Survey for

A HIGHWAY MOTEL CHAIN SYSTEM

Richard W. Hamilton
Master Architecture
Thesis, September 1950

Lawrence B. Anderson,
Head of the Department of Architecture,
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247 Westgate West
Cambridge, Mass.
September 11, 1950

Lawrence B. Anderson
Head, Department of Architecture
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Cambridge, Massachusetts

Dear Professor Anderson:

As a candidate for the degree Master in Architecture, I submit herewith my thesis, a survey for A Highway Motel Chain System.

Sincerely,

Richard W. Hamilton

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CHARTS

SCOPE OF THE SURVEY

One of the largest home builders in New England is desirous of expanding his activities by constructing and operating a chain of large motels. Neither he nor his associates have had any experience in the service fields of business. It is the purpose of this survey to make him aware of the differences between the selling of real estate and the selling of services, as well as to present the site selection analysis, architectural program, and the design for the initial motel in the system.

The scale of this merchant builder's present operations is indicated by the thousand or more houses he constructs annually. He operates his own lumber mill where many of the components are pre-cut and where all millwork is done. In addition his projects also employ a high degree of site fabrication, dry well construction and quantity buying and production. At present all of his houses have been designed with Cape Cod exteriors. In this motel venture he is interested in using contempory design and in experimenting with different construction methods which could lower costs. The designs in this proposal attempt to utilize all space enclosed by the structure through the use of mill type construction, and a study is made of various wall and roof constructions which are applicable to this method of building, and which reduce the number of separate layers of material which make up the typical stud wall and joisted roof.

SUMMARY OF THE PROPOSAL

1. It is proposed that a chain system of highway motels be established in New England with the site for the initial motel to be on Route 9, the Worcester Turnpike, at the Framingham - Natick town line.

2. The initial motel is planned for construction in two stages.
   a) Stage one to include 102 rental units which would be open the entire year, administrative and maintenance facilities.
   b) Stage two to provide upon completion an additional 106 rental units, a coffee shop, and a filling station.

BACKGROUND

Less than 20 years ago in the depression ridden '30's, a few venturesome persons first began putting up overnight cabins behind their filling stations and farmhouses. Despite the fact that these crude accommodations provided little more than shelter from the weather, a bed, and a community rest room, they quickly became prosperous for many reasons. They catered to the middle income families who could not afford downtown hotel rates and services. Travelers liked the idea of having their car and baggage next to their room; and, by paying the bill when registering, there were no delays in getting an early morning start. Instead of having to pay the bellboy to get the suitcases to and from the room, the car to and from the garage, plus the parking fee, there was little or no tipping and parking was free.

The financial success of many of these camps was for another and different reason. For a period during the '30's tourist camps became notorious as dens of vice and corruption. Many were closed to the traveling public on weekends in order to take advantage of the greater money to be gained from the fast turnover in the "couple trade". During the remainder of the week these assignation camps were ready for all types of business and families of respectability were given accommodations next to couples engaging in illicit relations. In 1940 the Chief of the FBI wrote an article for a magazine in which he stated that prostitution was

> "growing more nomadic and gravitating toward tourist camps, "drunk rolling," pocket-picking, the use of knockout drops for robbery, all of which flourished in the worst days of segregated districts, have now appeared again in suburban retreats." [1]

He further exposes the assignation camps influence on crime by revealing that they are frequented by the divorce detective, seeking evidence of indiscretion, so that heavier money settlements are made or grounds for divorce uncovered.

> "Marijuana sellers have been found around such places.... Gambling, with all of its attendant underworld tie-ups, its gangster fights and killings, is often another side line of the vicinity." [2]

The effect on the traveling public of the lurid details published in periodicals about these crimes was so tremendous that associations were formed by honest operators which are still concerned over the buyers resistance which ensued. Membership in these trade associations is definitely desirable since most have been established long enough to have widespread reputations for high class standards. Advantages of membership are entirely promotional as are inspections and listings by the A.A.A. and Duncan Hines, but this is becoming exceedingly important in view of the development and trends of limited access highways. At present, according to the Automobile Manufacturers Association, there are 34 million cars on the highways during the summer. [3] Of these, 2½ million are members of the A.A.A. which annually spends $100,000

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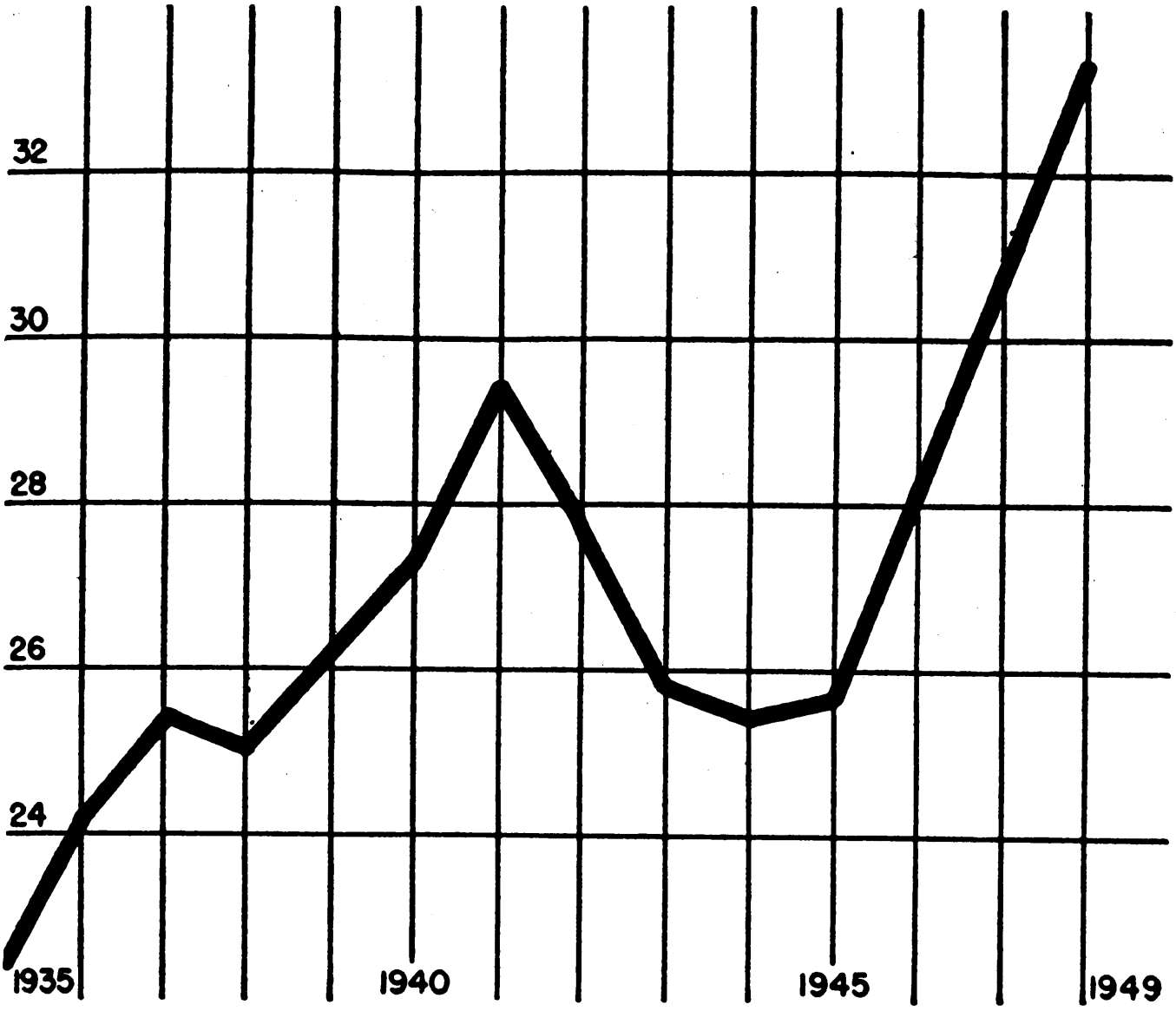
1. J. Edgar Hoover with Courtney Ryley Cooper, 'Camps Of Crime,' in The American Magazine, February 1940, p. 132.

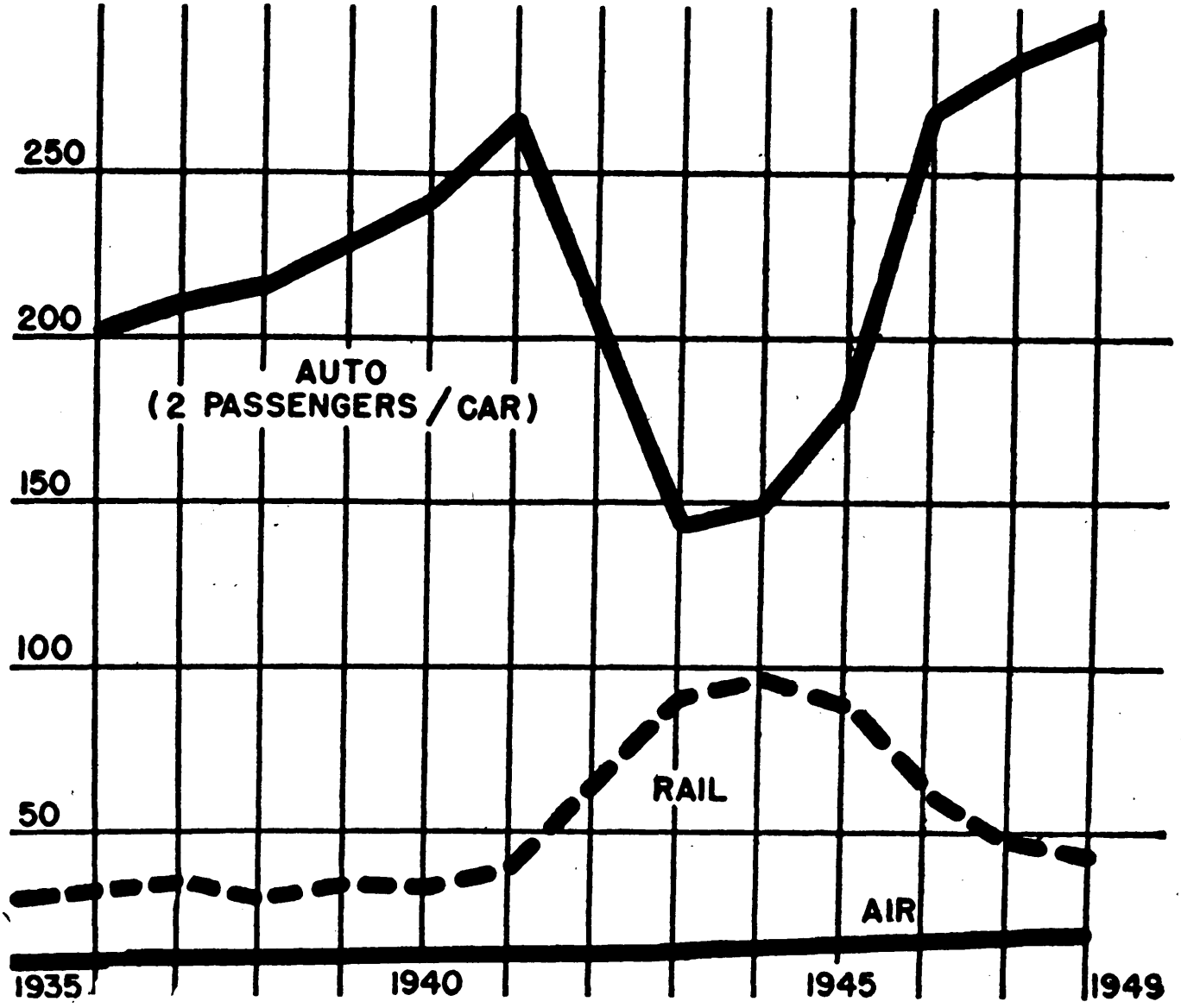
2. Ibid.

