- May 1965

UNITED STATES DEPARTMENT OF AGRICULTURE
Economic Research Service - Consumer and Marketing Service

ESTABLISHING THE CENTRAL SCHOOL LUNCH KITCHEN IN GRANITE SCHOOL DISTRICT, SALT LAKE COUNTY, UTAH: PROBLEMS AND COSTS

The need to expand the National School Lunch Program into older urban schools where installation of kitchen facilities is not feasible has been given strong recognition by the U. S. Department of Agriculture and the Senate Committee on Agriculture and Forestry. To this end, a study was initiated concerning means by which foods might be prepared centrally and distributed to such schools.

In addition to a summary report *, detailed case studies were prepared of the following eight school systems:

Kirksville, Mo.
Granite School District
Salt Lake County, Utah
St. Louis, Mo.
Livonia, Mich.
New York, N. Y.
Washington, D. C.
Special Program Schools in
West Virginia
Bremerton, Wash.

These schools were selected as showing different types of food preparation and distribution procedures, or as serving different forms of school lunches meeting nutritional requirements under the National School Lunch Program.

These case studies were prepared as research tools. The information in them may prove helpful to school officials concerned with a decision regarding establishment of a lunch program utilizing a central kitchen approach. A copy of any of these case studies is available upon request to the Marketing Economics Division, Economic Research Service, U. S. Department of Agriculture, Washington, D. C. 20250.

The research was conducted by staff members of the Battelle Memorial Institute, Columbus, Ohio, under contract with the Economic Research Service. These studies constitute a part of a national program of research relating to public food distribution programs being conducted in the U. S. Department of Agriculture.

Special appreciation is extended to local and State School Lunch Administrators who assisted in the development of these case studies.

---

*Reese, R. B. Establishing Central School Lunch Kitchens in Urban Areas: Problems and Costs. Agr. Econ. Rpt. 72, U. S. Dept. Agr., May 1965.

CONTENTS

May 1965

GRANITE SCHOOL DISTRICT, SALT LAKE COUNTY, UTAH

Background Information

General Description and Characteristics of Present School Lunch Operations (Spring of 1963)

The Granite School District has a Type A lunch program in which all school lunches are produced in a single central kitchen and transported to all schools. The single exception is the new Skyline High School, opened this year, which has a completely self-contained kitchen preparing and serving lunches for this school. The hot foods prepared in the central kitchen are distributed to the receiving schools in vacuum cans and Lincoln thermal carriers. 1/ Salads and cold foods are usually transported in the Vacuum Can Company's stainless steel 10¼ insert with the tight fitting lid; baked goods, panned gelatines, etc., in 18" x 26" x 2" aluminum pans transported in closed pan carriers. 1/ The schools receive all of their menus prepared and ready to serve. The serving utensils, consisting of conventional plastic divided trays, soup bowls and serving supplies and equipment are maintained in each school serving unit. Canned fruits, etc., are served in 5½-ounce paper souffle cups which are purchased in shipments of 1 million or more cups on bids from local paper houses. The kitchen prepares food for over 18,000 students daily and distributes it to 37 elementary schools, 8 junior high schools, and 4 high schools. Estimated average participation in the School Lunch Program is as follows:

	Spring and Fall	Winter
	Percent	Percent
Elementary Schools	70	85
Junior High Schools	45	60
High Schools	10	30

Participation was generally noted to increase where facilities were adequate to accommodate the students without overcrowding. It was believed that the poorer rate of participation in the secondary schools was, in large part, due to inadequate serving areas.

Granite School District is a consolidated county school district serving the north end of Salt Lake County, excluding Salt Lake City. Although 50 or so families live in the 3 scenic Wasatch Mountain canyons which are a part of the district, the schools and most of the homes are located in the high bench-lands skirting the mountains to the east, or in the broad, comparatively level valley stretching westward to the Great Salt Lake.

In 1948 the District was a quiet area of small farms and rural communities with 20 schools and 11,870 students. By 1962, it had become a bustling metropolitan system with over 44,703 students--the largest district in the State of Utah. The District is still growing rapidly.

1/ Use of a trade name does not constitute endorsement of the product over any other.

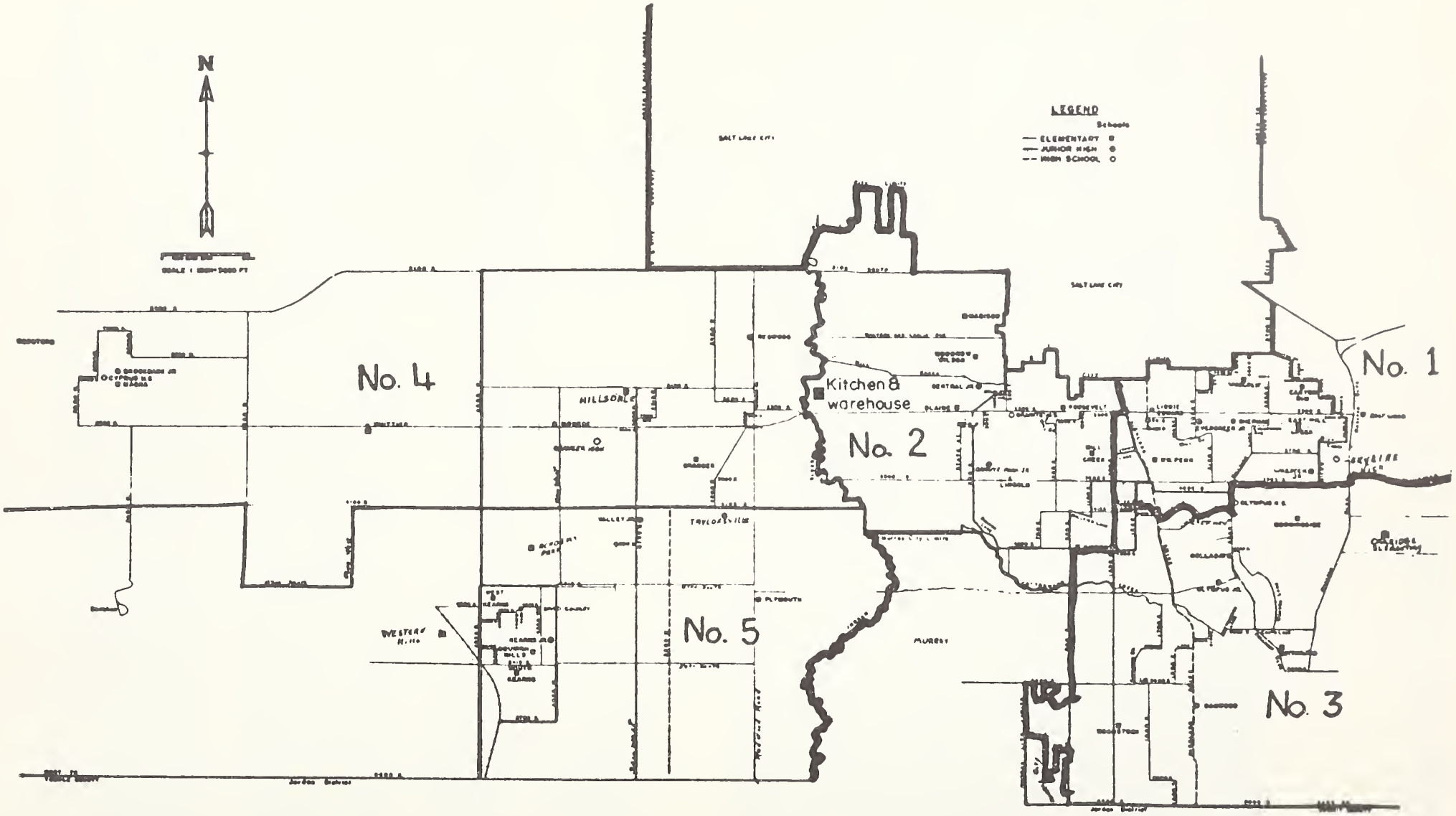


Figure 1.--Granite School District - schools, boundaries

With the exception of 4 elementary "walking" schools, most of the students are transported in the 85 buses operated by the District. Starting time in 46 schools is staggered to permit buses to service more than 1 school. Elementary students 1 mile or more from school, junior high students 1¼ or more miles and senior high students beyond 2 miles from their schools may ride the bus if they wish. School lunch participation in the "walking" schools is as high as in transport schools.

There are no "closed campus" noon periods in the school system. Length of the lunch period is not uniform. High and junior high school students usually are scheduled a 30-minute lunch; elementary schools usually have 45-minute noon period, but this varies from school to school. Participation in the program is voluntary. School lunch participation for 1961-62 school year is shown in table 1.

The new Skyline High School now serves approximately 450 meals per day to students of the school. It is believed that the program can be developed to serve a thousand or more meals at this school. The Skyline kitchen is designed to prepare 3,000 or more meals per day, and it is planned to eventually serve 3 large junior high schools near Skyline from this kitchen. District School Lunch administrators are of the opinion that, with patrons properly oriented, and children educated to an awareness of the program's values, an average daily participation approaching 87 percent of average daily attendance (A.D.A.) may be achieved in the District.

The Granite District School Lunch Division is organized into 7 departments as shown in table 2. The rapid growth of the program made departmentalization necessary. The organization was gradually developed over a period of 6 or 7 years. A departmental head may be required to work in more than one capacity.

Background and Evolution of Current Central Food Preparation System

The Granite District Board of Education elected to accept jurisdiction of the district school lunch program in the fall of 1942, and lunches were first served in some of the schools under the new sponsorship in February 1943. Fifteen of the District's 20 schools then operating were able to serve the hot lunches. There was no available space in the other schools that could be remodeled into a kitchen. By 1945, the kitchens built with such effort into the 15 schools were obsolete. They were too small to accommodate the additional equipment necessary to prepare the food for the increasing participation, and they had no storage rooms and vegetable cellars. The District saw possibly rapidly expanding enrollments, and was feverishly checking possible solutions to the finance problem, already precarious. Something had to be done--a central kitchen seemed one of the answers.

In 1946 Federal funds were allocated to the various districts of the State to help in the purchase of equipment for program kitchens. The Board of Education received permission to use their allotment to augment the cooking equipment in a small district-sponsored community cannery and, in 1947 the District began an experiment in centralized food preparation, using the cannery as a central kitchen, and a war-surplus truck to transport the prepared food to the schools.

Table 1.--Participation in the Central Kitchen School Lunch Program, Granite School District, 1961-62 daily averages

School	Grades in school	Average daily attendance	Year building constructed	Number of participating pupils		
				Lunch Program	Special Milk	Free or reduced price
Elementary schools						
Blaine (a)	1-6	597		315	184	45
Canyon Rim	1-6	738	1954	298	204	20
Cottonwood*	1-6	918	1958	360	411	0
Crestview	1-6	770	1960	386	260	26
No. 1 David Gourley*	1-6	583	1959	194	288	12
No. 2 David Gourley*	1-6	582	1959	197	262	4
East Mill Creek	1-6	754	1951	410	288	4
Eastwood*	1-6	955	1959	390	378	2
Granger*	1-6	890	1954	408	348	1
Hillsdale*	1-6	912	1960	353	322	4
Hillview	1-6	615	1952	414	213	6
Holladay	1-6	652		444	156	0
Libbie Edward	1-6	715	1946	394	242	13
Lincoln* (a)	1-6	738		374	245	3
Madison (a)	1-6	557		289	182	24
Magna	1-6	723	1955	402	228	4
Mill Creek*	1-6	758	1955	456	301	19
Monroe* (a)	1-6	675		354	226	4
Morningside*	1-6	976	1954	507	288	13
Oakwood (a)	1-6	596		289	160	18
No. 1 Oquirrh Hills*	1-6	612	1957	220	253	3
No. 2 Oquirrh Hills*	1-6	566	1957	208	241	13
Plymouth* (a)	1-6	623		308	215	3
Redwood	1-6	680	1953	408	191	51
Roosevelt (a)	1-6	603		302	176	7
Rosecrest	1-6	382	1959	180	123	20
Sherman* (a)	1-6	700		328	303	24
South Kearns	1-6	628	1955	274	142	17
Webster (a)	1-6	635		349	206	23
West Kearns	1-6	837	1954	391	286	23
Whittier* (a)	1-6	712		445	265	12
William Penn (a)	1-6	760		461	122	19
W. Wilson (a)	1-6	570		228	246	19
Woodstock* (a)	1-6	804		291	388	7
Total elementary schools		23,816		11,627	8,343	463
Junior high schools						
Brockbank	7-9	757	1948	341	100	24
Central	7-9	1,058	1948	497	254	87
Evergreen	7-9	1,258	1954	488	144	41
Granite Park	7-9	1,086	1960	544	169	73
Kearns	7-9	1,331	1957	592	106	72
Olympus (a)	7-9	1,230		427	81	61
Valley	7-9	1,207	1948	477	45	29
Wasatch	7-9	1,247	1959	628	267	52
Total junior high schools		9,174		3,994	1,166	439

See notes at end of table, page 5.

