COMMERCIAL OR HOSPITAL-OPERATED LAUNDRY AT PROVIDENCE HOSPITAL

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CHAPTER I

THE HOSPITAL LAUNDRY

The laundry service for the hospital is an indispensible function. The patient is in contact with the laundry's product, clean linen, during his entire stay in the hospital.

Institutional laundry literature indicates some hospitals have found it to their advantage to buy laundry services which were formerly performed by the hospital. Hospital management literature shows evidence of split opinion among administrators as to which service offers the lowest costs, the greatest service to the hospital, and the best quality of finished laundered product.

The hospital laundry service, be it commercial or in-house, represents a sizeable expense for every hospital. The most economical service must be obtained. To achieve this end, total costs of existing laundry service should be compared with equivalent services of contemplated alternatives. Before a change is made in laundries, searching questions of comparative costs, quality, and service must be answered before final decisions can be made.

Providence Hospital

Providence Hospital is a 190-bed, short term, general, voluntary institution. Its history dates to 1903. The hospital serves the community of Waco, Texas, and a population of over 100,000. It is administered by the Sisters of the Daughters of Charity.

Although the physical plant is partially in older buildings, the medical treatment, diagnostic services, and equipment is equal to most modern hospitals of similar size throughout the country.

In-patient admissions average 6,500 per year. Present daily bed occupancy rate has risen from 60 per cent in 1960 to 85 per cent in 1967, with a daily census of 162 patients. The hospital does not provide obstetric service but does have a 60 bed psychiatric unit. At the present time the hospital does not have an active training program in nursing, internship, or residency.

Providence employs approximately 370 men and women. The average yearly payroll is $1,068,068.00. This hospital operates its own laundry plant.

Providence is planning an extensive modernization and construction program. Twenty additional beds will be added. It is hoped that construction will be completed by 1971.

The hospital is listed by the American Hospital Association and is fully accredited by the Joint Commission for Accreditation of Hospitals.

Conditions Which Prompted the Study

Providence Hospital is operating a laundry plant in a sixty year-old building. The laundry is located on the second floor above the boiler plant and has ample space and ventilation. The equipment in most cases is old, obsolete, and subject to frequent breakdowns. Sister Austin, administrator, requested a comparative analysis study be made of the hospital laundry with commercial laundries in the vicinity of Waco, Texas. A comparison of cost, relative quality, and relative service would be used as an informal base for future decisions.

CHAPTER II

THE PROBLEM

Weighing the merits of a hospital operated laundry against those of a commercial firm creates perplexing problems. There are cases where hospitals have discontinued its own laundry in favor of commercial institutions.[1] There are other cases where commercial laundry contracts have proven unsatisfactory in terms of price, quality, and service. Each hospital's decision must be based on its own operating peculiarities. Some hospitals have negated the possibilities of an outside contract even when better quality laundry was offered at a lower cost because the staff felt a hospital operated laundry department was an absolute necessity to satisfy all patients and all departments in the hospital.[2]

Providence Hospital has the choice of three alternatives: (1) the hospital operated laundry, (2) commercial laundries, and (3) a linen supply service. Important factors, in addition to cost, are

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[1] L. A. Bradley, "The Selection, Care, and Laundering of Institutional Textiles," The Cornell Hotel and Restaurant Administration Quarterly, (1963), p. 74.

[2] Fred Foster, "Evaluating Laundry Service," Hospital Progress, XLII (October, 1961), 70.

relative quality, availability of linen, possible changes of conditions in the future, demands made by services of the hospital, and effect on employees. A final decision should not be made until weighing the merits of each particular factor.

Statement of the Problem

The problem is to determine the best commercial or hospital-operated laundry service system for Providence Hospital.

Approach to the Problem

Definitions. -- Terms used in the content of the study are defined below:

Cost Per Patient Day. -- A dollar amount used to quantify cost of laundry with an inpatient day.

Laundry Service. -- A function where soiled linen is washed, pressed, and/or dried, the end product being clean usable hospital linen.

Laundry Production. -- Pounds of soiled laundry processed in a given time period.

Linen. -- Any article of clothing, bedding, or washable cloth item used in the hospital including uniforms, mops, rags, and kitchen toweling.

Linen Service. -- A function within the hospital that is concerned with internal distribution of clean linen, collecting soiled linen, mending, marking, and controlling linen loss.

Linen Supply Company. -- A commercial firm that furnishes the hospital a complete stock of clean linen on a daily rental basis.

Objectives. -- In order to recommend the best laundry service system, the writer had the following objectives:

1. To find the total cost of laundry and linen service operations at Providence Hospital.

2. To find the total cost of commercial contracts from laundry and linen supply companies.

3. To find the most economical laundry system by cost comparison of the hospital laundry with commercial laundry quotations.

4. To compare quality of clean linen processed, delivery service, normal and emergency, of the hospital laundry with commercial firms.

Criteria. -- The following directional guidance was used as criteria throughout this study:

1. The hospital laundry, if used, must operate as economically as commercial laundries.

2. Cost for each pound of clean linen laundered must not exceed national averages for hospitals of similar size.

3. Washing and finished laundry techniques of prospective alternatives must meet the standards of the American Hospital Association and Cornell University School of Hotel Administration.

4. Infection control and handling of clean linen must meet the standards of the Providence Hospital Infection Committee.

5. Laundry service must be patient-oriented and available during emergencies and peak patient load conditions. Delivery response must be immediate.

Limitations. -- The study of laundry systems will be limited to Providence Hospital and commercial laundries under current conditions in Waco, Texas. The study, moreover, does not lend itself to comparison of all hospital laundries with all commercial firms throughout the country. Since each institution has differences in operating techniques, only general comparisons will be made with national statistics.

Determination of costs for Providence Hospital will be limited to and guided by original expense and accounting records that were accessible to the writer. Production data for Providence Hospital Laundry was compiled over a one week period. There were no unusual increases or decreases in admissions during this period; therefore, the survey week was considered a representative one.

> It should be remembered that whenever costs are accumulated, the final information represents approximations, but this does not remove the usefulness of the reports. If the degree of approximation is understood, the data can be used in hospital administration.[3]

Research Methodology

The writer relied extensively upon standard data, analytical guidelines, and methods developed by American Hospital Association, American Institute of Laundering, and Linen Supply Association of America.[4] It is the writer's belief that the use of this methodology has contributed greatly to the accuracy of quantitative data.

Useful information, criteria, and standards of laundry operation were obtained from American Hospital Association; Cornell University School of Hotel Administration; American Institute of Laundering, Joliet, Illinois; Linen Supply Association of America, Miami Beach, Florida; National Association of Institutional Laundry Managers, Girard College, Pennsylvania; and Community Systems Foundation, Ann Arbor, Michigan.

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[3]American Hospital Association, Cost Finding for Hospitals (Chicago: American Hospital Association, 1957), p. 82.

[4]Ibid., pp. 81-96; Robert C. Archer, Hospital Laundering Cost Survey, A Report to the Members of American Institute of Laundering (Joliet, Illinois: American Institute of Laundering, March 30, 1961), pp. 1-16; Linen Supply Association of America, Determining Hospital Linen Costs, A report prepared by Kenneth O. Weiser and Richard F. Cohn (Miami Beach, Florida: Linen Supply Association of America, 1965), pp. 5-19.

A seven day on-site study was made of Providence Hospital Laundry. Commercial laundries and one linen supply company in Waco were visited and queried. Interviews were held with the owners and managers of the commercial firms. Cost, quality of work, and service to the hospital were emphasized. Nonbinding estimates of costs were obtained from each commercial laundry capable of servicing Providence Hospital.

Care was taken when laundry costs were computed to include only those costs that would be eliminated if the hospital-operated laundry were discontinued. Costs of laundry, linen service, and linen replacements were kept separate so that valid comparisons could be made with equivalent commercial service. Laundry costs and laundry production statistics were compared with Texas and national hospitals of similar size. Only general comparisons could be made with Providence Hospital.

Review of the Literature. -- Before the study was made, institutional laundry literature was reviewed. Pertinent laundry articles found in hospital periodicals were read. A general knowledge was obtained in the area of commercial and hospital-operated laundries.

Literature indicated a pronounced division into two schools, one that was for commercial service, the other emphatically in favor of the hospitals operating their own laundry service system. Many articles on hospital laundry operation claimed commercial laundries

not economical when all overhead and administrative expenses were considered. Proponents of commercial laundry service for hospitals claimed hospital laundry costs figures are misleading. Certain industrial laundry literature stated the average hospital does not know the true cost of laundry service. Furthermore, the laundry industry emphatically stated that a commercial laundry can give better service at a lower cost than a badly managed hospital laundry.

Assumptions

The following assumptions were made in connection with the study:

1. Hospital bed occupancy rate will remain relatively constant at 85 per cent average per day.
2. The policy of no obstetric service will not change.
3. Laundry machinery will be usable for the next five years.
4. The policy of free laundering of uniforms will remain unchanged.
5. Labor will continue to remain plentiful in the Waco area.

Facts Bearing on the Problem

1. Minimum wages are scheduled to increase from $1.00 per hour to $1.60 per hour by 1970.
2. The hospital laundry is ideally located and has ample space; its machinery is capable of meeting the daily linen needs of the hospital.

3. Large modern commercial laundries are available within the Waco, Texas, city limits.

4. There has been practically no labor turnover in the hospital laundry during the past year.

PART II. DISCUSSION OF LAUNDRY SERVICE ALTERNATIVES

CHAPTER III

PROVIDENCE HOSPITAL LAUNDRY

The first alternative for Providence Hospital is the in-plant laundry presently in operation. An initial survey was made of the hospital laundry. The following observations were made:

1. The plant had a single large room, well lit, and well ventilated. Stools, worktables, and rest areas were available and considered adequate as shown in Appendix A.