3. See page 5 for Chart on Passenger Car Registrations. Pages 6, 7, 8 contain pertinent Travel Data.



PASSENGER CAR REGISTRATIONS, MILLIONS

Source: A.M.A. "Facts and Figures" (PRA)



BILLIONS OF PASSENGER-MILES

Source "Survey of Current Business"

TRAVEL TRENDS

LENGTH OF VACATION

	1948	1949	Planning for 1950
More than Four weeks	7%	6%	5%
Four weeks	5	5	8
Three weeks	11	11	13
Two weeks	45	42	54
One week	24	25	18
Less than One week	8	11	2
	100%	100%	100%
Median	2.40 weeks	2.34 weeks	2.55 weeks

WHERE THEY WENT

	1946	1947	1948	1949	Planning for 1950
New England	10%	12%	14%	10%	9%
Middle Atlantic	18	23	19	20	17
East North Central	17	24	24	22	19
West North Central	11	14	13	12	10
South Atlantic	18	25	18	18	16
East South Central	18	25	5	5	4
West South Central	6	8	9	7	6
Mountain	11	15	11	11	11
Pacific	12	19	14	16	17
Outside United States	5	10	10	10	12
Canada	4	7	8	8	7
All Others	1	3	4	3	5

DISTANCE TRAVELED

	1946	1947	1948	1949	Planning for 1950
2500 miles & Over	5%	10%	23%	19%	29%
1500 - 2500 miles	8	10	19	15	19
1000 - 1500 miles	15	11	16	15	13
600 - 1000 miles	12	12	15	16	9
400 - 600 miles	13	10	12	12	9
200 - 400 miles	22	20	10	14	7
Less than 200 miles	23	25	5	9	5
Indefinite	2	2	—	—	9
	100%	100%	100%	100%	100%
Mean Average	683	861	1396	1249	1630

METHODS OF TRAVEL

	1946	1947	1948	1949	Planning for 1950
Automobile	75%	76%	82%	84%	81%
Railroad	23	23	20	15	16
Bus	9	10	8	8	6
Airplane	7	7	5	4	6
Steamer	1	2	2	2	2
Other	1	1	2	2	1

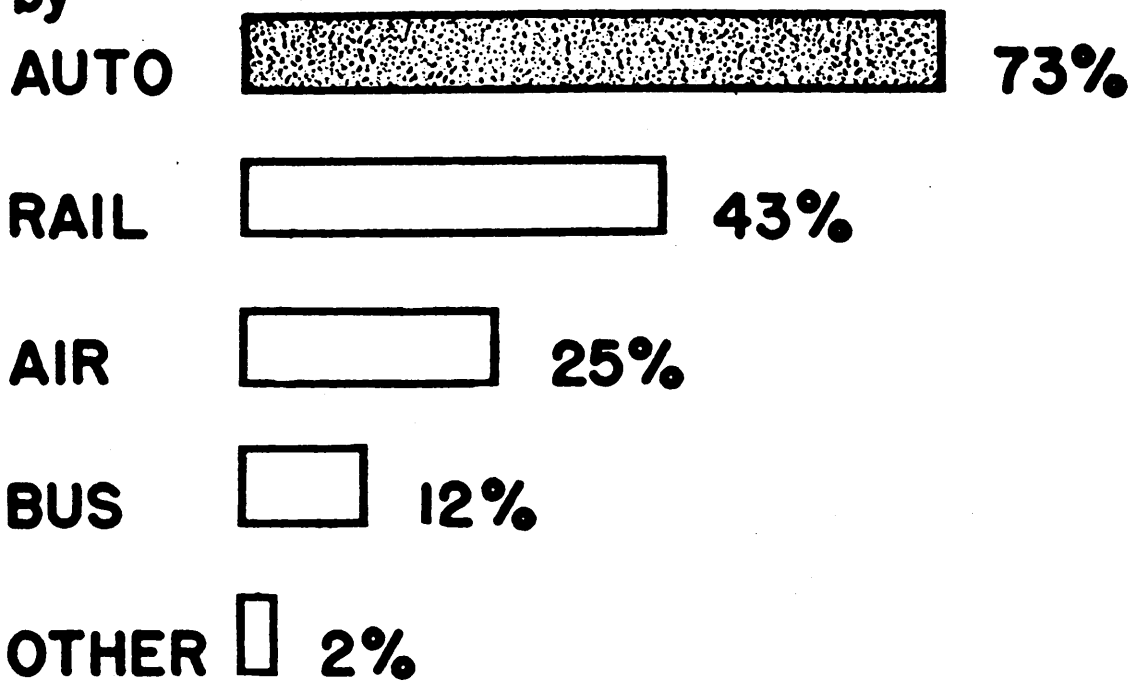
Average (mean) Spent on Vacation

1946 ——— $160
1947 ——— $217
1948 ——— $254
1949 ——— $213
Planning for 1950 ——— $279

Source: American Magazine, "1949 Travelogue"

43% OF MEN REPLYING TOOK OVER-NIGHT BUSINESS TRIPS (AV. 9 TRIPS EACH IN 1948)

by



SOME REPORTED MORE THAN ONE METHOD OF TRAVEL

BUSINESS TRIPS

Source: American Magazine, "1949 Travelogue"

inspecting and recommending highway accommodations for its membership. A recent poll by this latter group states that 40% of those reporting preferred to stay in highway motels rather than downtown hotels. [4] Elmer Jenkins, National Travel Director of A.A.A., reports that there are approximately 30,000 motels in the United States,[5] of which they find only 3522 (approximately 1 in 12) worthy of being listed in their Accommodations Directory, and that only 1000 (1 in 30) are recommended without qualification. [6]

Requirements for listing or membership with various organizations should be carefully considered and included in the planning of both facilities and administration for the chain system. A typical example of an operator's association with a high degree of organization for self-protection is Quality Courts United, an outgrowth of American Motor Hotel Association and United Motor Courts. This group consists of 128 members from New York to Florida and Louisiana, and has been in existence for ten years.

A member must agree, among other stipulations, to operate his court and other establishments within ten miles on a "high moral plane scrupulously catering to the furnishing of lodging or other facilities to bona fide travelers only." [7] No liquor may be sold,

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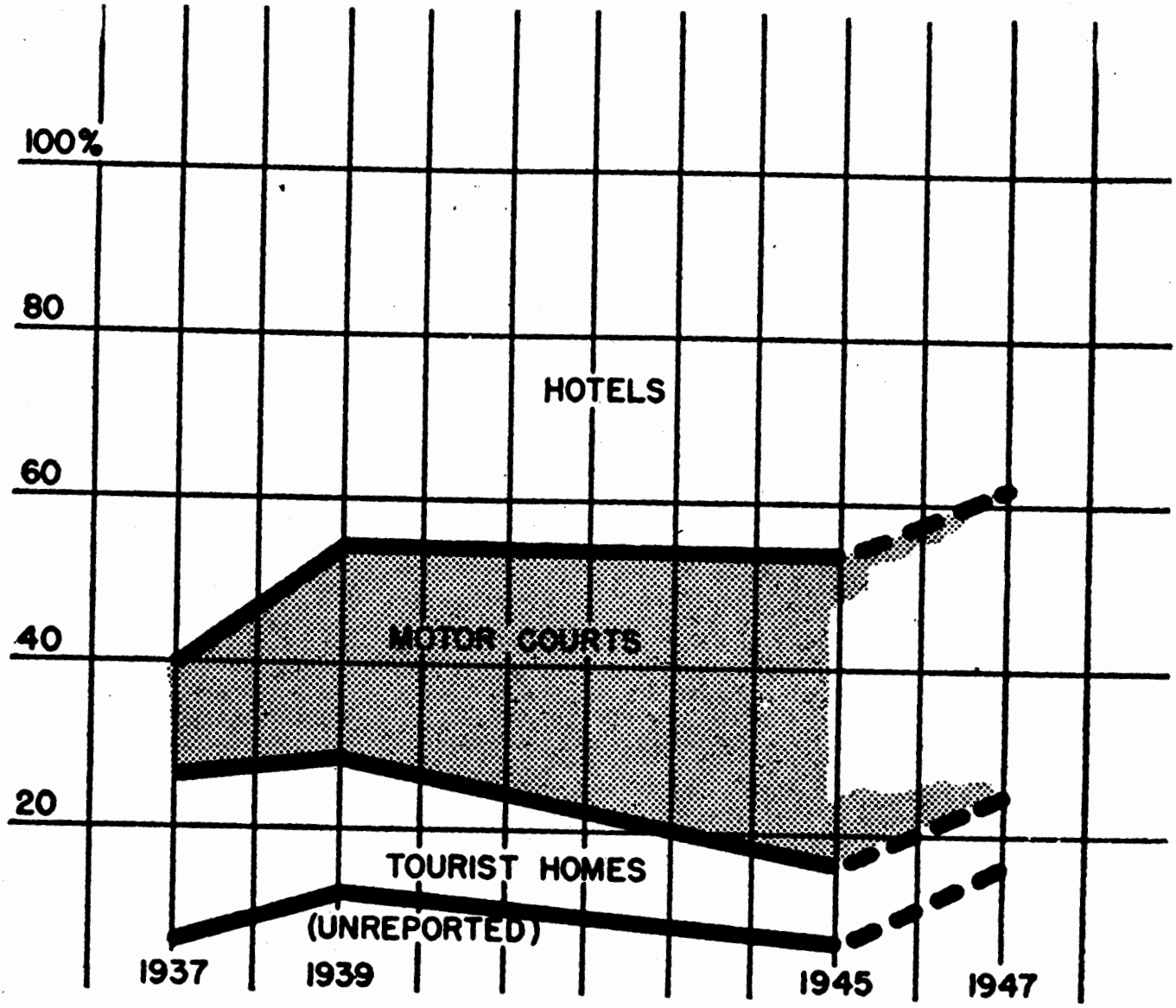
4. See page 10 for Chart on Motorists' Preferences.