Table 1.--Participation in the Central Kitchen School Lunch Program, Granite School District, 1961-62 daily averages--Continued

School	Grades in school	Average daily attendance	Year building constructed	Number of participating pupils		
				Lunch Program	Special Milk	Free or reduced price
High schools						
Cyprus	10-12	497		103	204	13
Granger	10-12	1,336	1957	288	157	40
Granite	10-12	1,736		252	445	34
Olympus	10-12	2,424	1951	155	469	11
Total high schools		5,993		798	1,275	98
Grand totals		38,983		16,419	10,784	1,000

*Double session schools in 1961-62. Double session schools, and first graders in all schools (first grades are all double session) do not have access to lunch.

(a) Originally had preparation facilities.

NOTE: All schools originally had serving facilities. All schools offer a Type A lunch.

Table 2.--Table of organization for management and supervisory personnel, Granite School District

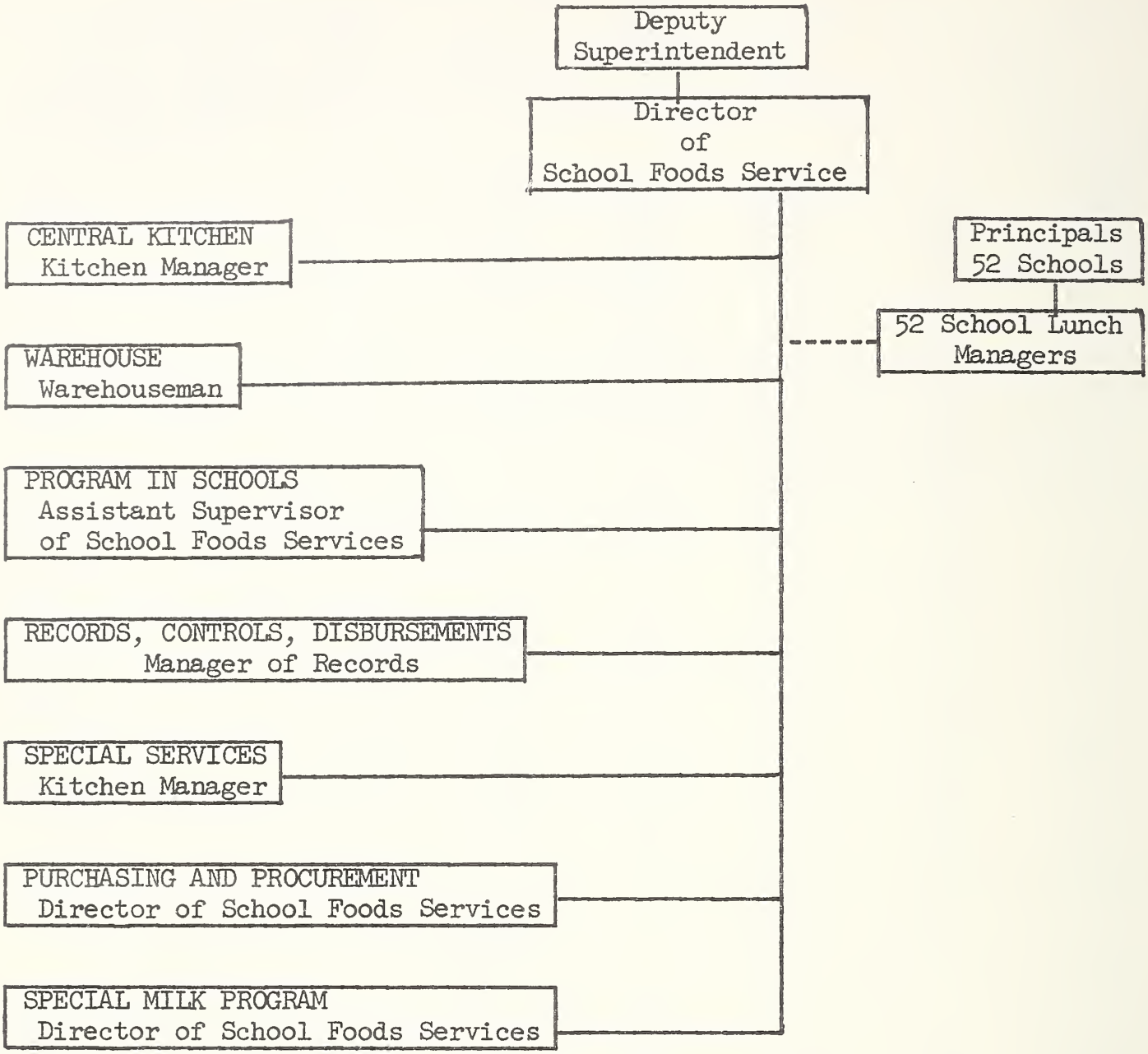


Table 3.--Summary of cash receipts and disbursements for the School Lunch Program for the fiscal year ended June 30, 1962 and 1961, Granite School District

	Current Year Ended June 30, 1962		Prior Year Ended June 30, 1961	
Cash Receipts				
Contributions from State of Utah - School Lunch Allocation	$100,952.98		$ 72,195.40	
Contributions from Federal Government - School Lunch	96,259.38		60,557.63	
Contributions from Federal Government - Special Milk	73,311.24		96,462.36	
Sale of school lunches	677,081.61		439,299.57	
Special milk sales	35,984.37		47,186.45	
Kindergarten milk sales	2,570.66		2,789.82	
Sales - special services	10,836.84			
Miscellaneous other food and supply sales	2,774.14		7,712.06	
Funds received from Davis Commodity Account - Trucking	2,402.14		1,559.01	
Refund - Davis Commodity Account	6,500.33			
Payments on account received from cannery-warehouse			29,098.21	
Increase in accrual of State withholding tax payable			41.57	
Miscellaneous receipts	3,428.25		29,206.60	
Total receipts		$1,012,101.94		$786,108.68
Cash Disbursements				
Food and produce purchases - Others	16,157.62		12,348.11	
Food and produce purchases - Cannery-warehouse - See note	300,386.65		192,981.84	
Milk and dairy products purchased	242,801.75		241,660.54	
Labor - Food preparation and serving	296,534.79		181,384.33	
Administrative salaries	30,011.50		21,601.80	
Administrative travel expense	1,250.76		799.19	
Repairs and maintenance	7,519.71		10,638.92	
Heat, light, power, and telephone	5,328.53		3,269.88	
Supplies purchased - Others	11,950.63		13,016.12	
Supplies purchased - Cannery-warehouse	19,141.09		10,660.27	
Truck expense	3,173.95		3,584.89	
Truck insurance	483.76		513.40	
Injury compensation and medical	1,855.89		1,528.35	
Payment of employees withholding tax accrued 6-30-61	574.88			
Purchase of equipment - New	28,347.45		69,588.07	
Purchase of equipment - Replacement	4,180.52			
Miscellaneous expense	756.20		853.88	
In service milk refunds to schools	17,973.25		23,606.00	
Advance to cannery-warehouse program	40,099.93			
Total disbursements		1,028,528.86		788,035.59
Excess disbursements over receipts		(16,426.92)		(1,926.91)
Cash balance beginning of year		8,387.68		10,314.59
Cash balance end of year		$ (8,039.24)		$ (8,387.68)

NOTE: Food and product purchases from cannery-warehouse includes $11,074.26 worth of meat from meat cutting class.

Table 4.--Granite School District, Salt Lake County, Utah, School Lunch Program
Reconciliation of Surplus, June 30, 1962

Surplus Balance June 30, 1962			$169,914.38
Add:			
Increase in accounts receivable	$ 836.77		
Decrease in employees' withholding tax payable	574.88		
Increase in new equipment	28,347.45		
Increase in amount due from cannery-warehouse	40,099.93		
		$ 69,859.03	
Deduct:			
Decrease in food inventory	2,850.93		
Decrease in Davis Commodity Account prepaid freight	6,500.33		
Cash disbursements in excess of cash receipts - Table 3	16,426.92		
		25,778.18	
Net increase in surplus			44,080.85
Surplus Balance June 30, 1962			$213,995.23

Note: The net gain was used to purchase equipment needed to take care of the rapid increase in participation. The program has been able to pay its own way with exception of capital outlay for sinks, serving counters, and cafeteria tables in the new schools. The District has used capital outlay funds to purchase this heavy school equipment in recent years. These expenditures are not included in this audit.

The operation started servicing one school. After an exploratory period during which unforeseen problems of preparation, transport, and school services were resolved, the program was extended to additional schools as rapidly as possible. School personnel and community groups interested in their schools had to be prepared for the changeover. Problems arising from the displacement of more than one-third of the personnel employed in the old program were especially troublesome.

By year's end, 7 schools were being serviced from the central kitchen, one of these (Garfield Elementary-Junior High combined) had been unable to serve lunches under the unit kitchen system for lack of space.

In his yearly report (Superintendent's Annual Report, 1946-47, p. 95), the supervisor makes some preliminary conclusions concerning the experiment:

Advantages

1. Better administrative control
2. Labor savings may reach 33 percent
3. Large savings in initial installation costs
4. Cooking odors and garbage problems eliminated from the schools
5. Administration and supervision simplified
6. Need for specially trained help reduced
7. Simplified installation of new units making program practicable for all schools of the district
8. Improved sanitation possible
9. Need was eliminated for food storage arrangements and enlarged kitchens in established units

Disadvantages

What appeared at first as disadvantages seem, upon analysis, to be simply the problems we have constantly had to face in the old program. They lend themselves to easier solution here, because administration and training of personnel is simpler in the new plan. Some of these problems will disappear as we gain experience. Some, such as the dissatisfaction of the retired employee and the accompanying public reaction, the general letdown in morale of employees retained, as their hours are reduced, etc., will disappear as the program gets older. Criticisms of the tendency of the system to regiment the tastes and habits of children are just as present in the unit (kitchen) system, and are a valid criticism of American education generally. Interest in the needs of the individual and a wise administration must find the answers to this latter problem.

Comparative Report

	Average cost per meal--labor	Average cost per meal--food	Total average cost per meal
	Cents	Cents	Cents
Central kitchen	4.4	15.84	20.24
9 schools	5.1	16.7	22.8

On the basis of this experiment, your supervisor recommends that we continue to develop this project; absorbing the various individual units as we are able to handle them, until we bring the entire program under this system.

All schools of the district were operating under the centralized program by the end of the 1951-52 school year. The old cannery-kitchen was remodeled in the summer of 1952. Floor and walls were tiled, the ceiling covered with asbestos sheeting, and painted, and a new larger steam generator installed. Funds derived from the operation of the Community Canning project, (the kitchen was still used as a community cannery during the summer months) were used to finance these alternations.

The new kitchen-cannery was designed to handle the food preparation for 10,000 meals per day. Everyone thought this capacity would be ample to handle any foreseeable demand on the program; they were mistaken. From 1955 until the present the district has doubled in enrollment approximately every 5 years. During this same period, school lunch participation has doubled each 3 to 4 years. In 1959 an 11,894 meal per day average made planning for a new kitchen exigent. In 1960 the District built a new facility adjoining the old kitchen, with a planned capacity of 30,000 meals per day.

There are no restrictions or limitations imposed by the School Board regarding when and where students will eat their meals. Parents are encouraged to occasionally come to school at noon and have lunch with their school children.

Relating to A La Carte Service

In the State of Utah, a District receiving direct State and Federal subsidy may not combine a la carte and Type A meal services.

A few secondary schools of the State continue to operate as a la carte programs, but they are district sponsored and supervised.

The State School Lunch Program serves only a Type A meal. On the secondary level, especially, innovations incorporating provisions for second helpings on expensive menu items, (seconds on less expensive items are freely given) and the sale of foods supplemental to the Type A menu seem to be gaining popularity. These supplements seem to appeal to the "teenager," but they may not take the place of the basic Type A meal.

This policy receives the Statewide support of district superintendents because they feel that the educational objectives are a necessary part of this School Lunch Program.

There are no a la carte programs operating in Granite School District.

