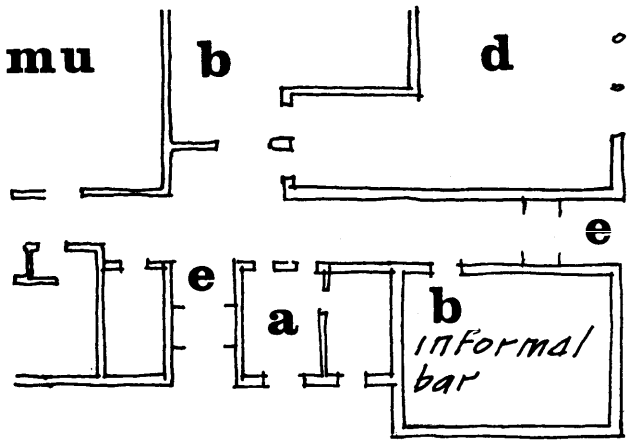


Figure 7-25 Alternative 2 for Medium Officers Club

Objective: Add informal bar with separate entry.



7-4.13 STEP M - UTILITY & THERMAL LOADS

7-4.13.1 Building data

A.	Gross floor area	7,806 s.f.
B.	Max. population at one time	275
C.	Max. meals served/day	400

7-4.13.2 Utility loads

A.	Electrical : Light and power	205 kva
B.	Water: Max. flow rate, cold water	60 gpm
	Max. flow rate, hot water	60 gpm
	Total flow per day	4,000 gal.
C.	Sewage: Total gallons per day	4,000 gal.

7-4.13.3 Heating and cooling loads

A.	Heating: Load	290 MBTU/hr.
B.	Air conditioning: Tons of refrigeration	35 tons

7-4.13.4 Design assumptions.

All policy and design criteria per DOD 4270.1-M.

A. Estimates are for plans shown

B. 40° North latitude.

C. Heat load in kitchen not included in heat gain calculations.

D. Mechanical room ventilated only.

E. Single glazing, standard glass.

F. 20% outside air assumed for ventilation.

G. Assumed perimeter heat loss: 40 BTU/hr./ft.

H. Sewage demand based on 10 gpd per person, max. occupancy.

I. Lighting load assumed 2.5 watts/s.f.

7-5.1 STEP A - SPACE PROGRAM: The space program shown in Figure 7-26 is based on a need to seat 225-240 for dining, plus simultaneous banquet facilities in the multi-use and party room. The design example shows a one-story solution.

Figure 7-26 Space Program for Large Officers Club A

Generic Space	Program Area	% Gross Area
1 - Entry	1,740	6.8
2 - Dining Room	3,364	13.2
3 - Bar	2,376	9.3
4 - Kitchen	5,016	19.8
5 - Multi-use	4,072	16
6 - Party Rooms	1,170	4.6
7 - Rec. Room (Q)	986	3.9
8 - Rec. Room (N)	280	1.1
9 - Administration	1,100	4.3
10 - Rest Rooms	760	2.9
11 - Storage	652	2.5
12 - Maintenance	28	.1
13 - Mechanical	988	3.9
14 - Lockers	412	1.6
Net Usable	22,944	90
Gross Area	25,494	100

Dining Room Occupancy: 224 @ 15 sq. ft./seat
Ballroom Occupancy: 250 - bingo
288 - banquet

Net usable: gross area ratio: 0.90

For basis upon which the space program is developed, see Sections 2 and 3.

LARGE OFFICERS CLUB

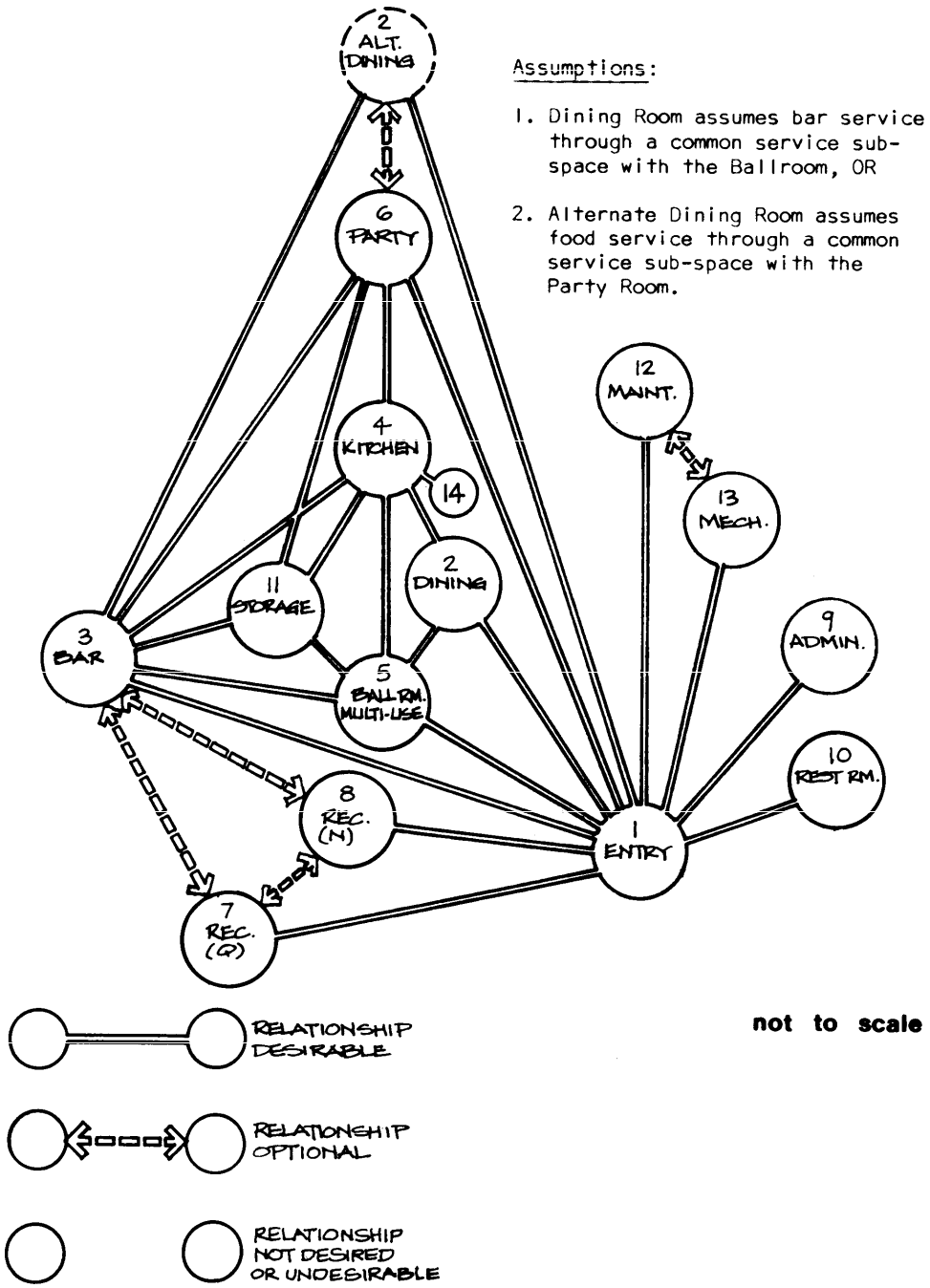
7-5.2 STEP B - AFFINITY MATRIX: The affinity matrix shown in Figure 7-27 indicates relationships between the generic spaces as being desirable (+), of no consequence (0), or undesirable (-). This is based upon use patterns, acoustic compatibility, mutual support for functional operation, sanitary or other reasons. The matrix is intended to denote the desirability of adjacency or separation per se, and along with the space program, is part of the problem statement generated by the using service.

Figure 7-27 Affinity Matrix for Large Officers Club A

1 - Entry (Main)														
2 - Dining Room	+													
3 - Bar	+	+												
4 - Kitchen	+	+	-											
5 - Multi-use	0	0	0	0										
6 - Party Room	+	+	0	-	-									
7 - Recreation Room-quiet	+	+	-	-	-	+								
8 - Recreation Room-noisy	0	-	-	-	-	-	+							
9 - Administration space	-	-	-	0	-	-	0	-						
10 - Rest Room	-	-	-	0	0	-	0	0	+					
11 - Storage	0	0	0	-	-	-	0	0	0	-				
12 - Maintenance	0	0	0	0	0	0	0	0	0	0	0			
13 - Mechanical Space	0	0	0	0	0	0	0	0	0	0	0	0		
14 - Locker Rooms	0	0	0	0	0	0	0	0	0	0	0	0	0	

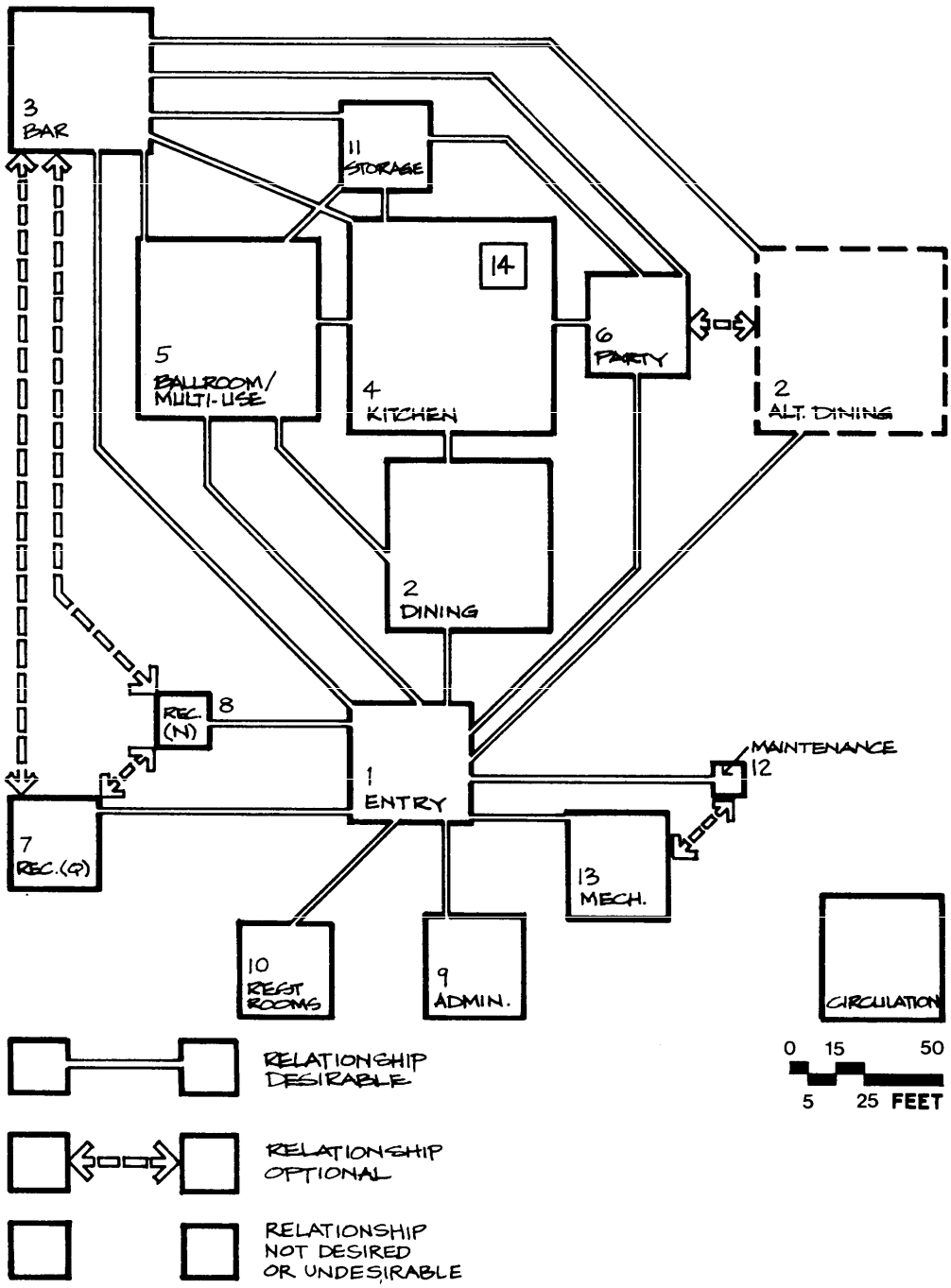
7-5.3 STEP C - AFFINITY DIAGRAM (NO SCALE)

Figure 7-28 Affinity Diagram for Large Officers Club A (no scale)



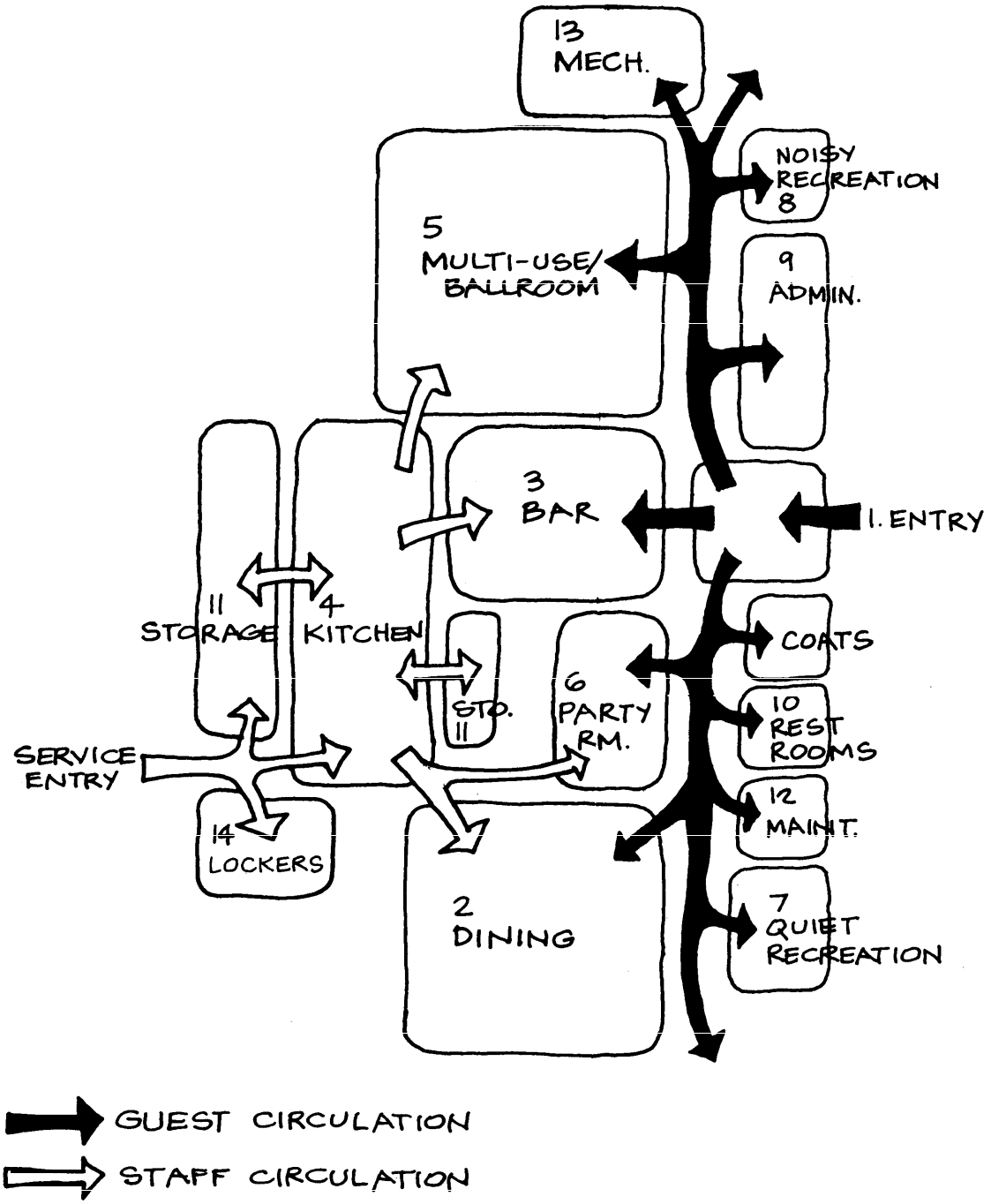
7-5.4 STEP D - AFFINITY DIAGRAM (TO SCALE)