5. Tourist Court Journal and American Motel Magazine place this figure at 25,000. An accurate census of motels has never been made, but this latter figure is based on findings of the periodicals themselves plus those of government offices, A.A.A., national motel associations, and other groups vitally interested in the field.

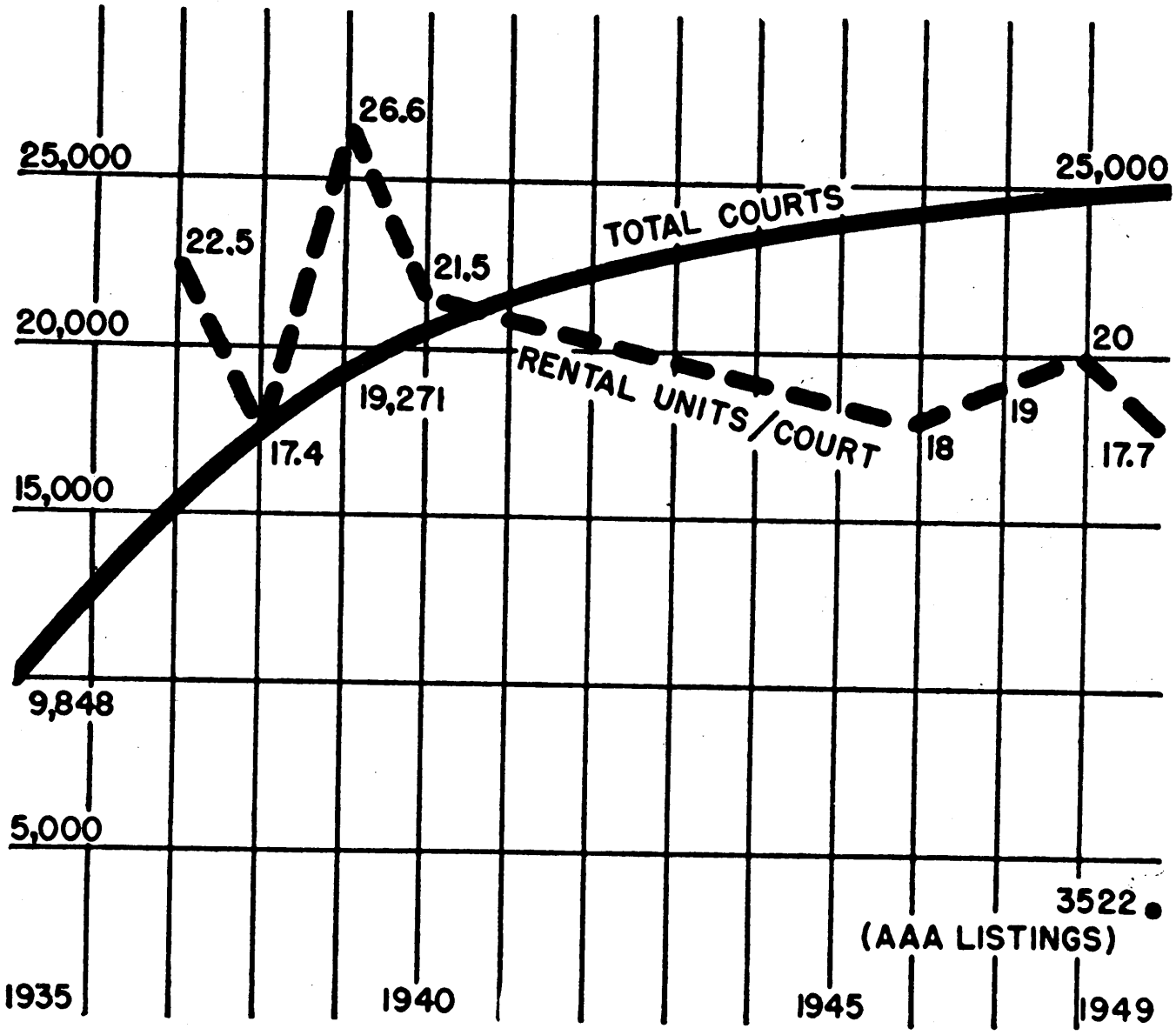
6. "How To Build and Operate Motor Courts and Highway Hotels". Compilation of articles assembled by F.A. Pawley for Hotel Management Magazine and Architectural Record.

7. Ibid., p. 24.



MOTORISTS' PREFERENCES

Source: Am. Automobile Ass'n.



NUMBER OF MOTELS IN U.S.A.

Source: *Tourist Court Journal*

no public dancehall operated. Accurate registration of all guests and their vehicles is required. Neither noisemaking devices to attract business nor highway solicitation by employees is allowed.

A Quality Court must provide adequate heating in relation to the local climate, mattresses of innerspring or latex foam construction, certified drinking water with ice to put in it, 24-hour hot water service, a private bathroom for each rental unit and fresh linen for each change of guest. Excerpts from Quality Courts United's requirements follow:

> "All credits are maximums allowable. Proportionate reduction must be made in each case where material workmanship or present condition is less than best."
>
> 1. BUILDING CONSTRUCTION AND SCIENTIFIC LAYOUT
>
> (Aggregate possible 13 points divided as follows)
>
> A. Wall construction (no more than 5 points)
> B. Inside walls and ceiling (no more than 2 points)
> C. Sub-floor (no more than 1 points)
> D. Foundations (no more than 1 point)
> E. Window openings (no more than 1 point)
> F. Roofs--First class (no more than 2 points)
> G. Good arrangement and plan (no more than 1 point)
>
> 2. GROUNDS, WALKS, DRIVE, & LANDSCAPING
>
> Attractive, outward appearance, paved drives and walks, neat, well-kept grounds having trees or shrubs, flowers (aggregate possible 4 points)
>
> 3. OFFICE AND LOBBY
>
> (Aggregate possible 2 points)
>
> 4. BATHROOM FIXTURES
>
> Bathroom floors measuring 32 sq. ft. or more, tub, shower or both, modern toilet and best seat, modern lavatory with pop-up waste and mixer valve, all matched fixtures of a late standard make only, tile floors and walls, built-in accessories, consisting

of toilet paper container, soap fixtures for shower or tub or both, grab bars over tub, plate glass mirrors and shelf, or plate glass mirror and medicine cabinet, well lighted, electric outlet for razor (aggregate possible 14 points).

5. CLEANLINESS AND NEATNESS

(Aggregate possible 8 points)

6. HEATING SYSTEMS

(Aggregate possible 10 points)

7. FLOORING AND FLOOR COVERINGS

(Aggregate possible credit 6 points)

Grading varies with both floor surface and floor covering. Floor surfaces are defined as of two classes: First class, which are hard tile, asphalt or rubber tile, varnished hardwood or heavy inlaid linoleum; and Second class, all others, including concrete or cement, painted or unpainted, pine or other soft wood. Floor coverings are also divided into two classes: First class being rugs or carpets of Wilton or Axminster type with warp count of not less than 4 warp per inch; and Second class being all other floor coverings.

8. INTERIOR, SIZE AND LAYOUT

(Aggregate possible 4 points)

9. WINDOW DRAPERIES AND BLINDS

(Aggregate possible 2 points)

10. LIGHTING

(Aggregate possible 4 points)

11. FURNITURE

(Aggregate possible 8 points)

12. BED SPRINGS

(Aggregate possible 6 points)

13. MATTRESSES

(Aggregate possible 10 points)

14. BEDDING

(Aggregate possible 8 points)

15. GARAGES

(Aggregate possible 1 point)

TOTAL GRADE ON divisions 1 to 15 inclusive 100 points

16. SPECIAL CREDITS AND DEDUCTIONS

NB. The above 15 divisions of this grade sheet embrace an aggregate possible of 100 points. To your total on them there must be added or deducted as follows. The credits shown are maximums and can be allowed only for the best. Lesser credit in proportion, however, can be claimed for good installations.

For exceptional landscaping, shrubs, swimming pools--not more than 5 points.

For Cafe within 1000 feet of property (vary with distance and quality of restaurant service)--not more than 5 points.

For telephone system with room to outside connections, not more than 5 points.

For telephone system office to room and vice versa only, not more than 1½ points.

Circulating ice water not more than 3 points.

Deduct for rate-cutting, or absence of 24-hour hot water service--deduct up to 25 points.

Deduct for permitting the use of property for immoral purposes. Deduct full 26 points. [8]

In order to operate as a Quality Court the physical qualifications require each type of rental unit to have a minimum of 85 and 80 points for court and units respectively in Florida, and 80 and 75 points elsewhere. The higher requirement in Florida is explained by the greater competition caused by the high density of motels in that state.

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8. Analysis of Facilities Form, pub. by Quality Courts United, St. Petersburg, Florida.

Hotel-Motel Competition

The fact that the motel enterprises have been able to grow into a 750 million dollar business has become extremely disturbing to the hotel operators who were either helpless or caught unaware and failed to recognize the needs of the motorist as automobile travel began to replace a large percentage of rail transportation. Their concern was evidenced recently in a booklet, How To Sell The Motor Traveler, published by the American Hotel Association. On the basis of an extensive survey of roadside housing many constructive suggestions were made, and many hotels have started providing automobile lobbies and adjacent parking lots. A few have even gone into competition with themselves by establishing highway hotels after discovering that the automobile lobby either did not solve the problem or cost more to construct than did the highway hotel. This survey also disclosed that the highway hotel could not be relied upon as a "feeder" for downtown hotel rooms. Road checks showed that when the guest wants to stay on the highway he seldom can be guided into the city. It is interesting to note that this fact was considered as the greatest loss of income to hotels.