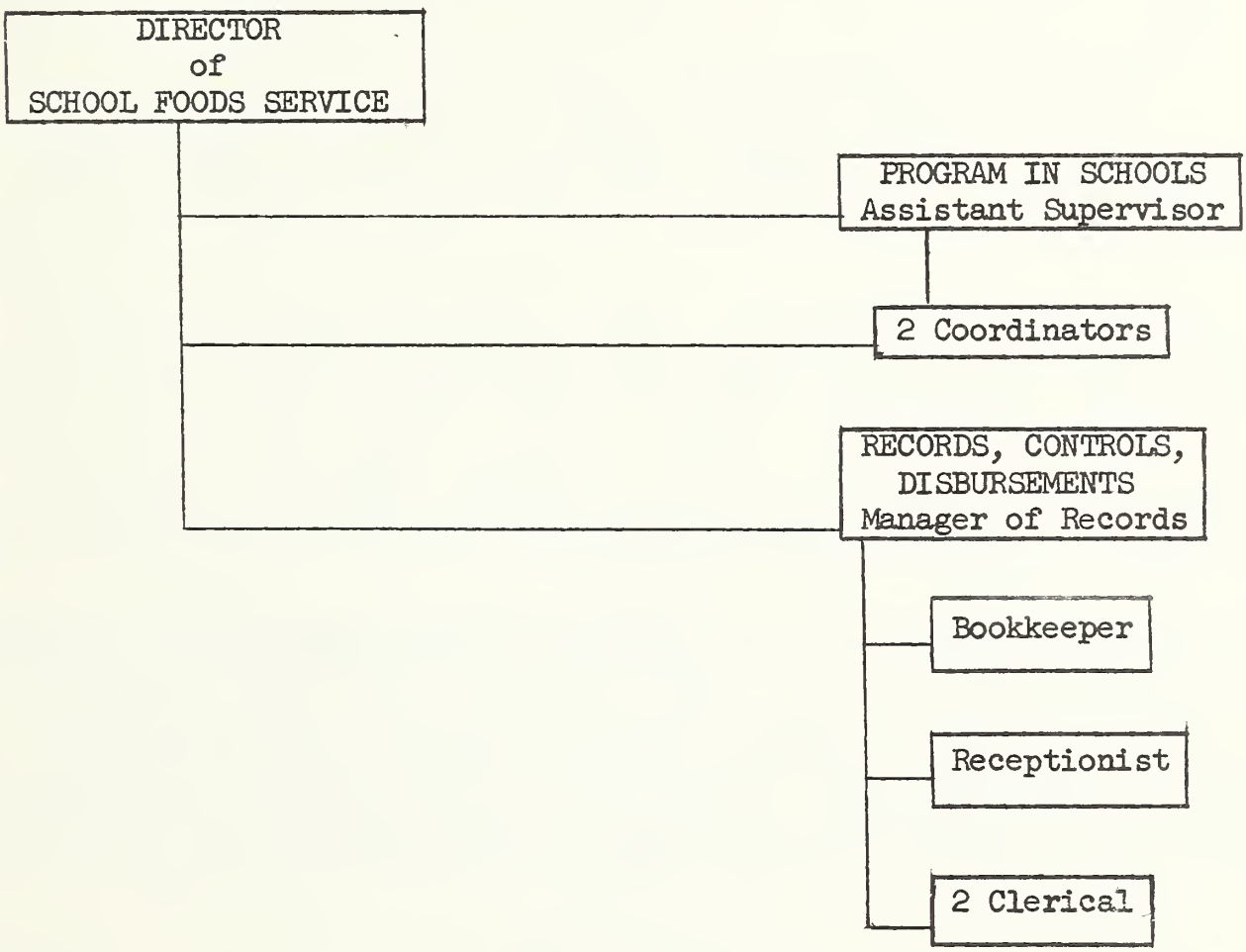
Organization, Description, and Methods of Operation

Administrative responsibility for the conduct of the School Lunch Program in the Granite School District has been assigned the Deputy Superintendent. Administratively, the Division is entirely separate in operation from other

Divisions of this school system. It has its independent purchasing, warehousing, and bookkeeping systems and is responsible for handling its own receipts and cash disbursements. Certain records are maintained by the District electronic data processing facility and certain limitations in size of single expenditures are prohibited without approval of the Board of Education, but the Division has considerable operational autonomy.

The organization of the Central Administration is presented in table 5.

Table 5.--Table of Organization for Central Administration
Granite School Lunch Program



(Note: This does not encompass the entire School Foods Service Division.)

Meal prices are established by the Board of Education on recommendation of the Superintendent of Schools.

A free meal committee in each school, made up of the District Supervisor or Director, the School Principal and the School Nurse supervises free meal requests and recommendations. These may originate with the Principal, the Teacher or the School Nurse; P.T.A., social organizations, or civic agencies.

In practice, the school nurse visits the home of every referral and the free meal privilege follows her recommendation unless there are extenuating circumstances.

Principals may grant any child free meals on a temporary or emergency basis. The program assists the school health program quite frequently by furnishing special food supplements such as between-meal fruit juices to children who are found to be undernourished, or in special need. Such services are supplied through special arrangement between principal, the central kitchen manager, and school nurse.

Consonant with Board of Education policy, there is no limitation on the number of free meals a school may serve. Any child who needs the meal but is unable for any reason to pay full cost, is eligible to participate at a reduced cost or free.

The lunch sales, official records and the handling of program funds in the schools is a function of the principal's office. The school lunch manager has supervisory interest in these records (she and her helpers are paid on the basis of meals served) but the official records are the principal's responsibility.

Meals are sold on a weekly basis in all schools as a matter of district policy. Each school develops its own policy as to how it will provide for exceptions. Money transactions take place in the cafeteria only under unusual conditions. Some schools accept monthly and even yearly school lunch subscriptions. Tokens are used in two of the high schools. Other secondary schools and a growing number of elementary units use tickets, which are supplied from the central office. The third permissable method of meal accounting is a weekly check-off roll -- preferred in some schools.

All schools are required to use a composite weekly report form for official accounting to the central office. This form gives a breakdown of daily meals served by category, number of meals sold, money collected, and balance computation which checks meals served and meals outstanding against receipts. This record, though simple and easy to maintain, has proved an effective control in the schools. It is maintained by the school clerk, signed by the principal, and with the school check to cover receipts, is mailed weekly to the central office.

School Lunch and Special Milk program columns are included in each school ledger. These ledgers are audited yearly in the general district audit.

School lunch bookkeepers in the central office check the daily meal counts reported in the weekly reports against tray counts reported daily to the kitchen by the school unit manager, during the routine audit of each school's weekly report. The funds from the schools are properly credited, the money banked in a separate school lunch account, and the records turned over to the IBM unit for recording on the school lunch ledger. 1/ Discrepancies which sometimes occur are immediately reconciled with the school office by the central office bookkeeper in charge of these records.

1/ Use of a trade name does not constitute endorsement of the product over any other.

Special Milk program activities are not made a part of the School Lunch Program in the schools. Since all school lunch employees in schools are part-time, special milk is handled in the schools by Special Milk Committees of each school's student body organization. These committees are paid an in-service reimbursement of 1 cent per one-half pint of milk served children. These committees are assigned the conduct of the Special Milk Program in the school, under the supervision of a faculty advisor. A monthly check from Special Milk funds is paid this committee, the name of the committee chairman, (student) and faculty advisor appearing on the check. The committee may divide these proceeds among its members, donate them to the school's student fund or use them for other purposes at its discretion and in accordance with Board policy.

Special Milk Program records, similar to School Lunch Program records, are maintained at the school. The weekly report is sent to the central office with its separate school check for receipts. It is audited separately at the District Office against dairy records of milk deliveries, the funds are recorded separately and handled separately in the data processing operation.

Monthly reports to the State are made up from these records. Through these reports the State director maintains surveillance over the program, as required by law; and they also form the basis of the State and Federal direct subsidy to the programs. These reports are on a cash receipt-disbursement basis (as are all school records in the State of Utah). At the district office as the bookkeeper compiles the State report, she also makes up a monthly operating gain or loss report, for control purposes only, on the basis of receipts plus estimated accruals.

Commodities and supplies delivered to the warehouse are accompanied by bills, which are signed by the warehouseman, processed through perpetual inventory by the inventory clerk and forwarded to the central office. Here these bills are accumulated, reconciled to monthly invoices properly certified from the distributors and recommended for payment, over the signature of the director, by the Board of Education. Vouchers are made up by data processing machines.

Commodities and supplies sold by the warehouse to the School Lunch Program are billed to the School Lunch Program from the warehouse on special forms printed in numeral sequence for accountability. (Department of Agriculture products are similarly billed on a separate enumerated form.) These billings are from perpetual inventory and priced by the inventory clerk, transferred to the central office where prices are checked with cost records maintained there, and extended. These warehouse delivery invoices are totaled at the end of each month, and a voucher made from School Lunch funds reimbursing the warehouse.

A visual warehouse inventory is taken quarterly and reconciled with the perpetual inventory kept in the central kitchen office.

Monthly time cards from the kitchen and schools are sent to the district office for processing of checks. The office handles approximately 400 checks per month.

The central administration of the School Lunch Program is located in the Granite School District's main office building. The School Lunch Division occupies three offices, two 8' x 15' and one 8' square. At an estimated cost

of $13.50 per square foot, the cost of facilities would amount to approximately $4,100.

Utilization of labor and monthly salary schedule for the central staff of the School Lunch Division is shown in table 6. The Division operates under the direction of the District Deputy Superintendent of Schools. This central staff handles the entire administrative, supervisory and clerical load for the program excepting the operating records from the kitchen, the clerical work done in the individual schools and the data processing services as explained in the foregoing descriptions.

Salaries shown in table 6 are paid by the program. School clerks and data processing personnel are paid from tax supported district funds.

Table 6.--Labor Utilization and Costs - Central Administration

Job title and description	Hours per day	Salary per month
Director		$755
Assistant supervisor		665
2 coordinators	6 each	295 (10 months basis)
Manager of records	8	465
Bookkeeper	8	315
Receptionist	8	245
Clerical	4	137 (9 months basis)
Clerical	8	260 (half-time warehouse)

Purchasing and Warehousing

The 'Cannery-Warehouse' is separate from the school lunch department for purposes of control. Purchasing and procurement are (with the exceptions of capital outlay for school lunch and dairy products) a warehouse function. State and district regulations permit the district to purchase food and supply items on either bid or negotiated basis. The division uses either system. However, bids are not used in the purchase of commodities. They are usually purchased on a basis the director calls "the system of the lowest offer". Since the program does not operate at a profit, operating funds are borrowed from the district through written application to the Board of Education each fall. These funds are returned as the warehouse inventory is liquidated and the money becomes available.

There is no set schedule of procurement of food and supplies. Thus, advantages are derived from a study of market trends, from seasonal price variations, and an occasional 'heavy' market. There are some mistakes, but generally, savings are realized through prudent and timely buying.

Normally, on the purchase of canned and frozen heavy storage items, the director will calculate his needs over an extended period, and contact at least three purveyors, preferably brokers or factory representatives, requesting

samples and quotations. The large central food plant has enabled the brokers to give the account a 'manufacturer's' rating, thus, avoiding retail and wholesale markups. Local interest is maintained because the large refrigerated and dry storage areas in the warehouse make it possible to buy in carload quantities.

Purveyors wishing to give quotations submit three samples of their merchandise with their quotation:

One can to be opened to determine acceptability of product
One can to be opened at time shipment is received, and compared with a random sample of the shipment
One can for comparative reasons should the shipment be rejected, and a confrontation with the manufacturer's agent be necessary.

The same system has been found effective in the purchase of large shipments of frozen food items.

The Director attempts to collect samples and cut cans on only one item at a time. A second item is canvassed only after the first item negotiations have been completed. At times this device has encouraged more houses to become interested.

Occasionally it may be advisable to reject all quotations, and ask a broker with an acceptable product priced too high to negotiate with his manufacturer. Since the program will pay cash, the manufacturer will often deal with the School Lunch Program, and notable savings result.

The director has tried to establish a reputation of fairness and impersonal objectivity in his dealings with purveyors. However, he does not hesitate to refuse even carload shipments of commodities that don't measure up to sample standards.

A warehouse foreman with the help of a full-time day and a full-time night assistant, operates, and is responsible for the warehouse program. On heavy receiving days, additional help is recruited from among the school lunch truck drivers, and, on occasion, from district building and grounds personnel. The assistant on the night shift fills kitchen orders and assists the school lunch personnel in the preparation of the menu. The warehouse foreman (day-shift) and his daytime assistant receive and store all incoming merchandise, fills supply orders for the schools and orders from kitchen day-shift operations, receives orders for the succeeding night-shift's needs from the kitchen manager and places them on skids for easy access as needed, maintains records of his department with the help of the inventory clerk.

