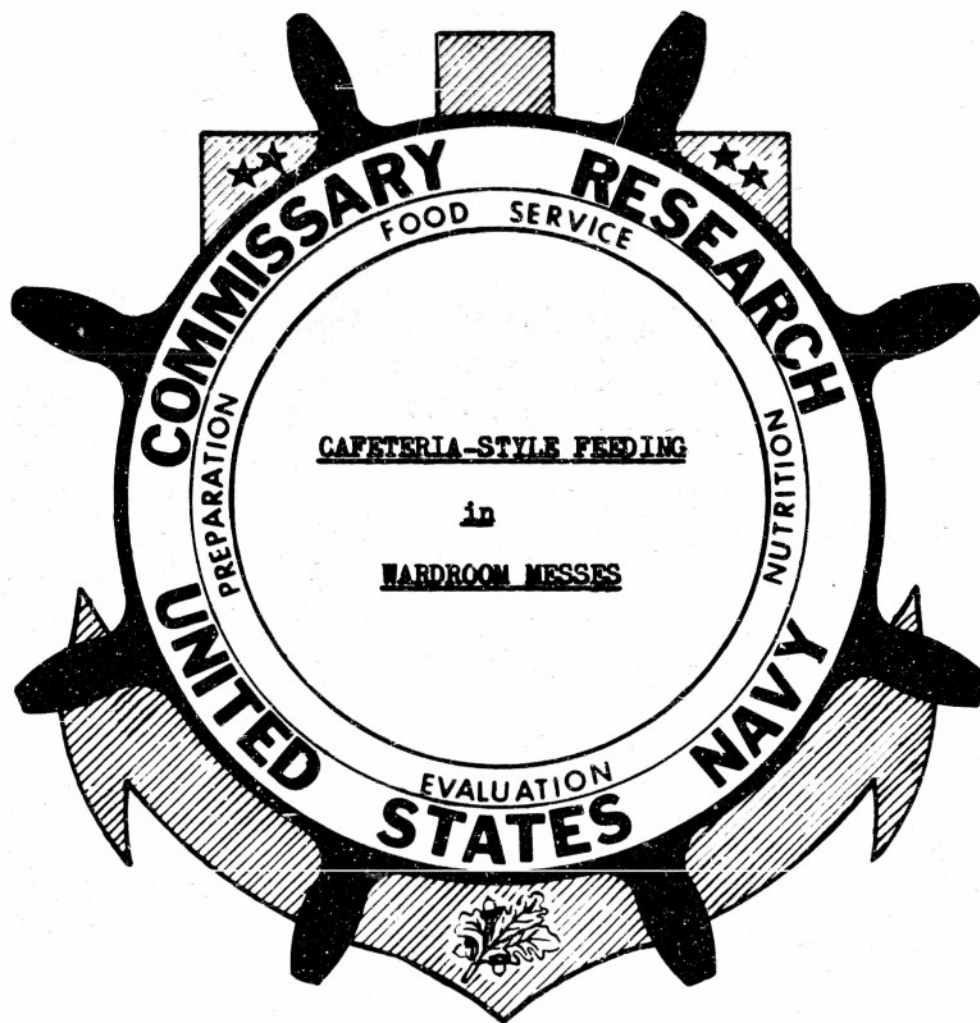


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COMMISSARY RESEARCH DIVISION
NAVAL SUPPLY RESEARCH AND DEVELOPMENT FACILITY
BAYONNE, NEW JERSEY



Project NT002026 (CR53-81)
Storage, Preparation and Service of Food Aboard Surface Craft
19 March 1953

DEPARTMENT OF THE NAVY
Bureau of Supplies and Accounts
Washington 25, D. C.

In reply refer to

TECHNICAL REPORT REVIEW

"CAFETERIA-STYLE FEEDING IN WARDROOM MESSSES"

Project NT002026 (CR 53-81)
"Storage, Preparation and Service of
Food Aboard Surface Craft"
19 March 1953

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/s/ Herman Strock
HERMAN STROCK
Commander, (SC), USN
Director, Research and Development Division
By direction of the Chief of Bureau

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BAYONNE, NEW JERSEY

CAFETERIA STYLE FEEDING

IN

WARDROOM MESSSES

Project NT002026 (CR 53-81)
Storage, Preparation and Service of Food Aboard Surface Craft
19 March 1953

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BACKGROUND INFORMATION AND CONDITIONS OF STUDY

In response to a request from the Commanding Officer of an Essex Class CVA Carrier for assistance in the conversion of the present table service to cafeteria-style service in the wardroom mess, this study was made. The conversion was considered to be necessary due to a present and anticipated further shortage of stewardsmen in relation to the number of officers on board.

The following operational features of the mess and administrative desires were to be considered in the development of the plans:

1. Facilities for a maximum of 250 officer personnel to be provided.
2. Existing equipment to be used insofar as considered suitable.
3. Bakery products to be purchased from the general mess and the bulk of the vegetable preparation accomplished in the general mess vegetable locker. Future mess planning also provides for the more extensive use of fresh frozen fruits and vegetables. Thus, extensive facilities in these preparation areas are not required.
4. All food service to be allocated to the serving line with the exception of butter, coffee cream and condiments.
5. All mess operations to be confined to one deck, if feasible.
6. The food service facility to be equipped and arranged to efficiently supply short orders, sandwiches and other special odd hour meals, occasioned by operational exigencies, in addition to normal meal period operations.

OBJECTIVE

To develop suitable plans for cafeteria-style feeding in the wardroom mess aboard an Essex Class CVA Carrier; the completed plans to fulfill the following basic requisites:

1. A temporary conversion plan requiring a minimum of changes and additions to existing facilities and which may be implemented immediately.

2. Permanent conversion plans reflecting the most desirable and efficient selection and arrangement of equipment in relation to the various food service demands pertinent to the class vessel concerned; and the more economical and efficient utilization of space and manpower for present table service and cafeteria-style service.

CONCLUSIONS

On the basis of the proposals submitted in this report as Plans A, B, and C, it is concluded that:

1. Plan A (Figure III) may be put into immediate operation with an approximate expenditure of \$4,500.00; labor requirements are reduced from 45 stewardsmen to 22 stewardsmen; rearrangement and modification of equipment, as indicated, provides the flexible food service requirements for special meal operations.
2. Plan B (Figure IV) requires the complete alteration of the pantry area but combines the entire galley, scullery and food service operations into the one former pantry area on the second deck; thus providing a compact, flexible arrangement which may be utilized equally as effectively for the normal table service or cafeteria-style service as desired. In addition, the following advantages result:
 - a. The release of approximately 600 sq. ft. of galley space on the third deck for other purposes.
 - b. A farther reduction of two personnel in galley labor requirements.
 - c. The elimination of the weighty, space consuming, hazardous, and unsanitary "dumb waiter" and shaft between the second and third decks.
 - d. The provision for the equipment and line station spaces necessary to efficiently fulfill the short order, sandwich, and special meal requirements.
 - e. Savings in food waste and deterioration and a reduction in heat and moisture dissipation to the galley will be realized through the use of the compartmented, dry heat, thermostatically controlled hot food service table.

- f. Through the utilization of additional items of progressive equipment, i.e., lowerators, silver washer and drier, pre-rinse device, glass washer, refrigerated pantry table, etc., further savings in labor and materials, reduction in service time and increased sanitation will result.
 - g. The mess officer and chief steward are enabled to exercise proper and more efficient control and supervision over all food supplies, preparation and service which should result in further monetary savings.
3. Plan C (Figure V) represents a more efficiently arranged and equipped present third deck galley.

RECOMMENDATIONS

It is recommended that:

1. Plan A be implemented aboard an Essex Class CVA Carrier at present to determine its practicality and advantages in the potential temporary conversion by other Essex Class vessels to cafeteria-style service when such type of service should be considered desirable and/or necessary.
2. The relative merits of Plan B, either in its entirety or component parts, be given adequate evaluation for use in future wardroom mess planning or present modification aboard Essex Class CVA Carriers to make the present family style feeding more efficient and to make facilities available for situations that demand cafeteria-style feeding.
3. Plan C be considered for improving the efficiency of the present galley arrangement and selection of equipment.