The reluctance of a great majority of the public to use hotels was attributed to the hospitality and informality previously experienced by motorists at roadside accommodations plus a shyness and feeling of strangeness which most persons have toward hotels,, and hotel lobbies in particular. In 1948 a survey made by the Gallup Poll staff showed that 69% of the public had never been in a hotel to eat or sleep and a difference of only 2 percent was found

WHERE THEY STAYED AND THEIR LIKES AND DISLIKES

"What accommodations did you have?"
"Would you please tell us what you particularly liked about your accommodations?"
"Would you please tell us what you particularly disliked about your accommodations?"

Of the American Magazine readers who went away for their vacations, 70% gave one or more reasons why they liked their accommodations and 20% gave one or more reasons why they disliked their accommodations.

Therefore, in order to show a complete picture, it was necessary to use a resulting small base in some cases. Caution is advised in cases where the base is less than 100.

	Total	*Hotel*	*Tourist Camp*	*Summer Cottage*	*Auto Park**	*Camp**	*Stayed with Relatives or friends*	*Other**
Total Vacationists	134%	26%	19%	18%	8%	6%	48%	9%
Their LIKES as reported by 70%								
Cleanliness	23%	27%	41%	21%	48%	19%	17%	30%
Convenient, fine location	17	14	11	30	15	20	13	14
Good food	10	17	8	5	3	10	10	17
Friendliness	9	8	8	2	7	17	12	8
Comfortable	9	8	8	8	9	2	11	11
Courteous	8	19	8	3	4	3	8	6
Quiet — Restful	8	8	7	13	8	5	4	10
Generally good	8	7	8	5	9	3	9	12
Homey atmosphere	7	1	2	6	—	2	11	2
Modern facilities	6	5	10	10	5	3	5	11
Fine shelter, nice rooms	5	8	6	7	4	3	3	5
Good beds	5	8	9	4	6	2	4	10
Reasonable rates	4	3	6	2	8	2	5	7
All Other	16	10	11	20	10	32	15	14
Base:	982	275	214	198	96	59	408	92

	Total	*Hotel**	*Tourist Camp**	*Summer* Cottage*	*Auto* Park*	*Camp**	*Stayed with Relatives or friends*	*Other**
Their DISLIKES as reported by 20%								
Crowds, noisy	20%	21%	15%	17%	13%	5%	24%	11%
Expensive	14	23	21	13	22	5	13	11
Lack of modern facilities	12	10	15	17	13	19	11	4
Poor location	11	6	8	13	13	14	10	15
Not Clean	8	8	15	4	19	5	8	7
Lack of sanitary facilities	8	10	5	17	9	5	3	11
Poor beds	5	3	6	7	6	10	5	11
Poor service	4	4	5	—	6	10	2	7
Hard to get reservations	4	4	3	—	3	10	2	15
Poor food	3	4	5	—	—	—	2	11
All Other	18	20	13	17	16	19	27	15
Base:	297	91	88	46	32	21	124	28

**Few cases here, therefore, figures should be used with caution.*

Source: American Magazine, "1949 Travelogue"

between high and low income groups. [9]

Much can be learned by the motel invester from experience of the hotel industry. Most important fact is that he is not engaging in a real estate venture but in a complicated and highly specialized business. The overbuilding boom of the 20's and the financial reversals which followed made this mistake clear to everyone when approximately 80 per cent of all hotels went through bankruptcy or some form of reorganization during the 30's. Average room occupancy was 86 per cent in 1920, but by 1928 when the rate of rooms being added reached approximately 100,000 it had declined near the break-even point of 65 per cent occupancy. By 1933 it was 51 per cent and to make matters worse, a damaging nationwide rate war was in progress.[10] Rates had far from recovered to 1929 levels when they were frozen during World War II. Hotels were only able to operate under the higher operating costs because of an abnormally greater volume of business. Today the break-even point is around 85 per cent occupancy which means that volume of sales must remain abnormal if a normal profit is to continue. Above all else hotel operators do not want the competition they are getting from motels.

Another important factor is that this competition does not operate to eliminate the weaker hotels or motels. Instead, if one gets into financial difficulty, it is reorganized with reduced

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9. How To Sell The Motor Traveler, American Hotel Association, New York 1948, p. 12.

10. 'That Hotel Boom.' Fortune Magazine, September 1947, p 104.

capitalization or goes into receivership and is operated by trustees until a buyer is found. The lower the price requested, the more able the buyer is to spend money on improvements for renewed competition.

In an attempt to protect the high occupancy ratios and discourage construction of new hotels and motels, the hotel industry in 1947 embarked on a modernization program which the American Hotel Association estimates will total 1½ billion dollars.[11] A few striking new hotels and motels set totally new standards for this program. Notable among these pace-setting projects are Cincinnati's Terrace Plaza, the new modern resort hotels in the Caribbean area, and some excellently designed motels in California.

Living habits and tastes have changed so radically since the last building boom that the average hotel is characterized by its depressing dullness and mediocrity. George Nelson, writing for Fortune magazine, presents many of the problems in hotel design currently being faced by architects which can be applied equally as well to motel design.

> "Hotel design, like hotel economics, begins with the room, and it is here that the close interlocking of these two factors is most apparent. The cost of a hotel building is directly related to its size. Size, in turn, is a function of individual room dimensions and the total number of rooms. Whether the individual room is large or small depends to some extent on the type of clientele to be sought, but the designer can do a great deal to save space by an intelligent approach to furnishings. To take the most obvious

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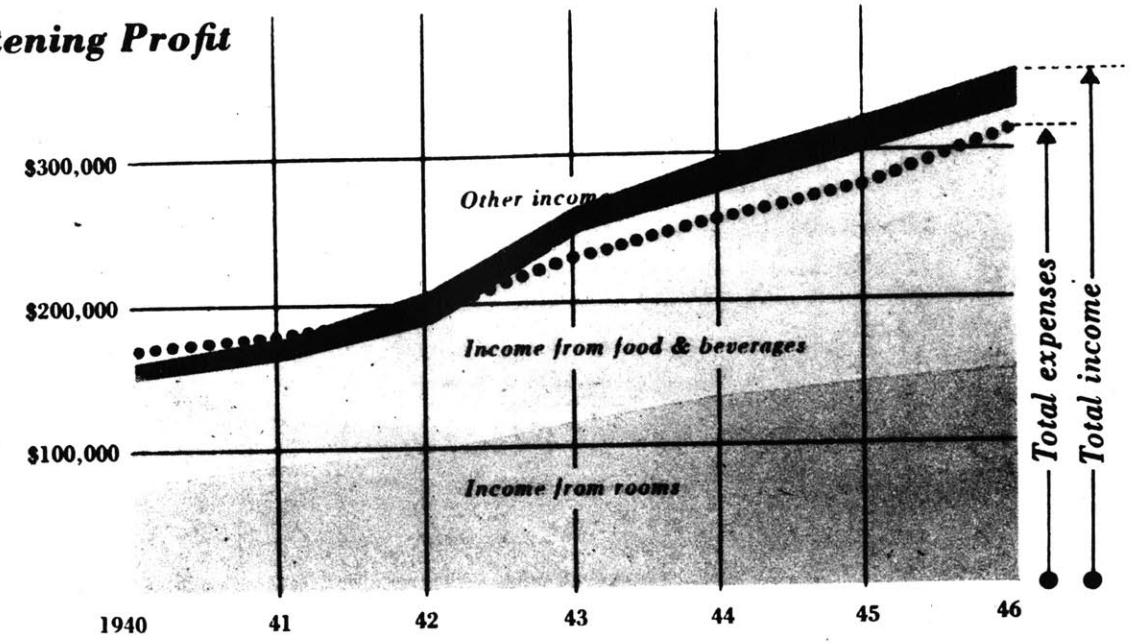
11. See pages 19 - 22 for Charts on Hotel Industry.

The building diagram and list below are based on estimates gathered by the American Hotel Association for the industry's rehabilitation and modernization program.
Not listed is the infinity of small expenditures (e.g., $1,978,877 for toasters) on silver, china, linens, laundry equipment, etc., bringing the total program to about $1.5 billion.

THE MODERNIZATION BUDGET

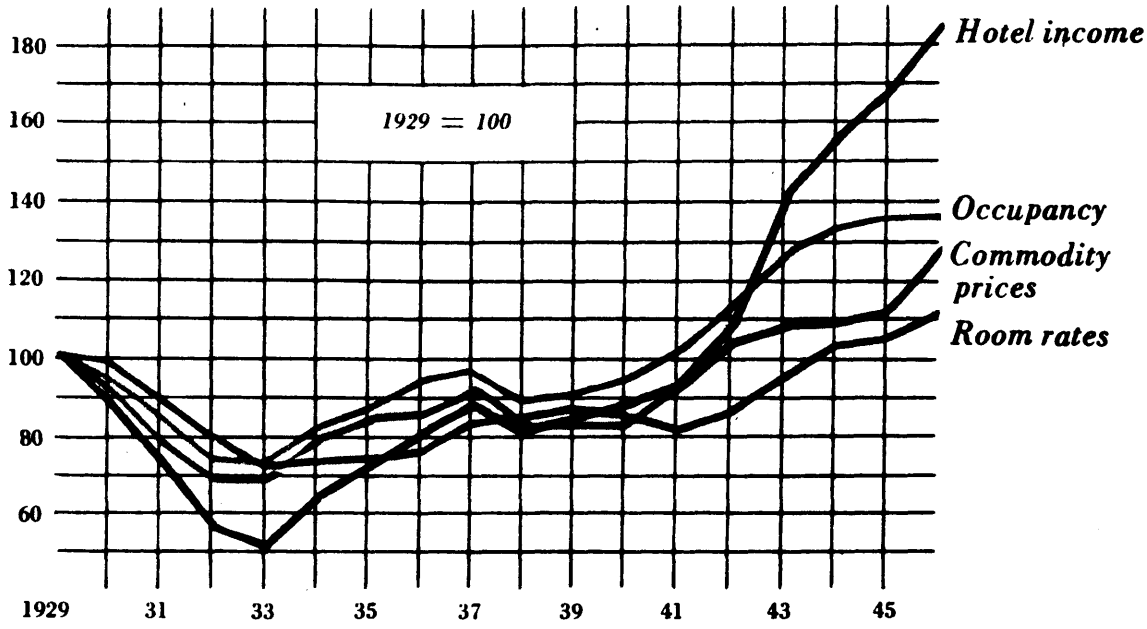
Additions	$ 597,000,000
Carpets & rugs	101,000,000
Plumbing	22,000,000
Remodeling	125,000,000
Building repairs	24,000,000
Elevators	46,000,000
Public-address & radio systems	7,000,000
Painting & decoration	28,000,000
Kitchens	29,000,000
Air conditioning & refrigeration	101,000,000
TOTAL	$1,080,000,000