2. Because the laundry is located on top of the power plant, electric lines, steam pressure, compressed air, and water pipes had sufficient capacity for all laundry operations.

3. The number of washers and extractors were within the minimum standard requirements of U. S. Public Health Service for this size of hospital.[1] Machinery was not modern. Washers and dryers were subject to frequent breakdowns. Labor saving devices, such as

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[1] Alex M. Milne, et al., Hospital Equipment Planning Guide, U. S. Dept of Health, Education, and Welfare, Public Health Service Publication No. 930-D-4 (Washington: U. S. Government Printing Office, 1964), pp. 54-55.

self-dumping washers and overhead monorail lifts, were lacking. The flatwork ironer was the newest addition to the laundry. Canopies were installed over the flatwork ironer which removed excess heat.

The laundry employed sixteen men and women, including the laundry manager, who was directly under the assistant administrator. The laundry manager was responsible for laundry operations, internal distribution and linen service throughout the hospital. Linen service employed four people. Detailed laundry positions are shown in Appendix B.

Distribution of soiled and clean linen is shown in Figure 1. Internal distribution of soiled linen was accomplished by two men picking up soiled linen at eleven pick up points. The same men delivered clean linen to the patient care areas.

Laundry technique and wash formula are shown in Table 1. Soiled linen was sorted for mops, rags, blankets and uniforms. All other linen was washed together as a lot. Linen was not weighed before loading operations.

Laundry Costs

Cost data was collected for direct and indirect expenses allocable to the laundry operation. The laundry manager did not have cost production records. He did record total pounds for all clean linen produced by carefully weighing and listing weekly totals.

FIGURE 1

DISTRIBUTION OF SOILED AND CLEAN LINEN
PROVIDENCE HOSPITAL LAUNDRY

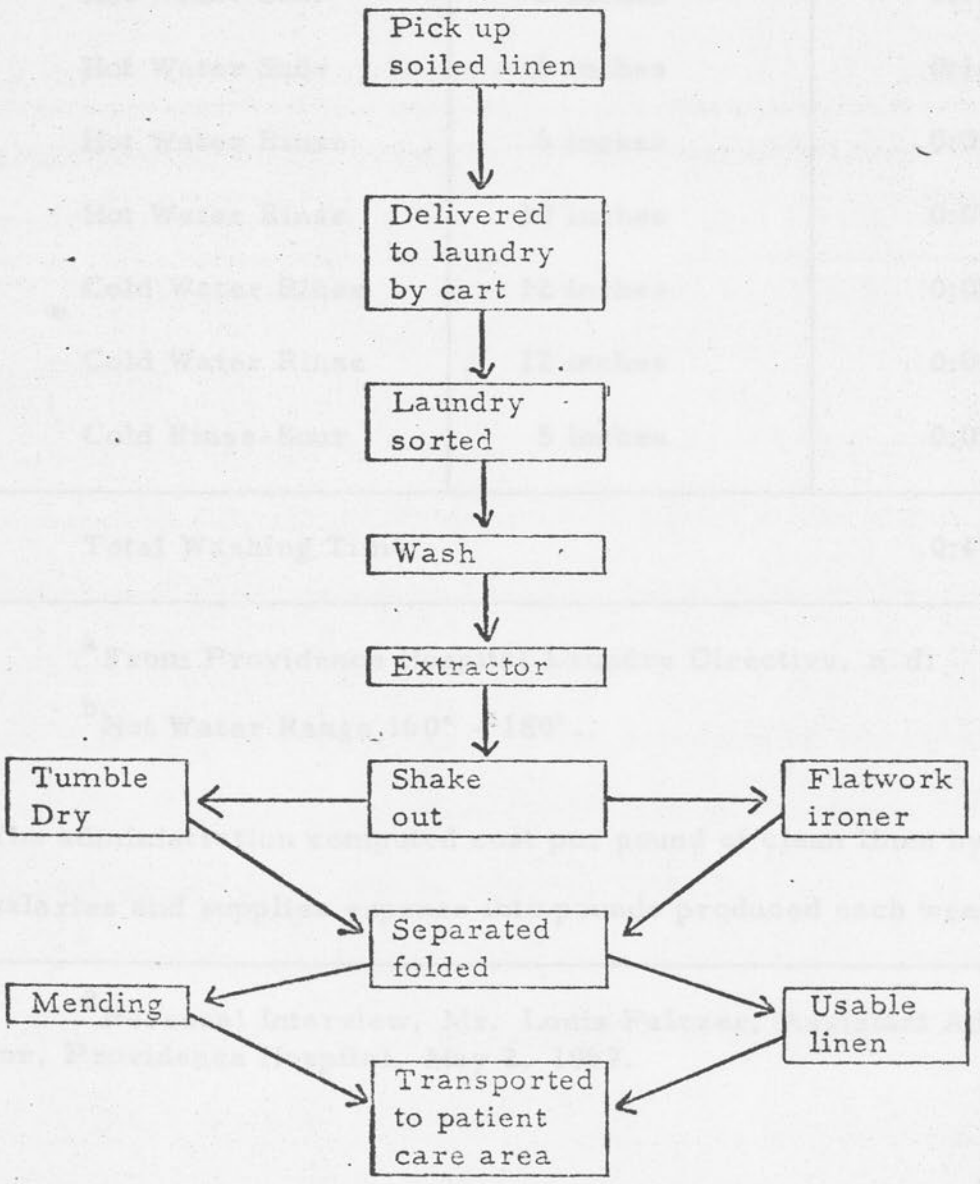

TABLE 1

WASHING FORMULA AND TECHNIQUE[a]

Procedure	Water Level	Time
Cold Water Break	12 inches	0:02
Hot Water Suds[b]	6 inches	0:10
Hot Water Suds	6 inches	0:10
Hot Water Rinse	6 inches	0:05
Hot Water Rinse	10 inches	0:05
Cold Water Rinse	12 inches	0:05
Cold Water Rinse	12 inches	0:05
Cold Rinse-Sour	5 inches	0:05
Total Washing Time		0:47

[a]From Providence Hospital Laundry Directive, n.d.

[b]Hot Water Range 160° - 180°.

The administration computed cost per pound of clean linen by dividing salaries and supplies expense into pounds produced each week.[2]

[2]Personal Interview, Mr. Louis Palczer, Assistant Administrator, Providence Hospital, May 2, 1967.

Indirect costs of steam, electricity, water, maintenance, and employer benefits were not included by the hospital for laundry expenses. Table 2 shows the costs for one pound of linen when direct and indirect expenses were applied to laundry operations. Providence Hospital did have up to date records of total expenses incurred for operation of plant, linen replacement, personnel and administrative overhead cost. Data was collected and expenses allocated to the laundry department in proportions recommended by the American Hospital Association, American Institute of Laundering and the Linen Supply Association of America. Appendix C and Schedules C-1 and C-2 show the methods used to arrive at total costs of the hospital-operated laundry.

As can be seen in Table 2, direct costs of laundry operation amounted to $37,357.32 for the year. Indirect costs, which included operation of plant, employee benefits, and administrative overhead, totaled $13,170.84. The grand total for laundry operation was $50,528.16. Costs were based on an average of 12,282 pounds of clean linen produced each week for the period, December 1966 through April 1967. This is shown in Table 3.

Cost for each pound of clean linen taken from the hospital laundry averaged $0.079. 10.7 pounds of linen was used for each

TABLE 2

COST OF LAUNDRY PRODUCTION
PROVIDENCE HOSPITAL

EXPENSES	Week[a]	Month[a]	Year
A. Direct Costs: (Appendix B)			
1. Laundry salary and wages	$695.00	$2,988.50	$35,862.00
2. Laundry supplies (Appendix C)	28.98	124.61	1,495.32
Total Direct Costs	$723.98	$3,113.11	$37,357.32
B. Indirect Allocated Costs: (Appendix C)			
1. Employee health, welfare pensions, payroll taxes	$ 40.31	$ 173.33	$ 2,079.96
2. Provisions for vacation holiday, and sick leave pay	$ 77.15	$ 331.70	$ 3,980.40
3. Operation of plant:			
Steam (Schedule C-1)	$ 36.84	$ 158.41	$ 1,900.92
Water	12.16	52.28	627.36
Electricity (Schedule C-2)	28.73	123.53	1,482.36
4. Repairs and maintenance of building and equipment:	$ 14.90	$ 64.07	$ 775.19
5. For depreciation of building and equipment[b]	-------	---------	----------

TABLE 2--Continued

EXPENSES	Week[a]	Month[a]	Year
6. Administration and general overhead:	$ 45.17	$ 194.23	$ 2,330.76
7. Interest related to investment made in laundry equipment	-------	---------	----------
TOTAL INDIRECT COST	$255.25	$1,097.57	$13,170.84
TOTAL LAUNDRY COSTS	$979.23	$4,210.68	$50,528.16
C. Average Pounds Processed Per Week (Clean)	12,282	52,812	633,744
D. Cost Per Pound Processed	$ .079		
E. Total Number of Patient Days (85% Average Occupancy = 163 Patients x 7 Days)	1,141		
F. Cost Per Patient Day	$ .858		
G. Pounds Per Patient Day	10.7		

[a]Monthly totals were computed on the basis of 4.3 weeks per month. Totals were rounded to the nearest cent. Survey week was considered a normal average representative period by Mr. Louis Palczer, Assistant Administrator.

[b]Laundry Building and Equipment carried on hospital books at no valuation.