INTERPRETATION OF PLANS

FIGURE I - Galley, 3rd Deck

Present arrangement of existing equipment

FIGURE II - Pantry, serving area, and scullery, 2nd deck

Present arrangement of existing equipment

FIGURE III - Plan A, Temporary conversion to cafeteria-style feeding

1. Rearrangement of existing pantry equipment:

a. The rearrangement of work tables, refrigerators and elements of the serving line as indicated, establishes the stations required for cafeteria-style service. In addition, the short order and sandwich stations have been provided with their respective refrigerators, providing for easy access to supplies. In order to provide adequate dresser service space and working implements, the following modifications and additions to the serving line have also been made:

- (1) Coffee service has been moved to the wardroom.
- (2) The toaster is stowed on work table (item 2) except for the breakfast meal.
- (3) A 4-hole section at the end of the steam table (item 9) has been covered with a solid removable top, providing dresser working space for the short order station (item 8) and soup station.

The remaining steam table sections provide adequate spaces for the normal number of meal components. (Foods should be supplied to the steam table in as small quantities as practicable to maintain their attractiveness and palatability and to prevent excessive deterioration). An efficient communication system between the galley and serving area is required.

(4) Salad and dessert display units, specifications:

30" x 30" x 25-1/2" high
3 - shelf, 14 gauge stainless steel with 1/2"
top roll edges, 7-1/2" between shelves.
Frame: 1" stainless steel pipe legs and shelf
supports.
Capacity of each unit: 50 salad and dessert plates.

2. Wardroom arrangement:

- a. Soiled mess gear receiving tables with stainless steel dish trays are required for the wardroom and are located equidistant along the port bulkhead. Full dish trays are transported from tables to scullery.
- b. Folding tray stands are to be located conveniently throughout the wardroom to receive empty trays as officers arrive at their respective tables.
- c. All beverage service is allocated to the wardroom as there is not sufficient space on the serving line.

3. Labor requirements:

- a. Stewardsmen are assigned as follows:

Galley - 2
Serving area - 6 (Dinner and supper meals)
Scullery - 2
Wardroom - 12

4. Additional equipment and gear required:

250 - 18" x 14" trays
16 - Folding tray stands
4 - Mess gear tables (G-26-F-12897-60)
1 - Tray and silver storage table (G-26-T-12897-36)
18 - Stainless steel dish trays (15-1/2" x 23" x 5"
deep)
1 - 18" x 24" cutting board (64-B-680)
1 - 12" x 18" cutting board (64-B-610)
350 - Plasticware 12 oz. bowls (63-P-590)
350 - Plasticware 12 oz. coffee mugs (63-P-598)

or

350 - General use bowls 5-3/4" (63-C-895)

350 - Coffee cups 3-3/4" (63-C-1420)

5. General Comments:

- a. The proper indoctrination into cafeteria-style service and subsequent supervision of stewardsmen is of vital importance. Pre-planning of the food arrangement and continual supply for the service line, in addition to proper instruction in the serving of steam table items, will insure a progressive, smooth flow of foods to personnel.
- b. The slicing of roasts, i.e., baked ham, roast beef, roast pork, meat loaf, etc. on the line at meal time, when possible, would increase the palatability of the meat and provide a medium of extra service.

FIGURE IV - Plan B, Proposed, permanent conversion plan, combining the galley, scullery and service operations into the present pantry area on the 2nd deck, adjacent to the wardroom.

1. General Specifications:

- a. All tables and operating equipment along bulkheads, except items 1, 7 and 37, shall be provided with #14 gauge stainless steel, 10" splashbacks, integrally welded to the fixtures. Figure V (items 12 and 12a) illustrates example specifications for fabricated tables.
- b. All tables and operating equipment to be provided with 8" adjustable legs, allowing for 34" to 35" working height, with the exception of the following items of equipment which are to be set in mastic:

Deep Fat Fryer (item 4)
Ranges (item 5)
Refrigerators (item 9)
Bake and Roast Oven (item 7)
Mixer (item 37)

- c. Figure VI (item 36) galley work table (cook's). Overhead bins are for spices, shelf storage under for line inserts and pans. Hardwood cutting boards to be provided.
- d. The serving line, from item 20 to 33, to be an integrally constructed unit. Reference is made to Catalog No. 501, Duke Manufacturing Company, St. Louis 6, Mo., for example specifications. Figure VII indicates the features of the hot food line with in-counter dish lowerators. The standard 12" x 20" openings are fitted with interchangeable top plates, allowing for the flexibility of capacity and arrangement of foods.
- e. Item 23, electric griddle with stand, Hotpoint Model HGG47 with twin automatic temperature controls and the following load capacity:
 - 48 - Eggs, fried or scrambled
 - 48 - 3 oz. hamburgers
 - 36 - 7 oz. tenderloin steaks
 - 28 - 4" hot cakes

Stand: 35-1/2" wide x 20-1/8" deep x 25-3/16" high
with plate storage below.
- f. Item 16, glass washer, Cunningham Model L-0, with four rinse racks; capacity 600 glasses per hour.
- g. Item 18, silver washer and drier, Foley-Irish Model A-7, capacity 200 pieces of silver per load or 2800 pieces per hour.
- h. Item 38, tray stand and lowerator, American Foundry and Machinery Co. Model 1418, capacity approximately 200 trays.
- i. Item 33, Figure VIII, refrigerated salad display unit. Refrigerated salad storage below; overhead shelves may be provided to increase capacity.
- j. Item 34, Figure IX, refrigerated salad and sandwich preparation unit.

2. Additional equipment required:

- a. The following items are required for the hot food table:
(Refer to Duke Manufacturing Co. Catalog No. 501)

- 5 - No. 6 Senior Top Plates
- 2 - No. 8 Senior Top Plates
- 2 - No. 0 Senior Top Plates
- 2 - No. H Senior Top Plates
- 6 - No. 531 St. St. Pans, 2-1/2" depth
- 3 - No. 532 St. St. Pans, 4" depth
- 3 - No. 533 St. St. Pans, 6" depth
- 6 - No. 521 St. St. Inserts, 10-1/2"
- 4 - No. 522 St. St. Inserts, 8-1/2"
- 8 - No. 523 St. St. Inserts, 9"
- 3 - No. 549 St. St. Soup Tureens w/ covers
- 1 - No. 530 St. St. Roll basket

- b. The following items are necessary for auxiliary operations:

Meat Slicer, Hobart Model 410, 10" diameter blade

Vegetable peeler, portable, Superior, Catalog No. S-12, capacity, 6 lbs. per minute.

3. General Comments:

- a. The following alterations are required:

- (1) Remove dumb waiter and shaft between 2nd and 3rd decks.
- (2) Remove a section of passageway after bulkhead, between wardroom and galley, sufficient to allow line service opening from item 20 to 33.
- (3) Remove section of passageway forward bulkhead, between wardroom and galley, to provide line entrance to wardroom, thus avoiding congestion between wardroom and scullery through dish bussing operations by stewardsmen and entrance of line.

- b. The wardroom arrangement and accessories are the same as used with Plan A and wardroom labor requirements are also the same. However, since cafeteria service will reduce the requirement for seats by approximately 30% below that required for table service, the number of tables can be reduced, thus further reducing the labor force required for the wardroom.

- c. It is recognized that certain items of equipment and equipment capacities do not conform to General Specification for Building Vessels of the United States Navy. Selection, ar-