The Fattening Profit



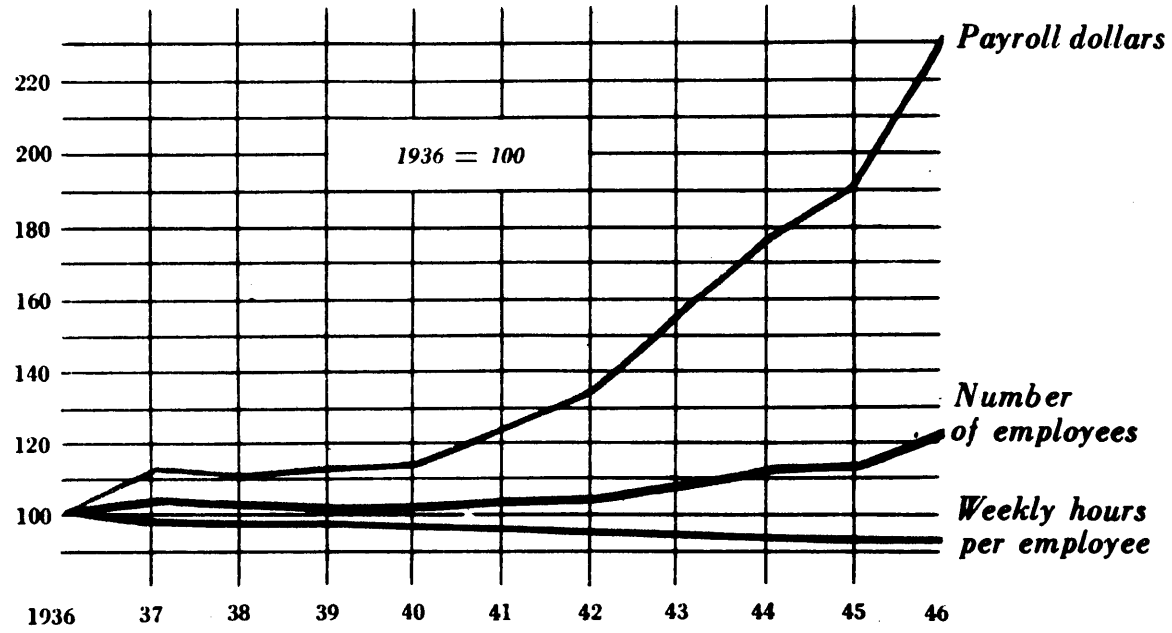
The middle of 1942 marks the beginning of the greatest of all hotel booms. While room revenue went to its all-time high, physical limitations and rent ceilings kept the increase below that of food and beverages. (Statistics per 100 rooms.)

The Dwindling Margin



The possible squeeze awaiting the industry lies in what the future may do to the projection of this graph. Two of the items—hotel income and occupancy—are high but unpredictable. Costs and room rates, on the other hand, are high but relatively fixed. A drop in occupancy, and consequently in revenue, need not be large to change the entire profit picture. It is on this point that the industry's opposition to new hotels is based.

The Heightening Payroll



The hotel payroll is about the same percentage of revenue as it was in the depression. Actual labor costs, however, have more than doubled in a decade. The new payroll will make sense only so long as revenue stays at current levels.

example, the bureau with which practically every transient hotel room is equipped is a waste of space and money, for the average guest has no need for more than a couple of drawers. By placing these drawers in another piece of furniture--say the desk or vanity--the bureau is eliminated in favor of a composite unit and it becomes possible to design a smaller room and still give the guest more usable space. On the basis of this kind of thinking, designers and architects have made the old-style hotel bedroom virtually unrecognizable, and there are innovations to come.

"The traditional hotel room is a bedroom-size rectangle, flanked by a bath, corridor, and closet. Its furnishings usually consist of a patterned carpet (which is supposed to show less wear than a plain one), twin beds, a small night table, a chest of drawers, vanity, desk, one easy chair, one or two straight chairs, and possibly a luggage rack. These items, all borrowed directly from the furnishings of an ordinary home bedroom (a mistake to start with) are generally so disposed that it is difficult for the guest to use the room for anything but sleeping. Which is fine if he wants to sleep. Walls are sometimes papered, but more frequently painted cream, tan, or bile green; windows are curtained with some uninspired fabric; lighting is provided by one unstable bridge lamp with a trailing cord and a central ceiling fixture, which glares in the guest's eyes if he tries to read in bed. Sometimes there are reading lights clamped on the bed back, which promptly fall off if one attempts to adjust the shade. This description does not hold for the best hotels--but neither does it apply to the worst.

"The inadequacy of this type of room for the needs of present-day travelers needs no demonstration. But before attempts at improvement are dealt with, there is another recurring problem that arises in connection with the hotel room--the relationship between design and the cost of maintenance.

"The average American, when he finds himself in a hotel room, behaves about as elegantly as he does in his own home. Possibly he is a little more careless. But there is a segment of the population--and every hotel man has encountered it--that, once ensconced in a hotel, rids itself of all inhibitions with extraordinary thoroughness and speed. The ges-

tures expressing new-found freedom may include opening a dusty suitcase on a white spread instead of on a luggage rack, or perhaps grinding out a cigarette stub in the carpet instead of the ash tray. There is the habit of leaning back in a chair and stabilizing this position by planting the feet on the wall, bed, or bureau. Every hotel has encountered guests who find it simpler to spit on the wall than to travel ten feet to the bathromm, and others who, lacking a handkerchief, commandeer the bedclothes. Towels are used not only for wiping shoes but for cleaning razor blades. There are the convivial spirits who squirt soda or ginger ale on the ceiling and prefer using the bureau drawer to a bottle opener. This list is not invention: it represents a small part of a horrifying compendium based on a survey of 8,000 hotel rooms made by Walter P. Margulies of the design firm of J. Gordon Lippincott & Co. And while such behavior is confined to the uninhibited fringe of the traveling public, it is nonetheless a problem for management and a challenge to the designer.

"By far the greatest amount of damage results, however, from normal everyday use by normal patrons. Anybody is likely to leave a cigarette too long on a bureau or desk top. Even a careful guest using a luggage rack will probably damage the wall behind. Sheets and mattresses are continually being ruined by guests who smoke in bed, and fire-prevention experts are inclined to ascribe a number of the great hotel fires of 1946 to this cause. The manager of one luxury hotel in New York has remarked that if a guest in a bedroom sends out for an extra chair, the hotel can count on two dollars worth of damage somewhere--to walls, woodwork, furniture, or the chair itself by the time it has been delivered and set in place. Liquor is always a problem. It gets on furniture and mars ordinary finishes; if spilled, it stains the floor coverings; broken glass damages both carpets and woodwork. Male guests who use hair lotions generally leave their mark on wall, bedspreads, and upholstery fabrics. All of this means expense, for the cost of carpenters, painters, seamstresses, upholsterers, cabinetmakers, etc., is related to damage as well as to day-by-day maintenance, and the designer who can anticipate the things that are going to happen in bedrooms and plan for them will save many times his fee in the end." [12]

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12. George Nelson, 'Hotel Design', Fortune Magazine, September 1947, pps. 106-107.

In order to prevent obsolescence and to maintain high occupancy the motel investor must provide well designed and equipped projects. It would be foolhardy to put money into the construction of the typical shacks of which there are already too many. The Architectural Record reports that only about 1 in 100 of all existing motels has architectural interest or planned efficiency, and that only 18 per cent employed architects. [13]

Motel Financing and Operating Costs

In 1949 the average investment for the country as a whole, including land equipment, was about $56,000 (average 18 units). The number of units per motel ranges upward to 425. The Tourist Court Journal recommended in 1940 that no new court be built for less than $50,000, while the United States Department of Commerce recommended in 1945 a size of 35 to 50 rental units.

Less than 1 per cent of the motels in the United States have investments of between $5,000 and $10,000. Only 2 per cent have between $10,000 and $15,000; 8 per cent are in the $15,000 to $25,000 class; 36 per cent fall into the $50,000 to $100,000 class, while 23 per cent have investments in excess of $100,000. The Architectural Record estimates current construction costs per unit completely furnished and exclusive of land are now between $3500 and $5000. The American Motel Magazine estimates this same figure to be between $5000 and $7000. In either case the figure is about approximately one third that of city hotel costs per room, which run from $12,000 to $24,000, including full hotel facilities.

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13. "Motels", Building Types Study No. 159. Architectural Record, March 1950.

The following article is a complete annual report, '1949 Tourist Court Operating Averages,' published by the Tourist Court Journal.[14]

Tourist courts were able to maintain the same level, or a slightly higher level, of average income in 1949 as in previous years even though competition within the industry was greater than ever before. Many, many new tourist courts were completed and put into operation within the year, thereby increasing the number of such accommodations available to the traveling public. Many of these courts were built in areas which already had facilities sufficient to accommodate the guests touring in these sections. Naturally, this reduced the average number of potential guests per court. As you will note from the "General Statistics" given in Fegure 5, the average percentage of occupancy decreased from 81.42% in 1948 to 69.85% in 1949. Yet, an average of 30¢ out of each dollar received by tourist courts in 1949 represented net profit.

How has this percentage of net income been maintained when the percentage of occupancy has been lowered?

As you compare the statements for the different years please bear in mind that the percentages shown represent the averages of all the courts reporting and that these statements come from some of the largest courts--from courts varying in size from three to more than a hundred units. Also, bear in mind that the statements used each year do not necessarily come from the same courts. The statements are sent in anonymously and they may or may not be from the same courts that reported in previous years. This might have some bearing on the changes in percentage of profit from year to year, and, of course, expenses decrease some when fewer rooms are occupied, but it is believed that the great number of smaller courts which have been built and put into operation within the last year is the greatest factor affecting the percentages or variation in figures from 1948 to 1949 and that the high percentage of profit was realized because no salary expense was incurred by these courts.