The warehouse maintains a cold and frozen storage area large enough to accommodate approximately 12 carloads of merchandise, and a dry storage area of approximately 7,000 square feet.

A shelf within the dry storage area, easily accessible from the kitchen is maintained as the "signed out" area. When practicable, items are signed out to the kitchen as a whole unit (a case of peaches or 100 pounds of rice). Broken units, instead of being signed back into the warehouse at the conclusion of the shift, are stored in the "signed out" unit. These materials are used without going again through transfer from warehouse to kitchen.

Although a few items, such as small shipments of spices, certain fresh vegetables, small supply items, etc., may be signed out directly to the kitchen when received, the practice is discouraged. The product signed out to the kitchen is taken off the perpetual inventory, and unless used forthwith, may become lost in the operation and rediscovered only when the monthly kitchen physical inventory is taken.

The warehouse will accumulate a peak inventory approaching $100,000 in purchased food items each year. It may house, in addition, an inventory of government-donated commodities in excess of $90,000. The inventory usually builds gradually to this peak sometime in December, after which the inventory value declines rapidly. The carryover from year to year approximates $20,000.

(Note: The above figure on Federal-donated commodities is a "fair value" figure established by the State agency for purpose of comparative studies on the use of these commodities by the various districts of the State. Since the "fair value" of these commodities may in some cases exceed their local market value by more than 30 percent, USDA assigned inventory values should not be used in comparative studies with purchased inventory values in this instance.)

Total charges for transportation and handling of donated commodities amounted to $11,010.74. This represents only State charges. Warehouse storage and handling costs would be difficult to estimate since no separate records of these items are kept.

The warehouse building consists of two Butler clearspan steel buildings covered with aluminum sheeting. The 4 cold storage "reefer" units are housed in a masonry block building which is joined to the dry storage area by a full length dock which serves both the storage areas.

The warehouse is attached to the kitchen, the reefers and the warehouse are both readily accessible from the kitchen area. The warehouse is 100' long and 70' wide. It was originally built by the district as a bus garage at a cost of $28,000. Its location was such that when the large central kitchen was built in front of it, the two roofs were joined and the entire area became one building. The cold storage area is, like the kitchen proper, new construction. It was built and equipped for $80,000.

Table 7.--Equipment on hand and cost, warehouse, Granite School Lunch Program 1/

Name	Specification	Number	Cost
Lift trucks	Barrett, 2-ton	1	$175.00
	American, 1-ton	1	225.00
	Barrett, 1-ton	1	175.00
Skids	Wooden	77	10.00
Hand trucks	2-wheeled	3	---
	Platform, hand	3	---
Scales	Toledo Portable 2600#	1	---

1/ Use of a trade name does not constitute endorsement of the product over any other.

Central Kitchen

The table of organization for the central kitchen department is shown in table 8. The kitchen manager is responsible to the program director for the kitchen operation. Since it is "the key" operation, the director naturally works very closely with the kitchen manager and her operational foremen. Briefly, her job breakdown includes:

1. Assisting in menu planning. Planning menus in director's absence.

2. Interviewing and hiring kitchen personnel.

3. In accordance with menu, computing portion size for entrees, setting up master sheet.

4. Using participation averages and standard recipes, computing approximate raw foods needed, checking with warehousemen to be sure that all foods are on hand.

5. Working with warehouseman, making up list of items needed, and refering it to purchasing department. In absence of director, purchasing necessary items.

6. Determining production needs for next succeeding menu, assigning specific jobs to each shift, including amount of raw materials, and quantity of finished product needed.

7. Coordinating the three production shifts through direct conference with foremen and/or written instructions.

8. Coordinating kitchen production with delivery schedules.

9. Directing refrigerator controls, supervising use of refrigerator inventories of edible returned foods.

10. Coordinating kitchen production and school serving functions by telephone.

11. Establishing work norms in consultation with director and production foremen.

12. Remaining alert to responsibilities relative to food quality, both as to products coming into the kitchen, and products transported to the schools. Maintaining lines of communication between all segments of her operation by discussing these and other problems related to responsibilities of production with foremen and first and second cooks under her supervision.

Production Manager: Job Breakdown in Brief:

1. Breaks shift assignment down into job man-hours in consultation with kitchen manager.

2. Assigns personnel to jobs by compiling worksheet, including completion time for each assignment.

3. Assigns floor stations for each job.

4. Supervises production.

5. Supervises kitchen organization: coordinates production; reassigns personnel as their work nears completion; explains, demonstrates, may work temporarily with groups needing assistance; brings each segment of production together so that food is properly prepared and on time.

6. Accepts direct responsibility for food quality.

7. Accepts direct responsibility for accurate food distribution.

8. Accepts responsibility for success of inservice training and upgrading of his employees. Instructs, assigns others to instruct, holds conferences, etc., to carry forward function.

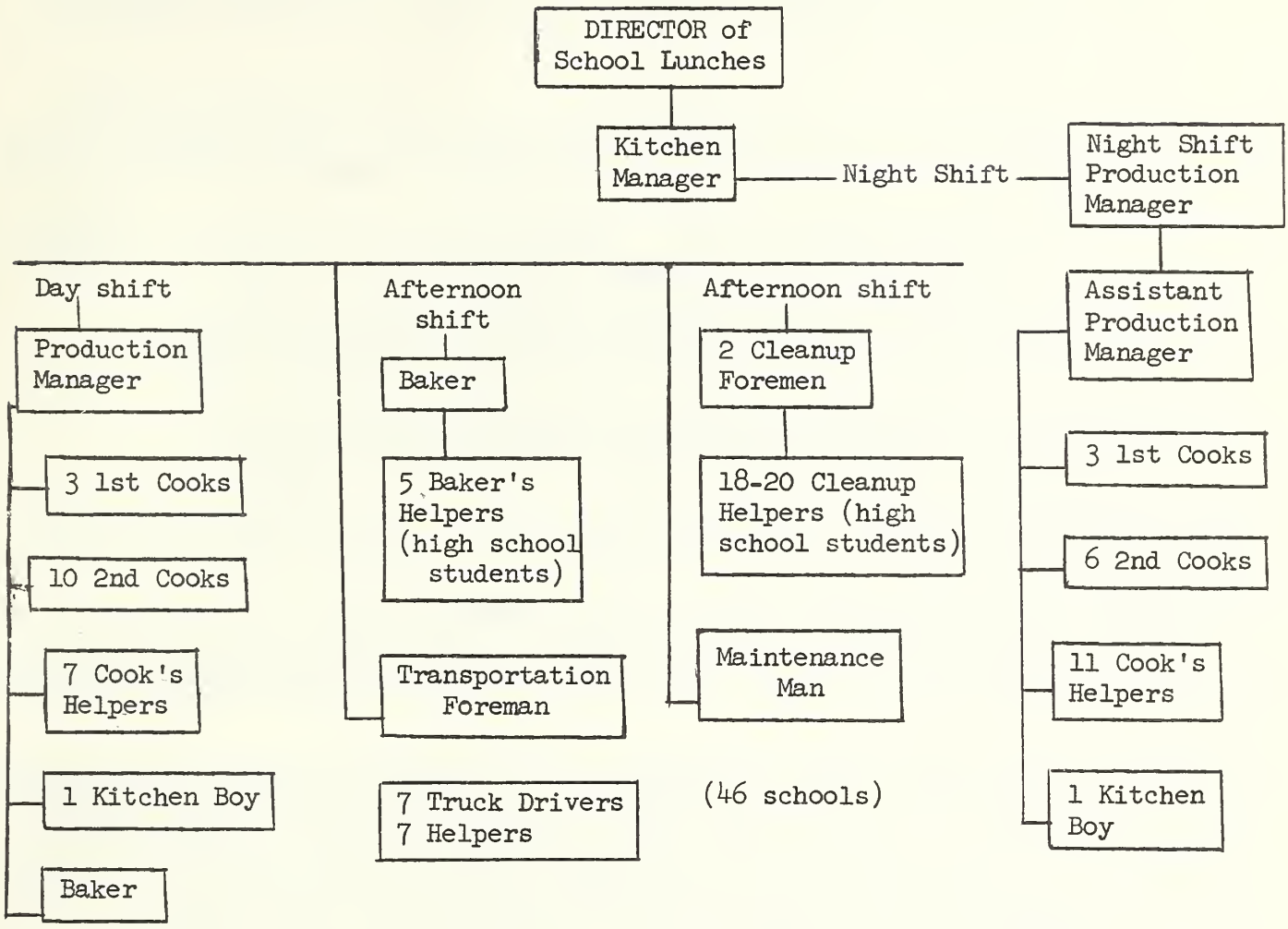
9. Accepts responsibility for checking operational refrigerators inventory and prudent use of leftover items.

10. Accepts responsibility for cleanliness and sanitation practices in the kitchen.

First Cook: Job Breakdown in Brief:

1. Accepts job assignment and instructions from production manager. Receives helpers assigned and discusses work plan. Assigns helpers.

Table 8.--Table of Organization for Central Kitchen, Granite School Lunch Program



2. From standard recipe, computes breakdown of raw materials into batch sizes, and checks out material needs, ordering additions through production manager, assembles materials, and acts as a working supervisor.

3. Brings up entree.

4. Accepts responsibility for prudent use of materials and equipment. May reject supplies if she questions their quality. May call for repair of equipment.

5. Accepts responsibility for finishing assignment on schedule.

6. Accepts responsibility for clean-work area, sanitary practices of workers.

7. Responsible for safety of personnel under her supervision.

8. Accepts responsibility for the quality of the food prepared under her jurisdiction.

9. Coordinates her work with other kitchen operations.

10. May be assigned any kitchen job. Takes turn at less desirable kitchen jobs.

11. May be called upon to advise management on different phases of her work. May be assigned to try an experimental recipe, evaluate it and recommend changes.

Comment: In addition to being familiar with acceptable use of all machines and equipment, kitchen routine, etc., the first cook will be familiar with Type A menu requirements, the use of standard recipes, basic cooking techniques, and other requirements of the master cook.

Second Cook: Job Breakdown in Brief:

1. May assist first cook.

2. May be assigned lead in preparation of less critical menu items.

3. Sets up and operates production machinery.

4. May be assigned jobs of responsibility only somewhat less than first cook.

5. Accepts turn at less popular assignments. May be assigned any job.

Baker: Job Breakdown in Brief:

1. Accepts responsibility for production of baked goods.

2. Instructs second cooks who are assigned to help on use of machines, oven operation, etc.

3. May be called upon to handle any job on the level of Journeyman Baker.

Comments: There are 2 baking shifts: one day shift starts at 7:30 a.m., the other, a part-time job, starts at 3:00 p.m. The day shift baker makes up all baked desserts such as cakes, pies, cookies, etc. and makes all specialty baked items. The afternoon shift, 1 baker and 5 high school boy helpers work about 4 hours a night, 5 days a week making bread products for the program.

The two jobs each require Journeyman Baker qualifications.

The baker's helpers (afternoon shift) assist in the preparation and baking off of the bread products, greasing pans, benchwork (the bread is made up by hand) and bake-off.

Kitchen Boy:

The Kitchen boy is the general handy-man of the kitchen. He takes out garbage, operates potato peeler, sets up equipment, and helps in numerous other ways.

Cook's Helper:

Cook's helpers are the unclassified female help in the kitchen. They are assigned to work in crews under the supervision of first and second cooks.

Clean-Up Personnel:

The cooks and bakers do not wash pots and pans and utensils, excepting cutlery and heavy equipment. The dishes are stacked as they are used in an assigned area. A clean-up crew (actually two crews) comes in to the kitchen, on alternate 2 afternoons one week, and 3 afternoons the next to hand wash utensils, pots and pans, food transport equipment returned from the schools, baking sheets and garbage cans. All garbage is returned to the kitchen from the schools, put into large drums, and hauled away by a contractor. (The garbage is sold on bid, the present price being $960 per school year. After cleaning the pans, etc., this crew scrubs down the kitchen, then rinses down the floor with hot-running water. The floor is then squeegeed dry, and the area is prepared for the night shift.

There are usually 20 to 24 boys to the shift. They are supervised by two carefully chosen adults, since the purpose of the work is twofold-- to get the cleanup done, and to give the boys work experience. The boys must bring permits signed by principal and parent, and must maintain a C average in their schoolwork.