Figure 7-29 Affinity Diagram for Large Officers Club A (to scale)



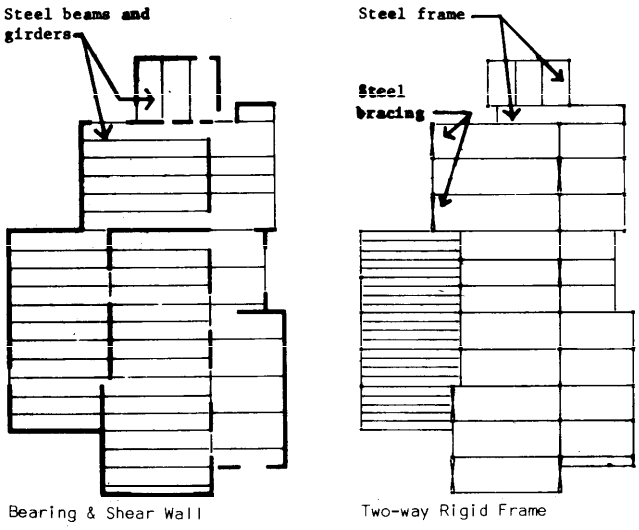
7-5.5 STEP E - PLANNING DIAGRAM

Figure 7-30 Planning Diagram for Large Officers Club A



7-3.6 STEP F - STRUCTURAL FRAMING

7-3.6.1 Structure: Alternative 1 uses bearing and shear walls in combination with steel beams and girders. Interior shear walls are necessary, and wide span framing is used to maintain adequate fl exibility. Alternative 2 uses a two-way rigid frame for maximum flexibility.



7-5.7 STEP G - SUBSYSTEM CHOICES

7-5.7.1 H.V.A.C.: System appropriate to climate.

7-5.7.2 Envelope: Masonry or concrete for load bearing and shear wall structure. Non-load bearing masonry or insulated panel infill for right frame structure.

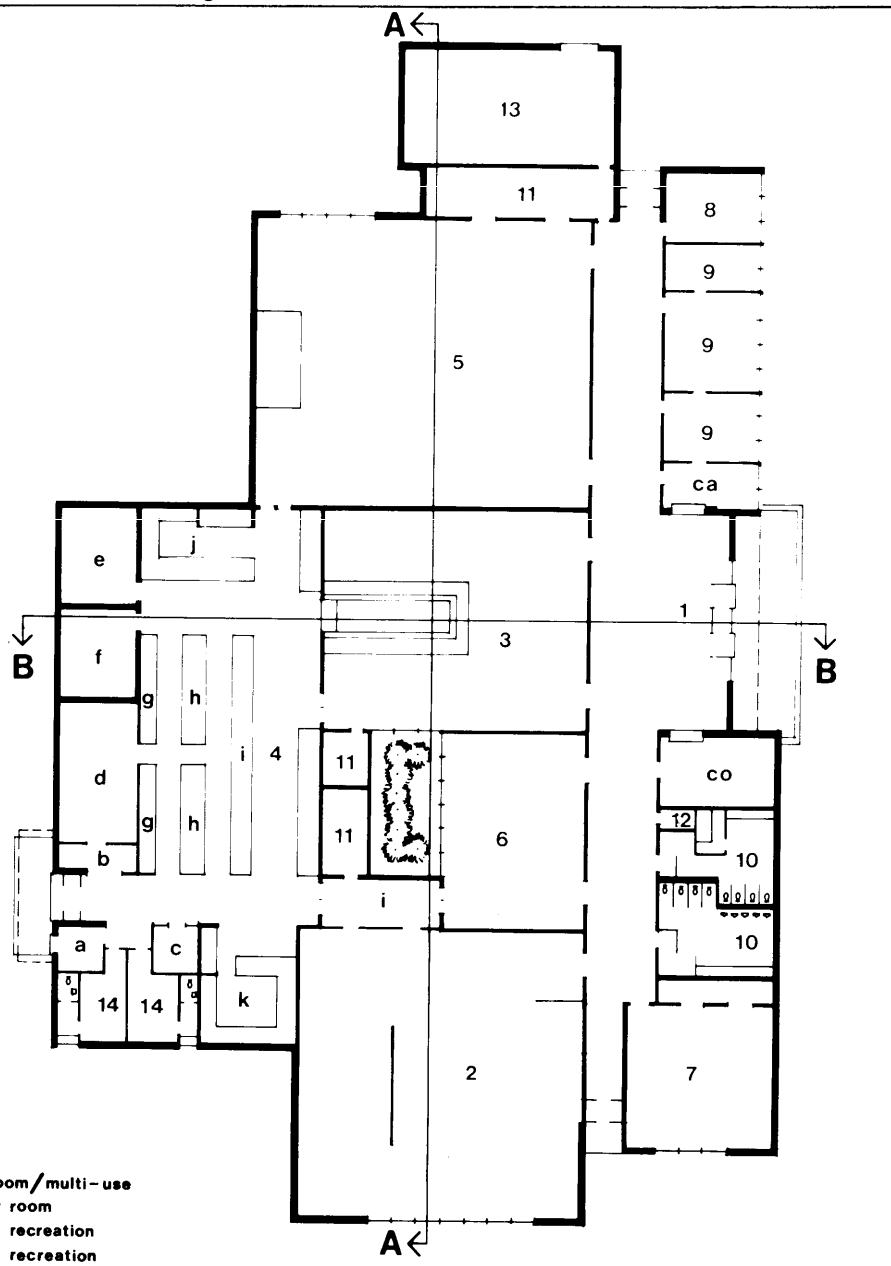
7-5.7.3 Interior partitions: Non-load bearing replaceable.

7-4.7.4 Ceiling: Systems appropriate to design requirements.

7-4.7.5 Lighting: Systems appropriate to design requirements.

7-5.8 STEP H - FLOOR PLAN

Figure 7-31 Floor Plan for Large Officers Club A



KEY

1 entry
co coatroom
2 dining
3 bar
4 kitchen
a waste holding
b check-in
c chef's office
d dry storage
e refrigerated storage
f freezer storage
g preparation area
h cooking area
i serving area
j banquet make-up
k dishwashing

5 ballroom/multi-use
6 party room
7 quiet recreation
8 noisy recreation
9 administration
ca cashier
10 restrooms
11 storage
12 maintenance
13 mechanical
14 locker room

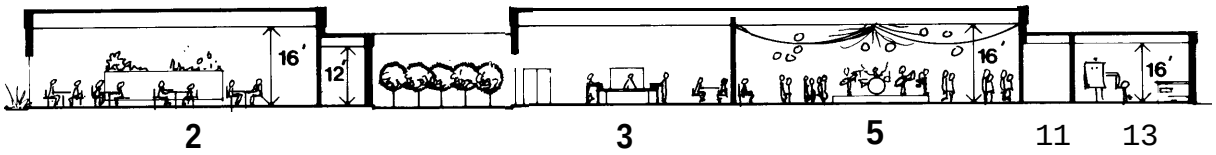
N
assumed

5 25 FEET
0 10 50

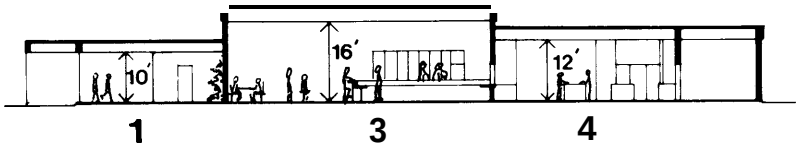
LARGE OFFICERS CLUB

7-5.9 STEP I - SECTIONS

Figure 7-32 Sections for Large Officers Club A



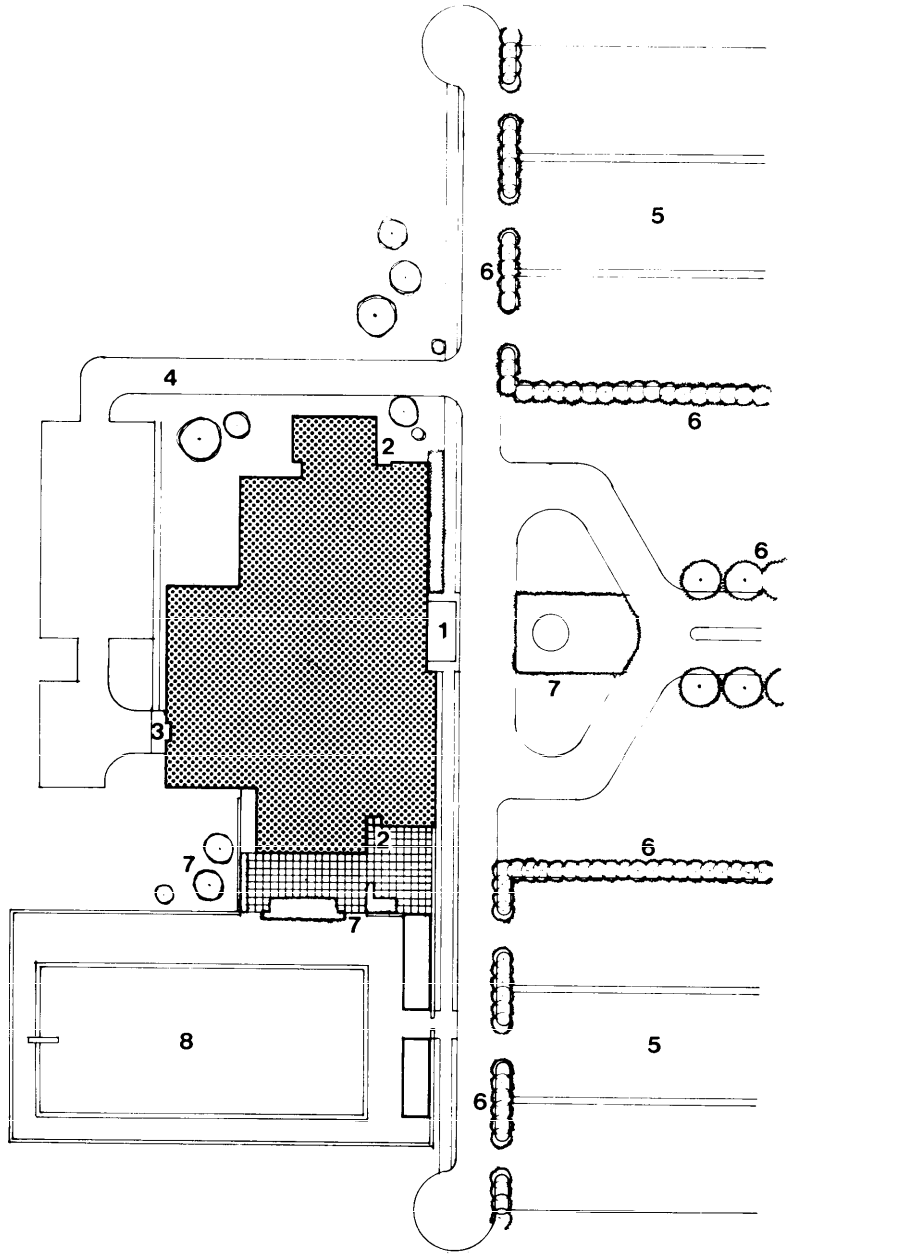
Section A – A



Section B – B

7-5.10 STEP J - SITE PLAN

Figure 7-33 Site Plan for Large Officers Club A



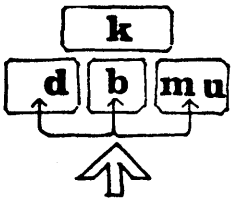
KEY

1 main entry
2 secondary entry
3 service entry
4 service access
5 parking
6 screen planting
7 intimate planting
8 pool

LARGE OFFICERS CLUB

7-5.11 STEP K - DESIGN ANALYSIS

7-5.11.1 Plan type: In-line plan.



7-5.11.2 Design assumptions

A. Attractive view to west.
B. View from bar and multi-use room unimportant.

7-5.11.3 Planning objectives: Building.

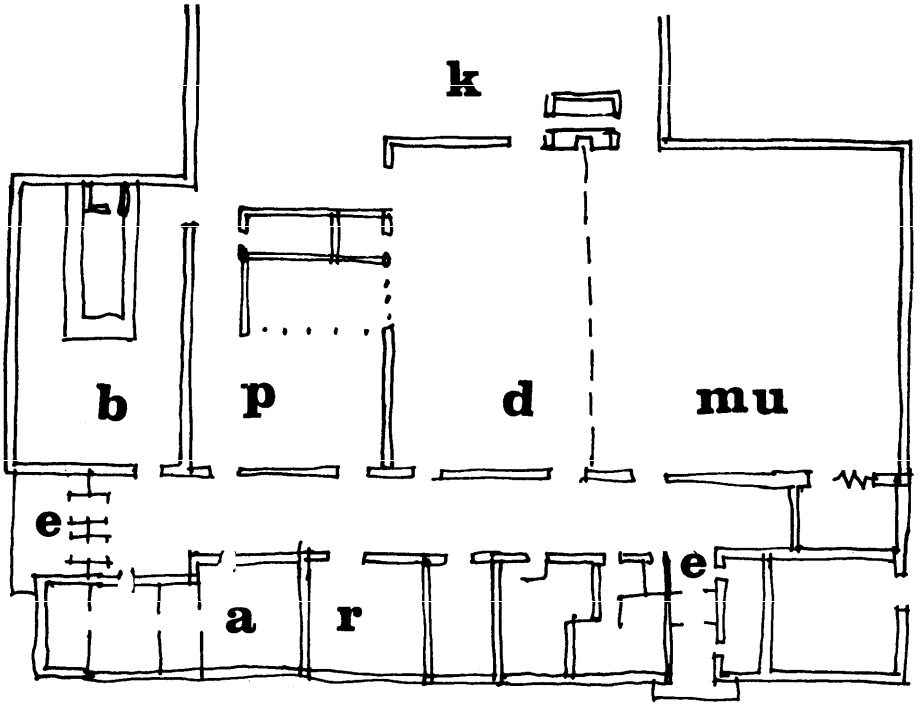
A. Orient dining room to view.
B. Provide terrace oriented to view with convenient bar and food service.
C. Provide separate entry convenient to multi-use room.
D. Provide one bar, with possibility of subdivision into formal and informal.
E. Provision for multi-use expansion unimportant.
F. Provision for dining room and kitchen expansion important.
G. Flexibility between dining room/multi-use room unimportant.

7-5.11.4 Planning evaluation: Building.

A. Expansion provision for di ning room and kitchen good.
B. Excellent simple circulat ion to all major spaces.
C. Good location for quiet recreation room (dead end location).
D. Good location for noisy recreation room, except no direct bar service.
E. Separate entry to multi-use adjoins noisy recreation room, which is not desirable.