TABLE 3

AVERAGE CLEAN LINEN PRODUCTION, PROVIDENCE HOSPITAL, DECEMBER, 1966 - APRIL, 1967

MONTH	AVERAGE POUNDS PER WEEK
December, 1966	11,462
January, 1967	12,783
February	12,499
March	12,293
April	12,375
Average Pounds Per Week	12,282

patient day. Cost of laundry produced for each patient day averaged $0.858.[3]

Linen service and linen replacement costs were kept separate so that valid comparisons could be made with commercial laundries. Linen service and distribution would remain a hospital expense

[3] To reduce the degree of error from accumulation of averages into definite costs, as much precision that was economically practicable was used in obtaining cost statistics. Source data was original and from Mr. John Styles, Comptroller, Providence Hospital.

regardless of the type laundry used. Table 4 shows costs incurred by the hospital for linen service.

TABLE 4

COST OF LINEN SERVICE, PROVIDENCE HOSPITAL

	Week	Month	Year
A. Direct Costs:			
1. Linen Service Wages (Appendix B)	$164.00	$705.20	$ 8,462.40
2. Linen Service Supplies[a] (manufactured items)	47.87	205.84	2,470.08
B. Allocated Costs:			
1. Administrative and general overhead (6.5% of payroll dollar as shown in Appendix C	12.02	51.68	620.16
C. Total Cost of Linen Service	$233.89	$962.72	$11,552.64

[a]Bolts of material, thread, etc. Total figures obtained from Mrs. Steindam, Housekeeper, Providence Hospital, based on issues from Hospital Stores during past year.

The yearly cost for internal distribution of linen, control of losses, and seamstresses duties totaled $11,552.64.

Although linen replacement was not a laundry cost, it was felt that linen replacement was directly related to laundry and linen

service operations. Improper washing techniques and loss control was directly proportionate to the new linen placed into the hospital system. Table 5 shows a total of $6,300.36 of new linen which was placed into service since July 1, 1966.

TABLE 5

COSTS OF LINEN REPLACEMENT
PROVIDENCE HOSPITAL
JULY, 1966 - MAY, 1967

	Week	Month	Year
New Linen Purchased since July 1, 1966[a]	$122.10	$525.03	$6,300.36
Total Cost of Linen Replacement	$122.10	$525.03	$6,300.36

[a]Data obtained from receipts and issues to housekeeping department from hospital stores.

Costs for laundry production and linen service using the hospital-operated laundry are shown in Table 6. The total cost for Providence Hospital to pick up soiled linen, wash and press it, and deliver clean linen back into the hospital system was $62,080.80. The average cost for each pound of clean linen processed, delivered, and mended was $0.098. Cost for each patient day averaged $1.06.[4]

[4]Yearly totals did not include annual linen replacement expense.

TABLE 6

RECAPITULATION OF COST FOR HOSPITAL-OPERATED LAUNDRY

	Week	Month	Year
Laundry Production	$979.23	$4,210.68	$50,528.16
Linen Service	$233.89	$ 962.72	$11,552.64

Interviews with Hospital Staff

Information was obtained from the hospital staff during interviews to determine the degree of satisfaction the hospital was deriving from its own laundry operation.

The Assistant Administrator directly in charge of the laundry stated:

1. That there was practically no labor turnover in the laundry department.

2. That minimum wages were currently $1.00 per hour and would increase in steps to $1.60 by 1970.

3. That the linen use policy of the hospital was new bedding each day and that uniforms were laundered free if the hospital required a uniform to be worn.

4. That he was happy with the performance of the hospital laundry, especially since total laundry and linen service was under the laundry manager.[5]

The Chief Nurse was complimentary to the personnel of the laundry. She stated that the finished laundered linen was of high caliber. Infection control was not a problem.[6]

The Laundry Manager stated:

1. That the hospital did not belong to a national laundry association.

2. That he was inexperienced in laundry operations.

3. That he had no major complaints concerning the laundry.

4. That his chief problem was lack of preventive maintenance on the machinery.[7]

The Hospital Engineer stated that his men spent six hours a week performing maintenance on laundry equipment. The Hospital Engineer estimates the old equipment to be good for at least five more years before it becomes uneconomical to repair.[8]

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[5]Personal interview Mr. Louis Palczer, Assistant Administrator, Providence Hospital, May 2, 1967.

[6]Personal interview Mrs. Erline Rogers, Chief Nurse, Providence Hospital, May 2, 1967.

[7]Personal interview Mr. Robert Brister, Laundry Manager, Providence Hospital, May 3, 1967.

[8]Personal interview Mr. James Irwin, Hospital Engineer, Providence Hospital, May 3, 1967.

Hospital Laundry Comparison

The hospital laundry was compared with similar size hospitals in Texas and the United States. Table 7 shows the laundry and its relative position, in terms of expenses, costs, and pounds of production for each man hour.

TABLE 7

COMPARISON OF LAUNDRY OPERATIONS -- PROVIDENCE HOSPITAL, TEXAS HOSPITALS, AND NATIONAL HOSPITALS OF SIMILAR SIZE[a]

	Providence Hospital Direct Costs	Median of 19 Texas Hospitals 100 - 199 Beds Direct Costs	Median of 149 Natl Hospitals 150 - 200 Beds Direct Costs
Laundry Cost Per Pound[b]	$.079	$.087	$.083
Laundry Pounds Per Patient Day	10.7	10.2	14.53
Laundry Pounds Produced Per Man Hour	19.2	26.5	26.5

[a]Data for Texas and National Hospitals was obtained from American Hospital Administrative Services Program, Chicago, Illinois. Comparative reports are for the months of December 1966 and January 1967. Hospital Administrative Services, "Guide for Uniform Reporting," sent to member hospitals requires that only direct expenses of laundry operations be reported.

[b]Includes laundry and linen service departments.

Providence Hospital's costs per pound of laundry were lower than compared hospitals reporting to the American Hospital Association.

Linen use within the hospital was lower than average as indicated by 10.7 pounds per patient day against 14.53 pounds for 149 national hospitals compared.

Laundry pounds produced per man hour was much lower than Texas or national medians. This was attributed to old and obsolete equipment and lack of automated equipment such as self-dumping washers, overhead crane conveyors, and mechanical linen folders. Lack of modern production methods was considered a primary reason for high labor costs.

Total linen inventory within the hospital was considered adequate. Downtime of machinery and other losses of production did not cause a linen shortage crisis.[9]

Major Advantages and Disadvantages of the Hospital-Operated Laundry at Providence

Advantages. -- Providence Hospital-operated laundry provided complete and absolute control of all hospital linens, cost of operation, washing techniques, quality of work, and delivery schedules.

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[9]Personal interviews with Mr. Robert Brister, Laundry Manager, and Mrs. Steindam, Housekeeper, Providence Hospital, May 3, 1967.

Proponents of hospital owned laundries list these as major advantages.[10]

Providence Hospital, by using its own laundry, offered special laundry services so as to enhance job satisfaction and create fringe benefits for employees.

The hospital required less linen inventory by having their own laundry operation. Items soiled were returned clean the following day.

The hospital-operated laundry at Providence was independent from labor disputes, civil emergencies, transportation snarls which could prevent necessary and vital service to the hospital. Literature indicates that this is a major consideration in favor of a hospital laundry.[11]

If Providence Hospital were to send their laundry to a commercial firm, personnel and inherent operating expenses would still be required for linen loss control, distribution of clean linen, marking, and mending maintenance of hospital owned linen. Wiley estimates

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[10] Ernest F. Jones, "NAILM President Defends All In-Plant Laundries," American Laundry Digest, XXXI (November, 1966), 62-63.

[11] Louis Black, "Evidence Favors the Hospital Laundry," Modern Hospital, XCIV (January, 1960), 118-120.

the total personnel required for a 200 bed hospital to distribute and control linen to be 25 per cent of the laundry staff.[12]

Disadvantages. -- In order to lower the operating cost of the Providence Hospital laundry, large expenditures would be required for production laundry equipment. A higher salary would also be required to attract an experienced manager who could increase productivity thereby decreasing operational costs. Laundry literature indicates that the above expenditures would not justify the possible net gain which would be realized by retaining the present in-hospital operation.[13]

Institutional laundry literature indicated that a small hospital, such as Providence, which is located in an area where commercial laundries were available, would find it more economical to send its laundry out after all costs were considered.

In addition, Providence Hospital Administration would be free of the burdens of managing a service which could be accomplished in an efficient, economic manner from a specialized outside agency.

An additional disadvantage was that the hospital-operated laundry consumed space within the hospital, space which could be used to better advantage as a patient care area.

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[12]Personal letter from Heywood M. Wiley, Chairman, Educational Bureau, National Association of Institutional Laundry Managers, Girard College, Pennsylvania, April 25, 1967.

[13]Roger P. Foussard, "Hospital Laundry -- In or Out?," Hospital Management, XCIX (February, 1965), 98-100.

CHAPTER IV

THE COMMERCIAL LAUNDRY

The second alternative Providence Hospital could choose for its laundry service is the commercial laundry. The hospital would retain ownership of all linen. Soiled linen would be picked up at a central location, and clean linen returned on a predetermined delivery schedule.

There were only two commercial laundries in the Waco area capable of satisfactory service. These laundries were large, modern establishments. The equipment was up to date and capable of high quality, high production processing. The laundries have served Waco for many years.

Interviews with Owners of Commercial Laundries

The writer visited these laundries and found the owners most anxious to serve Providence Hospital. Both owners stated that it would be more economical for the hospital to contract commercially than to operate an in-house plant. [1]

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[1] Personal interviews with H. C. Buchanan of Buchanan Laundry, January 24, 1967, and David Wallace of Progress Laundry, May 4, 1967.