Referring to Figure 5, you will note that 90.86% of the income received in 1949 was from room rentals, while only 86.25% of the total income received in 1949 represented room rentals. The percentage of total income representing coffee room receipts decreased from 7. % in 1948 to 4.03% in 1949, and filling station income decreased from 5.11% in 1948 to 2.92% in 1949. A great many of the new courts which have been built within the last year have been started on a small scale--that is, with just a few units to begin with and with the plan to make additions or add more units later

14. Figures referred to in this article appear on pages 29 - 35.

when the demand for additional facilities and financial conditions will warrant further investment. Naturally, in these smaller courts the coffee room and filling station are in the plans for the future. This is not necessarily true of the larger courts being built at the intersections of the super highways because such facilities must be provided by the courts when they are so far away from the towns and where such services cannot be secured elsewhere, but it seems that in the courts built within the last year the smaller courts far outnumber the larger courts. It was found that 38% of the courts reporting had ten or less units, 40% had eleven to twenty units, 19.33% had from twenty-one to forty units, while only 2.6% had over forty units. With so many more rooms available it is only logical to assume that the percentage of the total income from other sources decreased.

Figure 3 gives a clear picture of the sources from which the income of tourist courts was received in 1949.

Noting the expenses listed in Figure 5, you will see that the greatest change in 1949 from 1948 is the decrease of salary expense--a decrease of approximately 7%. It is believed that this can be attributed for the most part to the fact that there are so many of the smaller courts in which all of the work is done by the manager and his family, under which circumstances no expenditures are made for salaries. Approximately 30% of the courts reporting showed no salary expense whatsoever. Courts with no salary expense naturally show a higher percentage of profit than courts which pay salaries for all of the work done, and this brings the average percentage of profit for all courts to a higher level.

All of the other operating expenses were approximately the same as in the previous year with the exception of "Other Expenses," which showed an increase of 1.62%. It should be explained that a number of the courts reporting did not itemize the expenses chargeable against income, and it was necessary in such instances to place the entire amount of expenses in "Other Expense." This, no doubt, was the principal reason for the increase in this item.

In the capital expenses the greatest change was in depreciation, which has shown a gradual increase each year since 1946. We believe this is due to the fact that more and more court owners have realized that tourist court properties depreciate and become obsolete more rapidly than many other properties and that a higher rate of depreciation should be charged. The average rate of depreciation charged in 1948 was 5% on buildings and 11% on equipment, furniture, and fixtures. The average rate of depreciation charged in 1949 was 6% on buildings and 12% on equipment, furniture and fixtures.

While 30.39¢ out of each dollar received by tourist courts in 1949 represented net profit, not all courts realized a profit; 6.7% of those reporting showed a loss for the year.

Another evidence of the many smaller courts which have been put into operation within the last year is the decrease in the average number of units per court. This average was 20 for 1948 but only 18 for 1949. The average investment per court also decreased. The year 1948 showed an average investment of $69,017.23 but in 1949 this was decreased to $55,990.86 per court while the average investment per unit remained approximately the same. It might be stated that some courts showed no investment whatsoever for land, as the land on which the courts were built had been leased on a long-term basis.

Figure 6 shows the profit realized by tourist courts for the year from 1938 to 1949. It also shows what portion of the gross income was used for operating expenses and the portion used for capital expenses. This is based on income from room sales only.

Through 1945 no income of the tourist court other than room sales was taken into consideration in computing the operating averages. Income from other sources had been minor up to that time. In order that you might have a complete picture for the eleven years computation was made on this same basis, as you will note from Figure 1. This same information is given in graph form in Figure 2, however, beginning with 1946, the profit is also traced on the basis of all income.

It was interesting to note that 42% of the courts reporting showed expenditures for capital improvements or replacements. The average amount expended by these courts for this purpose was $3,000.00.

It was also interesting to note that 11% of the courts reporting were not in operation for the full year. Some of these were seasonal businesses while others were new courts that had been completed within the year. The average length of time in operation shown for all of the courts was four years.

While the statements given here show that 30¢ out of each dollar received by tourist courts in 1949 represented net profit it must be remembered that this does not mean that tourist courts made a profit of 30% upon their investments. This is not the case at all. The average percentage of income on investment was only 7.7%, and this is the percentage on which one would determine whether or not his tourist court is a profitable investment.

FIGURE 1—COMPARATIVE SCHEDULE

Percentage Relationships of Expenses and Net Profits to Total Room Sales

The ratios shown, for each year, in this schedule are complete averages for all reporting tourist courts for the year shown.

	1949	1948	1947	1946	1945	1944	1943	1942	*1940	1939	1938	Average
Room Sales	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Operating Expenses:												
Salaries and Wages	13.78%	22.48%	14.57%	15.78%	12.86%	12.42%	14.38%	12.80%	13.59%	13.03%	15.84%	14.68%
Executive Salaries	3.42%	3.97%	2.47%	1.62%	1.41%	1.13%	4.73%					1.70%
Laundry	5.97%	5.10%	5.52%	6.01%	4.20%	5.01%	4.52%	6.35%	8.11%	7.19%	6.72%	5.88%
Linen and China Replacement	1.69%	3.30%	2.57%	2.76%	2.00%	1.86%	2.02%	3.74%				1.81%
Cleaning	2.54%	2.42%	1.99%	1.57%	.98%	.81%	.64%	1.31%	.58%	5.90%	3.79%	2.05%
Printing, Stationery and Advertising	2.85%	2.64%	2.16%	1.54%	1.28%	1.15%	1.40%	2.95%	2.40%	2.83%	3.83%	2.28%
Telephone, Telegraph and Postage	1.09%	.75%	.94%	.65%	1.10%	1.58%	.53%	.93%	1.37%	.77%	.80%	.96%
Utilities	6.72%	5.65%	6.55%	7.26%	7.17%	7.83%	7.69%	8.85%	7.26%	10.63%	9.29%	7.72%
Repairs	5.42%	6.73%	7.49%	7.89%	6.26%	6.32%	2.89%	3.12%	3.39%			4.50%
Other Expenses	5.82%	4.63%	7.26%	11.11%	6.88%	5.74%	2.53%	7.01%	8.27%	7.56%	4.44%	6.48%
TOTAL OPERATING EXPENSES	49.30%	57.67%	51.52%	56.19%	44.14%	43.85%	41.33%	47.06%	44.97%	47.91%	44.71%	48.06%
Capital Expenses:												
Taxes	3.22%	3.43%	2.51%	2.55%	2.45%	3.58%	6.87%	5.90%	2.80%	3.98%	4.09%	3.76%
Insurance	2.22%	2.01%	1.93%	2.16%	1.28%	2.02%	1.33%	2.09%	1.93%	2.82%	2.41%	2.02%
Rent	1.01%	.62%	.72%	.89%	2.26%							.50%
Interest	5.91%	4.74%	3.90%	3.29%	2.94%	2.72%	1.61%	4.52%	2.14%	13.08%	2.13%	4.27%
Depreciation	14.96%	14.01%	10.29%	11.46%	9.63%	9.98%	12.25%	13.63%	14.97%	24.63%	11.13%	13.36%
TOTAL CAPITAL EXPENSES	27.32%	24.81%	19.35%	20.35%	18.56%	18.30%	22.06%	26.14%	21.84%	44.51%	19.76%	23.91%
TOTAL EXPENSES	76.62%	82.48%	70.87%	76.54%	62.70%	62.15%	63.39%	73.20%	66.81%	92.42%	64.47%	71.97%
NET PROFIT ON ROOM SALES	23.38%	17.52%	29.13%	23.46%	37.30%	37.85%	36.61%	26.80%	33.19%	7.58%	35.53%	28.03%

*NOTE: Figures for 1941 were not compiled.

FIGURE NO. 2—AVERAGE EARNINGS OF TOURIST COURTS

1938-1945 *Earnings based on income from room sales only; earnings* 1946-1949 *from room sales shown on bottom line shaded area* (23.38% *for* 1949) *and earnings from total sales shown on top line of shaded area* (30.39% *for* 1949).