7-5.12 STEP L - PLANNING ALTERNATIVES

Figure 7-34 Planning Alternatives for Large Officers Club A



Objective: illustrate alternative in-line plan, and provide flexibility between dining and multi-use room.

entrance location revised in order to remain close to bar.

7-5.13 STEP M - UTILITY & THERMAL LOADS

7-5.13.1 Building data

A.	Gross floor area	25,494 s.f.
B.	Max. population at one time	875
C.	Max. meals served/day	1,075

7-5.13.2 Utility loads

A.	Electrical:	Light and power	760 kva
B.	Water:	Max. flow rate, cold water	57 gpm
		Max. flow rate, hot water	57 gpm
		Total flow per day	10,750 gal.
C.	Sewage:	Total gallons per day	10,750 gal.

7-5.13.3 Heating and cooling loads

A.	Heating:	Load	692 MBTU/hr.
B.	Air conditioning:	Tons of refrigeration	99 tons

7-5.13.4 Design assumptions

All policy and design criteria per DOD 4270.1-M.

A. Estimates are for plans shown.

B. 40° North latitude.

D. Heat load in kitchen not included in heat gain calculations.

E. Single glazing, standard glass.

F. 20% outside air assumed for ventilation.

G. Assumed perimeter heat loss: 40 BTU/hr./ft.

H. Sewage demand based on 10 gpd per person, max. occupancy.

I. Lighting load assumed 2 5 watts/s.f.

7-6.1 STEP A - SPACE PROGRAM: The space program shown in Figure 7-35 is based on a need to seat 100 for dining, plus simultaneous banquet and party room facilities in a flexible multi-use room. Military strength served is 401-750 NCOs.

Figure 7-35 Space Program for Small NCO Club

Generic Space	Program Area	% Gross Area
1 - Entry	559.5	6.1
2 - Dining Room	1,407	15.3
3 - Bar	1,243.5	13.5
4 - Kitchen	1,488.5	16.2
5 - Multi-use	2,140	23.2
6 - Party Rooms	---	---
7 - Rec. Room (Q)	---	---
8 - Rec. Room (N)	---	---
9 - Administration	430	4.7
10 - Rest Rooms	288.5	3.1
11 - Storage	271.5	2.9
12 - Maintenance	20	.2
13 - Mechanical	336	3.6
14 - Lockers	116	1.2
Net Usable	8,295.5	90
Gross Area	9.217	100

Dining Room Occupancy: 100 @ 14 sq. ft./seat
Ballroom Occupancy: 143 - bingo
165 - banquet

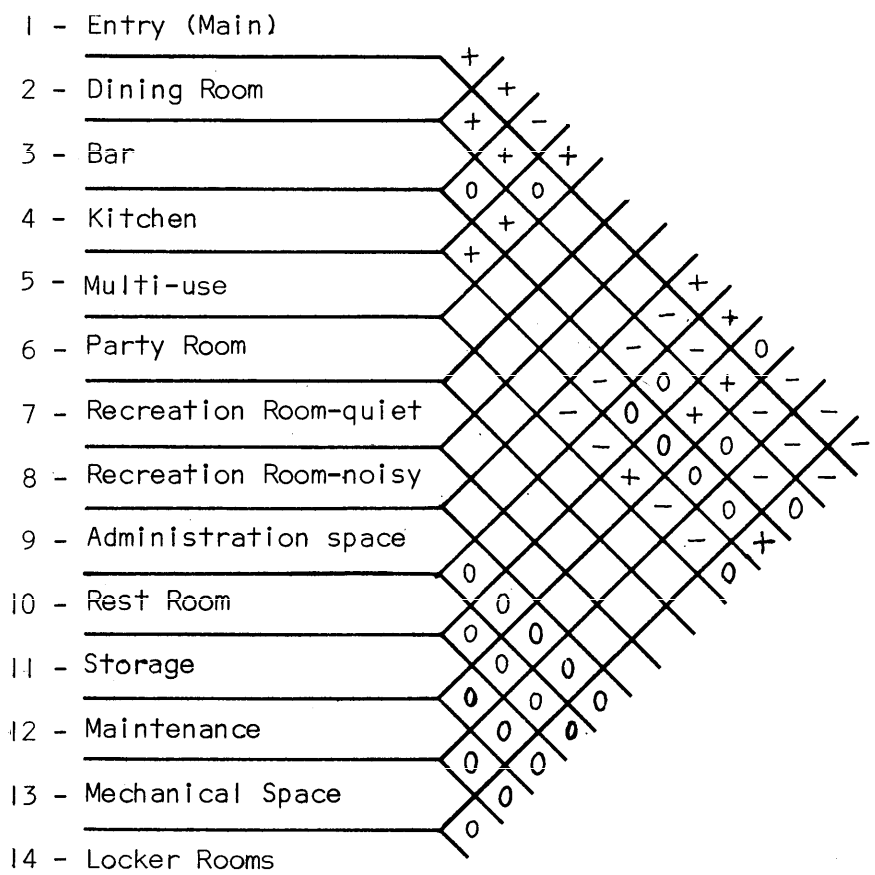
Net usable: gross area ratio: 0.90

For basis upon which the space program is developed, see Sections 2 and 3.

SMALL NCO CLUB

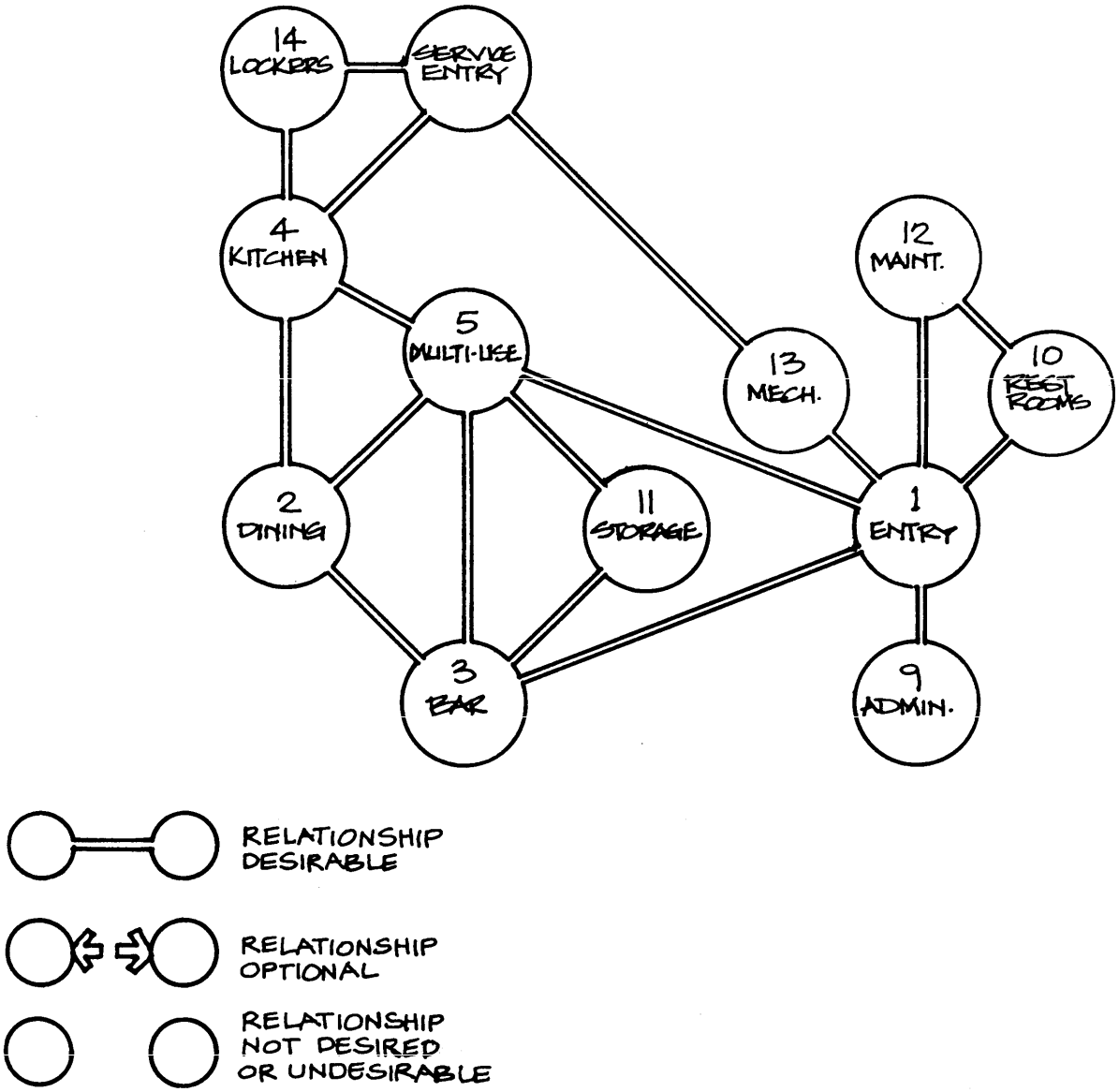
7-6.2 STEP B - AFFINITY MATRIX: The affinity matrix shown in Figure 7-36 indicates relationships between the generic spaces as-being desirable (+), of no consequence (0), or undesirable (-). This is based upon use patterns, acoustic compatibility, mutual support for functional operation, sanitary or other reasons. The matrix is intended to denote the desirability of adjacency or separation per se, and along with the space program, is part of the problem statement generated by the using service.

Figure 7-36 Affinity Matrix for Small NCO Club



7-6.3 STEP C - AFFINITY DIAGRAM (NO SCALE)

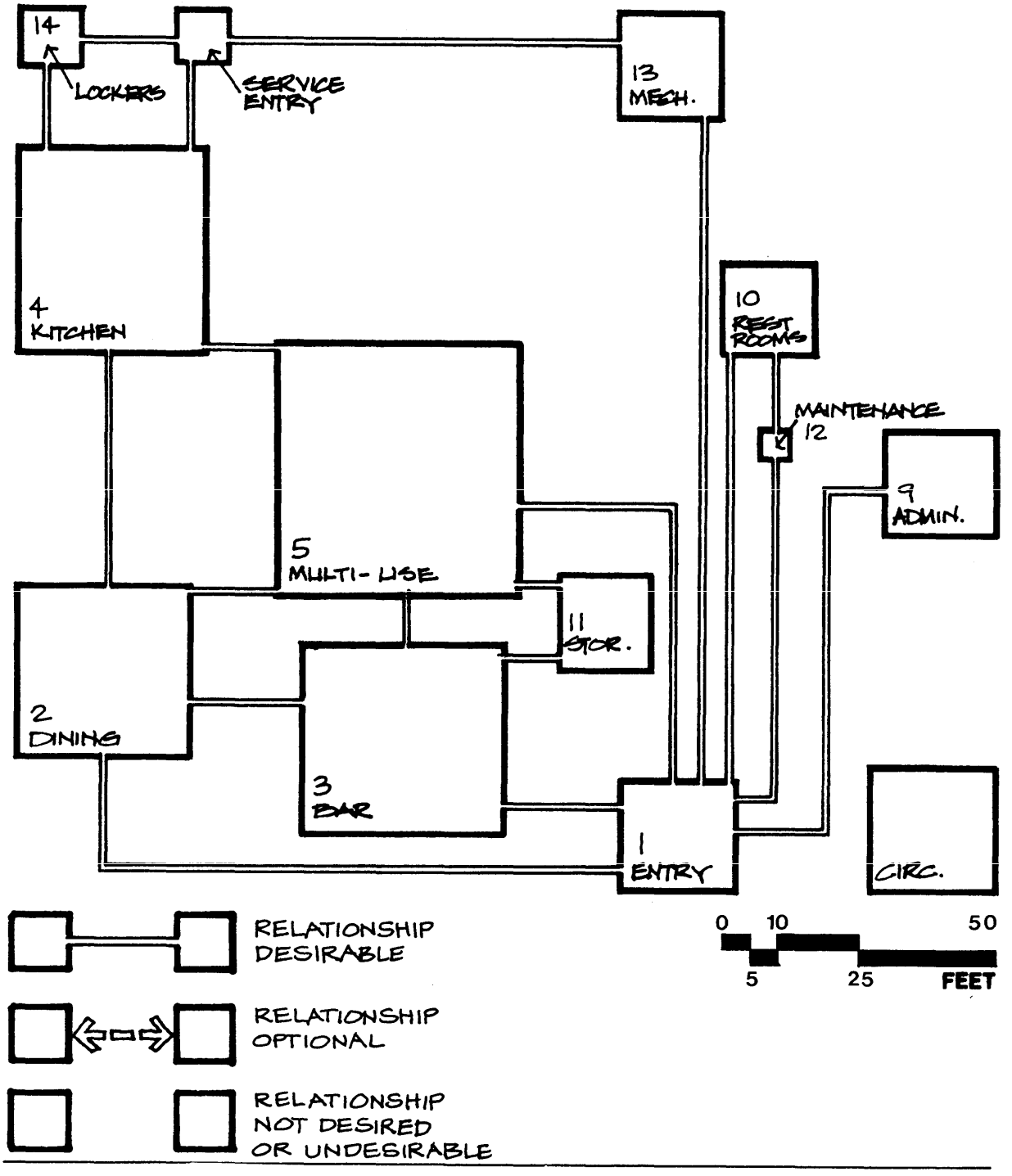
Figure 7-37 Affinity Diagram for Small NCO Club (no scale)



not to scale

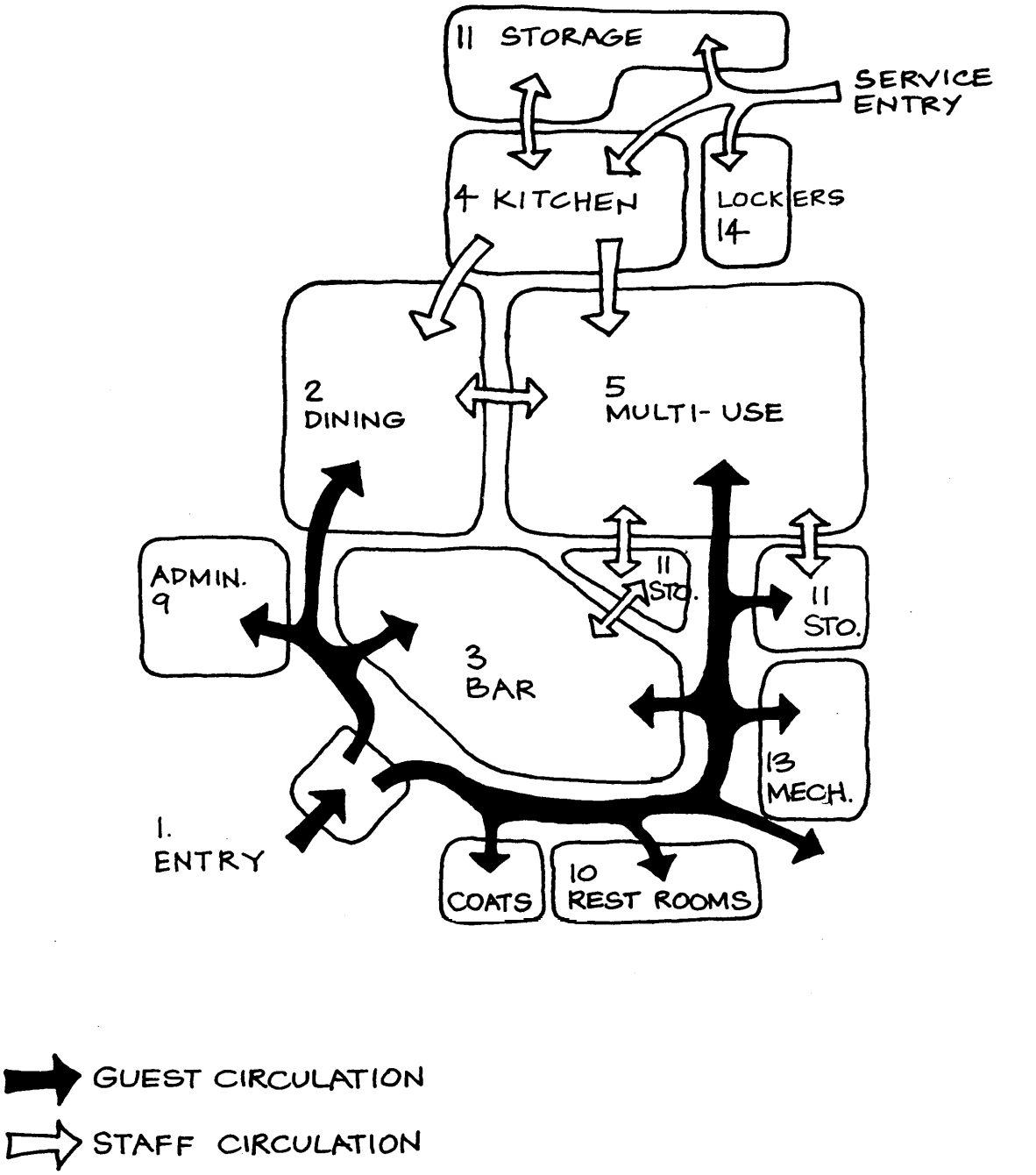
7-6.4 STEP D - AFFINITY DIAGRAM (TO SCALE)