PART II

FIGURES I - X

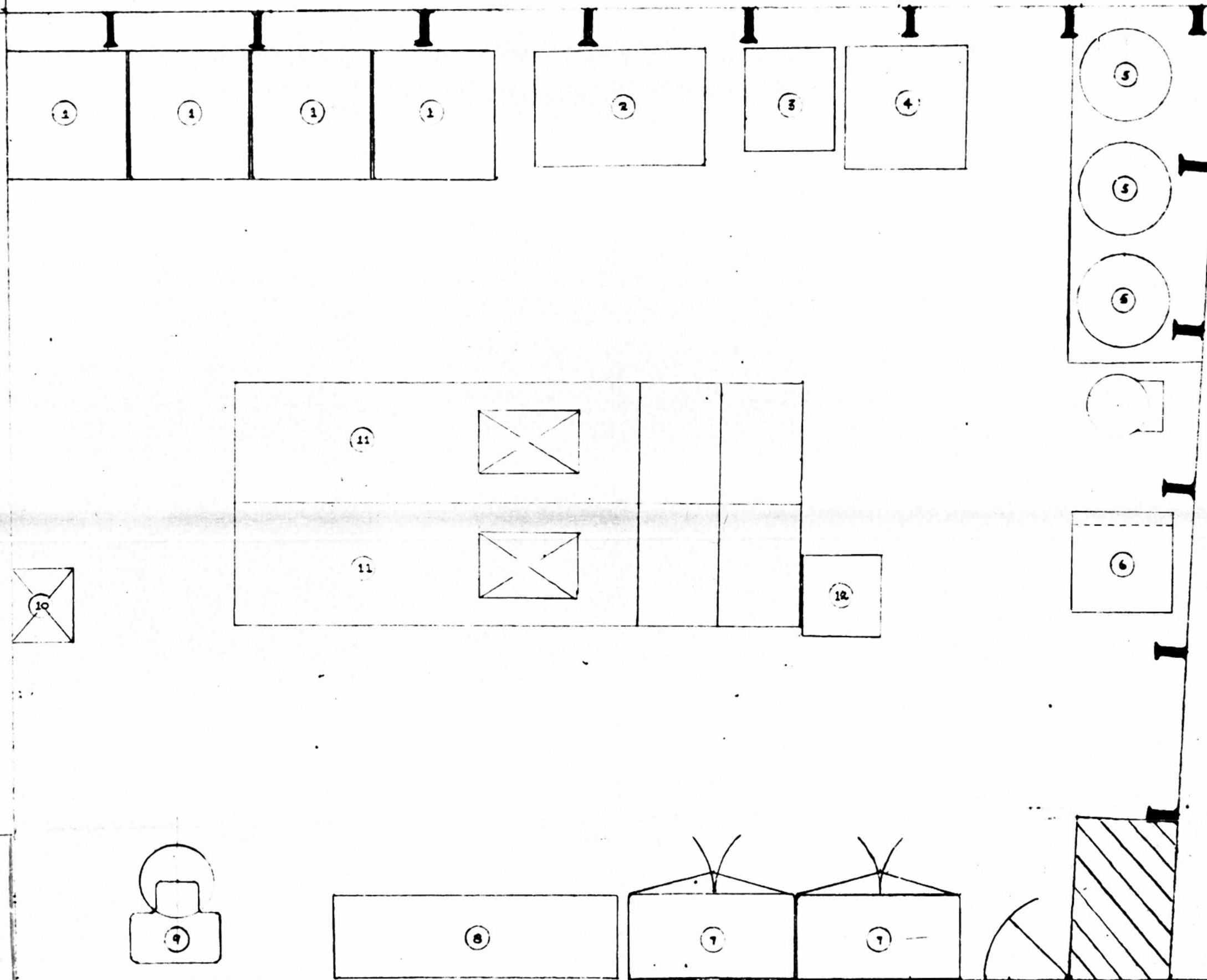


FIGURE I

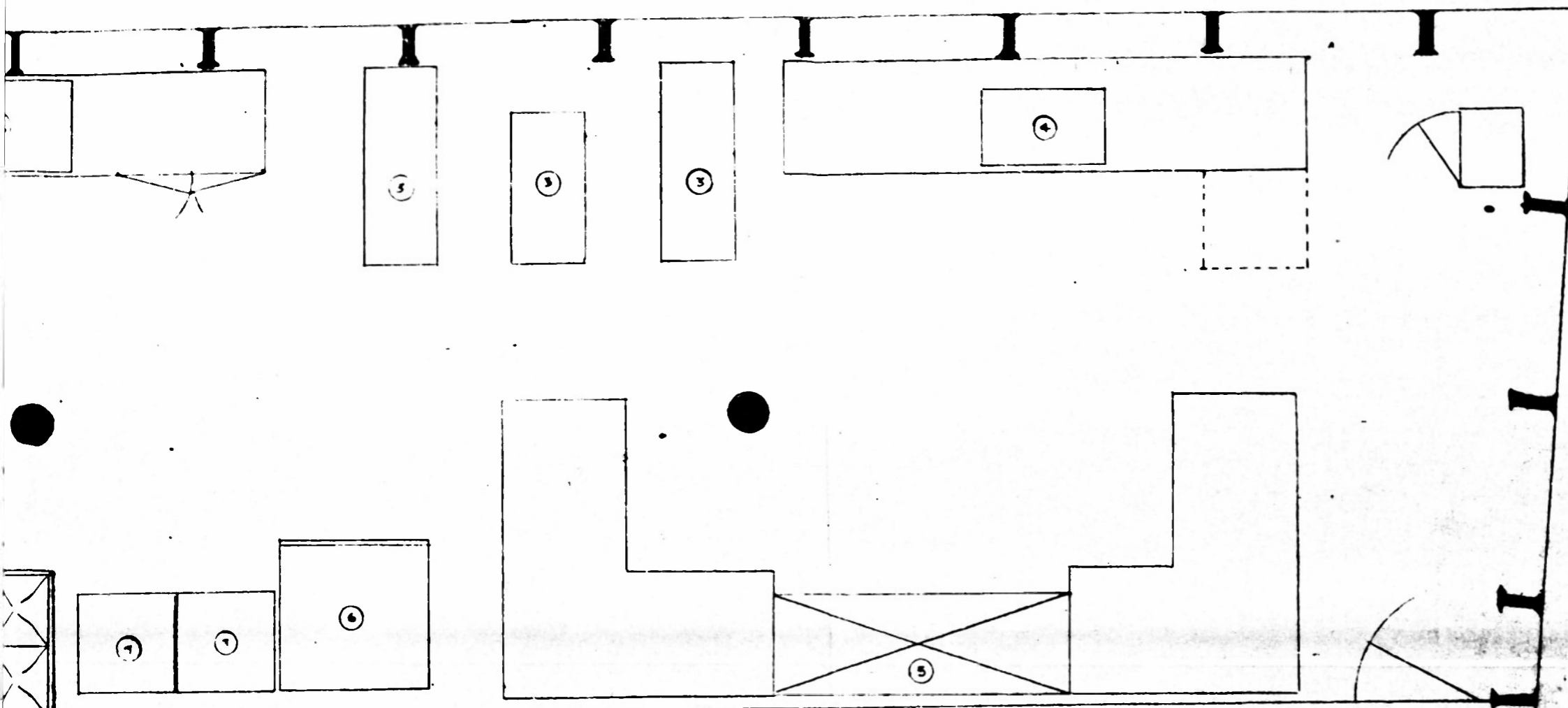
EQUIPMENT		SYMBOL		SCHEDULE		SYMBOL	
1	4	RANGE W/ OVEN	7	2	REFRIGERATOR	8	1
2	1	POT RACK	8	1	WORK TABLE	9	1
3	1	DEEP FAT FRYER 60 LB	9	1	MIKER - 60 QT	10	1
4	1	ROAST OVEN - 3 DECK	10	1	UTILITY SINK	11	2
5	3	40 GAL. S.I. KETTLE	11	2	WORK TABLE W/ SINK	12	1
6	1	DUMB WAITER	12	1	HEAT BLOCK		

ESSEX CLASS CVA CARRIER

PRESENT WARDROOM GALLEY

THIRD DECK

SCALE APPROX. 1/8" TO 1 FT



WARDROOM

ESSEX CLASS CVF CARRIER		
PRESENT WARDROOM PANTRY AND SERVING AREA		
SECOND DECK		
EQUIPMENT SCHEDULE		
SYM	QTY	DESCRIPTION
1	4	REFRIGERATOR
2	1	UTILITY SINK W/ DRAIN TOP
3	3	CLEAN DISH STORAGE RACK
4	1	POT SINK W/ DRAIN TOP
6	1	DISH WASHER W/ TABLES
6	1	FOOD ELEVATOR
7	2	GRILLS
8	1	STEAM TABLE
9	1	DRESSER
10	1	TOASTER
11	2	COFFEE URN
12	2	WORK TABLES