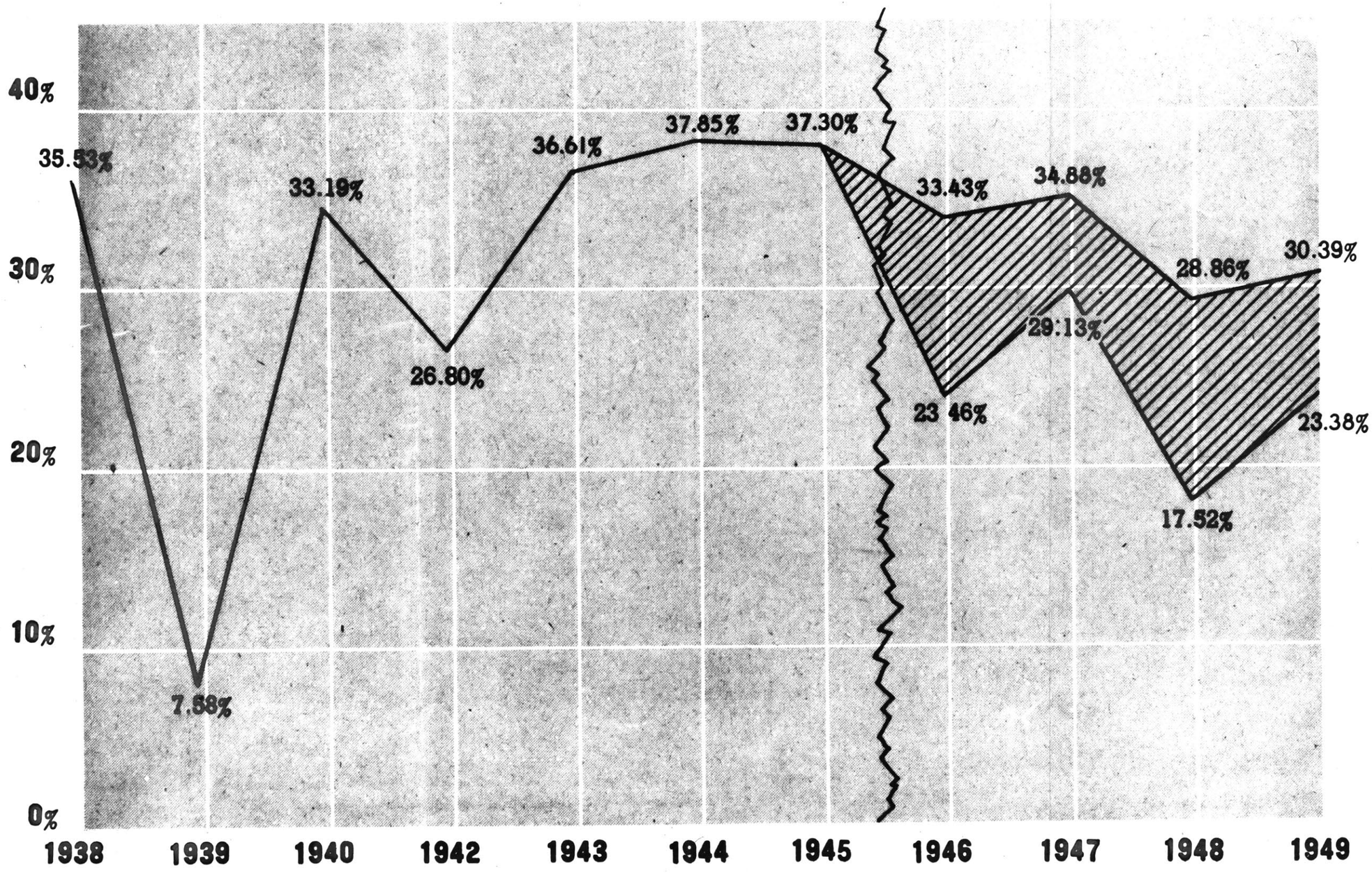


FIGURE NO. 3—TOTAL INCOME
Sources of 1949 Tourist Court Income

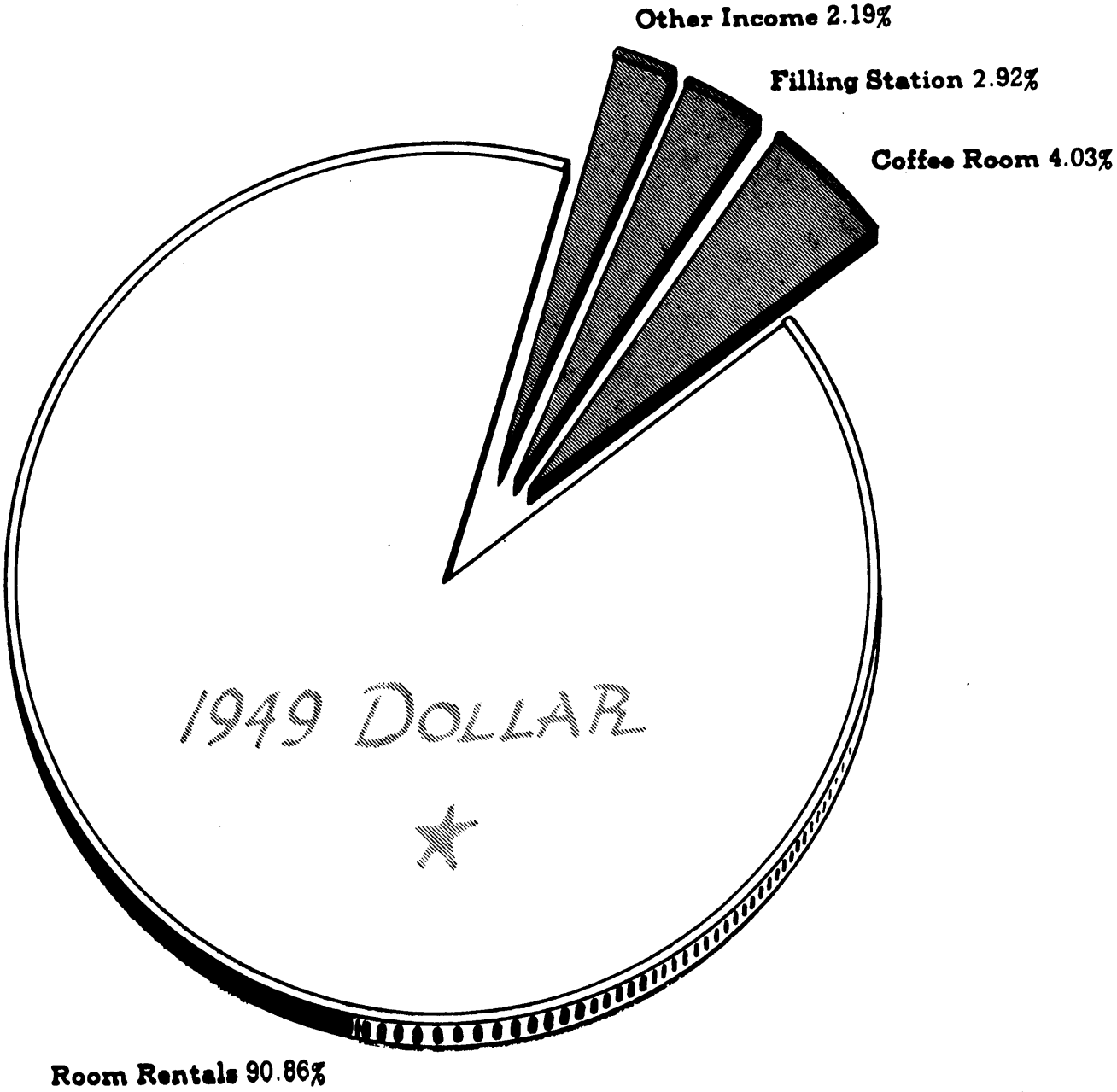


FIGURE NO. 4—TOTAL EXPENSES
Distribution of 1949 Tourist Court Income

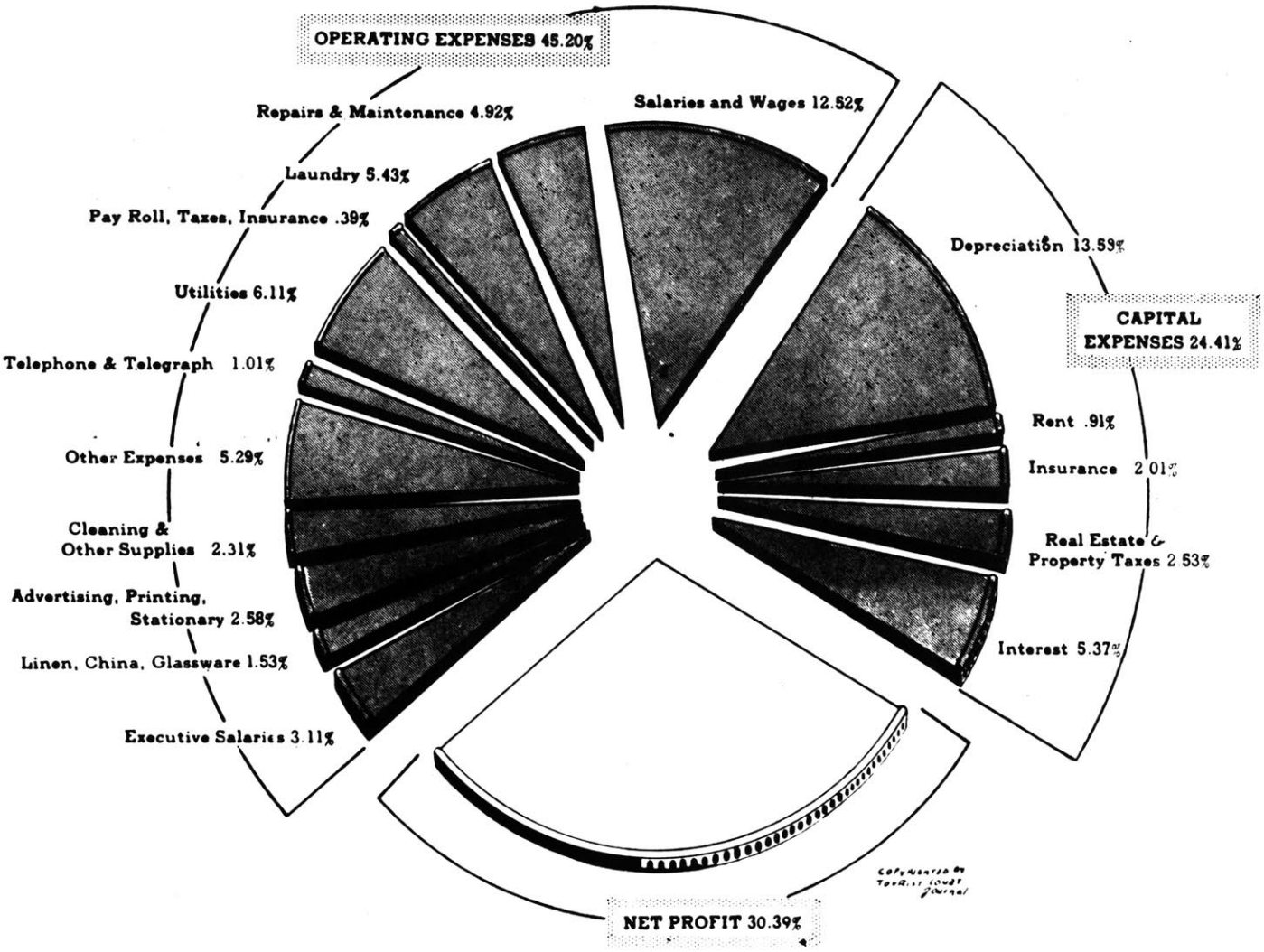


FIGURE 5—TOURIST COURT OPERATIONS—1946 THROUGH 1949

Nationwide Survey Segregated by Areas

INCOME:	New England, Middle and South Atlantic States				North Central States				South Central States			
	1949	1948	1947	1946	1949	1948	1947	1946	1949	1948	1947	1946
Room Rentals	92.02%	88.97%	79.36%	75.13%	77.36%	54.02%	88.26%	96.03%	93.55%	96.86%	97.88%	94.55%
Coffee Room	5.87%	5.33%	1.64%	17.16%	10.04%	26.77%	6.44%	3.09%	3.61%	1.84%	.47%	2.42%
Filling Station	.07%	1.53%	9.50%	5.11%	11.26%	17.86%	5.09%	.63%	1.25%	.68%	.44%	1.82%
Other Income	2.04%	4.17%	9.50%	2.60%	1.34%	1.35%	.21%	.25%	1.59%	.62%	1.21%	1.21%
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
OPERATING EXPENSES:												
Salaries and Wages	10.24%	14.40%	14.62%	20.16%	20.49%	36.44%	12.74%	15.76%	7.95%	17.34%	13.02%	13.13%
Executive Salaries	6.80%	3.06%	1.84%		1.57%	4.03%	3.29%	1.55%	1.09%	4.86%	1.02%	1.98%
Laundry	5.38%	3.74%	4.85%	5.36%	5.33%	3.33%	5.97%	4.88%	5.29%	5.96%	5.75%	5.92%
Linen, China, Glassware	2.09%	2.48%	1.70%	3.33%	.72%	.93%	1.00%	3.82%	2.44%	2.33%	3.39%	4.09%
Advertising, Ptg. & Sta.	2.35%	1.76%	2.20%	1.07%	2.51%	1.89%	1.02%	1.67%	3.33%	1.94%	1.82%	1.07%
Payroll Taxes, Insurance	.31%	.20%	.14%	.69%	.67%	.66%	.44%	.47%	.27%	.29%	.63%	.28%
Heat, Light and Power	6.71%	5.75%	9.25%	4.82%	6.40%	4.21%	6.19%	7.03%	5.31%	5.74%	5.05%	6.31%
Repairs and Maintenance	5.26%	4.88%	7.65%	4.40%	3.83%	5.15%	6.36%	9.33%	4.11%	6.27%	6.42%	5.64%
Cleaning & Other Supplies	3.07%	4.25%			2.58%	2.98%			1.55%	2.04%		
Telephone & Telegraph	.69%	.68%			1.02%	.66%			1.03%	1.32%		
Other Operating Expenses	8.54%	4.41%	8.87%	13.47%	3.74%	4.81%	4.56%	2.56%	5.57%	1.78%	7.55%	5.04%
Total Operating Expenses	51.44%	45.61%	51.12%	53.30%	48.86%	65.09%	41.57%	47.07%	37.94%	49.87%	44.65%	43.46%
GROSS OPERATING PROFIT	48.56%	64.91%	48.88%	46.70%	51.14%	34.91%	58.43%	52.93%	62.06%	50.13%	55.35%	56.54%
CAPITAL EXPENSES:												
Real Estate & Prop. Taxes	2.89%	1.76%	1.96%	2.69%	2.38%	1.71%	1.50%	1.81%	1.86%	3.85%	1.97%	2.08%
Insurance	2.06%	2.63%	2.01%	3.06%	1.86%	1.58%	1.32%	1.61%	2.11%	1.92%	1.76%	1.75%
Interest	4.14%	4.03%	3.21%	5.40%	4.82%	3.34%	1.77%	2.13%	5.12%	2.28%	2.39%	2.19%
Rent	.03%	.44%	.74%		.71%	2.01%	.01%	2.94%		.14%		.34%
Depreciation	11.40%	10.44%	7.48%	10.74%	11.24%	6.66%	9.93%	8.11%	13.22%	11.98%	9.08%	9.15%
Total Capital Expenses	20.02%	19.30%	15.40%	21.89%	21.01%	15.30%	14.53%	16.60%	22.31%	20.17%	15.20%	15.51%
NET PROFIT	28.54%	35.09%	33.48%	24.81%	30.13%	19.61%	43.90%	36.33%	39.75%	29.96%	40.15%	41.03%
AVE. INVESTMENT PER COURT:												
Buildings	$40,543.28	$37,204.51	$26,654.35	$38,100.00	$36,130.20	$42,933.90	$19,807.18	$17,350.00	$43,584.29	$44,612.09	$34,919.29	$23,300.00
Furniture & Fixtures	9,818.92	8,806.79	6,483.25	7,200.00	7,265.44	6,173.25	3,348.07	4,550.00	7,839.26	7,113.05	8,093.37	5,650.00
Sub-Total	50,362.20	46,011.30	33,137.60	45,300.00	43,395.64	49,107.15	23,150.25	21,900.00	51,423.55	51,725.14	43,012.66	28,950.00
Land	8,425.60	7,400.00	6,295.45	6,200.00	5,139.99	6,265.43	6,573.21	2,700.00	3,573.14	26,098.37	6,204.21	6,250.00
Total Investment	$58,787.80	$53,411.30	$39,433.05	$51,500.00	$48,535.63	$55,372.58	$29,723.46	$24,600.00	$54,996.69	$77,823.51	$49,216.87	$35,200.00
GENERAL STATISTICS:												
Ave. No. Rooms per Court	17	16	16	22	15	19	15	14	25	20	21	22
Percentage of Occupancy	70.17%	63.02%	78.55%	78.60%	69.08%	73.65%	74.64%	87.92%	80.55%	85.81%	89.19%	96.53%
Ave. Daily Rate per Rented Rm.	$3.70	$4.15	$4.47	$2.48	$2.74	$3.58	$3.81	$1.99	$3.16	$3.85	$3.31	$2.02