Figure 7-38 Affinity Diagram for Small NCO Club (to scale)



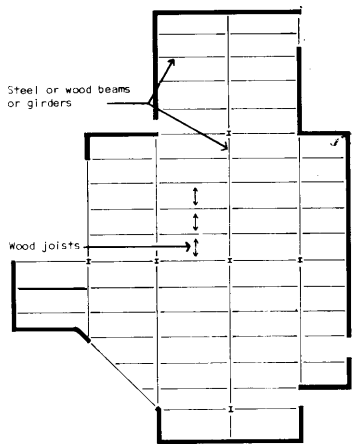
7-6.5 STEP E - PLANNING DIAGRAM

Figure 7-39 Planning Diagram for Small NCO Club



7-6.6 STEP F - STRUCTURAL FRAMING

7-6.6.1 Structure: Bearing and shear wall framing: Flexibility is not impeded, since walls can be confined to exterior of building.



7-6.7 STEP G - SUBSYSTEM CHOICES

7-6.7.1 H.V.A.C.: System appropriate to climate.

7-6.7.2 Envelope: Masonry or concrete.

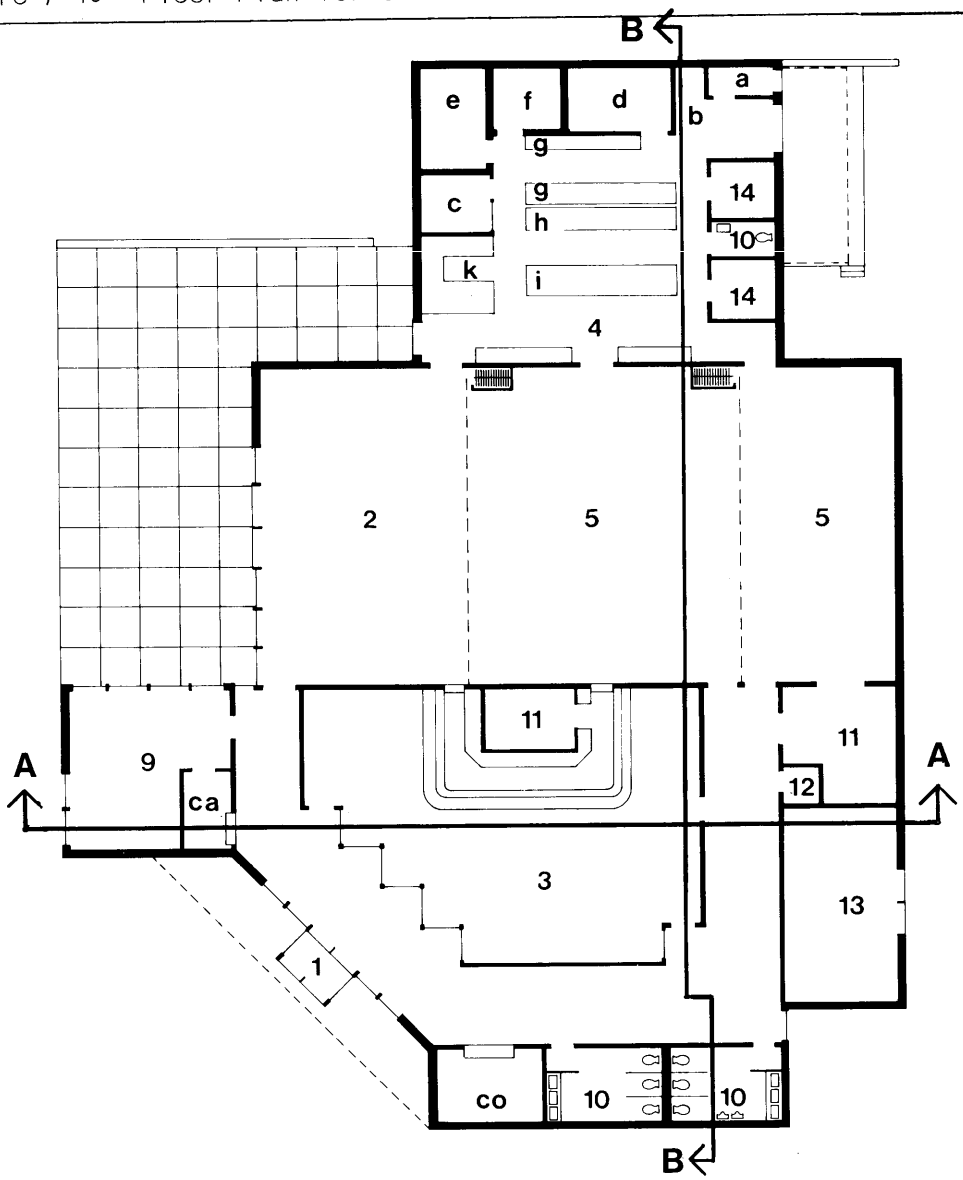
7-6.7.3 Interior partitions: Non-load bearing replaceable partitions, operable walls Is in multi-use room.

7-6.7.4 Ceiling: Systems appropriate to design requirements.

7-6.7.5 Lighting: Systems appropriate to design requirements.

7-6.8 STEP H - FLOOR PLAN

Figure 7-40 Floor Plan for Small NCO Club



KEY

1 entry
co coatroom
2 dining
3 bar
4 kitchen
a waste holding
b check-in
c chef's office
d dry storage
e refrigerated storage
f freezer storage
g preparation area
h cooking area
i serving area
k dishwashing

5 ballroom/multi-use
9 administration
ca cashier
10 restrooms
11 storage
12 maintenance
13 mechanical
14 locker room

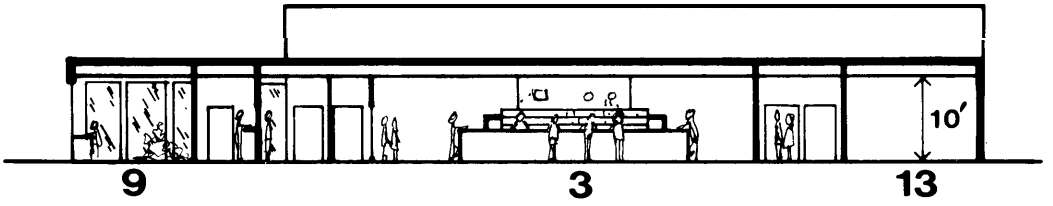
N
assumed

5 25 FEET
0 10 50

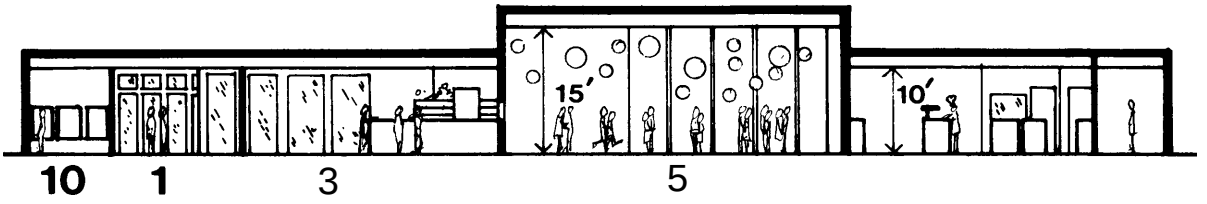
SMALL NCO CLUB

7-6.9 STEP I - SECTIONS

Figure 7-4 I Sections for Small NCO Club



section A-A



section B-B

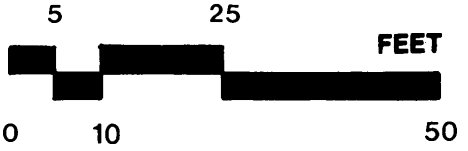
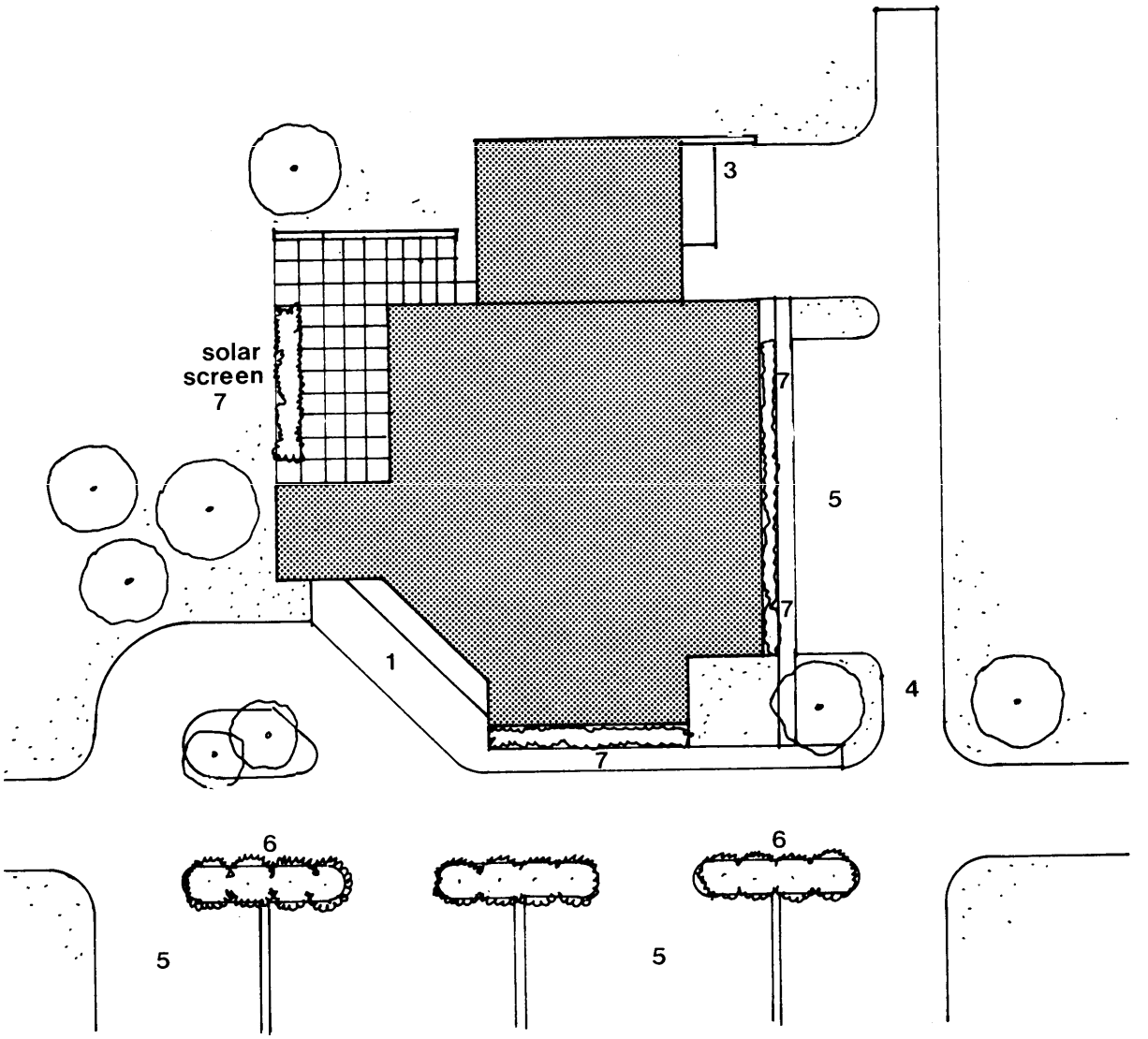


Figure 7-42 Site Plan for Small NCO Club



KEY

1 main entry
3 service entry
4 service access
5 parking
6 screen planting
7 intimate planting

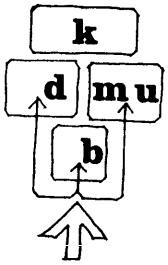
assumed

5 25 FEET
0 10 50

SMALL NCO CLUB

7-6.11 STEP K - DESIGN ANALYSIS

7-6.11.1 Plan type: Three-way plan.



7-6.11.2 Design assumptions:
Attractive view to west.

7-6.11.3 Planning objectives:
Building.

A. Flexibility important between dining room and multi-use; small club with highly varying party and banquet service.

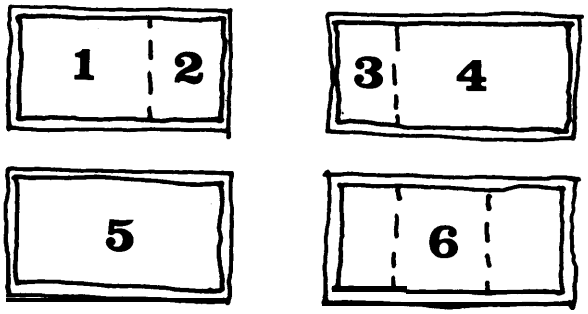
B. Exploit corner entry in interesting way.

C. Subdivide main circulation and place most-used spaces closest to entry.

D. Provide for expansion.

7-6.11.4 Planning evaluation:
Building,

A. Good flexibility between multi-use room and dining room. Six different size spaces available.



B. Attractive corner entry well related to circulation areas.

C. Good kitchen and bar service to dining room and multi-use rooms.

D. Easy to arrange separate entry, though probably not useful at present size.

E. Subdivided circulation with good variety in character of spaces.

7-6.11.5 Planning objectives: Site.

A. Relate site planning to corner entry.

B. Provide screened terrace off dining area with food servicing possible.

7-6.11.6 Planning evaluation: Site.

A. Good solution of corner entrance.

B. West facing dining room protected from late afternoon solar glare by screened planting.

7-6.12 STEP L - PLANNING ALTERNATIVES

Figure 7-43 Alternative I for Small NCO Club

Objective: Provide side entry to club.