The kitchen operation has developed a master sheet both as a production guide and a record. School routes for delivery purposes are listed according to route. Columns are set up for each menu item, with the name of the item and the size of serving heading up the column. Further over on the sheet are listed all materials used in the menu. These are priced out each day. From the materials list the protein foods, fruit, vegetable, and butter compliance figures are shown. Next over is a listing of all foods returned from the schools, by school, and next the number of meals served. An estimated total operational cost and cost per meal are easily determined from this information and this is entered on the sheet by the director along with the value of donated foods. This record becomes a valuable resource sheet for future references. It is maintained by the kitchen manager and inventory clerk.

Menus are planned weekly at a Thursday planning session in which the director, supervisor, two coordinators, kitchen manager and warehouse foreman participate. These are written up and copies sent each school. The day before the menu is served, it is set up on the master sheet by the manager. Serving portions are based on the number of servings per quart, or per pound in some dishes, or just on the basis of units sent. Sandwiches are figured by pans (72 sandwiches to a pan) as are cakes, gelatines and other set items. With the menu set up by columns according to entree, it is not difficult to add up the number of quarts of mashed potatoes or the number of hamburgers needed. The director usually checks over the master sheet and the night shift production foreman comes in before the shift to study orders, managerial instructions and production before making her work assignments.

The Schedule of Activities for a Typical Day are as Follows:

1. The day shift production foreman and two previously assigned first cooks start work at 6:00 a.m. Since the night shift crew does not ring out until 6:30 a.m. a period of overlap exists. The two production managers talk over production schedules and necessary assignment changes; the first cooks talk with their night shift counterparts and determine the progress of the scheduled production.

2. The incoming production manager finalizes assignment schedule and posts on bulletin board. The two first cooks begin assembling spices and materials necessary to finish their main dish assignments. With some exceptions, there are usually six production assignments on the menu, two or three of which demand expert supervision in finishing. Usually the three first cooks are assigned these dishes; they assemble the help designated on the schedule, get organized, and proceed to finish the entrees for "dip up."

3. When the day shift crew arrives at 6:30 a.m., they take over from the night shift in an orderly transition. The night shift production manager and her assistant work an 8-hour shift. They assist the day shift production manager if necessary in completing the transition, make up their report in the production log book, including in their reports the production started, the production finished, unusual conditions, instructions and counsel for the incoming shift, and a schedule of man-hours worked.

4. The day shift group leaders organize their schedule in such a way that the first truck load of food is ready to "dip up" by 7:15 a.m. Truck drivers and helpers ring in at 7 a.m., and prepare to help the kitchen workers they are assigned to help get the food into the carriers and onto the trucks. This work is coordinated so that the trucks are loaded one or two at a time, with the food being transferred to carrying containers, put into carriers and moved to the dock in time for each truck in succession to be loaded to leave on schedule.

5. Filling and loading activities occupy the entire staff from 7 to 10 a.m., as a rule. The job leaders and the production foreman cooperate in reporting for reassignment of excess help as the work nears completion. These are reassigned. Should a "bottleneck" develop in some schedule, the foreman borrows from other crews to assemble the manpower necessary to bring the production back onto schedule. As the various jobs are completed, the job leader releases her help, and they report to the production foreman for reassignment.

6. As the finishing period nears its end (usually around 9 a.m.), the kitchen manager and production foreman, in conference, finalize the day's production schedule, and prepare a second aasignment sheet which is posted on the bulletin board. The balance of the day is spent in those activities necessary in prepreparation for the next day's menu. Refrigerators are reinventoried, work areas are cleaned, vegetables prepared and refrigerated, etc., windows washed, offices cleaned, etc.

7. In lieu of a 15-minute morning and afternoon rest period, as required by State Law for women workers, the women take an hour noon period (1/2 hour their own time, 1/2 hour company time). The two first cooks sign out at 2:30, the rest of the crew at 3 p.m.

8. All trucks are scheduled to be back in the kitchen by 2:30 p.m. Some shorter runs get into the kitchen before this time. They leave their trucks for the latecomers to unload and check in, and they are assigned by the transport foreman the jobs of picking up shipments from railroad cars, unloading merchandise at the dock, and the numerous jobs of maintenance and cleanup characteristic of a large institution. By 3:30 p.m. all trucks are unloaded, the returns checked in and refrigerated in the dock refrigerator where it will remain until inspected by the next shift, reports are turned in to the transport foreman and the men ring out.

9. The program trucks almost all its own merchandise from railroad or purveyor to the warehouse. The truck drivers, after their runs, are often offered overtime to help bring in this warehouse merchandise.

10. The afternoon baker comes in at 3 p.m. (2:30 p.m. on roll days) and starts to scale off for the bread shift. He uses "short time dough" formulas which have been developed for use in the unit. At 3:30 p.m. he starts to mix the first of 12 or 13 132-loaf batches of bread. By 4 p.m. his helpers have the pans and work benches ready, and the baker's racks assembled, and the benchwork begins. The bakers work until about 8:30 or 9 p.m.

11. The cleanup crew (high school boys) assemble at about 3:30. A luncheon assembled from the foods returned from the schools is set out for them, and they are allowed to have something to eat before they start to work (a popular appeal for teenagers). They change into work clothes, and start the cleanup at 4 p.m. As the pans and food carriers, etc., are cleaned, they are placed on portable racks and wheeled to the pan storage area located in one end of the warehouse building. After all the equipment is cleaned, floors are scrubbed with a detergent bactericide, rinsed down, tools are put away, and the shift rings out at 9 p.m. They generally stop to eat numerous loaves of warm bread with butter and honey before they leave for home.

12. The night shift production foreman, her assistant and warehouseman ring in at 10:30 p.m. The warehouseman immediately starts bringing stock onto the floor which has been assembled by the day shift warehouse crew. The assistant begins to make up the worksheets from the master sheet, the foreman studies the log, surveys the menu and master sheet and prepares her schedule of assignments for the night shift. (This actually is a finishing of the schedule, she has it set up in her mind from the previous evening.) The work assignments are posted when the night shift rings in at 11 p.m. This crew starts and brings up the menu ready for finishing. However, they are seldom called upon to finish the entrees. For instance, they will finish washing and breaking up all salad components, which are then refrigerated for the morning (finishing) shift to put together. The salad dressing will have been made by the day shift on the day before, and left to mellow in the refrigerator for 24 hours. The night shift rings out at 6:30 a.m.

Edible food returned from the schools will be reused. With the exception of creamed dishes and leafy salad vegetables, there is little food that is wasted. About 5 percent of the food sent out is returned in edible condition. It is estimated that less than 1 percent of the food sent out is wasted when the food comes back from the schools. In the utilization of these foods, returned potatoes may be made into hash browns and sent out to some of the high schools, or they may be used as a soup thickener; barbecued beef leftovers will be used up in meat loaf, etc.

Garbage from the schools is returned to the kitchens in closed containers on the trucks bringing back the food carriers. This garbage, along with the kitchen disposal is loaded into large barrels and picked up by hog raisers. The garbage is sold by yearly contract on a bid basis. Cans, gunny sacks,

surplus grease, boxes, etc., are disposed of in similar manner. Thus, these many items become an added source of income to the program.

Table 9 shows a sampling of menus used in April 1963. These were prepared in the central kitchen. Table 10 lists the number of meals prepared, sent out and served, and returned to kitchen (leftover) for each school day of a random week chosen in April. The average error in estimating the number of meals to send was 4 percent for the month.

The central kitchen is centrally located and is adjacent to the main traffic arteries leading to all parts of the district. These will continue to afford easy access to all school areas, and problems of transport are not expected to develop. The layout of the kitchen and warehouse is shown in figure 2. Equipment used in the central kitchen only is indicated in table 11. Labor utilization and cost are given in table 12.

Changes and refinements in the central kitchen operation and in the program in the schools continue. Although the kitchen was planned to accommodate 30,000 meals per day, anticipated district growth and a growing percentage of participation make it necessary to consider the need for even larger production. Production is now high enough to permit the purchase of selected large-production machines already in use in the canning, baking, meat packing, and other highly mechanized food processing industries. The horizontal bread mixer, the cookie machine, the cake depositor, tray ovens, etc., are from the wholesale baking industry. The Urschel vegetable dicer and the potato peeler were purchased second hand from the canning industry. The United States Automatic Meat Slicer and Stacker was developed for the meat packing industry.1/

These machines and others planned for procurement will continue to increase the productive capacity and efficiency of the kitchen. The managers, cooks, and helpers in the kitchen produce, by production norm, approximately 55 meals per hour worked. Counting all personnel working in preparation, delivery, and serving of the meals, excluding the administrative personnel from the central office, the system averages about 35 meals per hour worked.

1/ Use of a trade name does not constitute endorsement of the product over any other.

Table 9.--Daily menus in April 1963, Granite School Lunch Program

April 1
Chicken noodle soup with vegetables
Barbecue beef on a bun
Red lettuce salad
Whole kernel corn
Ebemeyer cake with apple sauce
Milk

April 2
Scalloped potatoes with ham
Vienna sausages
Souffle of canned tomatoes
Rolled wheat bread and butter
Canned elberta peaches
Peanut butter cookies
Milk

April 3
Hot dogs with mustard butter
Catsup
Vegetables o'brien
Rice pudding
Milk
Chef's salad

April 4
Diced beef and pork sandwich - brown gravy
Beans parisien
Michigan salad
Bread and butter
Boston pie with lemon

April 5
Mashed potatoes with cheese
Tuna gravy
Fried ham with pineapple
Salted peanuts and raisins
Chef's salad
Bread and butter
Fruited gelatin
Milk

April 15
Chili con carne
Spring vegetables in salad
Bread and butter
Cherry short cake
Milk

April 16
Broiled lunch meat with barbecue sauce
Mashed sweet potato with butter and honey
W. K. corn - Mexican
Carrot sticks
Rolled wheat honey bread and butter
Watermelon
Milk

April 17
Oven grilled weiner
Catsup
Mashed potatoes - brown gravy
Apple, pineapple, carrot, cabbage, coconut salad
Poppy seed bread with mustard butter
Gelatin salad
Cookie
Milk

April 18
Beef and noodles with vegetables in brown sauce
Escalloped tomatoes
Tossed Michigan salad with apples and cheese
Butter crust roll
Peanut butter souffle
Vanilla pudding - chocolate sauce

Table 10.--School lunches prepared, served, and left over, by days, April 1963

Date	Lunches prepared	Lunches served	Lunches left over
April 1	19,128	18,305	823
April 2	18,724	18,066	658
April 3	18,750	17,986	782
April 4	18,787	18,155	632
April 5	18,552	17,854	698
April 15	19,030	16,971	2,059
April 16	18,510	NA	NA
April 17	18,674	17,690	984
April 18	18,716	17,987	729
April 19	18,432	17,594	838