SCALE: AS SHOWN 1/8" TO 1 FT

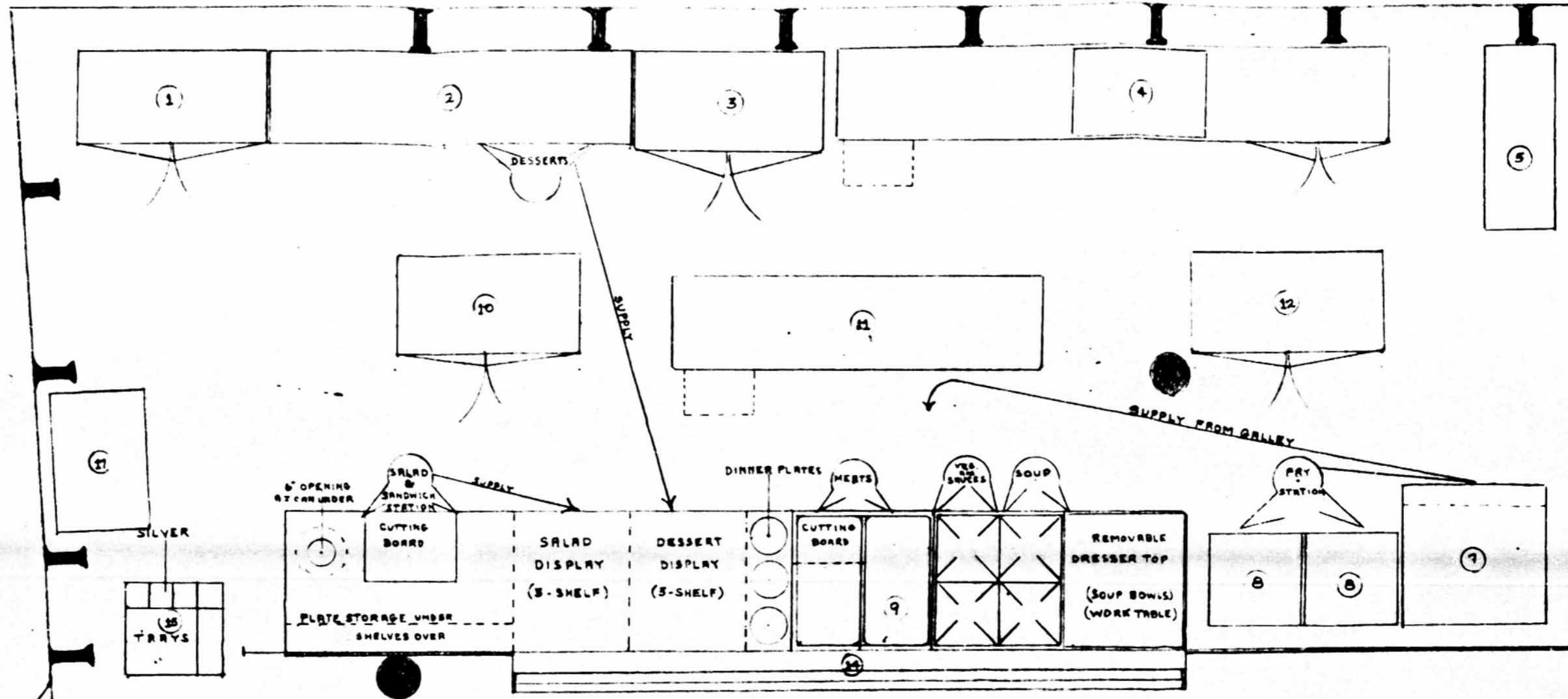
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Part

FIGURE II

STRB

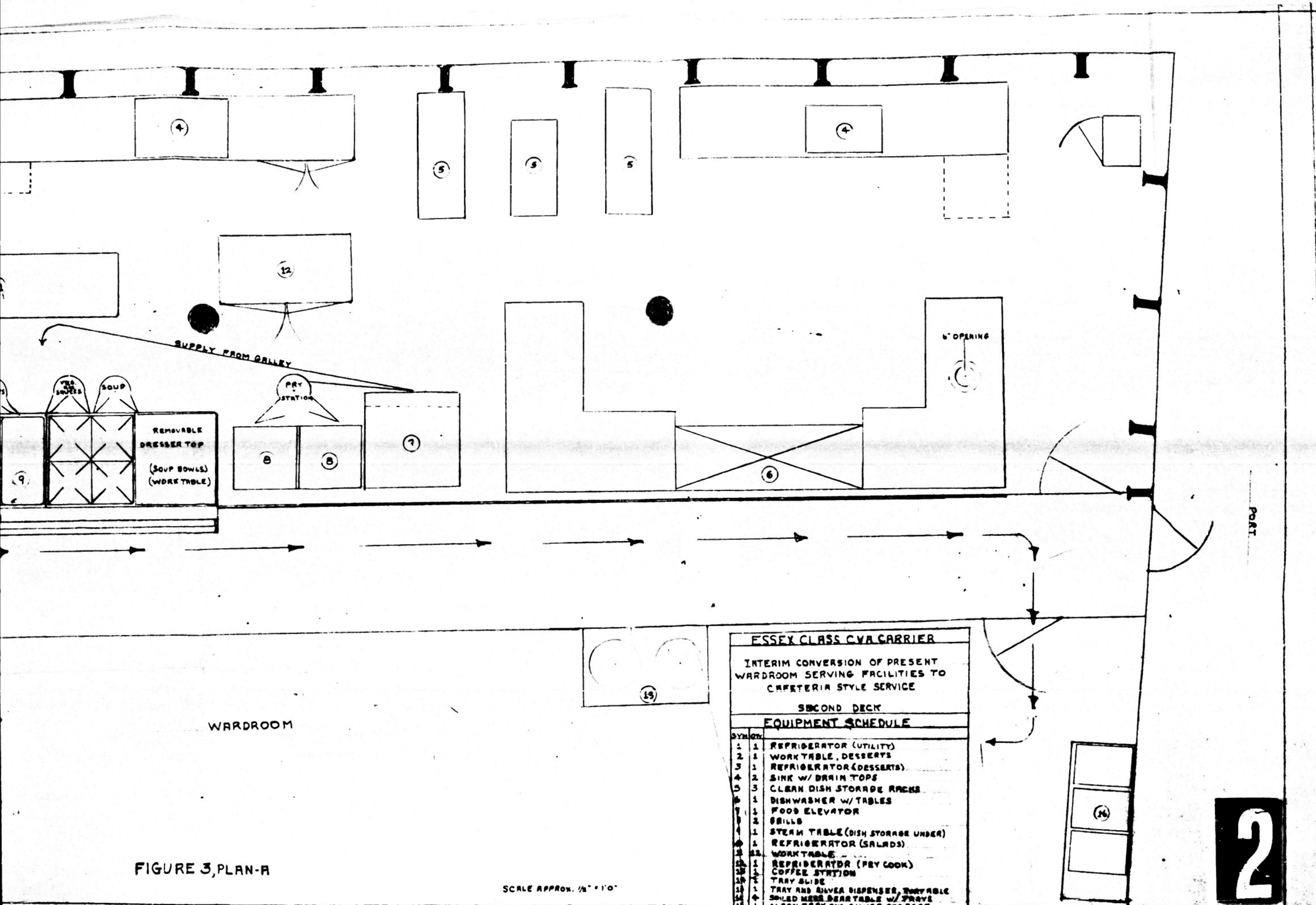
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WARDROOM

FIGURE 3, PLAN-A

SCALE A



WARDROOM

FIGURE 3, PLAN-A

SCALE APPROX. 1/8" = 1'-0"