Lengthy interviews were conducted with the owners of commercial laundries. The purpose of the interviews was to determine the laundry costs, the service that would be given to Providence Hospital, and the relative quality of the finished product. Each owner answered the author's questions in essentially the same manner; the only differences were costs and washing procedures.

Laundry B gave a nonbinding written estimate of $0.07 per pound for all laundry work except items requiring starching and pressing. These items would cost $0.40 per pound. Laundry P gave written nonbinding estimates of $0.08 per pound for flatwork and rough dry items. Starching and presswork would cost the hospital $0.50 per pound.

Laundry B and P would pick up and deliver daily from and to a central point within the hospital. All laundry would be delivered within two working days. Both laundries would segregate major items of clean linen and would wrap bundles in plastic coverings. Uniforms would be delivered on hangers if desired. All hospital linen would be washed separately by lot.

Table 8 shows the wash procedure for each laundry. A considerable variance existed in total time and techniques for each wash.

Laundry B and P both required the hospital to separate soiled linen and store at a central pick up location. Laundry P required the hospital to furnish canvas carts for ease of loading onto pickup trucks.

TABLE 8

WASH FORMULAS FOR TWO COMMERCIAL LAUNDRIES, WACO, TEXAS

LAUNDRY B

Procedure	Water Level	Time
1. Two Cold Rinses	Flush Out	0:02
2. Cold Bleach Rinse	6 inches	0:01
3. Hot Water (180°) Suds	6 inches	0:05
4. Hot Rinse	12 inches	0:01
5. Hot and Cold Rinse	12 inches	0:01
6. Cold Rinse	12 inches	0:01
7. Cold Rinse	12 inches	0:01
8. Cold Rinse and Sour	6 inches	0:04
	TOTAL TIME	0:16

LAUNDRY P

1. One Cold Rinse	6 inches	0:02
2. Hot Water Sudes (180°)	6 inches	0:07
3. Hot Water Suds Bleach (180°)	6 inches	0:07
4. Hot Rinse	12 inches	0:03
5. Hot Rinse	12 inches	0:03
6. Hot Rinse	12 inches	0:03
7. Hot Rinse	12 inches	0:03
8. Cold Rinse, Blue and Sour	6 inches	0:05
	TOTAL TIME	0:33

Canvas carts would be plastic lined and returned with clean linen.

Laundry B and P stated that anti-bacteria agents would not be used in the wash unless the hospital desired a special procedure.[2]

Both laundries stated that hospital linens would be kept separate and that there was no need to be concerned over linen loss. Laundries would be responsible for lost linen if it could be substantiated that they did in fact lose linen.

Laundry B required a three year contract. Laundry P required a five year contract because of additional equipment that must be added for increased work load.

Analysis of Costs of Commercial Laundry Service

The price of laundry service varied considerably between laundries. Table 9 depicts this variance and analyzes productive and nonproductive costs that the hospital would incur.

Prices for laundry service were based on a weekly average of 12,282 pounds. Providence Hospital's soiled linen was categorized into 3% presswork, 75% flatwork and 22% rough dry.[3] The costs for

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[2]Special sterilization procedures are not necessary. MacEachern states that sterilization is "a waste of time" if the wash formula is correct. Malcolm T. MacEachern, Hospital Organization and Management (Berwyn, Illinois: Physician's Record Company, 1962), p. 952.

[3]Percentages of different type laundry operations are within national averages. E. Todd Wheeler, Hospital Design and Function (New York: McGraw-Hill Book Company, 1964), p. 198.

TABLE 9

COMPARATIVE COST ANALYSIS COMMERCIAL LAUNDRIES, WACO, TEXAS

	LAUNDRY P (Rate: Presswork - $0.50 Per Pound; All Other - $0.08 Per Pound)		LAUNDRY B (Rate: Presswork - $0.40 Per Pound; All Other - $0.07 Per Pound)	
	Week	Year	Week	Year
A. Average Pounds Per Week:				
Presswork - 300 - 3%	$ 150.00	$ 7,740.00	$ 120.00	$ 6,192.00
Flatwork - 9275 - 75%	742.00	38,287.20	649.00	33,501.24
Rough Dry - 2702 - 22%	216.00	11,145.60	189.14	9,759.60
Total Production Costs	$1,108.00	$57,172.80	$ 958.39	$49,452.84
B. Cost Per Pound	$ 0.09		$ .078	
C. Cost Per Patient Day	$ 0.97		$ 0.83	
D. Nonproductive Costs:				
Linen Service Wages (distribution, mending)	$ 164.00	$ 8,462.40	$ 164.00	$ 8,462.40
Linen Service Supplies	47.87	2,470.08	47.87	2,470.08
Administration and General Overhead (6.5% of payroll)	12.02	620.16	12.02	620.16
Total Nonproductive Costs	$ 233.89	$11,552.64	$ 233.89	$11,552.64
E. Total Laundry and Linen Service Cost (Col. A+D)	$1,341.89	$68,725.44	$1,192.28	$61,005.48
F. Adjusted Cost Per Pound	$ 0.109		$ 0.097	
G. Adjusted Cost Per Patient Day	$ 1.17		$ 1.04	
H. Linen Replacement Costs:	$ 122.10	$ 6,300.36	$ 122.10	$ 6,300.36
I. Total Hospital Costs (Col. A+D+H)	$1,463.99	$75,025.80	$1,314.38	$67,305.84
J. Readjusted Cost Per Pound	$ 0.119		$ 0.107	
K. Readjusted Cost Per Patient Day	$ 1.28		$ 1.15	

commercial laundry production totaled:

Laundry B $ 958.39 per week -- $49,452.84 per year.

Laundry P $1,108.00 per week -- $57,172.80 per year.[4]

Costs per pound averaged $0.078 at Laundry B and $0.09 at Laundry P. Costs for each patient day averaged $0.83 and $0.97 respectively.

The hospital would continue to provide linen service. Internal distribution of linen, mending, marking, sorting, and controlling are necessary functions within a hospital regardless of the type laundry service. These costs were called nonproductive and are shown at Column D, Table 9. Total nonproductive cost was $11,552.64 per year. Nonproductive costs were added to commercial prices to find the real costs for laundry service. Table 10 shows Providence Hospital's linen service expense.

Annual linen replacement expense, i.e., linen replaced because of depreciation totaled $6,300.36 and was not included in Table 10. It was felt that this is a supply expense. The expense should not be included with commercial laundry price comparisons.

Quality of Wash

Both laundries were compared against the guidelines of Cornell University, School of Hotel Administration, as to quality and technique

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[4]Annual totals were computed on the basis of 4.3 weeks per month.

of washing. Bradley states, "In the long run, linen life is largely dependent on the washing process."[5] This was considered an important factor when commercial laundry companies were compared.

TABLE 10

TOTAL LAUNDRY AND LINEN SERVICE EXPENSE
COMMERCIAL CONTRACT

		LAUNDRY P	LAUNDRY B
Direct Expense:		$57,172.80	$49,452.84
Indirect Expense:			
Linen Service Wages and Supplies	$10,932.48		
Administrative and General Overhead	620.16		
Total Estimated Cost Per Year		$68,725.44	$61,005.48
Adjusted Cost Per Pound of Linen		$ 0.109	$ 0.097
Adjusted Cost Per Patient Day		$ 1.17	$ 1.04

Table 8 depicts the washing technique for each laundry. Compared against the Cornell University standard of a 30 minute wash cycle for lightly soiled laundry and 40 minutes for medium soiled, Laundry B's washing time was below minimum standards. Laundry P's wash formula was within acceptable limits.[6] Providence Hospital's

[5] Bradley, op. cit., p. 50.

[6] Bradley, op. cit., p. 53.

possible savings in costs per pound could be eroded by excessive linen replacements caused by improper washing times and techniques.

Major Advantages and Disadvantages of Commercial Laundry Service

Advantages. -- The greatest advantage to Providence Hospital if a commercial laundry were used would be substantial savings on capital investment. Biggs analyzed this advantage:

> If the administration can buy outside laundry service for $0.075 a pound, is it economically sound to invest $125,000.00 or more in a hospital plant that produces laundry for $0.065 a pound or higher? It may be wiser to use capital investment money for other (perhaps much needed) hospital equipment.[7]

This analogy can apply to Providence Hospital, depending on the administrative point of view.

When a comparison was made of hospital laundry costs against commercial laundry costs, Laundry B was $1,000.00 a year less in total cost than the Providence Hospital laundry. Table 14 graphically illustrates this comparison. The savings included expenses for non-productive linen service.

If a commercial laundry were used, the space saved could be better used as a patient care area. In addition, Providence Hospital could reduce its payroll by sixteen employees.

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[7] Erroll L. Biggs, "The Laundry - Hospital Operated vs. Commercial Service," Hospital Topics, XLIV (June, 1966), 65.

Disadvantages. -- By using a commercial firm, Providence Hospital would relinquish a great deal of control over washing procedures, quality of work, and delivery schedules. Strict specifications written into the contract could eliminate some loss of control; however, the administration could not be assured that commercial firms were complying with the contract in every respect. In a report to Congress, the General Accounting Office stated that many hospital authorities believed a hospital operated laundry was the most desirable means of meeting the requirements for economical, sanitary, and controlled laundry service. The laundry was an essential activity of a well-planned hospital.[8]

By using a commercial firm, Providence Hospital would be vulnerable to high rises in price after the initial contract period. This vulnerability is due to the limited competition for laundry service within Waco. The hospital laundry service would also be vulnerable to labor disputes, civil emergencies, and possible transportation snarls. The hospital in effect would be completely dependent upon commercial firms for an essential, tangible element of patient care.