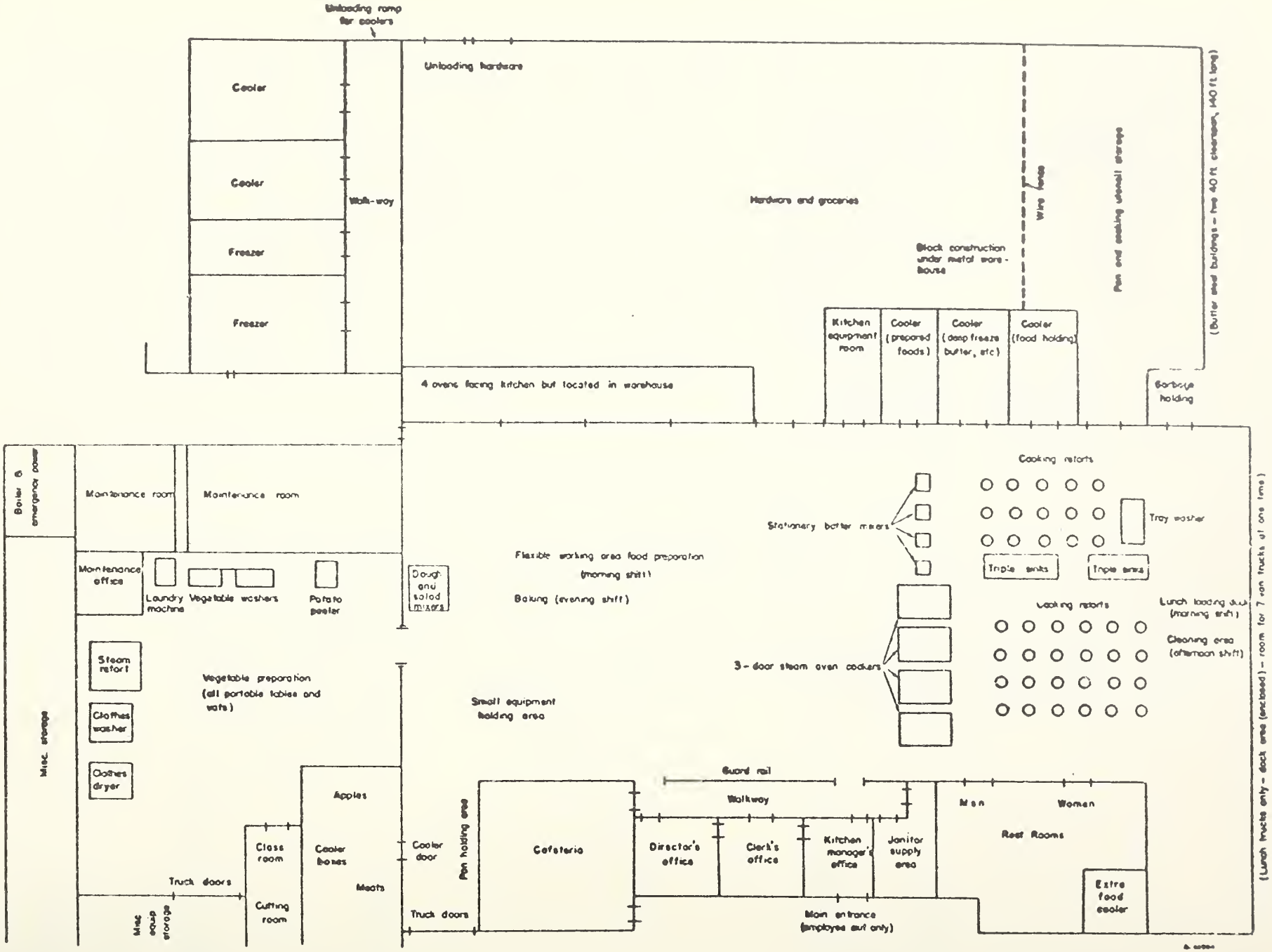


Figure 2.--Layout of central kitchen and warehouse, Granite School Lunch Program

Table 11.--Equipment on hand and cost of facilities and equipment in the central kitchen, Granite School Lunch Program 1/

Name	Specification	Size and number	Cost
Central kitchen	Complete, less equipment	15,620 sq. ft.	$250,000
Well	250 gal./min.	8" pipe, 460' depth	6,000
Pressure pumps and tanks	7 HP pump 75# pressure	5,000 gal. tank (2 pumps)	350 ea.
Ovens	Chubbuck	12 pan (1)	1,800
	Fish	30 pan (1)	3,000
	Chubbuck	18 pan (1)	2,700
	Reed	25 pan (1)	2,800
Automatic bun divider	Dutchess	32 cut (2)	600 ea.
Food cutter	Hobart T215	(2)	370 ea.
Mixers	Century	60 qt. (1)	670
	Hobart	60 qt. (1)	Free
	Hobart	30 qt. (1)	Free
	Hobart	110 qt. (1)	1,800
	Century	80 qt. (1)	Free
Kettles	Steam chef	9 bu. (3)	600
	Market forge 3MTS	7 bu. (1)	600
Stainless steel steam kettles	Groen 1/2 jacketed	50 gal. (3)	600 ea.
	Legion 3/4 jacket	60 gal. (4)	525 ea.
	Groen 1/2 jacketed tilting, mixer	60 gal. (1)	1,870
	Lee 1/2 jacketed, tilting	60 gal. (3)	2 at 600 ea., at 60
	Wearever aluminum 1/2 jacketed	40 gal. (3)	war surplus
	Wearever aluminum 1/2 jacketed	70 gal. (1)	war surplus
	Wearever aluminum 1/2 jacketed	15 gal. (1)	325
	Groen full jacketed	70 gal. (2)	600 ea.
	Groen full jacketed	100 gal. (4)	800 ea.
	Triclover return pump 1/2 jacketed	600 gal. (1)	600
Bread mixer	Century highspeed, horizontal barrel	(1)	75 - war surplus
Rol-sheeter	Acme	(1)	370
Bread slicer	Oliver	(1)	270
Cake depositor	Everready	(1)	75
Meat slicer	US automatic	(1)	1,370
Cookie cutter	Triumph	(1)	17
Vegetable dicer	Urschel #6	(1)	600
Slicers	Hobart 1512	(1)	190
	Hobart 8065	(2)	320 ea.
Vegetable slicer and cutter	Qualheim #100	(3)	30 ea. - war surplus
Vegetable dicer	O'Brien H36	(2)	600 total
Potato peeler		(1)	160
Hoist	The master stacker	(1)	70 - war surplus
Work tables	Stainless steel (low)	28" x 30" (7)	87 ea.
	Stainless steel (high)	28" x 30" (21)	87 ea.
Baker's tables	Wood	36" x 96" (2)	Free
Baker's bread racks		(22)	Free
Toters	Aluminum	17 gal. (7)	27 ea.
	Aluminum	14 gal. (55)	17 ea.
Dough trough	Stainless steel wheeled	22" x 43" x 16" (3)	80 ea.
Stock pots and miscellaneous other equipment obtained through war surplus			

1/ Use of a trade name does not constitute endorsement of the product over any other.

Table 12.--Labor utilization and costs, central kitchen

Job title and description and number of workers	Hours per day	Wages or salary
Kitchen manager (1)	--	$320 per mo.
Kitchen manager (night shift) (1)	--	300 per mo.
Assistant kitchen manager (1)	--	260 per mo.
Production manager (1)	--	260 per mo.
First cooks (2)	8	1.60 per hr.
(1)	8	1.50 per hr.
(3)	7	1.50 per hr.
Second cooks (3)	8	1.40 per hr.
(2)	8	1.35 per hr.
(2)	8	1.30 per hr.
(3)	8	1.25 per hr.
(2)	7	1.40 per hr.
(1)	7	1.35 per hr.
(1)	7	1.30 per hr.
(2)	7	1.25 per hr.
Cook's helpers (5)	8	1.20 per hr.
(2)	8	1.10 per hr.
(7)	7	1.25 per hr.
(4)	7	1.15 per hr.
Bakers (1)	8	2.25 per hr.
(1)	6	2.00 per hr.
Cleanup foremen (1)	3 (av.)	2.15 per hr.
(1)	3 (av.)	1.90 per hr.
Cleanup crew (49)	2½ (av.)	.80 per hr.
Baker's helpers (4)	5	.80 per hr.
Kitchen boys (1)	8	1.10 per hr.
(1)	7	1.15 per hr.
Maintenance man (1)		427 per mo.

Distribution

Hot foods are transported to the schools in stainless steel vacuum cans or the Lincoln thermal carriers. 1/ Trucks are equipped with van-type beds, 12' to 18' in length and power-lift end gates which swing up to close the entire rear end of the van-type bed. A crew of six male drivers, six male helpers, and a foreman handles the food distribution. This takes approximately 80 percent of their work day. The balance of time is used in helping the cooks get the food out in the morning (the drivers do most of the dipping up) and in unloading and transporting supplies from railroads and warehouses. The distribution foreman is responsible for proper loading and dispatch of the trucks and the delivery of the foods to the schools; he rides periodically with his drivers to supervise routes and handling of the deliveries, care and maintenance of the trucks and equipment, return of leftover food and transport equipment to the kitchen on schedule, disposition of edible foods and the food wastes, and the daily report of each driver as to quantities of edible food returned.

At 7 a.m. the foreman assigns his personnel to various jobs incident to getting the food ready for shipment and assembling it on the dock. About 30 minutes before leaving time, he gives each driver the orders for his route, and the letter instructing each school on amounts of food the kitchen is sending, serving suggestions, and portions. The driver of each is responsible for the food containers and loading of his truck. He asks the foreman for additional help as needed. With the transportation equipment that he must carry, the close time schedules on delivery he must maintain, and the expense of followup if errors are made, the truck driver's job is critical.

With the exception of the route closest to the kitchen, each truck delivers to 7 or 8 schools, and carries food for from 3,000 to 3,500 servings. The close-in route makes two runs each day, the other trucks each make one long run, traveling from 30 to 50 miles round trip. Drivers, excepting the short route man, eat lunch and take their 30 minute noon period at the end of their routes, then pick up the empty transport equipment and school reports from each school as they return. Back at the kitchen, each driver, assisted by his helper, unloads his own truck, placing edible food from the carriers into storage containers and the garbage into garbage barrels. When he finishes unloading, he lists edible food returns on his daily report, takes the food to the dock refrigerator for storage, the garbage to the garbage dock, and turns in his report to the transport foreman. The foreman gets a report from each driver, as well as the daily reports from each of his schools, and turns them in to the kitchen manager.

Though the school lunch trucks have been purchased with program funds, in operation they are considered a part of the District Motor Pool under the supervision of the District Director of Transportation. Routine maintenance is done by the truck maintenance crew. The program owns a standby truck which is used when a truck must be retired for any major overhaul. Major repairs must be reported to the District Transportation Director, whose mechanics diagnose the problem and take the truck to local shops specializing in truck overhaul. The

1/ Use of a trade name does not constitute endorsement of the product over any other.

program is not charged for the labor of the district mechanics, but is billed for gas, oil, and parts, as well as the entire cost of major overhaul done by an outside firm.

Truck and equipment requirements in the distribution process are shown in table 13. The program has been fortunate in having access to the State's distribution center for war surplus equipment. A large part of the equipment used in the central operation has been purchased from this source at approximately 5 percent of its real value. This explains the low cost of many of the central kitchen items. Some of the heavy equipment has been purchased secondhand from bakeries, commercial canneries, etc., at very low comparative cost.

In a recent study by the District on comparative transportation costs, it was shown that had the program relied on commercial wholesale purveyors for delivery to the schools, (not including donated commodities), the yearly cost for the comparative year would have been:

Markup for delivery by commercial carrier	$50,348.00
District operated transport costs, including labor, maintenance, gas and oil, and amortization	34,288.48

Difference: $16,059 (a saving of approximately 32 percent)

Labor utilization and cost of distribution is shown in table 14.

It was noted that temperature loss in the thermal food carriers from the initial 165° at the kitchen until served in the receiving school averaged about 25°. Optimum eating temperature is considered 120°.

Food Service in the Schools

The District divides the program-in-the-schools into three categories when it is under discussion. This is because of the differences in the serving problems encountered in the elementary, junior, and senior schools. The critical financial problem of the District has imposed severe restrictions on the building of cafeteria facilities in the secondary schools. In the elementary schools the District is just now completing the installation of modern serving facilities and multipurpose rooms in all of the old schools. Very adequate facilities are planned in the new units as they are built.

With the exception of Kearns and the new Granite Park Junior High Schools, the junior high students are served from serving kitchens contiguous to gymnasiums equipped with inwall tables, where the children eat. Because of space restrictions, children bringing sack lunches are not able to eat with the children participating in the School Lunch Program, with resulting problems growing out of gymnasium-cafeteria arrangements, and the necessity to supervise two luncheon areas during two or three divided noon periods. With the exception of the new Skyline High School (built with State support money awarded the District for this purpose), high school facilities are considered even less adequate than those in the junior high. The administration recognizes the inadequacy of the facilities in the secondary schools, but has been reluctant to divert funds from needed classrooms to cafeterias. In the elementary serving

Table 13.--Distribution equipment, Granite School Lunch Program 1/

Item	Specification	Size	Number	Cost
Trucks	1950 White van	16'	1	
	1952 Ford van	14'	1	
	1949 Ford van	14'	1	
	1959 Ford van	16'	1	
	1952 White van	16'	2	
	1960 Ford van	18'	1	$7,900
	1959 Ford panel	3/4 ton		
Pan carriers	On wheels	45 pan	51	84.00 ea.
	Metal boxes	11 pan	55	65.00 ea.
Lincoln thermal carriers	Stainless	Small	8	430.00 ea.
		Large	12	670.00 ea.
Vacuum cans	Stainless	Large	210	150.00 ea.
		Small	36	80.00 ea.
		Medium	5	105.00 ea.
Bread pans	4 strap		248	.35 ea.
Jello trays		18" x 26" x 2"	1,200	6.00
Pans	S. S. Steamtable	12" x 20" x 6"	24	30.00
		12" x 20" x 4"	193	17.00
		12" x 20" x 2"	239	11.00
Pot bellies	Stainless steel 104's w/lids	7 qt.	443	11.35
Bun pans		18" x 26" x 1"	900	5.00

1/ Use of a trade name does not constitute endorsement of the product over any other.