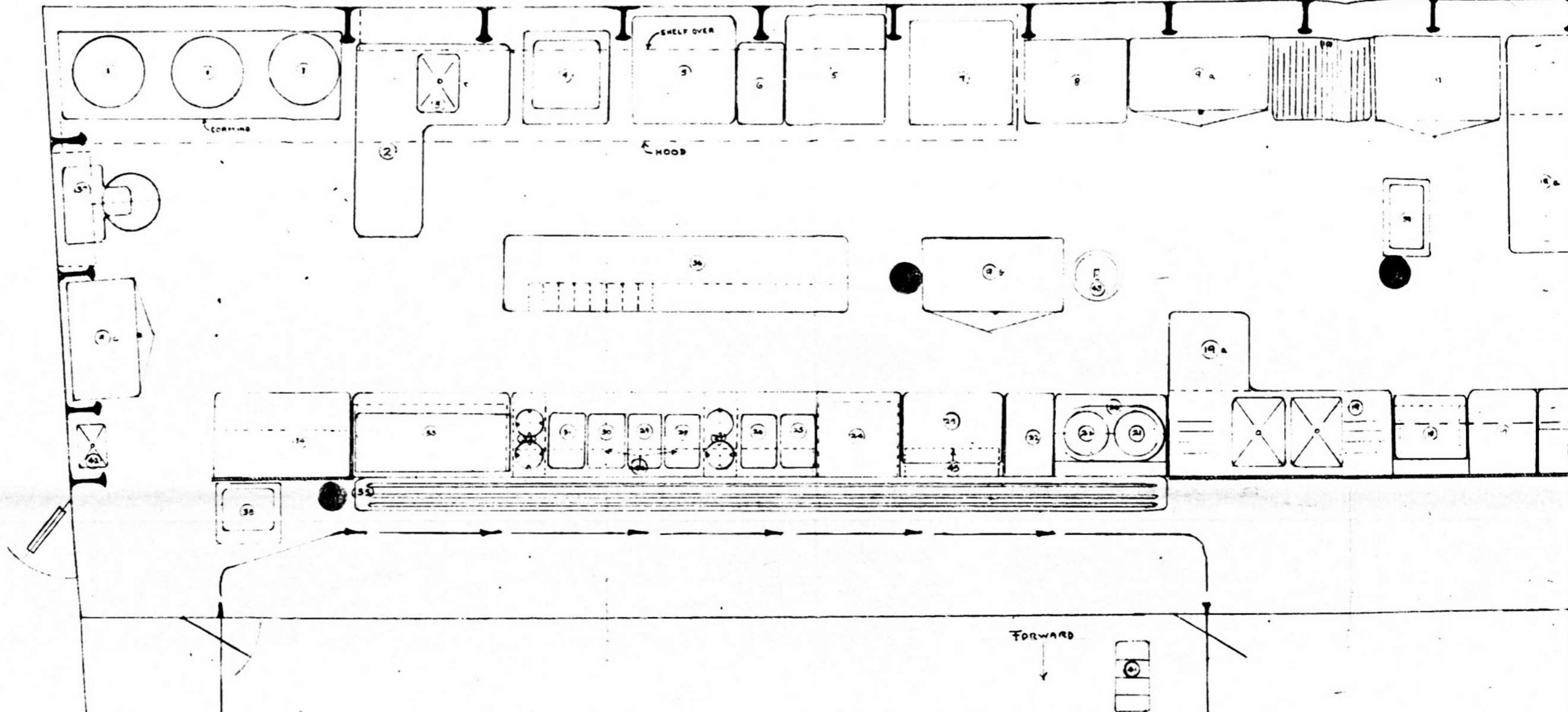
SYMBOL		DESCRIPTION
1	1	REFRIGERATOR (UTILITY)
2	1	WORK TABLE, DESSERTS
3	1	REFRIGERATOR (DESSERTS)
4	2	SINK W/ DRAIN TOPS
5	3	CLEAN DISH STORAGE RACKS
6	1	DISHWASHER W/ TABLES
7	1	FOOD ELEVATOR
8	2	GRILLS
9	1	STEAM TABLE (DISH STORAGE UNDER)
10	1	REFRIGERATOR (SALADS)
11	1	WORK TABLE
12	1	REFRIGERATOR (FRY COOK)
13	1	COFFEE STATION
14	1	TRAY SLIDE
15	1	TRAY AND SILVER DISPENSER, WORKTABLE
16	1	SOLEID MESS DESSERT TABLE W/ TRAYS
17	1	CLEAN TRAY AND SILVER STORAGE

2

1

STBD

AFT



EQUIPMENT SCHEDULE	
QTY	ITEM
1	3. STEAM KETTLE - 90 GAL. (1)
2	WORK TABLE - STORAGE UNDER
5	UTILITY SINK - H. & C. WATER
4	DEEP FAT FRYER - 60 LB. (1)
5	RANGE W/ OVEN BELOW (1)
6	5" ST SPREADER
7	BAKE & ROAST OVEN - 3 DECK (1)
8	5" ST WORK TABLE - STOR BELOW
9	COOK'S REFRIGERATOR - 18 CU FT (1)
10	UTENSIL STORAGE RACK
11	DRY PROV. STORAGE - 48 CU FT
12	CLEAN DISHTABLE
13	CLEAN DISHES - ENCL. STORAGE UNDER
14	SOILED DIRT TABLE - RACKS UNDER
15	DISHWASHER - SINGLE TANK
16	PRE-RINSE SINK W/ TRAY UNIT
17	SCRAPPING UNIT - 61 CAN UNDER
18	GLASS WASHER - 2 BRUSH
19	5" ST WORK TABLE - STOR UNDER
20	SILVER WASHER & DRIER
21	POT & VEG SINKS - DRAINS
22	WORK TABLE - ENCL. STOR UNDER
23	URN STAND - OPEN STORAGE UNDER
24	COFFE URN - 4 GAL. (1)
25	5" ST WORK TABLE - STORAGE UNDER
26	GRIDDLE W/ STAND - STORAGE UNDER
27	DESSERT UNIT - 3 SHELF - ST. UNDER
28	HOT ROLL UNIT W/ COVER
29	SOUP TUREEN - 26 QT CAP.
30	BOWL LOWERATOR - 36 CAP. EA.
31	5" ST INSERT - 5' 8" QT CAP. EA.
32	105" & 84" 18 QT CAP.
33	MEAT PAN, 12 X 20 X 8, 22 QT CAP.
34	PLATE LOWERATOR - 60 CAP. EA.
35	REFRID. SALAD DISPLAY UNIT
36	REFRID. PANTRY PREP. UNIT
37	TRIP & BAR ST. ST. TRAY SLIDE - 105"
38	WORK TABLE - BINS UNDER
39	MIXER - 60 QT (1)
40	PANTRY REFRIGERATOR - 18 CU FT (1)
41	TRAY STAND W/ LOWERATOR - 200 CAP.
42	5" ST BUS. CART W/ WHEEL DRAKE
43	GEAR LOCKER
44	SILVER DISPENSER
45	PANTRY UTILITY SINK
46	91 CAN
47	FRY STAND ON REFRIGERATOR - 18 CU FT
48	SERVING SHELF - 10" WIDE, HT. 16"

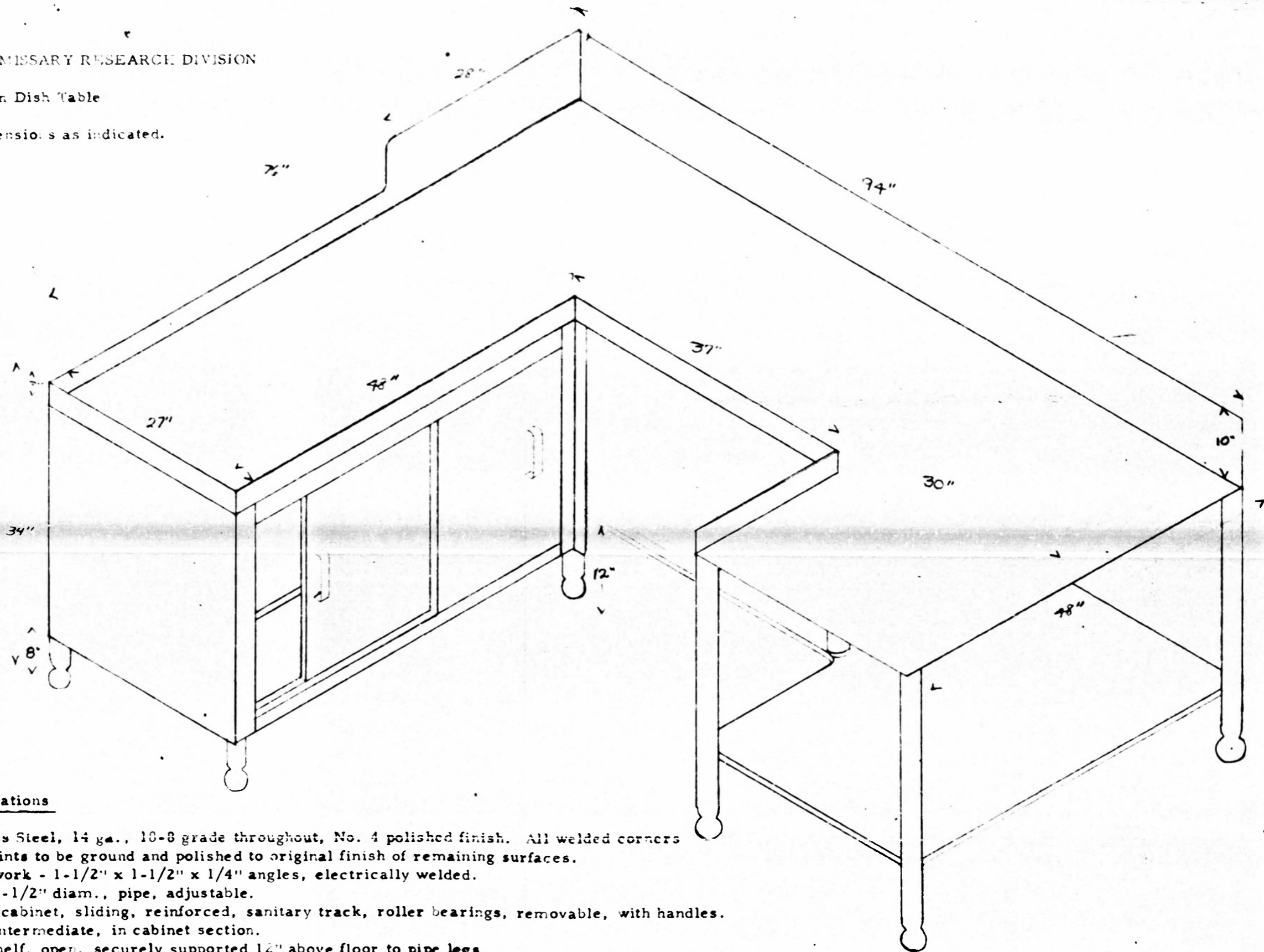
(1) EXISTING EQUIPMENT

FIGURE IV, PLAN 'B'