A further disadvantage to Providence would be the need to increase linen inventory. Kenny estimates a hospital using commercial

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[8] United States Comptroller General, Report to the Congress of the United States, Potential Savings Through Use of Government-Owned Laundry Facilities at Hospitals Rather Than Use of Contract Services -- Veterans Administration (Washington: Government Accounting Office, September, 1965), p. 3.

service to require at least five days of linen supplies.[9] A large linen inventory would be the only means of assuring the administration that adequate amounts of linen were on hand over long weekends, and during unforeseen emergencies.

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[9]John F. Kenny, "Internal Hospital Laundry Versus Contract Service," Hospital Progress, XXXXI (November, 1960), 85. Personal interview with M. Buchanan of Buchanan Laundry, May 4, 1967, confirmed the need for a large linen inventory if commercial service was used.

CHAPTER V

HOSPITAL LINEN SUPPLY SERVICE

The third alternative of Providence Hospital was a commercial linen supply service. All hospital linen would be owned by the commercial firm. Clean linen would be exchanged for soiled linen on a daily rental basis. Charges to the hospital would be by the pound.

There was one linen supply service within Waco. The laundry was large and modern with modern equipment and a fleet of delivery vehicles. The writer visited, surveyed, and toured this firm. The owner was proud of his production record and method of operation. He was most anxious to serve Providence Hospital. The owner stated, "After all costs are considered, I believe we could furnish the hospital a complete linen supply service just as economically, if not more so, than the hospital-operated laundry."[1]

A survey conducted in September 1966 by Linen Supply Association of America indicated that 42% of the 266 responding linen

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[1]Personal interview with H. C. Buchanan, Owner of Buchanan Laundry, Waco, Texas, January 24, 1967.

suppliers presently serve hospitals.[2] Hospitals, 300 beds and lower, were the most common users.

Interview with the Owner of Linen Supply Service

The writer held an interview with the owner of the Linen Supply Service in an attempt to find complete costs to Providence Hospital, service that would be afforded the hospital, general information concerning the linen rental system, and quality of linen produced by the laundry.[3]

A written estimate was obtained wherein the cost of all linen furnished to the hospital was $0.11 per pound. The price per pound included starch and presswork items.

The linen supply company would pick up soiled linen and exchange for a like number of clean items on a daily basis. All clean linen would be sorted and wrapped in protective plastic. All uniforms would be placed on hangers if desired. All hospital linen in the supply system would be kept separate from other industrial linen. Linen would be washed in separate lots.

Table 11 depicts the washing formula used by the linen supply company. Sterilization formulas would not be used unless the hospital so desired.

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[2]Samuel B. Shapiro, "Linen Supply Can Help Any Hospital: LSAA Head," American Laundry Digest, XXXI (November 15, 1966), 48.

[3]Personal interview with H. C. Buchanan, Owner of Buchanan Laundry, Waco, Texas, May 5, 1967.

TABLE 11

WASH FORMULA, LINEN SUPPLY COMPANY,
WACO, TEXAS

PROCEDURE	WATER LEVEL	TIME
1. Two Cold Rinses	Flush	0:02
2. Cold, Bleach, Rinse	6 inches	0:01
3. Hot Water (180°) Suds	6 inches	0:05
4. Hot Rinse	12 inches	0:01
5. Hot, Cold Rinse	12 inches	0:01
6. Cold Rinse	12 inches	0:01
7. Cold Rinse	12 inches	0:01
8. Cold Rinse, Sour	6 inches	0:04
	TOTAL TIME	0:16

The hospital would be required to sort and count all linen. Soiled linen would be picked up at a central location on a daily basis and exchanged on a piece for piece basis, clean linen for soiled.

All losses caused by stains, normal wear and tear, would be borne by the linen supply firm. Once a basic stock of linen was placed into the hospital system, the hospital would have to control the system. If the basic stock were depleted, the hospital would reimburse the supply company to obtain sufficient linen to reach the original operating levels. If necessary, the linen supply company would place a linen control man at Providence Hospital to facilitate a one for one exchange.

The owner stated that he was well aware of his responsibilities to the patients and to the hospital. He suggested an emergency three-day stock be placed in the hospital in a locked, secure location. In order to service the hospital, a three-year contract would be required.

Analysis of Costs of Linen Supply Service

Price for complete linen supply service to Providence Hospital was estimated at $0.11 per pound of clean linen. As shown on Table 12, the price for such service, based on a weekly average of 12,282 pounds totaled $1,351.02 per week or $69,711.84 per year. This price was compared to related cost that was incurred by the hospital-operated laundry.

Cost per patient day, based on an average 85% in-patient occupancy rate, averaged $1.18. The cost reflects the total expense for laundry production. Nonproductive costs of linen service (control and distribution only) must be allocated to linen supply service totals.

The hospital function of linen service would have to be retained. The seamstress positions would be eliminated. It would be necessary, however, to reassign the two seamstresses to the task of sorting and counting linen. Approximately 4,000 pieces of linen would be exchanged daily. Cost of linen service averaged $8,462.00 per year.

TABLE 12

COMPARATIVE COST ANALYSIS, LINEN SUPPLY SERVICE, WACO, TEXAS

	Linen Supply Company Rate $0.11 Per Pound All Linen		Providence Hospital Rate $0.079 Per Pound All Linen	
	Week	Year	Week	Year
A. Average Pounds Per Week, 12,282				
Total Production Cost	$1,351.02	$69,711.84	$ 979.23	$50,528.16
Cost Per Pound	$ 0.11		$ 0.079	
Cost Per Patient Day	$ 1.18		$ 0.858	
B. Nonproductive Costs:				
Linen Service Wages	$ 164.00	$ 8,462.40	$ 164.00	$ 8,462.40
Linen Service Supplies[a]			47.87	2,470.08
Administrative Overhead (6.5% of payroll)	12.02	620.16	12.02	620.16
Total Nonproductive Costs	$ 176.02	$ 9,082.56	$ 233.89	$11,552.64
C. Total Laundry and Linen Service Cost (Col. A+B)	$1,527.04	$78,794.40	$1,213.12	$62,080.80
Adjusted Cost Per Pound	$ 0.124		$ 0.098	
Adjusted Cost Per Patient Day	$ 1.34		$ 1.06	
D. Linen Replacement Expense[b]	$ 0.00	$ 0.00	$ 122.10	$ 6,300.36
E. Total Hospital Expense (Col. A+B+D)	$1,527.04	$78,794.40	$1,335.22	$68,381.16
Readjusted Cost Per Pound	$ 0.124		$ 0.108	
Readjusted Cost Per Patient Day	$ 1.34		$ 1.17	

[a] Linen service supplies were included in price of $0.11 per pound.

[b] Linen Supply Company furnishes all linen. There would be no linen replacement expense to the hospital. Total figure does not include linen lost by theft or other reasons at hospital or laundry.

In addition to distribution and control expense, administrative and general overhead must be added to the linen supply company estimate, (Paragraph B, Table 12). The hospital would not have a linen replacement expense, that is providing linen is not lost or stolen from operating stock. A significant saving could be realized each year by elimination of this expense. Total annual costs to Providence Hospital for linen supply service is shown at Table 13.

TABLE 13

TOTAL LINEN SUPPLY SERVICE EXPENSE FOR PROVIDENCE HOSPITAL

Linen Supply Service, Direct Expense		$69,711.84
Indirect Nonproductive Expenses:		
Linen Control and Distribution	$8,462.40	
Administrative and General Overhead	620.16	
Linen Replacement Expense	---.--	9,082.56
Total Cost Per Year		$78,794.40
Cost Per Pound of Clean Linen		$ 0.124
Cost Per Patient Day		$ 1.34

Quality of Wash

The linen service supply company's washing technique was compared against the Cornell University standard of a 30 minute wash cycle for lightly soiled laundry and 40 minutes for medium soiled. The linen service wash technique was essentially the same as Laundry B, Table 9.

Wash time was below minimum standards.[4]

Major Advantages and Disadvantages of Linen Supply Service

Advantages. -- A nationwide survey of attitudes of hospital administration toward linen processing and distribution was conducted in 1964 by Institutional Management Corporation. Interviews were conducted in sixty-five short term general hospitals in twenty states.[5] The administrators listed reduced capital outlay, fewer personnel problems, lower costs, and less administrative responsibility as advantages of a linen supply service. With the exception of lower costs, these advantages also applied to Providence Hospital.

There would be no investment in linen inventory. Providence Hospital's linen inventory totaled $13,500.00 in January 1967.[6] Additionally, linen replacement expense would be eliminated. Providence Hospital placed $6,300.00 of new linen into the system during the period of July 1, 1966 to May 1, 1967.[7]

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[4]Bradley, op. cit., p. 53.

[5]Institutional Management Corporation, Independent Survey, cited by Linen Supply Association of America, A Guide to Hospital Linen Supply (Miami Beach: Linen Supply Association of America, 1966), p. 18.

[6]Total taken from inventory of January 1967, conducted by Mrs. Steindam, Housekeeper, Providence.

[7]Total value was taken from receipts to Housekeeping Department from Hospital Stores for a year period ending May 1, 1967. Since the hospital had no record of actual linen loss which was not contributed to fair wear and tear, it is assumed losses were negligible.