Table 14.--Labor utilization and costs - distribution

Job title and distribution	Hours per day	Wages or salary per hour
Foreman	8	$2.50
5 drivers	8	2.00
1 driver	8	1.80
6 helpers	8	1.25

unit two types of serving counters are used. One of these is the conventional "pass along" counter, the other the "T"-type counter (fig. 3).

In the junior high schools T-type counters are used, since it is possible to serve from them very rapidly. In the senior high schools both conventional and T counters are in use, but at Skyline a system incorporating the conventional scramble system and T-type counter is in the process of development.

A Typical Junior High School Service

The Wasatch Junior High School serving kitchen is equipped with 4 T-type serving counters (with dish storage compartments beneath each of them), towel dryer and coat cabinets, household type 14-foot refrigerator, prerinse and 3-compartment hand-dish sink with an ample drain board; set up in a room 20' x 32' in area (fig. 4).

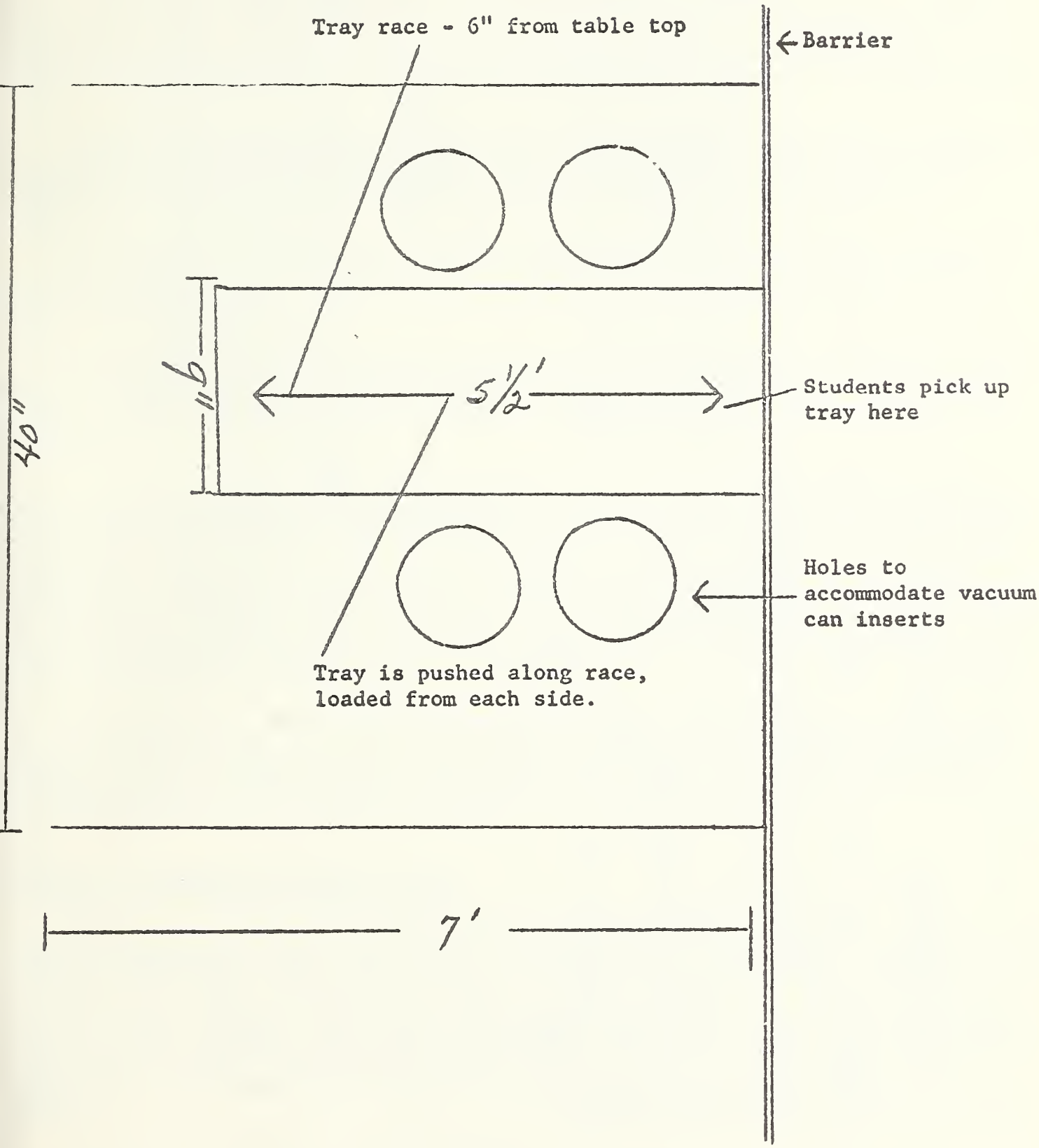
The school is located in the east bench area of the valley, its students come from families of higher than average income. School enrollment was about 1,500 students, average daily participation in the School Lunch Program approximately 800. School Starts at 7:45 a.m., approximately 200 students arrive on buses. First lunch period, 10:25; second, 10:55; third, 11:25 a.m.

Student school lunch workers number 15 girls and 13 boys. These students are not paid for the time they work, but receive lunch without charge. Students enroll for school lunch service as for classes in office practice or assistant librarian and it counts as a unit of junior high school work. These services in the school receive special recognition as an honor service by the student body. A homemaking teacher conducts formal class work and discussions with the group, the sewing classes make up special serving uniforms with school insignia and colors which the girls wear while serving. Other recognition and awards are given this group along with other service groups during the course of the school year. Mr. Walter K. Daley, principal, is a prominent exponent of the value of this activity as work experience for the students of his school, and takes personal interest and pride in this department.

The girls assist in serving, wiping down tables, and cleanup of serving area between lunch periods. Four of the boys, under the supervision of a boys' counselor, are responsible for order and proper conduct in the lunchroom. The others supervise the return-dish area, assist custodians to let down and put up the inwall tables in the gym, take care of the garbage. Boys may work on serving line also.

The adult personnel consist of one part-time manager and three part-time assistants. The four workers arrive at the kitchen at 10 a.m. While the manager checks the food delivery from the central kitchen, the assistants set out trays and serving equipment. After all is ready, the manager makes up a sample tray and the four discuss organization of the serving line. At 10:25 the student help report for work, wash up, receive instructions on portions and stations, examine the sample tray, take their place on the serving line. Only three of the four serving tables are used, and an assistant works at the head of each table to supervise servings and give extra helpings when requested, etc.

Figure 3.--Sketch of T-type serving counter



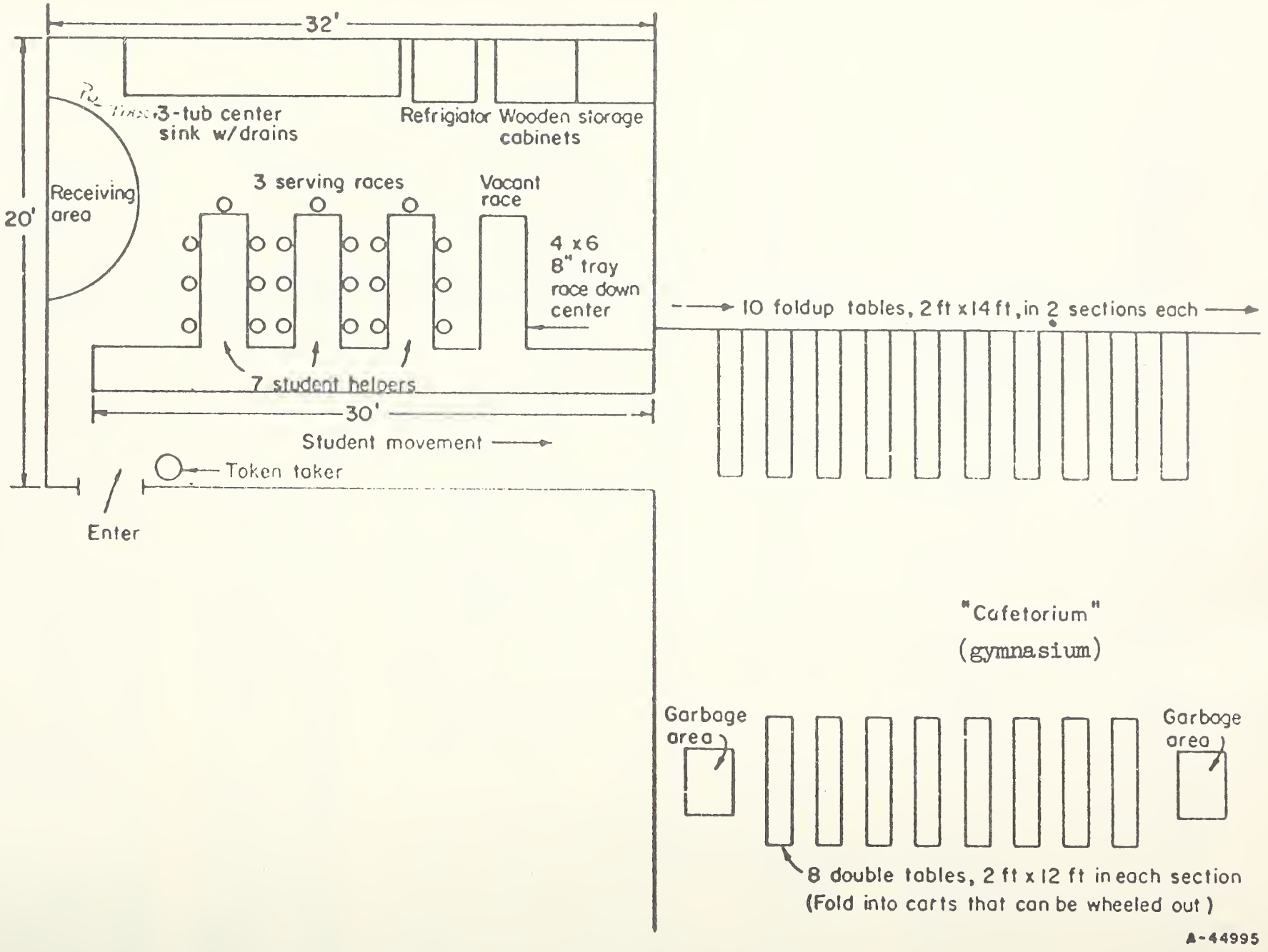


Figure 4.--Food service layout in the Wasatch Junior High School ("Scramble" system)

When serving starts, the student enters, leaves ticket at the door with a teacher, and moves to his choice of the three serving tables, picks up the tray (he may order extra portions or smaller servings) and moves on to the dining room. In the serving routine, a tray with napkin, fork and spoon, and one-half pint of milk is placed on the end of the tray race by a helper. As the tray is pushed down the race towards the serving barrier, helpers stationed on each side of the counter portion the food onto an assigned place on the tray. When the tray reaches the barrier, the student may pick it up, or ask for extra servings.

Each serving line will serve, allowing for interruptions, 12 to 15 trays per minute, serving 280 students in from 6 to 8 minutes. The manager maintains a general control of the serving area, and is assisted by three students in taking food from carriers to replenish the serving units as needed.

The workers eat after the first serving, while the ladies police dining room and serving area. Students police the area during the second break, and the ladies have lunch.

At the end of the serving periods, students quickly wipe the tables so they may be returned to the walls and the floor is policed. The area is now ready for the gymnasium classes which occupy it immediately after the last luncheon period.

The school lunch workers, immediately after serving, combine the leftover foods into one tray per item, the manager estimates her returns, puts them into the food carriers, counts the tickets gathered at the door, and turns them into the school office for recheck and entry onto the weekly report by the office secretary, finishes her daily report to the kitchen, and places it with the carriers to be picked up by the truck. She then assists in finishing the dishes and cleaning up the serving area. The school lunch workers finish their assignment and leave for home from 2 p.m. to 2:30 p.m.

In addition to the teacher taking the tickets, and the boys' counselor in charge of the dining area, the three school custodians lead the students in the letting down and putting up of the inwall tables, and are on call during the entire lunch period to assist as needed.

A Typical Elementary School Service

The Granger Elementary School serves a new housing development, still rapidly expanding in the central part of the valley. In November 1962 the school enrollment was 782. One hundred sixty of these were first graders on double session. Bus schedules made the school lunch unavailable to them. Out of the remaining 622 students who could avail themselves of the lunch, 530 were participating, an average daily participation of 85 percent. Fifty-four percent of the total school enrollment were transported to and from school in District buses.