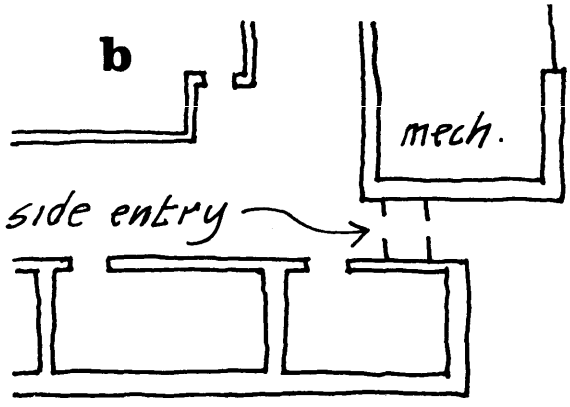
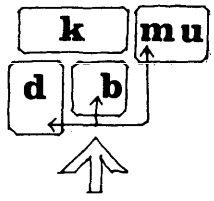
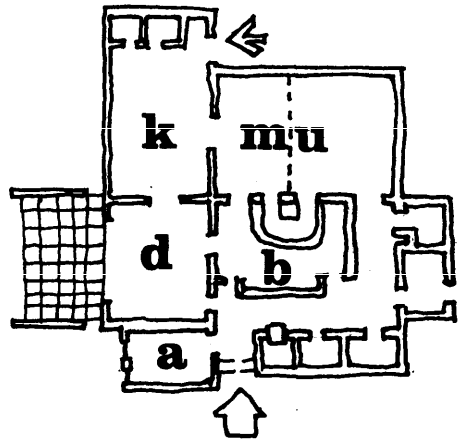


Figure 7-44 Alternative 2 for Small NCO Club

Objective: Illustrate 2-way plan variation. More compact circulation, but no flexibility between dining and multi-use rooms.





7-6.13 STEP M - UTILITY & THERMAL LOADS

7-6.13.1 Building data

A.	Gross floor area	9,217 s.f.
B.	Max. population at one time	305
C.	Max. meals served/day	400

7-6.13.2 Utility loads

A.	Electrical: Light and power	250 kva
B.	Water: Max. flow rate, cold water	60 gpm
	Max. flow rate, hot water	60 gpm
	Total flow per day	4,000 gal.
C.	Sewage: Total gallons per day	4,000 gal.

7-6.13.3 Heating and cooling loads

A.	Heating: Load	302 MBTU/hr.
B.	Air conditioning: Tons of refrigeration	40 tons

7-6.13.4 Design assumptions

All policy and design criteria per DOD 4270.1-M.

A. Estimates are for plans shown.

B. 40° North latitude.

C. Heat load in kitchen not included in heat gain calculations.

D. Mechanical room ventilated only.

E. Single glazing, standard glass.

F. 20% outside air assumed for ventilation.

G. Assumed perimeter heat loss: 40 BTU/hr./ft.

H. Sewage demand based on 10 gpd per person, max. occupancy.

I. Lighting load assumed 2.5 watts/s.f.

7-7.1 STEP A - SPACE PROGRAM: The space program shown in Figure provides for separate bars; one associated with the main entrance and dining room, the other functioning as an informal bar related to a separate entrance. In addition, a separate party room is required. Military strength served is 1251-2000 NCOS.

Figure 7-45 Space Program for Medium NCO Club

Generic Space	Program Area	% Gross Area
1 - Entry	1,362.5	7.7
2 - Dining Room	2,963	16.8
3 - Bar	1,345.5	7.6
4 - Kitchen	2,740	15.6
5 - Multi-use	2,942.5	16.7
6 - Party Rooms	750	4.3
7 - Rec. Room (Q)	575.5	3.3
8 - Rec. Room (N)	294	1.7
9 - Administration	894	5.1
10 - Rest Rooms	361.5	2.1
11 - Storage	666.5	3.8
12 - Maintenance	43	.2
13 - Mechanical	696	3.9
14 - Lockers	214	1.2
Net Usable	15,848	90
Gross Area	17,609	100

Dining Room Occupancy: 211 @ 14 sq. ft./seat
Ballroom Occupancy: 187 - bingo
216 - banquet

Net usable: gross area ratio: 0.90

For basis upon which the space program is developed, see Sections 2 and 3.

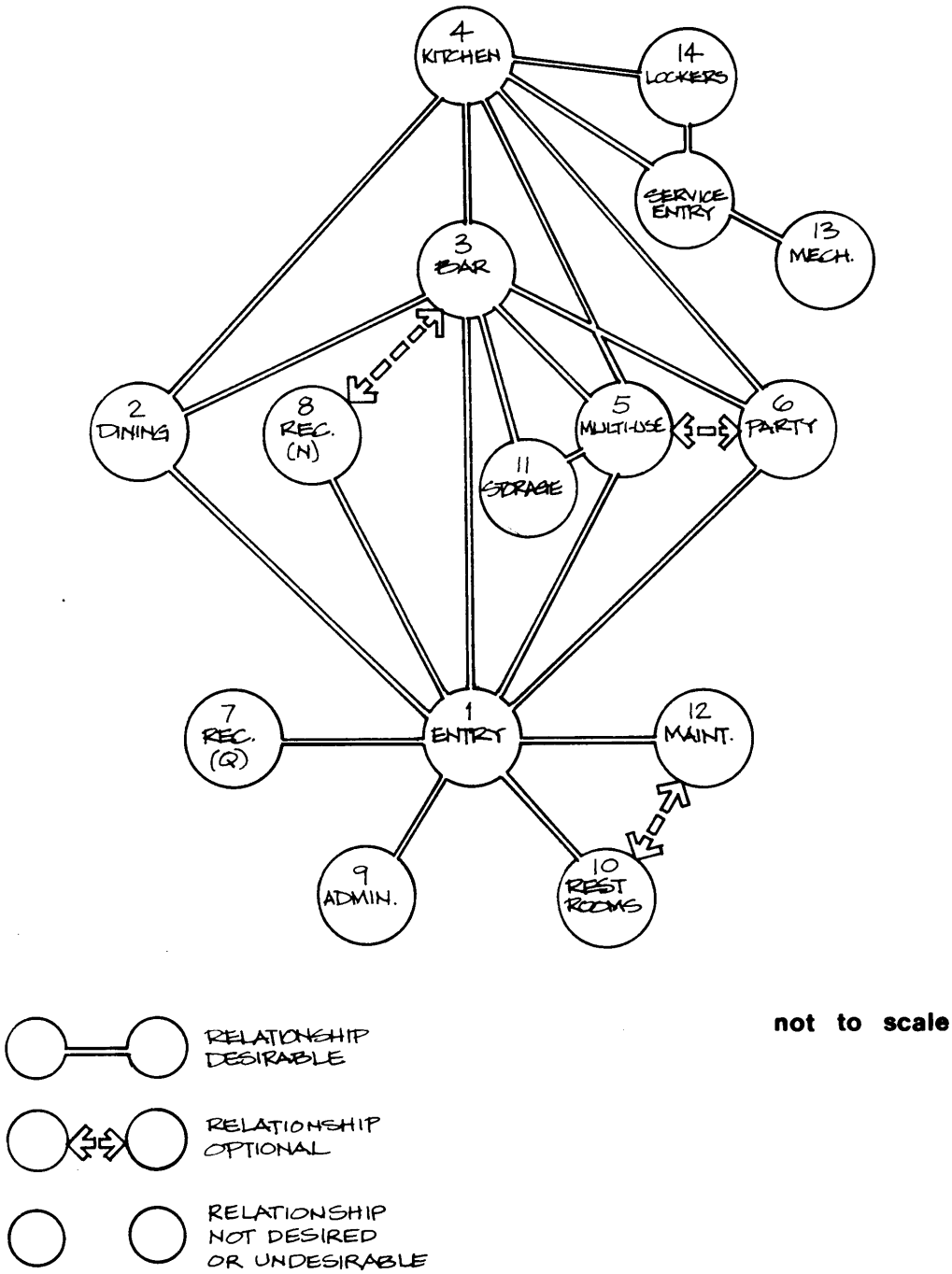
7-7.2 STEP B - AFFINITY MATRIX: The affinity matrix shown in Figure indicates relationships between the generic spaces as being desirable (+), of no consequence (0), or undesirable (-). This is based upon use patterns, acoustic compatibility, mutual support for functional operation, sanitary or other reasons. The matrix is intended to denote the desirability of adjacency or separation per se, and along with the space program, is part of the problem statement generated by the using service.

Figure 7-46 Affinity Matrix for Medium NCO Club

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 - Entry (Main)		+	+	0	+	0	-	-	-	0	0	0	0	0
2 - Dining Room			+	+	+	-	-	-	0	0	0	0	0	0
3 - Bar				+	+	-	-	-	-	-	-	-	-	-
4 - Kitchen					-	-	-	-	-	-	-	-	-	-
5 - Multi-use						+	+	+	+	+	+	+	+	+
6 - Party Room							0	0	0	0	0	0	0	0
7 - Recreation Room-quiet								+	+	+	+	+	+	+
8 - Recreation Room-noisy									-	-	-	-	-	-
9 - Administration space										0	0	0	0	0
10 - Rest Room											0	0	0	0
11 - Storage												0	0	0
12 - Maintenance													0	0
13 - Mechanical Space														0
14 - Locker Rooms														

7-7.3 STEP C - AFFINITY DIAGRAM (NO SCALE)

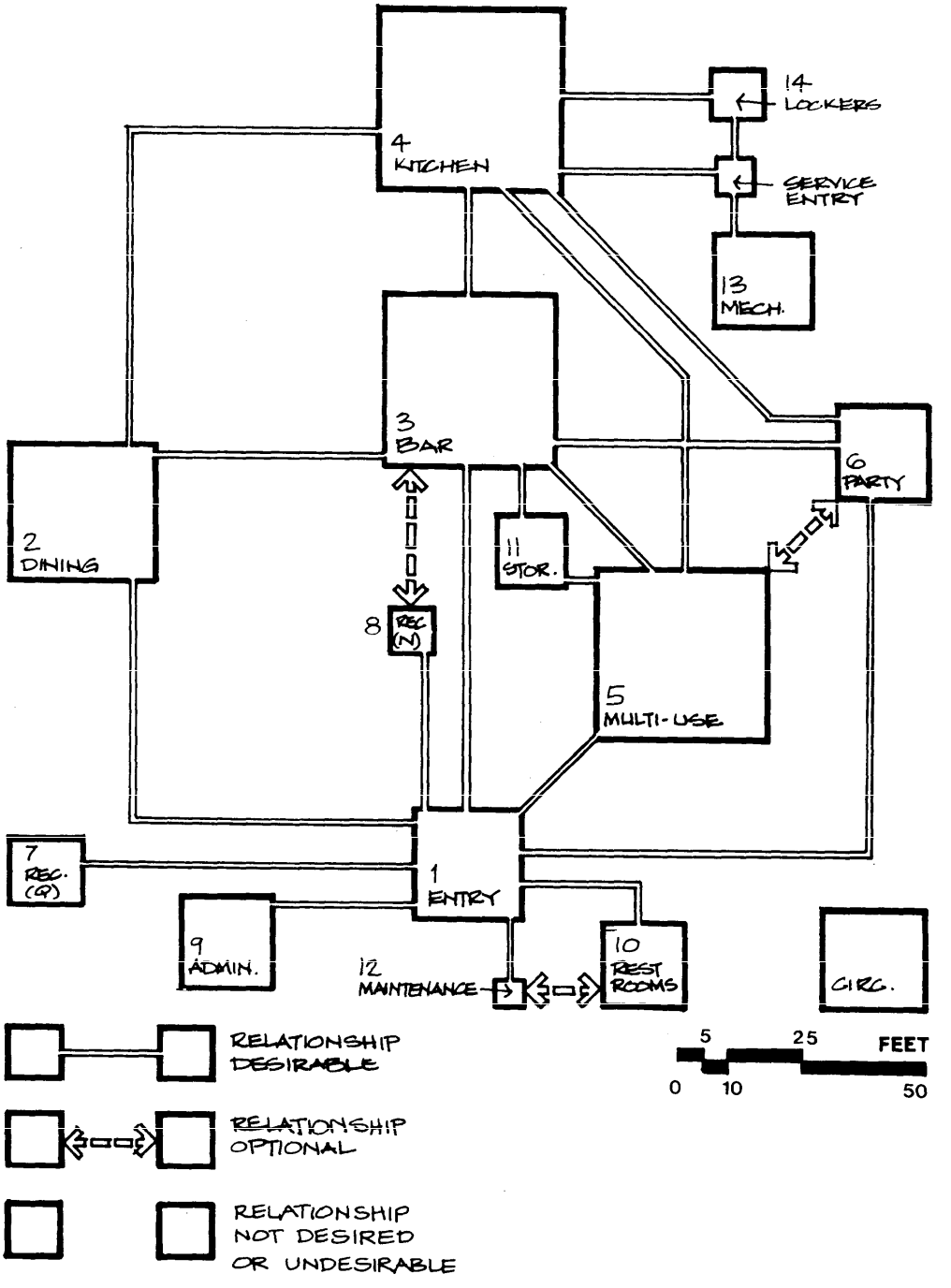
Figure 7-47 Affinity Diagram for Medium NCO Club (no scale)



not to scale

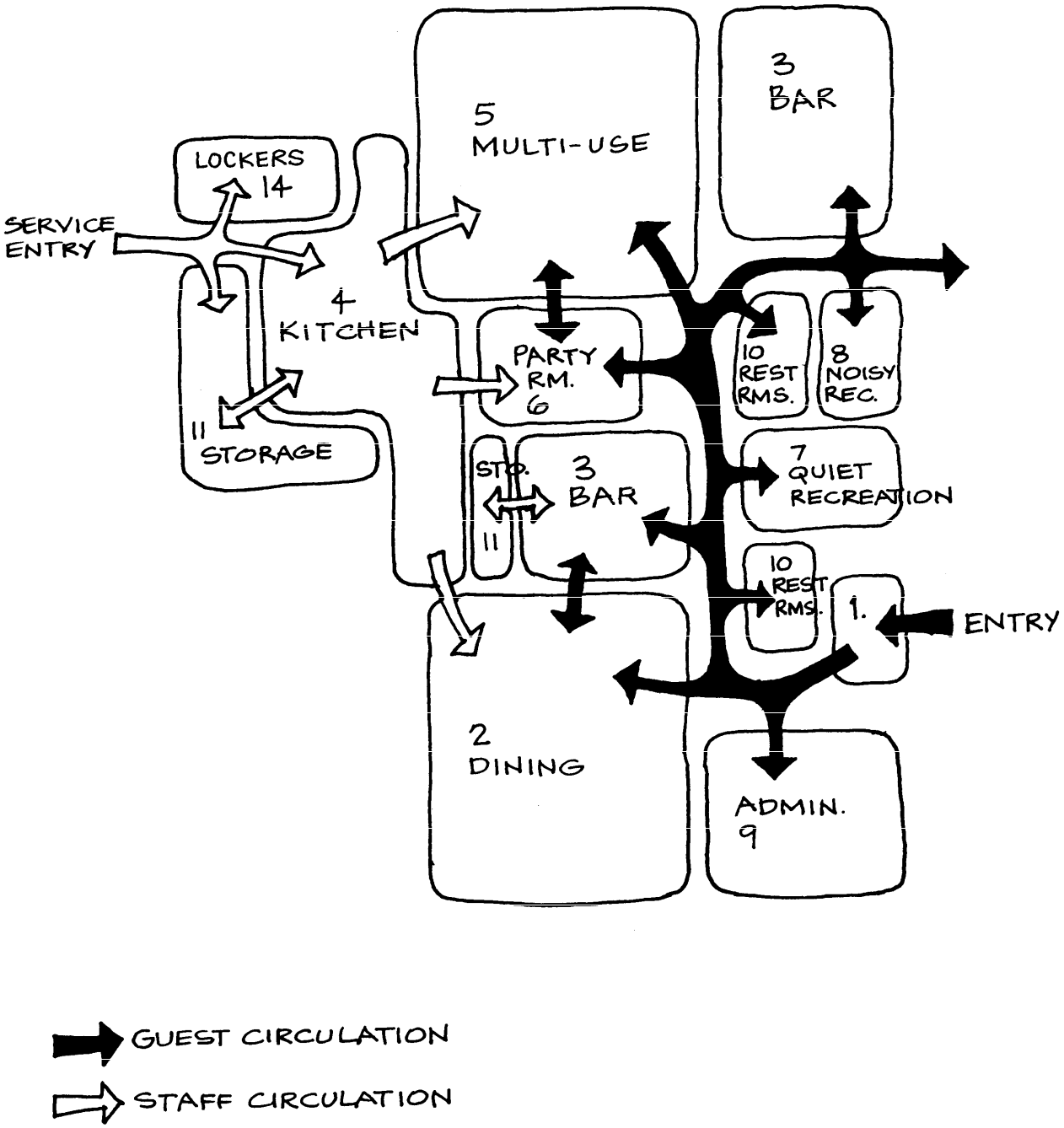
7-7.4 STEP D - AFFINITY PROGRAM (TO SCALE)