Disadvantages. -- The Institutional Management Corporation survey of hospital administrator's attitudes toward linen supply service listed loss of control over processing, increased costs, inflexible arrangements, strike vulnerability, and increased handling of linen as disadvantages of a linen supply service. These disadvantages could be applied to Providence Hospital's laundry service system.[8]

The linen supply service would increase Providence Hospital's expense for laundry and linen service by approximately $10,400.00 per year.

Since there is only one linen supply company in Waco, the hospital would be vulnerable to high rises in price after the contact period. Moreover, Providence Hospital would be completely dependent on an outside agency for a sensitive, vital, and tangible aspect of patient care.

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[8] Institutional Management Corporation, op. cit., p. 20.

PART III. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

CHAPTER VI

SUMMARY

The purpose of this study was to determine the best laundry service system for Providence Hospital, commercial or hospital-operated. Three alternatives were presented: (1) the present hospital-operated laundry, (2) the commercial laundry, (3) the linen supply company. Each alternative was immediately available to the hospital within the Waco, Texas area. Each alternate laundry system was analyzed and compared in terms of cost, relative service to the hospital, and relative quality of their finished product, clean linen.

Tables 14 and 15 represent a recapitulation of each laundry service's total costs, cost per pound of clean linen, and costs per average patient day. Laundry production, linen service, and linen replacement expenses were kept separate from laundry production comparisons.

Commercial laundry B was found to be the most economical. A savings of $1,000.00 each year could be realized over the current

hospital-operated laundry system. Linen supply service was found to be the most expensive system.

The washing time required in the wash formula was below minimum standards at Laundry B and the Linen Supply Company.

The major advantage of the hospital-operated laundry was found to be complete control over a necessary service which relates directly to patient care. The chief disadvantage was the necessity for large capital expenditures for laundry equipment.

Chief advantage of a commercial laundry was that it was the least expensive laundry service. The major disadvantage was the necessity for Providence Hospital to relinquish control of hospital owned linens, of quality of laundry, and of costs of operation.

The linen supply rental system's main advantage was that of providing a complete laundry linen supply service. The main disadvantage was the additional $10,400.00 per year cost to Providence Hospital.

TABLE 14

SUMMARY COMPARATIVE COST ANALYSIS

COMMERCIAL LAUNDRY VS., PROVIDENCE HOSPITAL LAUNDRY

	LAUNDRY P		LAUNDRY B		LINEN SUPPLY		PROVIDENCE HOSPITAL	
	Week	Year	Week	Year	Week	Year	Week	Year
A. Price Rate	Presswork $0.50 Per Pound All Other $0.08 Per Pound		Presswork $0.40 Per Pound All Other $0.08 Per Pound		All Work $0.11 Per Pound		All Work $.079 Per Pound	
B. Laundry Production Costs(12, 282 Pounds Per Average Week)	$1, 108.00	$57, 172.80	$ 958.39	$49, 452.84	$1, 351.02	$69, 711.84	$ 979.23	$50, 528.16
C. Nonproductive Costs (Linen Service Distribution, Administrative Overhead)	233.89	11, 552.64	233.89	11, 552.64	176.02	9, 082.56	233.89	11, 552.64
D. Total Laundry and Linen Service Costs	$1, 341.89	$68, 725.44	$1, 192.28	$61, 005.48	$1, 527.04	$78, 794.40	$1, 213.12	$62, 080.80
E. Linen Replacement Costs	122.10	6, 300.36	122.10	6, 300.36	--	--	122.10	6, 300.36
F. Total Hospital Costs for Laundry, Linen Service, and Linen Replacement	$1, 463.99	$75, 025.80	$1, 314.38	$67, 305.84	$1, 527.04	$78, 794.40	$1, 335.22	$68, 381.16

TABLE 15

SUMMARY COMPARATIVE COST ANALYSIS
COMMERCIAL LAUNDRY VS., PROVIDENCE HOSPITAL LAUNDRY
COST PER POUND - COST PER PATIENT DAY

	Laundry P	Laundry B	Linen Supply Company	Providence Hospital
A. Total Laundry Production Costs Per Year (12,282 Pounds Per Week)	$57,172.80	$49,452.84	$69,711.84	$50,528.16
Cost Per Pound	$ 0.09	$ .078	$ 0.11	$ .079
Cost Per Patient Day	$ 0.97	$ 0.83	$ 1.18	$ 0.858
B. Total Laundry and Linen Service Costs Per Year	$68,725.44	$61,005.48	$78,794.40	$62,080.80
Adjusted Cost Per Pound	$ 0.109	$ 0.097	$ 0.124	$ 0.098
Adjusted Cost Per Patient Day	$ 1.17	$ 1.04	$ 1.34	$ 1.06
C. Total Hospital Costs for Laundry, Linen Service, and Linen Replacement Per Year	$75,025.80	$67,305.84	$78,794.40	$68,381.16
Adjusted Cost Per Pound	$ 0.119	$ 0.107	$ 0.124	$ 0.108
Adjusted Cost Per Patient Day	$ 1.28	$ 1.15	$ 1.34	$ 1.17

CHAPTER VII

CONCLUSIONS

1. The comparative study of Providence hospital-operated laundry and commercial laundries in Waco established the fact that a commercial laundry is more economical under current conditions. Commercial Laundry B was found to be $1,000.00 a year less expensive after all direct and indirect costs were computed. After the contract period, however, Providence Hospital will be vulnerable to price increases. A price increase of $0.10 per pound for presswork and $0.01 per pound for all other wash would increase Providence's yearly laundry expense by approximately $7,500.00. This vulnerability would be greater, and more dangerous, if the hospital did not have a laundry plant.

2. The Linen Supply Service offered many advantages, for example, complete freedom from purchasing hospital linen, and freedom from capital expenditures for laundry equipment. Yet the additional cost of $10,400.00 a year for this service would seem prohibitive for a small hospital such as Providence. In addition, Providence Hospital would not have absolute control over items necessary for patient care.

3. The hospital-operated laundry can give better service to Providence because of control over laundry operations, flexibility of service, and responsiveness to the demands of the hospital.

4. Quality and sanitation of clean linen produced by the commercial laundry would be difficult to control. There can be faith, but no guarantee that commercial laundries will not wash improperly.

5. While relative savings and economy of space are important factors in deciding the most desirable laundry system for Providence Hospital, they should not be the sole deciding factors. The hospital-operated laundry is currently within $1,000.00 per year above the lowest commercial estimate. This has been accomplished with old, nonautomated equipment and extremely low productivity per man hour.

6. Providence Hospital's loss of independence of action, freedom of choice, and control over a necessary, tangible element of patient care outweigh the commercial laundry advantages of savings in money and savings in space.

CHAPTER VIII

RECOMMENDATIONS

Based on the foregoing conclusions and information contained in this study, the following recommendations are made:

1. That the present laundry at Providence Hospital be retained.

2. That the hospital become a member of a national laundry association so as to stay abreast with institutional laundry techniques.

3. That the laundry manager be trained in modern institutional laundry methods and procedures.

During the course of the study it was the opinion of the author that certain aspects of the laundry operation need further consideration and investigation:

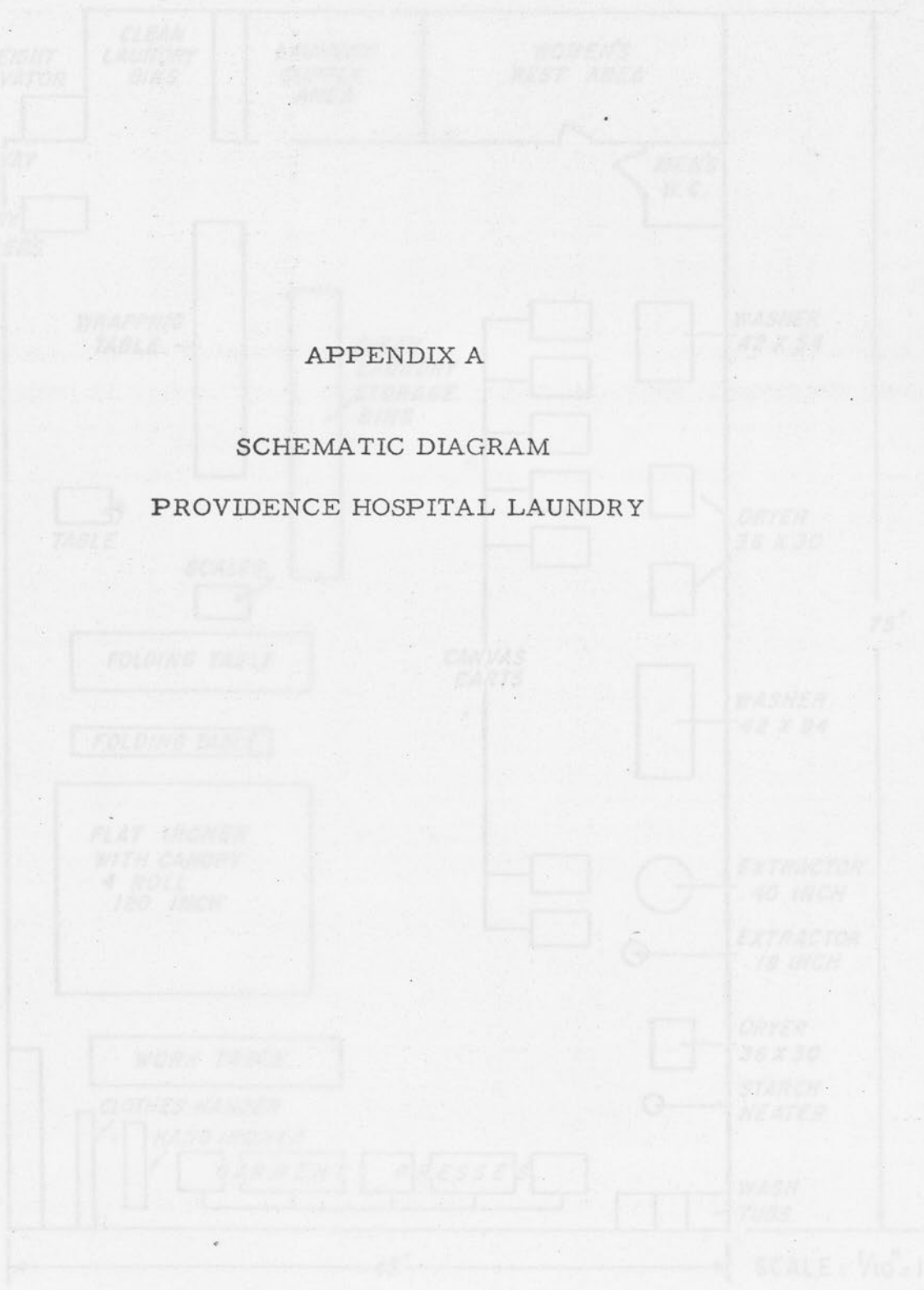
1. That the possibility of installing labor saving devices in the present laundry to increase production per man hour and thereby decrease costs per pound of clean linen produced be explored.