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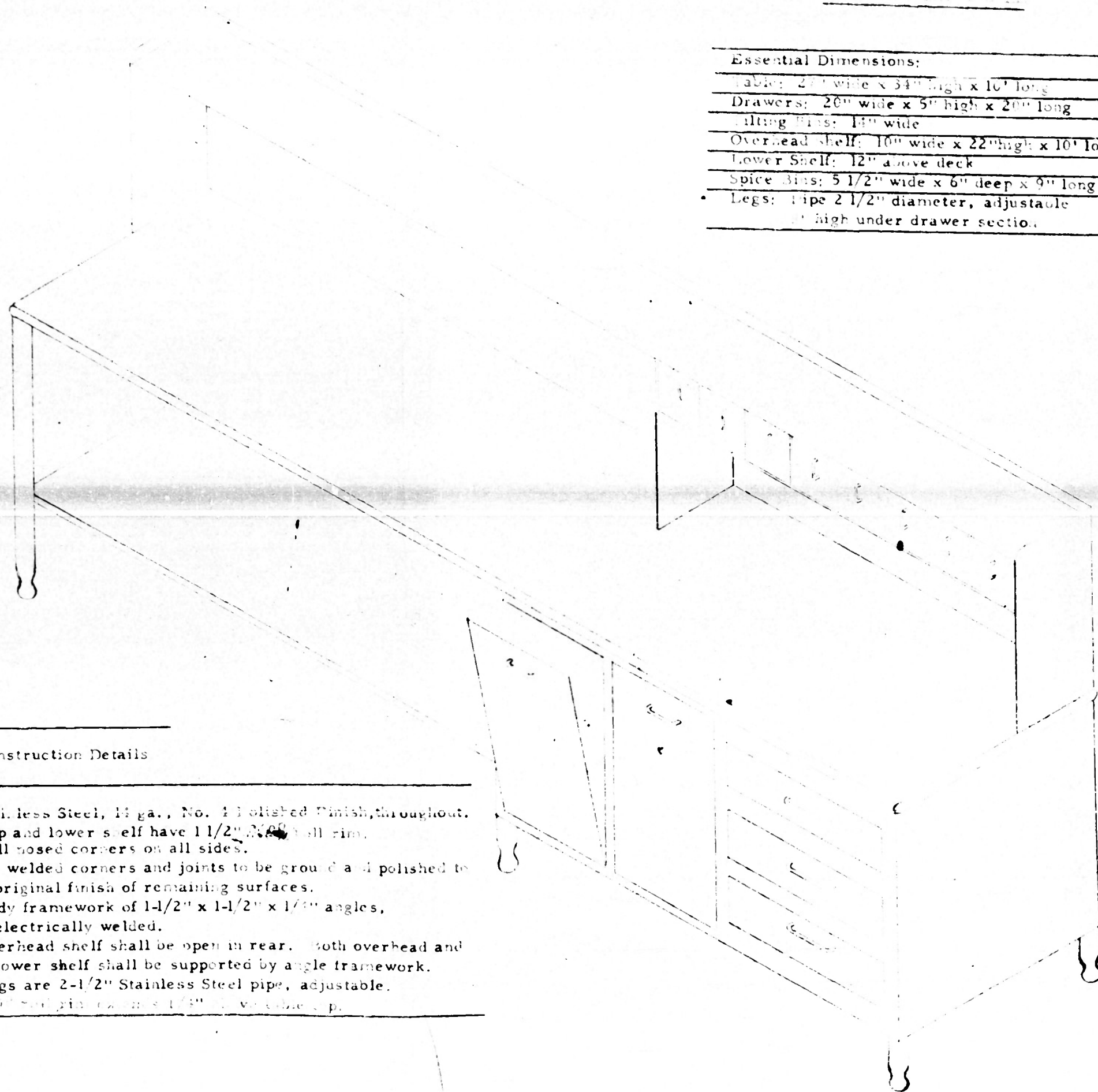
Clean Dish Table

Dimensions as indicated.



Specifications

Stainless Steel, 14 ga., 18-8 grade throughout, No. 4 polished finish. All welded corners and joints to be ground and polished to original finish of remaining surfaces.
Framework - 1-1/2" x 1-1/2" x 1/4" angles, electrically welded.
Legs, 2-1/2" diam., pipe, adjustable.
Doors, cabinet, sliding, reinforced, sanitary track, roller bearings, removable, with handles.
Shelf, intermediate, in cabinet section.
Undershelf, open, securely supported 12" above floor to pipe legs.
Rim and splash back, height as indicated, rolled rim, 360° all sides.
Legs on open table area attached to underside of table with reinforcing channel braces bolted to gussets of the same material. Bolts through gussets and legs to be slotless head type.
Cabinet section accessible from both sides, similar doors in rear side.



Essential Dimensions:

- Table: 24" wide x 34" high x 10' long
- Drawers: 20" wide x 5" high x 20" long
- Tilting Bins: 14" wide
- Overhead shelf: 10" wide x 22" high x 10' long
- Lower Shelf: 12" above deck
- Spice Bins: 5 1/2" wide x 6" deep x 9" long
- Legs: Pipe 2 1/2" diameter, adjustable
12" high under drawer section.