Figure 7-48 Affinity Diagram for Medium NCO Club (to scale)



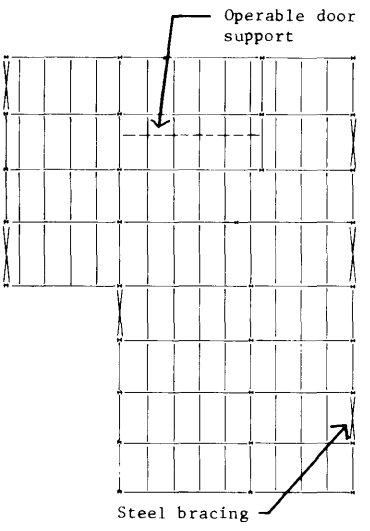
7-7.5 STEP E - PLANNING DIAGRAM

Figure 7-49 Planning Diagram for Medium NCO Club

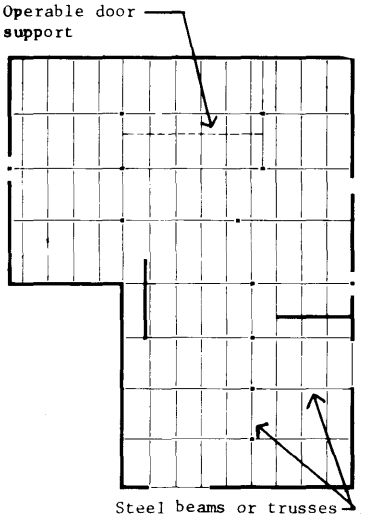


7-7.6 STEP F - STRUCTURAL FRAMING

7-7.6.1 Structure: Bearing and shear wall, or two-way rigid frame. Bearing and shear wall will usually be most economical, particularly in seismic areas. Rigid frame will provide for more flexibility in planning for expansion or change.



Two-way Rigid Frame



Beam and Shear Wall

STEP G - SUBSYSTEM CHOICES

7-7.7 H.V.A.C.: System appropriate to climate.

7-7.7.2 Envelope: Masonry or concrete for load bearing and shear wall structure. Non-load bearing masonry or insulated panel infill for rigid frame structure.

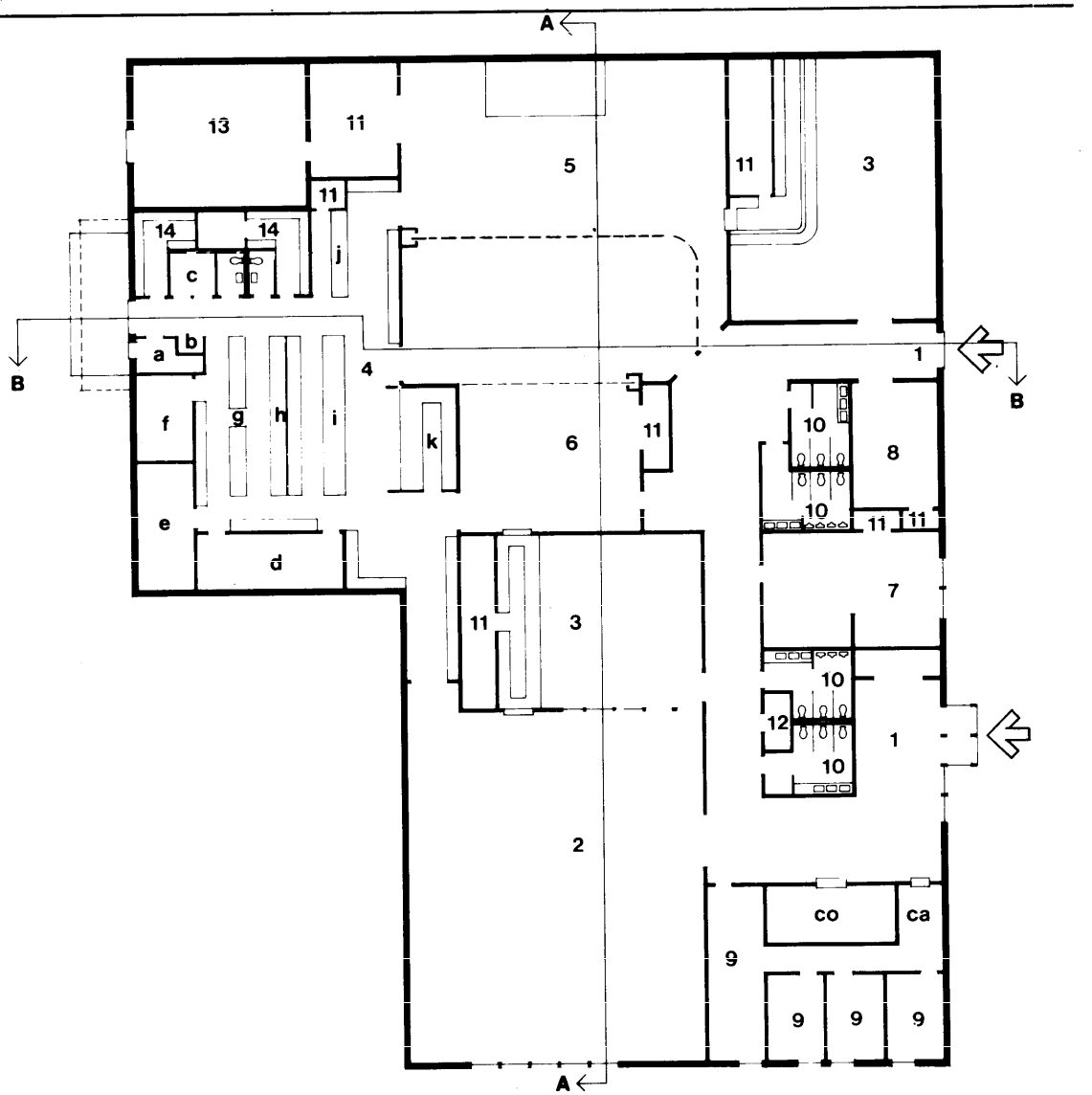
7-7.7.3 Interior partitions: Non-load bearing replaceable partitions.

7-7.7.4 Ceiling: Systems appropriate to design requirements.

7-7.7.5 Lighting: Systems appropriate to design requirements.

7-7.8 STEP H - FLOOR PLAN

Figure 7-50 Floor Plan for Medium NCO Club



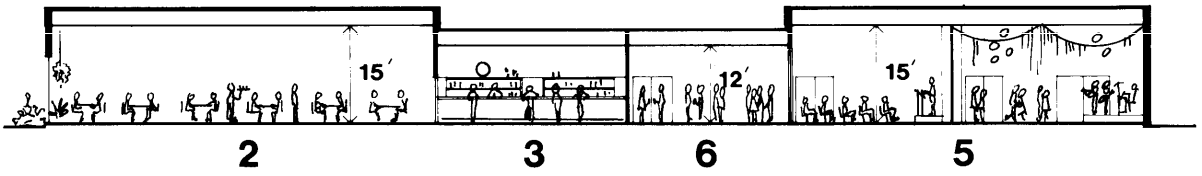
KEY

1 entry
co coatroom
2 dining
3 bar
4 kitchen
a waste holding
b check-in
c chef's office
d dry storage
e refrigerated storage
f freezer storage
g preparation area
h cooking area
i serving area
j banquet make-up
k dishwashing

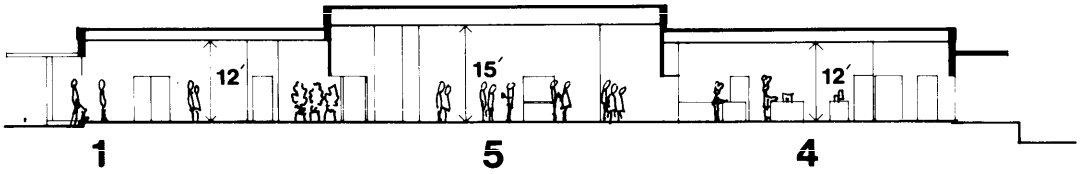
5 ballroom/multi-use
6 party room
7 quiet recreation
8 noisy recreation
9 administration
ca cashier
10 restrooms
11 storage
12 maintenance
13 mechanical
14 locker room

7-7.9 STEP I - SECTIONS

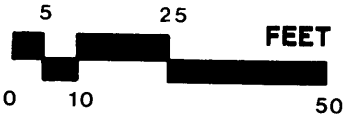
Figure 7-51 Sections for Medium NCO Club



Section A – A

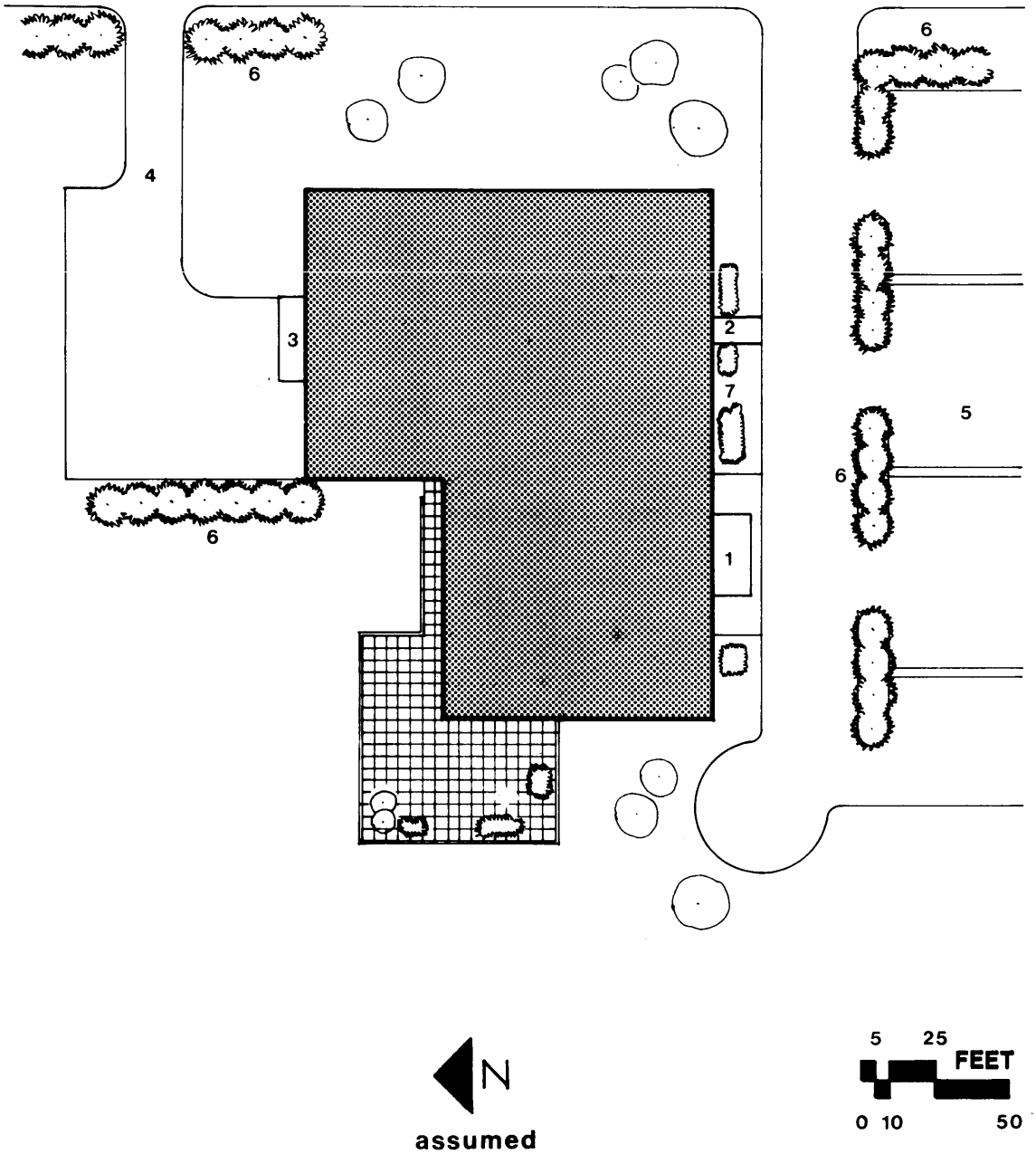


Section B – B



7-7.10 STEP J - SITE PLAN

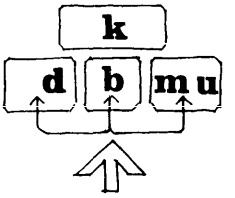
Figure 7-52 Site Plan for Medium NCO Club



MEDIUM NCO CLUB

7-7.11 STEP K - DESIGN ANALYSIS

7-7.11.1 Plan type: In-line plan.



7-7.11.2 Design assumptions: Views unimportant.

7-7.11.3 Planning objectives: Building.

A. Provision for flexibility between dining room/ballroom unimportant.

B. Provision for dining room and kitchen expansion important.

C. Provide separate informal bar located close to game room, with separate entry.

7-7.11.4 Planning evaluation: Building.

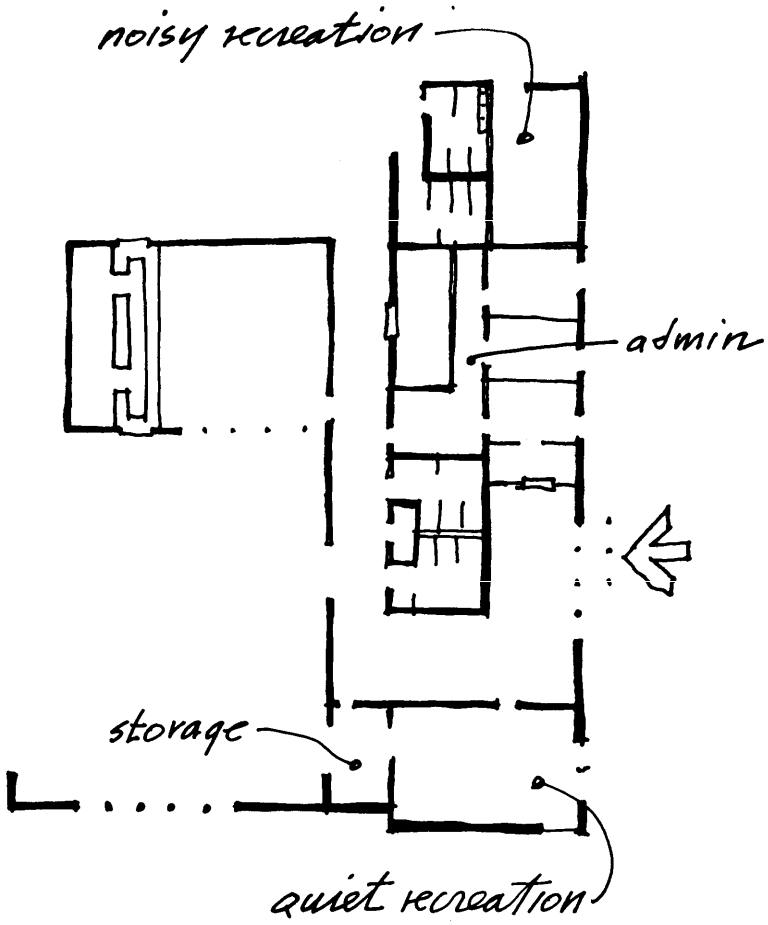
A. Good expansion for kitchen, dining room and ballroom.