2. That the possibility of including a new modern laundry in any forthcoming renovation plan be examined.

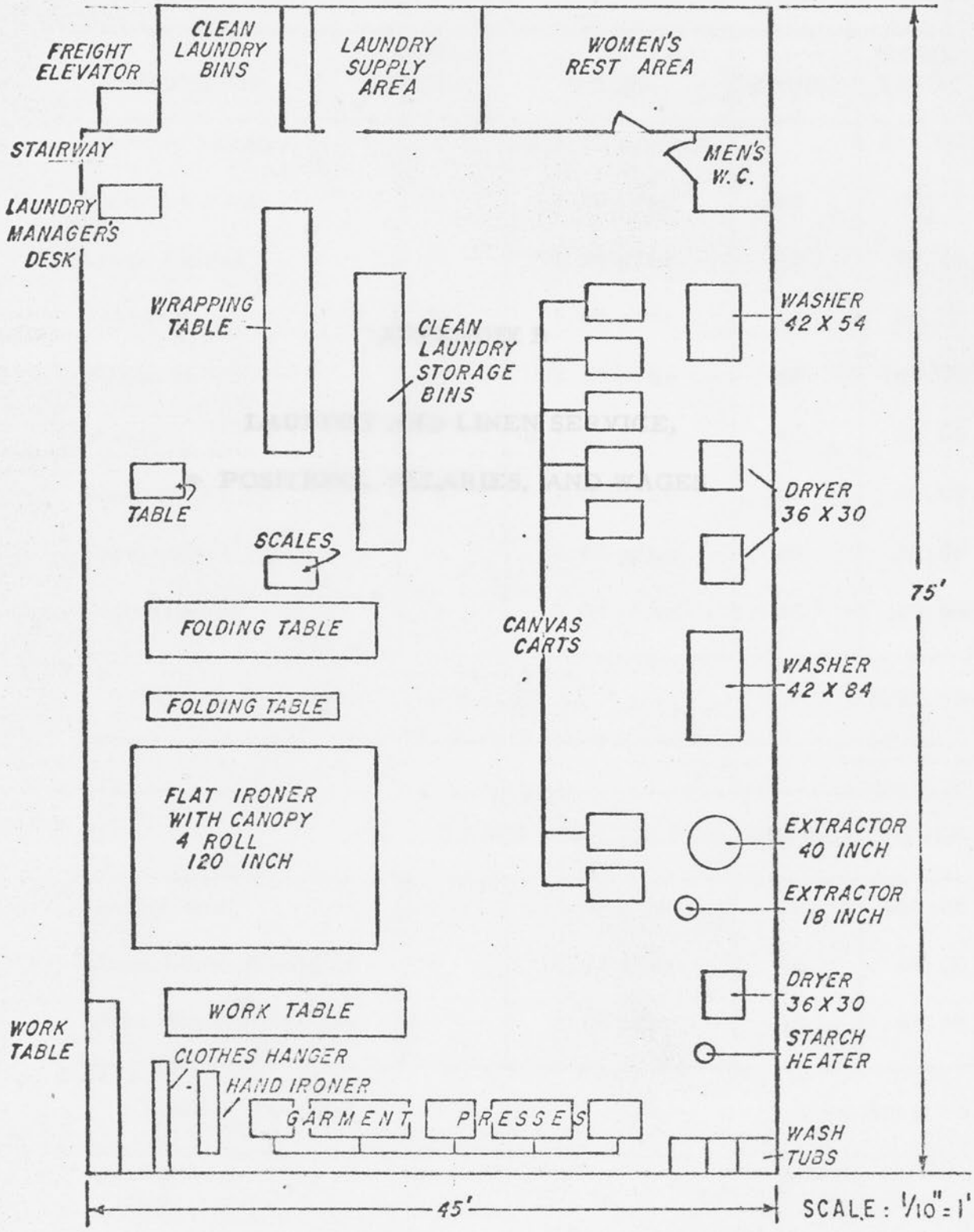
APPENDIX A

SCHEMATIC DIAGRAM

PROVIDENCE HOSPITAL LAUNDRY



SCHEMATIC DIAGRAM OF PROVIDENCE HOSPITAL LAUNDRY



APPENDIX B

LAUNDRY AND LINEN SERVICE,

POSITIONS, SALARIES, AND WAGES

LAUNDRY POSITION, SALARY AND WAGES

PROVIDENCE HOSPITAL

POSITION	NUM-BER	WAGE	HOURS	WEEK TOTAL
Laundry Manager	1	$75.00 p/week		$75.00
Flatwork Folder	2	1.00 p/hr	40	80.00
Linen Folder	2	1.00 p/hr	40	80.00
Presser	2	1.00 p/hr	40	80.00
Washman	2	1.25 p/hr	40	100.00
Ironer	2	1.00 p/hr	40	80.00
General Utility	2	1.00 p/hr	40	80.00
Extractor	2	1.00 p/hr	40	80.00
Deliveryman	1	1.00 p/hr	40	40.00
TOTAL SALARIES AND WAGES				$695.00

LINEN SERVICE POSITION AND WAGES

Seamstress	2	1.00 p/hr	40	$80.00
Linen Room Attendant	1	1.10 p/hr	40	44.00
Linen Room Attendant	1	1.00 p/hr	40	40.00
TOTAL WAGES				$164.00

APPENDIX C

STATISTICS OF ALLOCATED COSTS TO LAUNDRY OPERATIONS, DIRECT AND INDIRECT EXPENSES

STATISTICS OF ALLOCATED COSTS TO LAUNDRY OPERATIONS, DIRECT AND INDIRECT EXPENSES

A. Employee Health Welfare, Pensions and Payroll Taxes:

1. Annual hospital expense	$ 62,868.00	
2. Annual hospital payroll	$1,068,068.00	
3. Percent of payroll dollar	5.8%	
4. Laundry salary per week	$ 695.00	
Allocated Cost to Laundry Production Per Week		$40.31

B. Provision for Vacation, Holiday and Sick Leave Pay:

1. Number of days allowed each employee per year	26	
2. Number of working days per employee (52 weeks x 5 days - 26)	234	
3. Percentage of annual work days to annual vacation, holiday, and sick leave	11.1%	
4. Laundry payroll per week	$695.00	
Allocated Cost to Laundry Production Per Week		$77.14

C. Operation of Laundry Plant - Steam:

1. Hospital cost for steam used during one week in August, 1966. (Schedule C-1)	$666.41

2. Pounds of steam produced during one week in August (300 boiler horsepower x 50% capacity x 24 hours per day)[1]	800,000	
3. Cost for one pound of steam[2] ($666.11 ÷ 800,000 pounds)	$ .0083	
4. Pounds of steam required to produce 100 pounds of wash[3]	362	
5. Cost of steam per 100 pounds of wash	$ 0.30	
Allocated Cost of Steam to Laundry Production Per Week Based on 12,282 Average Pounds		$36.84

Water:

1. Total hospital expense for each month	$616.20	
2. Total gallons used	2.8 Million	
3. Cost per gallon	$ .00022	
4. Gallons used in laundry per week (12,282 average pounds each week)[4]	55,269	
Allocated Cost of Water to Laundry Production Per Week		$12.16

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[1] Calculations made by James Irwin, Plant Engineer, Providence Hospital, May 3, 1967.

[2] Estimate of $0.010 per pound of steam and 362 pounds of steam per 100 lbs of wash was given by personal letter from H. S. Rohn, Manager, Sales, Engineering and Service; Troy Laundry Machinery, Division of AMETEX, Inc., East Moline, Illinois, April 12, 1967. Mr. David P. Wallace, Owner of Progress Laundry and Cleaning Co., Waco, Texas, confirmed this estimate, May 3, 1967.

[3] Ibid.

[4] Laundry institutional average is 4.5 gallons for each pound of wash per Linen Supply Association of America, op. cit., p. 8.