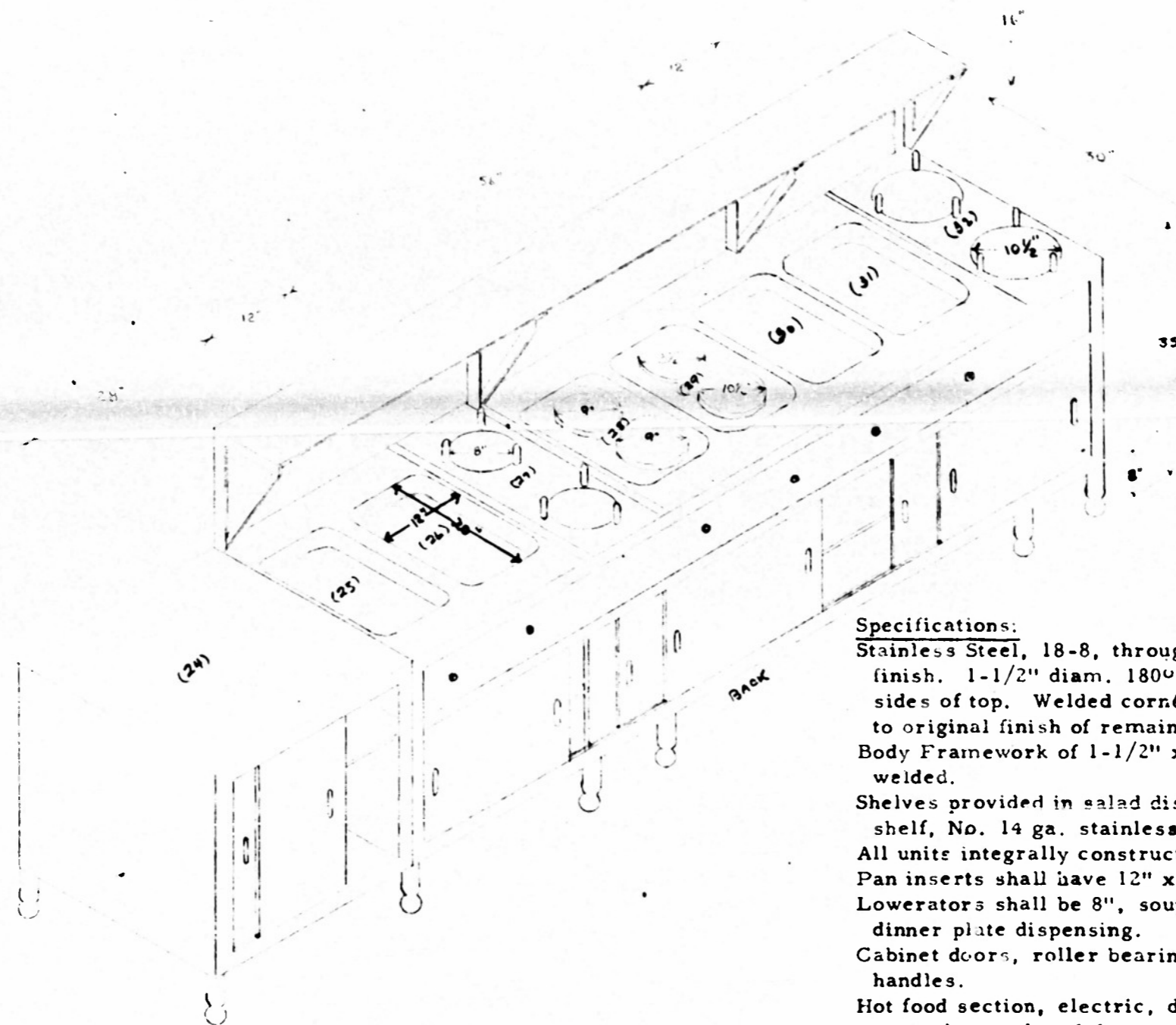
Construction Details

Stainless Steel, 14 ga., No. 1 Polished Finish, throughout.
Top and lower shelf have 1 1/2" ~~3/16"~~ full rim.
Full nosed corners on all sides.
All welded corners and joints to be ground and polished to original finish of remaining surfaces.
Body framework of 1-1/2" x 1-1/2" x 1/4" angles, electrically welded.
Overhead shelf shall be open in rear. Both overhead and lower shelf shall be supported by angle framework.
Legs are 2-1/2" Stainless Steel pipe, adjustable.
3/16" diameter pins x 1/4" x 1/4" x 1/4" cap.

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Service Counter, with Lower Units

Figure VII



Specifications:

Stainless Steel, 18-8, throughout. No. 14 ga. No. 4 polished finish. 1-1/2" diam. 180° roll rim, bullnose corners on all sides of top. Welded corners and joints ground and polished to original finish of remaining surface.

Body Framework of 1-1/2" x 1-1/2" x 1/4" angles, electrically welded.

Shelves provided in salad display table and in steam table under-shelf, No. 14 ga. stainless steel.

All units integrally constructed.

Pan inserts shall have 12" x 20" openings.

Lowerators shall be 8", soup bowl dispensing, and 10-1/2" for dinner plate dispensing.

Cabinet doors, roller bearing, sliding, sanitary track, recessed handles.

Hot food section, electric, dry heat type, individual thermostatic controls, enclosed deep well units, master cut-off switch, individually insulated compartments, heat control from 125° to 275° F.

Legs, pipe, 2-1/2" diam. stainless steel, adjustable.

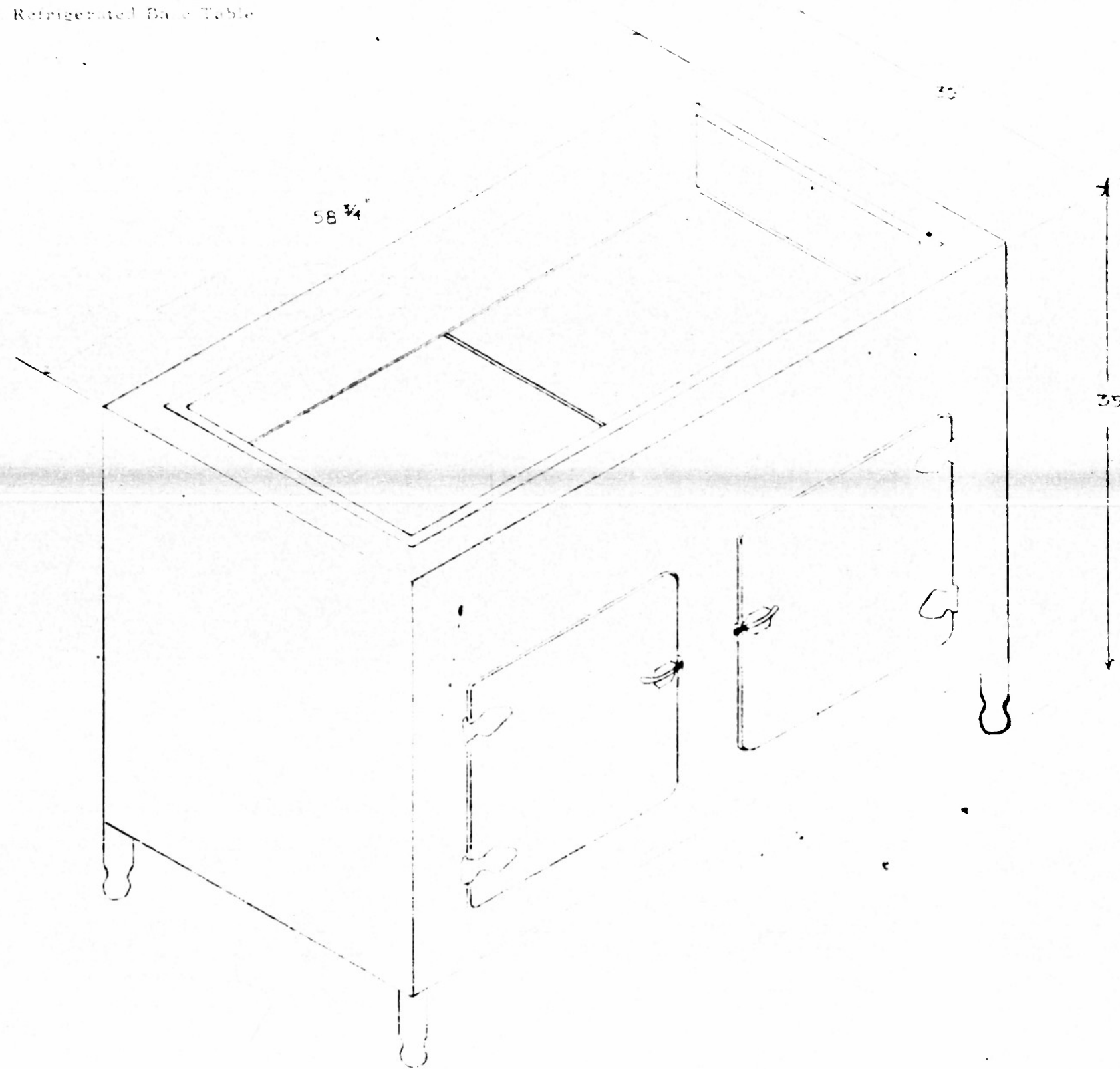
Counter shelf, open, supported by stainless steel angle braces.

Figure VII

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Cold Pan with Refrigerated Base Table

Drawing No. 100-1000



Specification, Cold Pan with Refrigerated Base

Stainless steel throughout 14 ga. 18-8, No. 4 polished finish. All welded corners and joints to be ground and polished to original finish of remaining surfaces.

Body framework of 1-1/2" x 1-1/2" x 1/8" angles, electrically welded.

Legs shall be 2" high, stainless steel, adjustable.

Dimensions, Overall - 58-3/4" long x 30" deep x 35" high.

Cold Salad Pan shall be designed for mechanical refrigeration with copper tube refrigerated coils embedded in insulation against stainless steel bottom of pan with tubing extending below bottom of pan for connections to compressor, valves and controls.

Grates to be 14 ga. perforated, removable.

Refrigerated base insulated with 3" approved insulation, lined on interior with stainless steel, fitted with waste outlet, floor rack and stainless steel center shelf. Refrigerator fin coil for connection, as above. Interior stainless steel 2B finish.

Refrigerator door, overlapping, closing on rubber tubular gaskets. Chrome-plated hinges and catches with provision for locking.

COMMISSARY RESEARCH DIVISION, USNERDV

ALAD AND DAI DWI 37 RE RESEARCH UNIT

40" long x 30" wide x 35" high.

18-g stainless steel throughout.

Top braced internally and removable. furnished with 2" thick, sectional maple cutting board; provided with four 11"x3"x3", four 9"x3"x3", one 10"x11"x3" stainless steel insets. Insets shall rest on a stainless steel contact plate with curved edges.

Understructure insulation 2" thick, lined with stainless steel, 18 ga.