B. Party room well located for service and public entry, and as reception area for ballroom.

C. Good location for game room opposite informal bar.

7-7.12 STEP L - PLANNING ALTERNATIVES

Objectives: Relocate quiet recreation room to avoid possible acoustic interference from adjoining restrooms and noisy recreation room. In addition, provide storage space with direct access to multi-use room.



7-7.13 STEP M - UTILITY & THERMAL LOADS

7-7.13.1 Building data

A.	Gross floor area	17,609 s.f.
B.	Max. population at one time	486
C.	Max. meals served/day	635

7-7.13.2 Utility loads

A.	Electrical:	Light and power	690 kva
B.	Water:	Max. flow rate, cold water	60 gpm
		Max. flow rate, hot water	60 gpm
		Total flow per day	6,350 gal.
C.	Sewage:	Total gallons per day	6,350 gal.

7-7.13.3 Heating and cooling loads

A.	Heating: Load	698 MBTU/hr.
B.	Air conditioning: Tons of refrigeration	61 tons

7-7.13.4 Design assumptions

All policy and design criteria per DOD 4270.1-M.

A. Estimates are for plans shown.

B. 40° North latitude

C. Heat load in kitchen not included in heat gain calculations.

D. Mechanical room ventilated only.

E. Single glazing, standard glass.

F. 20% outside air assumed for ventilation.

G. Assumed perimeter heat loss: 40 BTU/hr./ft.

H. Sewage demand based on 10 gpd per person, max. occupancy.

I. Lighting load assumed 2.5 watts/s.f.

7-8.1 STEP A - SPACE PROGRAM: The space program shown in Figure is based on an assumption of greater demand for dining facilities relative to ballroom area, than the other two NCOs' club examples. A required dining seating capability of 275 is assumed. The military strength served is 2000-3000 NCOs.

Figure 7-53 Space Program for Large NCO Club

Generic Space	Program Area	% Gross Area
1 - Entry	519.5	2.0
2 - Dining Room	3,839.5	14.8
3 - Bar	3,211	12.3
4 - Kitchen	5,335	20.5
5 - Multi-use	3,520	13.5
6 - Party Rooms	737.5	2.9
7 - Rec. Room (Q)	710.5	2.7
8 - Rec. Room (N)	1,150	4.5
9 - Administration	1,310	5
10 - Rest Rooms	852	3.3
11 - Storage	773.5	2.9
12 - Maintenance	38	.1
13 - Mechanical	1,075	4.1
14 - Lockers	374	1.4
Net Usable	23,445.5	90
Gross Area	26,051	100

Dining Room Occupancy: 272 @ 14 sq. ft./seat
Ballroom Occupancy: 238 - bingo
275 - banquet

Net usable: gross area ratio: 0.90

For basis upon which the space program is developed, see Sections 2 and 3.

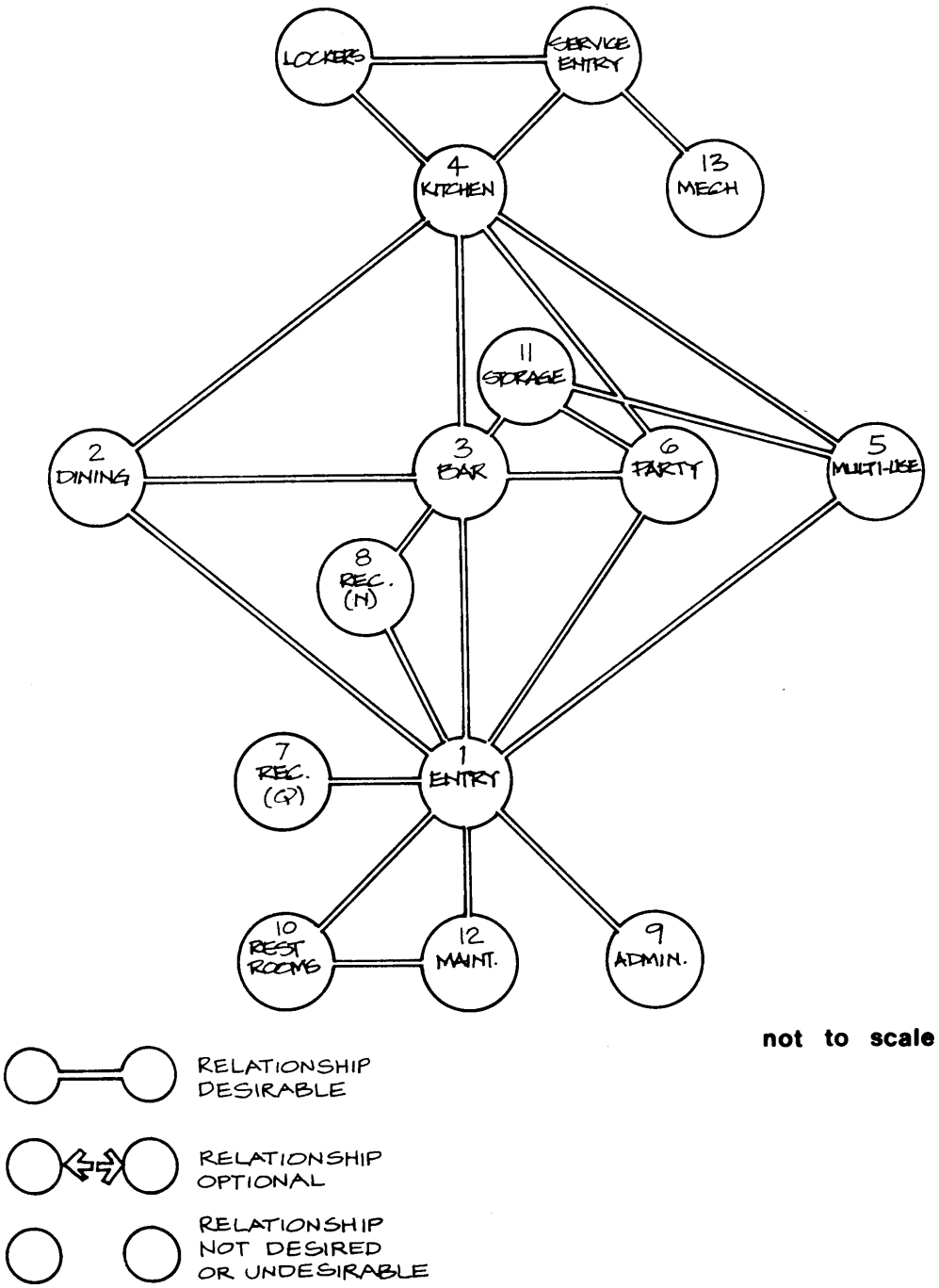
7-8.2 STEP B - AFFINITY MATRIX: The affinity matrix shown in Figure 7-54 indicates relationships between the generic spaces as being desirable (+), of no consequence (0), or undesirable (-). This is based upon use patterns, acoustic compatibility, mutual support for functional operation, sanitary or other reasons. The matrix is intended to denote the desirability of adjacency or separation per se, and along with the space program, is part of the problem statement generated by the using service.

Figure 7-54 Affinity Matrix for Large NCO Club

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 - Entry (Main)		+	+	0	+	0	-	-	-	0	0	0	0	0
2 - Dining Room			+	0	+	-	-	-	-	0	0	0	0	0
3 - Bar				+	-	0	-	-	-	-	-	-	-	-
4 - Kitchen					+	+	+	+	-	-	-	-	-	-
5 - Multi-use						+	-	-	-	-	-	-	-	-
6 - Party Room							0	+	+	-	-	-	-	-
7 - Recreation Room-quiet								0	-	-	-	-	-	-
8 - Recreation Room-noisy									+	+	+	+	+	+
9 - Administration space										0	0	0	0	0
10 - Rest Room											0	0	0	0
11 - Storage												0	0	0
12 - Maintenance													0	0
13 - Mechanical Space														0
14 - Locker Rooms														

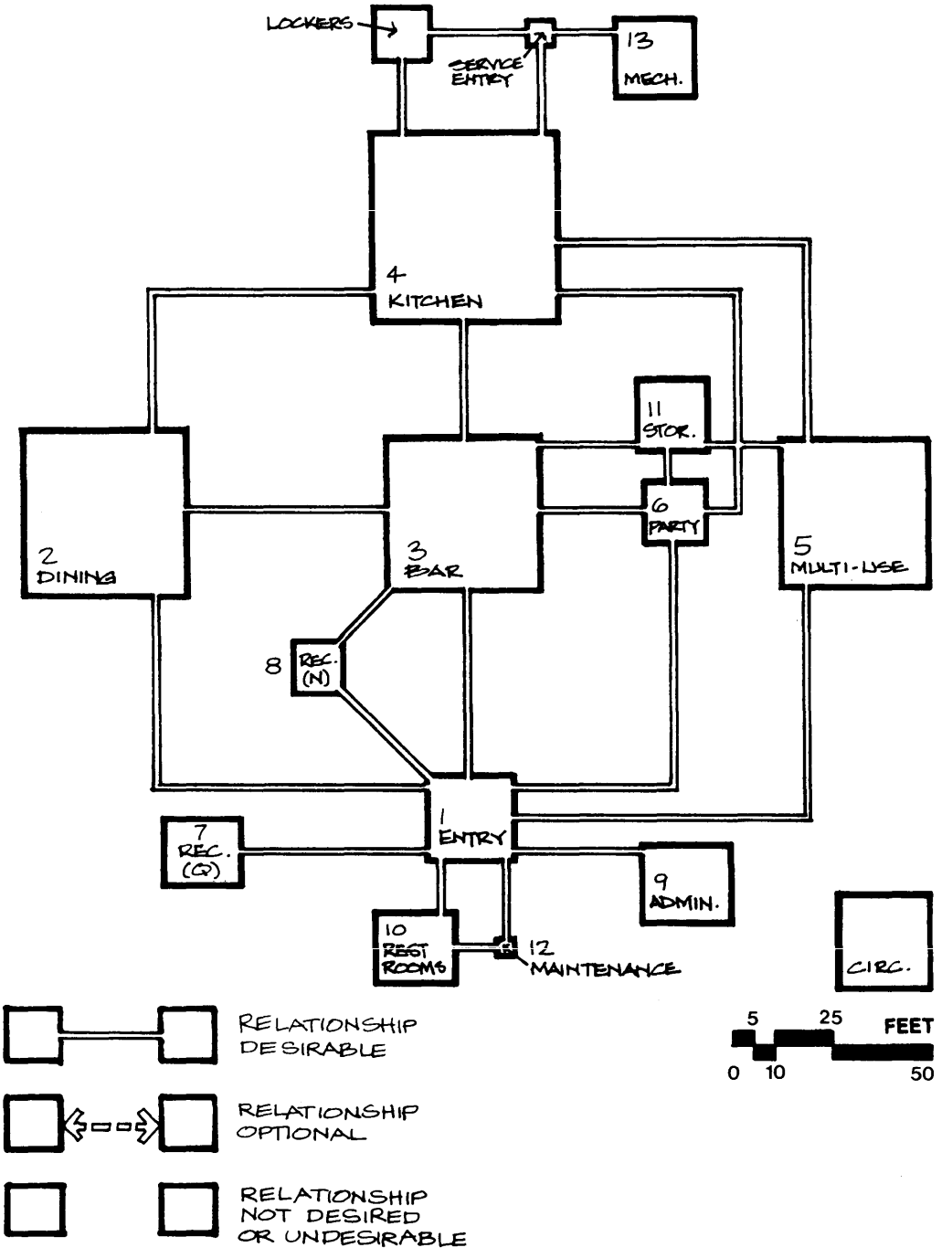
7-8.3 STEP C - AFFINITY DIAGRAM (NO SCALE)

Figure 7-55 Affinity Diagram for Large NCO Club



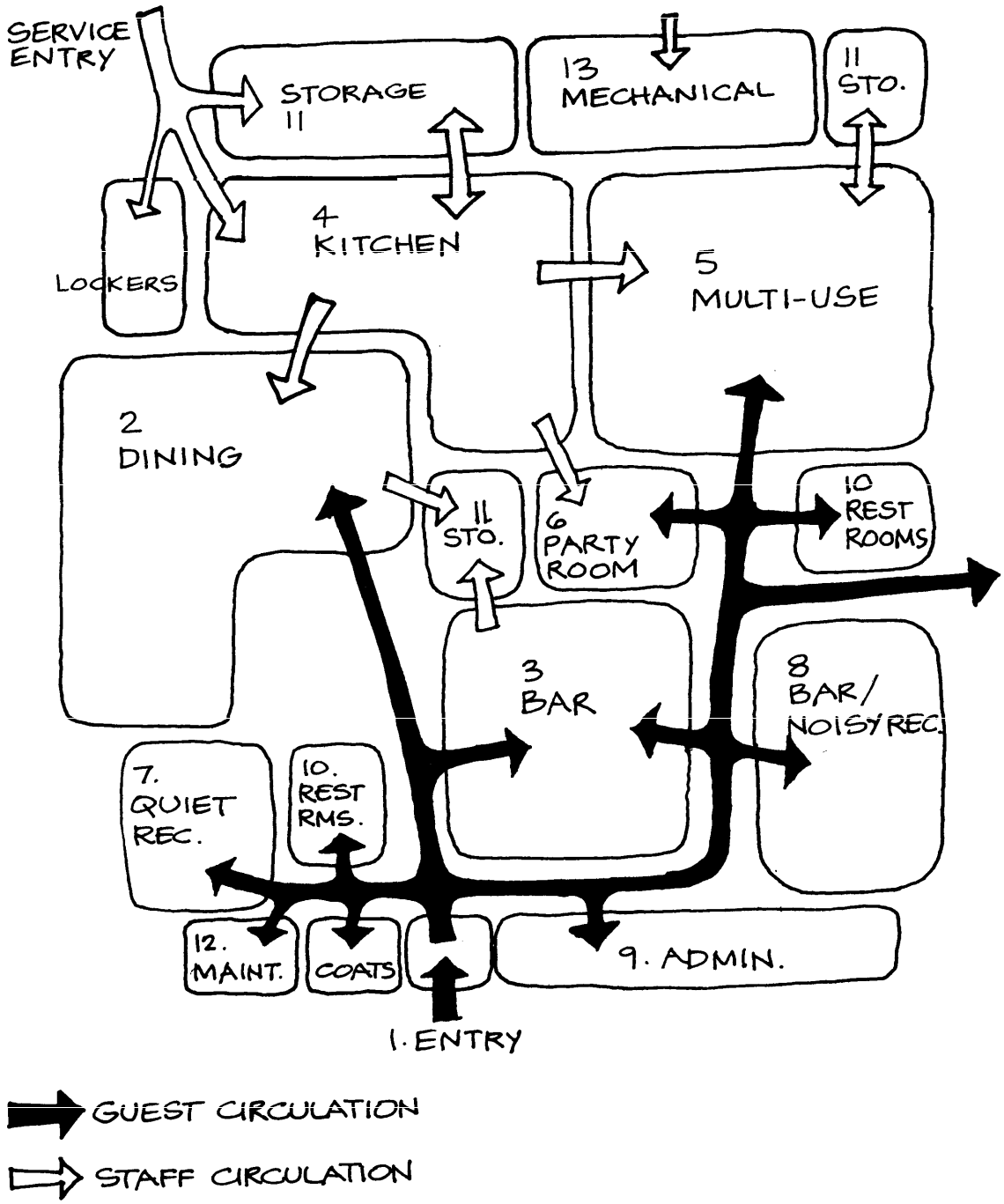
7-8.4 STEP D - AFFINITY DIAGRAM (TO SCALE)