Electricity:			
1. Kilowatt hours for 100 pounds of laundry		4.5	
2. Cost per kilowatt hour[5]	$	.052	
3. Cost for 100 pounds of laundry (Schedule C-2)	$	.234	
Allocated Cost of Electricity to Laundry Production Per Week			$28.73
D. Repairs and Maintenance of Laundry Building and Equipment:			
1. Direct costs allocated to laundry each year (included direct purchases, and internal maintenance costs charged to the laundry).	$	775.19	
2. Cost per week ($775.19 ÷ 52 weeks)		14.90	
Allocated Costs of Repairs and Maintenance to Laundry Production Per Week			$14.90
E. Provisions for Depreciation of Buildings and Equipment:			
1. The hospital has not depreciated laundry building and equipment. Hospital books show no dollar valuation.			$ 0.00
F. Administration and General Overhead:[6]			
1. Total administration payroll per year	$70,000.00		
2. Total annual payroll for hospital employees	$1,068,068.00		
3. Administrative cost per payroll dollar	$	0.065	
4. Laundry salaries per week	$	695.00	

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[5] Average rate to the hospital according to Texas Power and Light Company, Waco, Texas, during interview with the Chief Rate Clerk, May 4, 1967.

[6] It was felt that the most appropriate basis for distributing these expenses to laundry operations was by means of the laundry portion of total hospital payroll.

Total allocated cost of administration and general overhead to laundry production per week. Expressed as per cent of production payroll dollar.	$ 45.17
Average allocated costs to laundry production per week	$255.25

Laundry Supplies Used for Month of April, 1967. (Soap, Sour, Bleach, and Starch)

April 1 - 8	$ 31.53	12,524 laundry pounds
April 9 - 15	24.49	12,101 laundry pounds
April 16 - 22	34.17	11,568 laundry pounds
April 23 - 29	25.75	12,347 laundry pounds
Total	$115.94	48,540
Average	$ 28.98	12,135

Average Cost Per 100 Pounds $0.24

SCHEDULE C-1

ALLOCATION OF STEAM COST FOR MONTH OF AUGUST, 1966[1]

			Expenses Per Week
1.	Engineering Department Salaries, Annual	$23,870.00	$459.03
2.	Health Welfare Payroll Taxes At 5.8% of Payroll	1,384.46	26.62
3.	Supplies and Expense	1,200.00	23.07
4.	Repairs of Equipment	866.50	16.67
5.	Fuel (gas - of which 95% is used by the boiler) During the Month of August[2]	277.78	64.60
6.	Hospital Electricity Expense for One Week in August (10% is used by the power plant)[3]	455.30	45.53
7.	Hospital Water Expense for One Week in August (20% is used by power plant)[4]	142.20	28.44

[1]During the month of August, 99% of the steam produced was for laundry operations.

[2]Per Mr. James Irwin, Hospital Engineer, during interview on May 3, 1967.

[3]Ibid.

[4]Ibid.

8. Weekly Sewage Expense for Hospital (20% used by power plant)[5]	12.25	2.45
Total Allocated Steam Costs Per Week		$666.41

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[5] Ibid.

SCHEDULE C-2

ALLOCATED COST OF ELECTRICITY FOR ONE HUNDRED POUNDS OF LAUNDRY

Electricity cost in the Waco, Texas area averaged $.052 per kilowatt hour. Information obtained from Troy Laundry Machine Company gives the average kilowatt hours required of various machinery to produce 100 pounds of laundry:[1]

Machinery	KW Hrs per 100 Pounds
Washers	1.02
Extractors	1.02
Tumblers	.32
Ironer-Mangle	1.41
Compressor	.73
Total Kilowatt Hours Per 100 Pounds	4.50

Cost .052 x 4.50 KWH = $0.234 per 100 pounds.

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[1]H. S. Rohn, Troy Laundry Machinery, op. cit.

APPENDIX D

LETTER ESTIMATES, COMMERCIAL LAUNDRIES AND LINEN SUPPLY COMPANY

BUCHANAN'S
WACO, TEXAS 76703

H. C. BUCHANAN
H. MERCER BUCHANAN
JOHN D. BUCHANAN

MAIN OFFICE
ELEVENTH & WEBSTER
P. O. BOX 730
PHONE PL 3-2461

CLEANING PLANT
400 SUNSET BLVD
PHONE PL 3-4591

UNIFORM RENTAL — LINEN SUPPLY
DUST CONTROL & SHOP TOWELS

COLD STORAGE FOR
FURS & WINTER GARMENTS

March 3, 1967

Major William R. Bentley
108 Birkhead Rd.
Ft. Sam Houston, Texas 78234

Dear Major Bentley:

Based on current prices and wages a linen rental contract for Providence Hospital with our company furnishing all linens would be 11¢ per pound. Of necessity this contract would have to be for a minimum of three years duration.

A complete laundry service with Providence furnishing the linens for a three year contract taking into consideration the additional increase in the cost of minimum wages the price would be 7¢ per pound for flat work and rough dry. It would be difficult to estimate the cost of press work with out knowning what the pieces were, but the price would be approximately 40¢ per pound for starch press wear.

I am sorry to have been so late in answering your letter and giving you these estimates. Please let me see a copy of your thesis when it is completed.

Sincerely,

H. C. Buchanan

H. C. Buchanan

HCB/mk

The PROGRESS
LAUNDRY and CLEANING CO.
3508 LIVE OAK ST. • DALLAS 4, TEXAS

February 22, 1967

William R. Bentley
Major, Medical Service Corps
Hospital Administration Course
Medical Field Service School
Fort Sam Houston, Texas

Dear Major Bentley:

Based on your letter of February 11, 1967 concerning the commercial laundry problem facing Providence Hospital in Waco, Texas I will give you the best answer I can.

The average weekly volume of 14,000 pounds is distributed and priced as follows:

700 lbs. requiring pressing @ .50 per lb.	$350.00
2800 lbs. of tumble work @ .08 per lb.	224.00
10,500 lbs. of linen to be ironed @ .08 per lb.	840.00
Average weekly cost based on dry weight	$1414.00

The above price would include pick-up and delivery to a central point at Providence Hospital. Your letter mentions two day service, so I would assume the following schedule is close to what you have in mind:

Picked-up	Delivered
Monday	Wednesday
Tuesday	Thursday
Wednesday	Friday
Thursday	Saturday
Friday	Tuesday

The above shhedule is based on a five day, 40 hour work week for our plant. This schedule omits a pick-up on Saturdays and Sundays and deliveries on Sunday and Monday. Following such a schedule would mean Providence must have sufficient linen in stock to go from the Saturday delivery to the Tuesday delivery. While an additional pick-up could be made on Saturday it would not normally expedite delivery of clean linens, but simply decrease the storage problem of soiled linens at Providence.

The 40 hour work week before overtime is four hours shorter that that now required under the Federal Wage & Hour Law this year, but we feel that Providence, whether operating their own laundry or using an outside service, must work toward the 40 hour week at present rather than change their schedules each year for the next two years when overtime becomes manditory after 40 hours. Overtime in a service industry such as laundry makes quickly obvious the economic

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3508 LIVE OAK ST. • DALLAS 4, TEXAS

February 22, 1967

Major Bentley Page two

advantage of having a sufficient supply of linen on hand to preclude the necessity for overtime labor costs, barring an emergency. Should a holiday hit on a Friday or Monday we would work on Saturday to prevent the extended time between deliveries from causing a shortage of linens.

The prices quoted above are consistant with todays labor, supply and tax costs, but following the escalation required by the Federal Wage & Hour Law, normal accompanying tax costs, and the normal inflation expected, I feel you can expect an increase in cost each year for the next three years of 5¢ per pound on press work, and 1¢ per pound on tumble work and ironed linens.

Our company is not in the linen supply business as pertains to hospitals for sveral reasons. Among these reasons is the mulitiplicity of items for special purposes, and even bed sheets and pads which normally can not be rented to anyone other than a hospital. A linen supply contract with a hospital must include a buy-sell clause to the effect that if the hospital should de eide to discontinue the rental service, then a fair and equitable value for the linens in service would be paid by the hospital to the supplier. This is a reasonable agreement, in my opinion, but it also increases the advantages of hospitals owning their own linens, which, if prperly controlled from an inventory standpoint, is much cheaper than a rental service.

Finally, the advantage of using an outside laundry service by any hospital sums up to using the administrative abilities of hospital personnel in the field for which they have been trained--which normally is not running a laundry. I know that a hopital after reaching a certain size can effectively and efficiently operate their own laundry facility, and perhaps Providence expansion plans would make this feasible in the forseeable future. This I do not know.

The contract you mention would be acceptable to our company, although we would lean to the five year period because there would doubtless be considerable investment in new equipment reouire to handle this additional work load in our plant.

Should this letter leave ce tain questions you have raided unanswered, please feel free to contact me at any time at the address below.

Sincerely,

David P. Wallace

David P. Wallace
4437 Bordeaux
Dallas, Texas 75205

"The Progress Way Pleases"

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BIOGRAPHICAL SKETCH

Major William Rallie Bentley [redacted] He received his primary education in Louisville, Kentucky. He graduated from Valley Stream Central High School, Valley Stream, New York.

Major Bentley was drafted into the army in 1952 and married Joan Dorothy Borman of Valley Stream, New York, the same year. Having graduated from Officer Candidate School, Fort Benning, Georgia, in 1953, Major Bentley was sent to the Medical Field Service School, Fort Sam Houston, Texas, for his basic officer training. After graduation he was sent to the Army Aviation School and was rated a medical helicopter evacuation pilot in 1954.

Major Bentley has served in Korea, Germany, and Vietnam in various medical aviation positions. During his tours of duty in the United States, he served as Medical Supply Officer in various positions.

Major Bentley graduated from University of Omaha, under the final semester program, in 1965. He returned from Vietnam in 1966 to attend the Baylor University - Army Program in Hospital Administration. Following the academic phase of this program, he was sent to Fort Knox, Kentucky, for a one year administrative residency.

Major Bentley and his wife have six children. He is a member of American Hospital Association, and a student member of American College of Hospital Administrators.