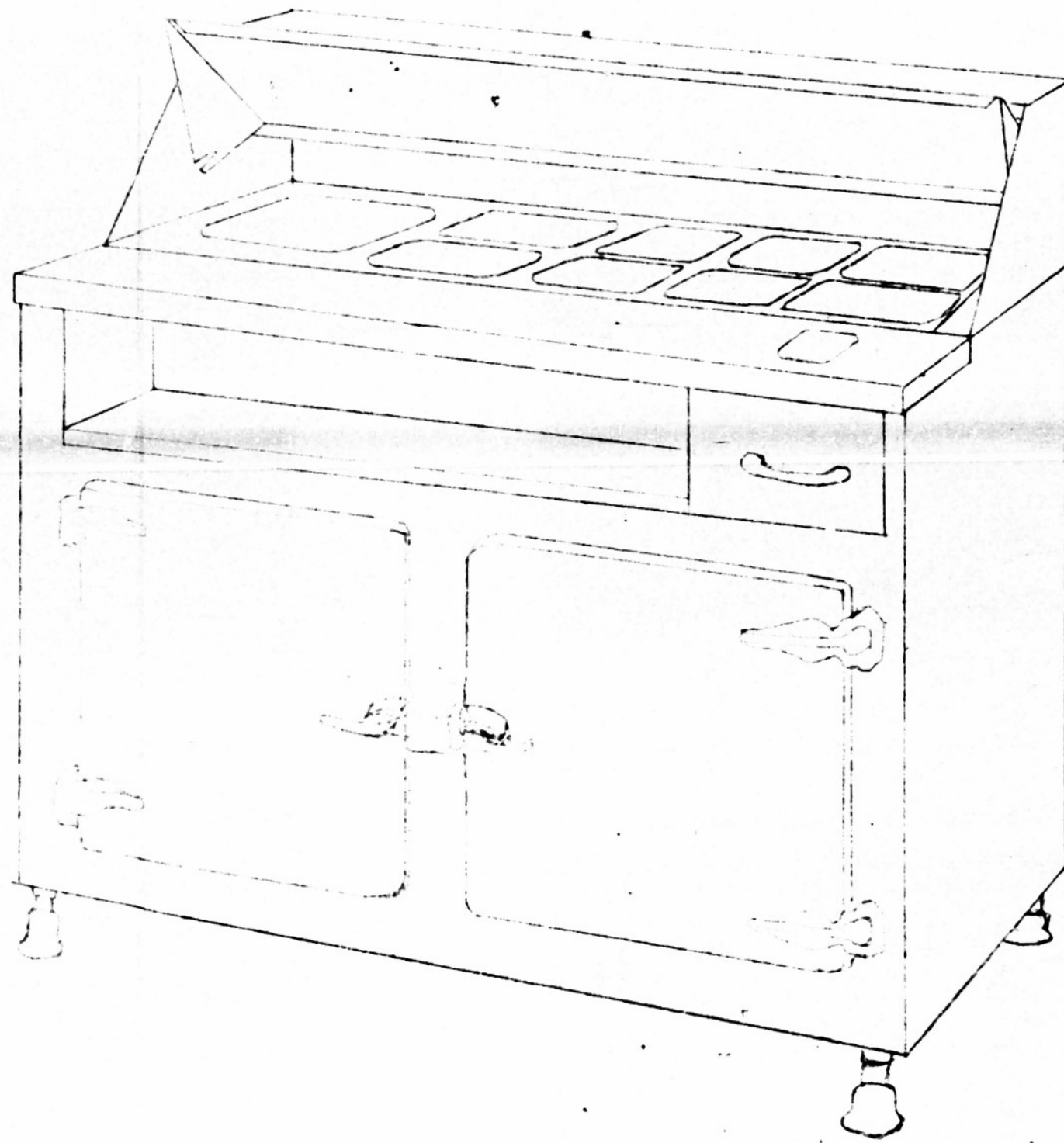
Refrigerator door panels of 14 ga. stainless steel, welded seamless construction with rounded corners.

Ice compartment shelf lined with 18 ga. stainless steel; crumb drawer provided.

Legs 8" high, adjustable, stainless steel pipe, with ball feet.

Exterior front, ends, bottom, and rear of 14 ga. stainless steel.

Interior of refrigerator section furnished with removable stainless steel shelves.



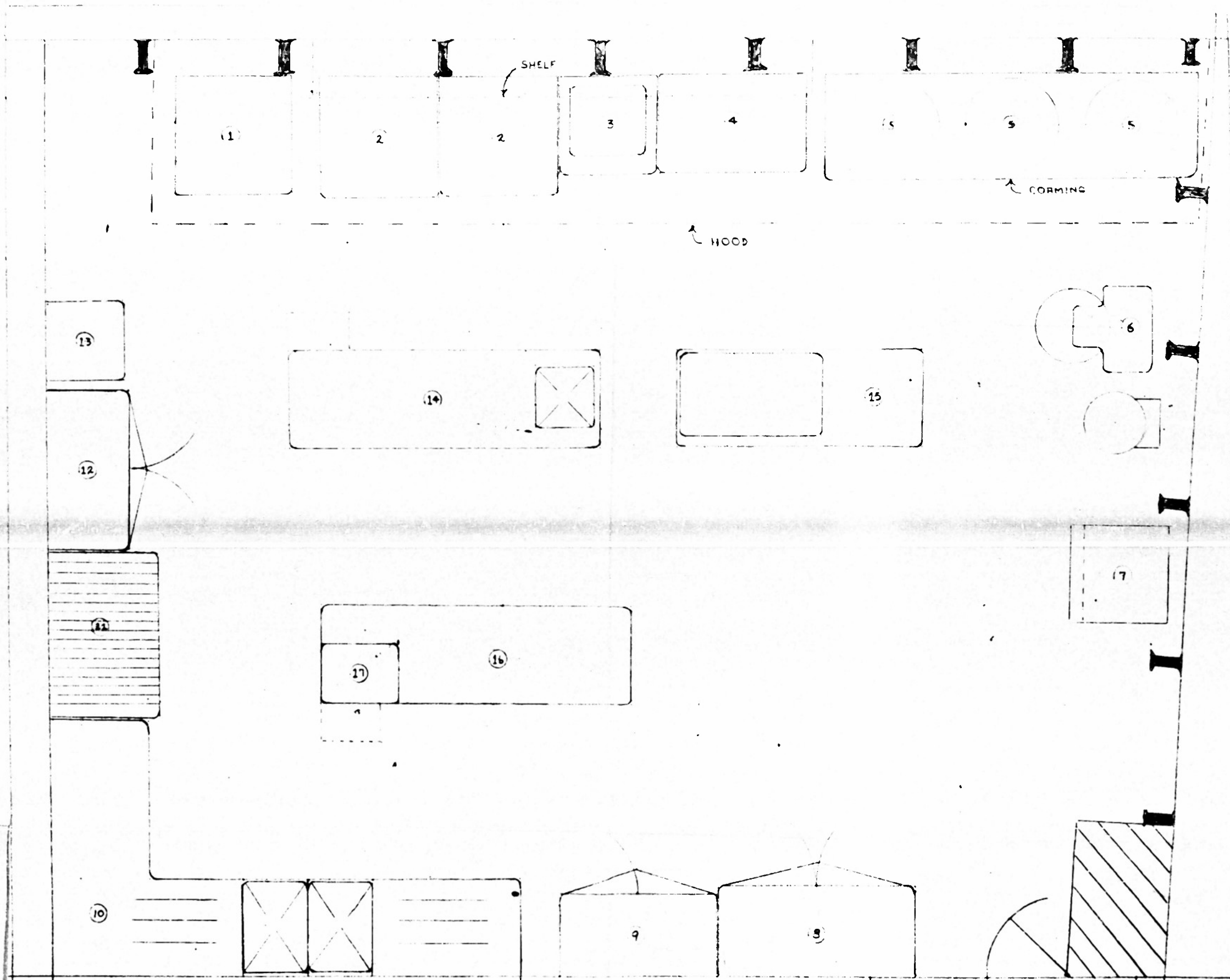


FIGURE X, PLAN 'C'

EQUIPMENT SCHEDULE					
SYMB	QTY	DESCRIPTION	SYMB	QTY	DESCRIPTION
1	1	3-DECK ROAST OVEN	10	1	SINKS & DRAIN TOPS
2	2	RANGE W/ OVEN	11	1	PCT & PAN RACK
3	1	FRYER - 60 LB	12	1	REFRIGERATOR - COOKS
4	1	WORK TABLE	13	1	MEAT BLOCK
5	3	50 KETTLE - 40 GAL	14	1	COOK'S TABLE W/ SINK
6	1	MIXER - 80 QT	15	1	UTILITY TABLE W/ BAN MARIE
7	1	FOOD ELEVATOR	16	1	PANTRY WORK TABLE
8	1	DRY PROC. STORAGE	17	1	CUTTING BOARD
9	1	REFRIGERATOR - PANTRY			

ESSEX CLASS OVA CARRIER
~~REARRANGE HERE~~
 PROPOSED REARRANGEMENT
 PRESENT WARDROOM GALLEY
 THIRD DECK
 USNR & DF COMRES DIV
 BAYONNE, NJ
 SCALE APPROX. 1/4" = 1 FT