Figure 7-56 Affinity Program for Large NCO Club



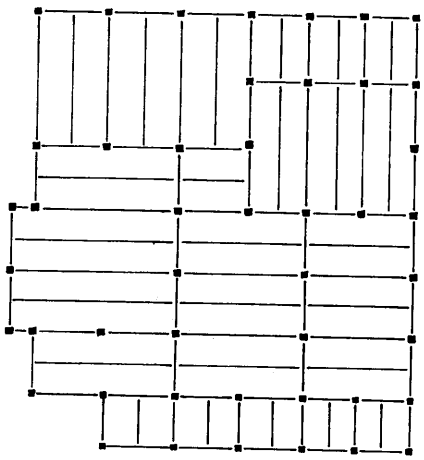
7-8.5 STEP E - PLANNING DIAGRAM

Figure 7-57 Planning Diagram for Large NCO Club

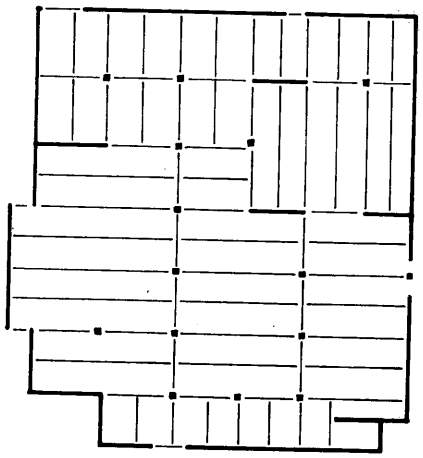


7-8.6 STEP F - STRUCTURAL FRAMING

7-8.6.1 Structure: Alternative I shows bearing and shear walls, heavy timber beams and girders, with concrete or masonry columns used as a design element. Alternative 2 uses cantilevered columns with wood beams and girders. This alternative is more flexible than alternative I, but particularly in seismic areas, will be more expensive. Both alternatives could also economically utilize a steel structure if the design expression of heavy exposed structure is not desired.



Rigid Frame



Bearing and Shear Walls

7-8.7 STEP G - SUBSYSTEM CHOICES

7-8.7.1 H.V.A.C.: System appropriate to climate. Note effect of skylights on the heating and cooling loads (STEP M).

7-8.7.2 Envelope: Masonry or concrete.

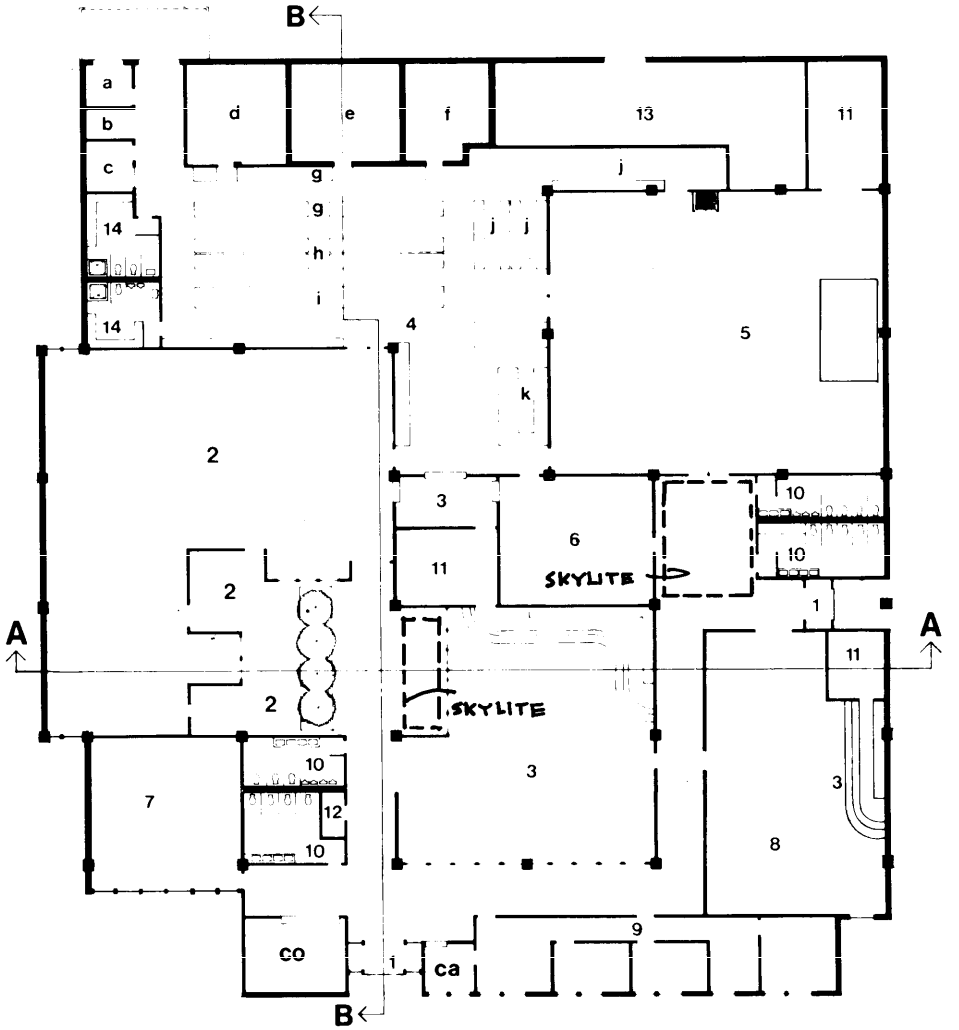
7-8.7.3 Interior partitions: Non-load bearing replaceable partitions throughout, except for operable wall in multi-use room.

7-8.7.4 Ceiling: Direct application to structure in large public and service areas. Suspended plaster or gypsum board in administration areas.

7-8.7.5 Lighting: Systems appropriate to design requirements.

7-8.8 STEP H - FLOOR PLAN

Figure 7-58 Floor Plan for Large NCO Club



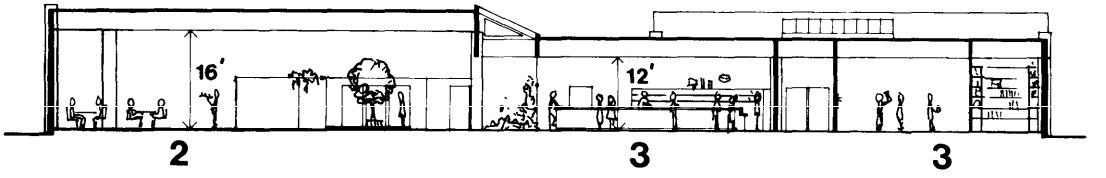
KEY

1 entry
co coatroom
2 dining
3 bar
4 kitchen
a waste holding
b check-in
c chef's office
d dry storage
e refrigerated storage
f freezer storage
g preparation area
h cooking area
i serving area
j banquet make-up
k dishwashing

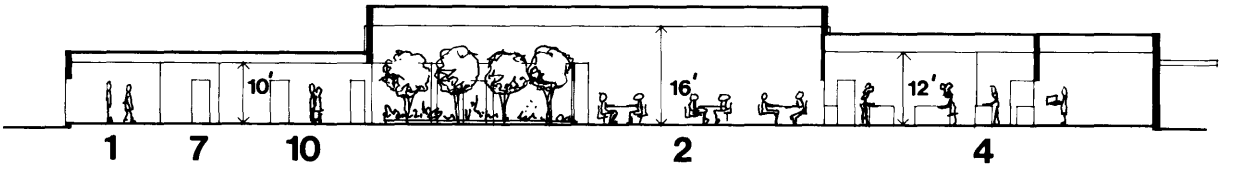
5 ballroom/multi-use
6 party room
7 quiet recreation
8 noisy recreation
9 administration
ca cashier
10 restrooms
11 storage
12 maintenance
13 mechanical
14 locker room

7-8.9 STEP I - SECTIONS

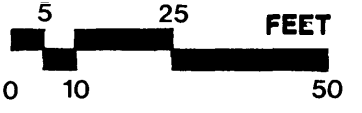
Figure 7-59 Sections for Large NCO Club



Section A – A

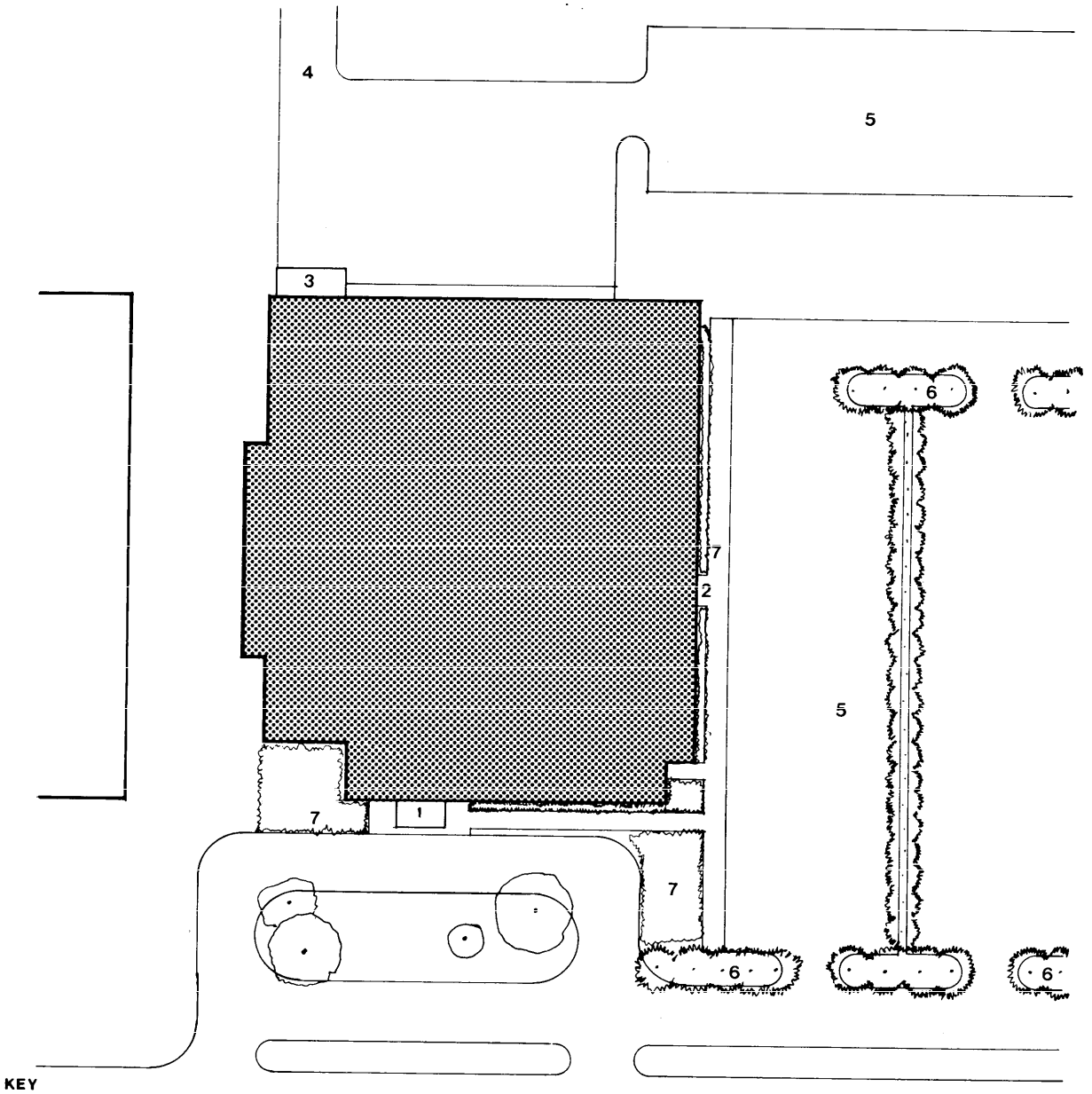


Section B – B



7-8.10 STEP J - SITE PLAN

Figure 7-60 Site Plan for Large NCO Club



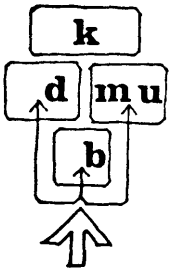
KEY

1 main entry
2 secondary entry
3 service entry
4 service access
5 parking
6 screen planting
7 intimate planting
8 pool

N
assumed

10 50 FEET
0 25 100

7-8.11 STEP K - DESIGN ANALYSIS



7-8.11.1 Plan type: Three-way plan.

7-8.11.2 Design assumptions

A. Unattractive surroundings.
B. Adequate space for one-story solution.
C. Expansion unimportant; club assumed to be at maximum capacity.
D. Dining room/multi-use room flexibility unimportant.

7-8.11.3 Planning objectives: Building.

A. Provide solution in which east and west elevations can be blank.
B. Subdivide dining room in functional and interesting way.
C. Provide informal bar with separate entrance.
D. Subdivide main circulation.

7-8.11.4 Planning evaluation: Building.

A. Subdivided circulation good.
B. Circulation area at entry to multi-use room is possible source of congestion and will be unattractive unless well-developed in detail. Skylight helps, at expense of increased construction cost and air conditioning load.
C. Subdivided dining room provides well for a variety of dining group sizes.

7-8.12 STEP L - PLANNING ALTERNATIVES

7-8.12.1 Many variations are possible for this large club. The large officers clubs A and B illustrate different planning solutions that would also be appropriate for this club.

7-8.13 STEP M - UTILITY & THERMAL LOADS

7-8.13.1 Building data

A.	Gross floor area	26,051 s.f.
B.	Max. population at one time	765
C.	Max. meals served/day	1,100

7-8.13.2 Utility loads

A.	Electrical: Light and power	780 kva
B.	Water: Max. flow rate, cold water	75 gpm
	Max. flow rate, hot water	75 gpm
	Total flow per day	11,000 gal.
C.	Sewage: Total gallons per day	11,000 gal.

7-8.13.3 Heating and cooling loads

A.	Heating: Load	790 *MBTU/hr.
B.	Air conditioning: Tons of refrigeration	108 **tons

7-8.13.4 Design assumptions

All policy and design criteria per DOD 4270.1-M.

A. Estimates are for plans shown.

B. 40° North latitude.

C. Heat load in kitchen not included in heat gain calculations.

D. Mechanical room ventilated only.

E. Single glazing, standard glass.

F. 20% outside air assumed for ventilation.

G. Assumed perimeter heat loss: 40 BTU/hr./ft.

H. Sewage demand based on 10 gpd per person, max. occupancy.

I. Lighting load assumed 2.5 watts/s.f.

* Loss due to skylight 37900 BTU/hr.

** Load due to skylight 7.2 tons

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