The Granger Elementary School serving unit is less complex than the Wasatch unit (fig. 5). A part-time manager and three part-time assistants serve and do the cleanup with only an occasional assist from students. The adult workers

come to work one-half hour before serving time. While the manager checks the food delivery with her daily "send" report from the kitchen, her assistants set up the serving area. The multipurpose room clears of students at about 11:15 and the custodian comes to put down the inwall tables, moves the portable tables to their places and opens them. As indicated in figure 5, the serving counter is conventional, serving only one line. The school has two unstaggered lunch serving times. Four women with occasional student help are able to serve each period in approximately 12 minutes. Meals are paid for one day each week in the classroom. The check-off system of meal accounting is used, each teacher bringing her roll of participating students to the dining area with her, (students bringing lunches from home eat at the dining tables with those eating the school lunch). The teacher leaves the check-off roll at the door with the student assigned to check off the students as they pass through the door. After lunch, the rolls are taken by the school lunch manager to the office for counting. After the serving period, a tray count is made by the manager and taken to the office where the school clerk checks the tabulated record from the check-off against tray count. The manager estimates the food returns to the kitchen (gathered by this time and ready to put back in the food carriers), checks her garbage can for waste and makes up her daily report. The principal assigns the custodian or a teacher to watch the food waste return and tray gathering area. If problems develop, students are assigned to assist at this station during the serving time. Student helpers are served a lunch without charge. After the reports are ready, the manager assists in wiping the tables, washing of the utensils, cleanup of the serving unit, etc. Workers finish and leave about 2:30 p.m.

The manager in each service unit makes up a daily report, which is taken to the central kitchen with the truck returning empty food carriers. The report shows number of meals served to adults and children, the number which are paid, free, and served to children helpers. The manager rates the meal "poor", "fair", "good", "excellent", makes suggestions for improvement, notes significant comments from her staff and the school, lists returns by name and amount, discusses problems, difficulties, etc., orders supplies, asks (in case of need) for visits from central staff, etc. The director and the central staff, including kitchen management and workers may receive communications through this medium and write return communications which are delivered at the school with the next day's lunches.

Equipment in each of the kitchens consists primarily of combination serving counters and cabinets, 4-compartment sink and drain boards, lavatory, milk box, (a refrigerator with a capacity for approximately 775 half-pints of milk in cartons), cabinets for drying towels (in the newer schools), storing street clothes, etc.,and a broom closet. Serving utensils are standard throughout the District, and consist of divided trays for presetup of 5 1/2 ounce paper souffles which are used for portioning fruits, puddings, etc., forks, spoons, and an assortment of scoops, ladles, serving spoons, etc.,for controlled portioned serving. The elementary schools are equipped with the serving unit opening into a multipurpose room which seats approximately one-half the student enrollment. In many schools additional classrooms have been built without enlarging the serving unit or multipurpose area or creating too great a problem in this system. Costs were not available for either of the serving kitchens. (Director's note: Approximately $18 per child for 75 percent of the student body for new elementary

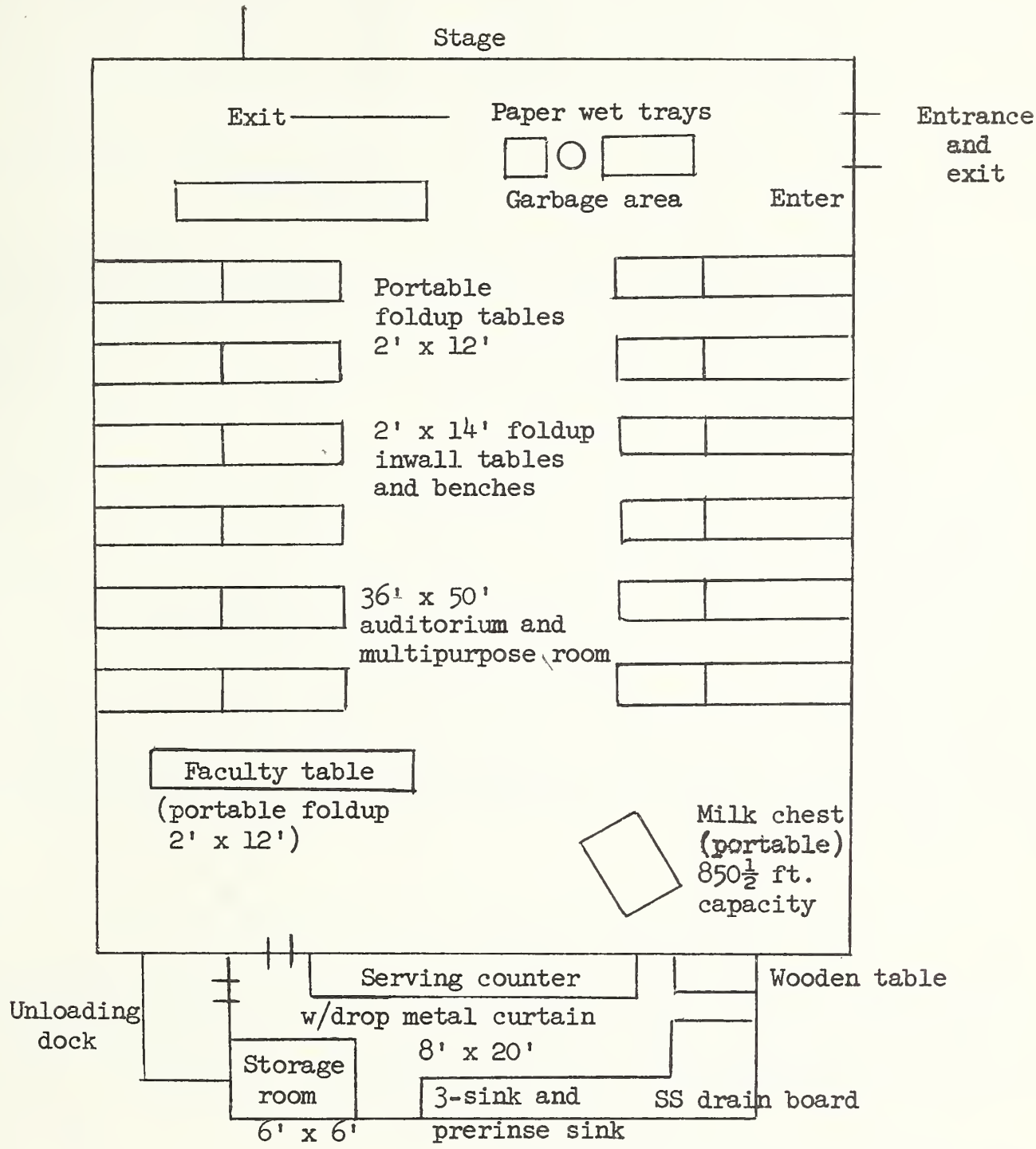


Figure 5.--Food service layout in the Granger Elementary School

and junior high schools is budgeted. This will cover cost of additional kitchen equipment, food carrier and transport outlay, and the trays, bowls, eating-ware, and serving equipment necessary to open a new unit. The serving units, sinks, cabinets, etc., as fixed equipment in the unit, are now made a part of the total cost of the school and are paid by the District with capital outlay funds. There is wide variation in these costs, as there is in serving unit design. In general, a T-type serving table with cabinets for dish storage, with stainless steel top costs $900 to $1,000. The prerinse 3-compartment sink and drain boards (all stainless) average $1,800 to $2,000 per unit.

Labor cost for the school lunch employees in the schools is based on a variable rate per number served. This system was developed early in the present program to provide equitable rates of pay for equal work. The norms from which the scale was derived were developed through experience and observation, and set an arbitrary wage return on each tray served. The rate progresses from 4 1/2 cents per tray for schools serving 250 meals to 3 1/2 cents per tray for schools serving 850 meals per day. A floor of $1.20 per hour for assistants, and $1.40 per hour for managers is placed under the salary scale. However, if this is the rate earned in the school for a 2 month period, it is considered on the part of central management an indication of the need of retraining, and the coordinator assigned to the school studies the problem. In a smaller school, the typical manager receives about $1.57 per hour, and assistants $1.35 per hour. An additional attempt to achieve equity is that the coordinator can give a special rating, in addition to the scale, to a school working under handicap. This rating is based on the coordinator's evaluation of the amount of additional work the handicap causes. If the coordinator concludes that working conditions are creating unusual problems affecting the work load of the workers, she awards the school points on a scale of the increasing difficulty. Her conclusions are reviewed by the central staff in a management meeting, and if adopted, the workers in the school receive a 5 percent increase in rated salary for each point awarded.

Evaluation of the Food Service System

To evaluate a system, one must determine the degree to which it does what it sets out to do. At the time the experiment in centralized foods preparation was initiated, a series of objectives were identified (they have not been presented to the administration, and are not officially recognized):

1. The program would not limit the number of free meals served so long as the participants were properly certified.

2. The program would be operated as a business to give the child the best possible meal at the lowest possible price.

3. We would attempt to develop a system that would make the services of a school foods program recognized as a part of the District's total educational effort -- a system that would become recognized serving the needs of the entire school program.

4. That, since the State school lunch legislation did not include provisions to enable districts to finance the program in a manner similar to other school activities; and since, for the forseeable future, all available district resources were overcommitted in maintenance of established academic programs, this system would be as far as possible, self-supporting.

Evaluation in Terms of Objectives

1. The program does not limit the number of certified free meals a school may serve. During times of labor unrest which sometime precipitate serious economic dislocations in the District, a few of the schools have been known to serve 35 percent to 40 percent of their lunch participation free for periods of 2 to 3 months. Fortunately, these occasions are not of frequent occurrence. The program has not found it necessary to ask for outside help for these emergencies.

2. Savings attributed to the program are indicated by the fact that the total program cost per meal has increased only from 31 cents in 1948 to 32 cents in 1963, despite increases of 250 percent in wage rates and continuing inflation in market costs of food and supplies. The director attributes these quite stable costs to refined purchasing methods; increased production per man-hour through use of labor-saving equipment and improved labor utilization; and easily administered controls possible in a centralized operation.

3. This year the central kitchen prepared $10,000 worth of food into a variety of luncheons, dinners, party snacks, etc. (The kitchen prepares the food, but the sponsors make their own serving arrangements.) Sponsors pay only the actual food cost; the program absorbs preparation costs as a service to the total school program.

4. Until 1956 the program paid all costs including capital outlay for procurement of equipment installed for use of the programs in the schools (within restrictions imposed by State and Federal regulations). Since that time, the sinks and the serving and dining room facilities have been included in the cost of construction. The program continues to purchase and maintain all equipment used in the central kitchen, including trucks, and provides the trays, utensils, serving equipment, and supplies necessary to the service in the schools. The program remains largely self-supporting.

General Comments

The program has had personnel problems from time to time, but these are less serious than they would be if each school had an individual kitchen. The serving personnel in the schools are more successful if they have certain well defined personal qualifications. However, it is not essential that they be highly skilled. The program had trouble recruiting full-time help in certain residential areas when it operated in the individual schools, but it has been possible to recruit high-type personnel for the part-time jobs in these same communities. The management prefers a moderately high personnel turnover on

U. S. Department of Agriculture
Washington, D. C. 20250

POSTAGE AND FEES PAID
U. S. Department of Agriculture

OFFICIAL BUSINESS

serving jobs because the women who work at these jobs almost always become boosters for the program in their neighborhoods, and improvement in home menu planning follows experience with the carefully planned but low cost meal they serve to children in the schools.

The above observation does not apply in the case of a small corps of key personnel highly trained for the central kitchen. This necessary staff, however, does not have to exceed 10 women, 5 on each preparation shift. When the new kitchen was built, the program did not begin operation until the 28th of November. At this late date, only five of our key personnel came back to work; the others had accepted employment in local restaurants that try to recruit these highly skilled people. However, with three of these on the finish (day) shift, and two on the preparation (night) shift, we went into production. Fortunately, participation was low for the first week, but when we entered the third week we were preparing 17,000 meals a day without difficulty, The key personnel, first and second cooks, are encouraged to attend conventions and local seminars, and as formal training becomes available, they are invited to attend classes on a share-the-expense basis. They, in turn, are expected to share the information they acquire with the people assigned to help them in the kitchen.

The system practically eliminates the abiding problem of personnel training which plagues so many national school lunch programs.