Ave. Daily Rate per Guest	$1.91	$2.20	$3.32	$1.10	$1.55	$1.91	$1.71	.85	$1.64	$2.11	$2.10	$ .80
Ave. No. Guests per Room	1.94	1.89	1.34	2.25	1.76	1.88	2.23	2.34	1.92	1.82	1.58	2.51

INCOME:	Mountain and Pacific States				Total United States				INCOME:
	1949	1948	1947	1946	1949	1948	1947	1946	
Room Rentals	96.44%	96.49%	92.08%	82.72%	90.86%	86.25%	91.39%	86.98%	Room Rentals
Coffee Room	.14%	.20%	.77%	2.58%	4.03%	7.00%	1.57%	4.93%	Coffee Room
Filling Station	.42%	1.75%	1.51%	8.62%	2.92%	5.11%	2.67%	4.87%	Filling Station
Other Income	3.00%	1.56%	5.64%	6.08%	2.19%	1.64%	4.37%	3.22%	Other Income
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
OPERATING EXPENSES:									**OPERATING EXPENSES:**
Salaries and Wages	11.31%	13.43%	13.28%	10.64%	12.52%	19.39%	13.32%	13.73%	Salaries and Wages
Executive Salaries	3.24%	2.66%	2.60%	1.55%	3.11%	3.42%	2.26%	1.41%	Executive Salaries
Laundry	5.57%	4.47%	4.80%	4.92%	5.43%	4.40%	5.04%	5.22%	Laundry
Linen, China, Glassware	1.31%	4.03%	2.40%	3.72%	1.53%	2.84%	2.35%	3.77%	Linen, China, Glassware
Advertising, Ptg. & Sta.	2.38%	2.72%	2.24%	1.45%	2.58%	2.28%	1.98%	1.34%	Advertising, Ptg. & Sta.
Payroll Taxes, Insurance	.33%	.47%	.73%	.25%	.39%	.45%	.60%	.37%	Payroll Taxes, Insaronce
Heat, Light and Power	6.05%	4.63%	5.62%	6.56%	6.11%	4.87%	5.99%	6.32%	Heat, Light and Power
Repairs and Maintenance	5.74%	6.15%	6.96%	7.39%	4.92%	5.81%	6.84%	6.86%	Repairs and Maintenance
Cleaning & Other Supplies	2.17%	1.16%			2.31%	2.09%			Cleaning & Other Supplies
Telephone & Telegraph	1.15%	.37%			1.01%	.65%			Telephone & Telegraph
Other Operating Expenses	4.56%	3.71%	9.40%	14.78%	5.29%	3.67%	8.71%	9.85%	Other Operating Expenses
Total Operating Expenses	43.81%	43.80%	48.03%	51.26%	45.20%	49.87%	47.09%	48.87%	Total Operating Expenses
GROSS OPERATING PROFIT	56.19%	56.20%	51.97%	48.74%	54.80%	50.13%	52.91%	51.13%	**GROSS OPERATING PROFIT**
CAPITAL EXPENSES:									**CAPITAL EXPENSES:**
Real Estate & Prop. Taxes	2.99%	3.21%	2.71%	2.32%	2.53%	2.83%	2.30%	2.22%	Real Estate & Prop. Taxes
Insurance	2.02%	1.50%	2.32%	1.62%	2.01%	1.73%	2.02%	1.88%	Insurance
Interest	6.32%	5.16%	4.59%	2.62%	5.37%	4.09%	3.58%	2.86%	Interest
Rent	1.84%	.03%	.81%	.31%	.91%	.54%	.65%	.77%	Rent
Depreciation	16.03%	15.04%	10.03%	11.06%	13.59%	12.08%	9.48%	9.97%	Depreciation
Total Capital Expenses	29.20%	24.94%	20.46%	17.93%	24.41%	21.27%	18.03%	17.70%	Total Capital Expenses
NET PROFIT	26.99%	31.26%	31.51%	30.81%	30.39%	28.86%	34.88%	33.43%	**NET PROFIT**
AVE. INVESTMENT PER COURT:									**AVE. INVESTMENT PER COURT:**
Buildings	$39,458.53	$55,481.25	$39,386.33	$26,400.00	$39,563.56	$46,614.41	$32,856.22	$24,500.00	Buildings
Furniture & Fixtures	11,890.33	13,828.84	9,214.93	4,700.00	9,339.91	9,762.22	7,462.10	4,900.00	Furniture & Fixtures
Sub-Total	51,348.86	69,310.00	48,601.26	31,100.00	48,903.47	56,376.63	40,318.32	29,400.00	Sub-Total
Land	9,932.93	10,965.02	12,660.94	6,600.00	7,087.39	12,640.60	9,295.97	5,600.00	Land
Total Investment	$61,281.79	$80,275.11	$61,262.20	$37,700.00	$55,990.86	$69,017.23	$49,614.29	$35,000.00	Total Investment
GENERAL STATISTICS:									**GENERAL STATISTICS:**
Ave. No. Rooms per Court	18	24	23	17	18	20	19	18	Ave. No. Rooms per Court
Percentage of Occupancy	65.00%	90.52%	83.23%	95.94%	69.85%	81.42%	81.40%	92.09%	Percentage of Occupancy
Ave. Daily Rate per Rented Rm.	$4.14	$3.85	$3.71	$2.38	$3.45	$3.95	$3.83	$2.22	Ave. Daily Rate per Rented Rm.
Ave. Daily Rate per Guest	$1.68	$1.68	$2.59	$ .93	$1.70	$1.97	$2.43	$ .90	Ave. Daily Rate per Guest
Ave. No. Guests per Room	2.46	2.29	1.43	2.57	2.03	2.00	1.65	2.47	Ave. No. Guests per Room

FIGURE NO. 6—OPERATION OF A TOURIST COURT
1938-1945 *based on income from room sales only;*
1946-1949 *based on total income from all sources.*

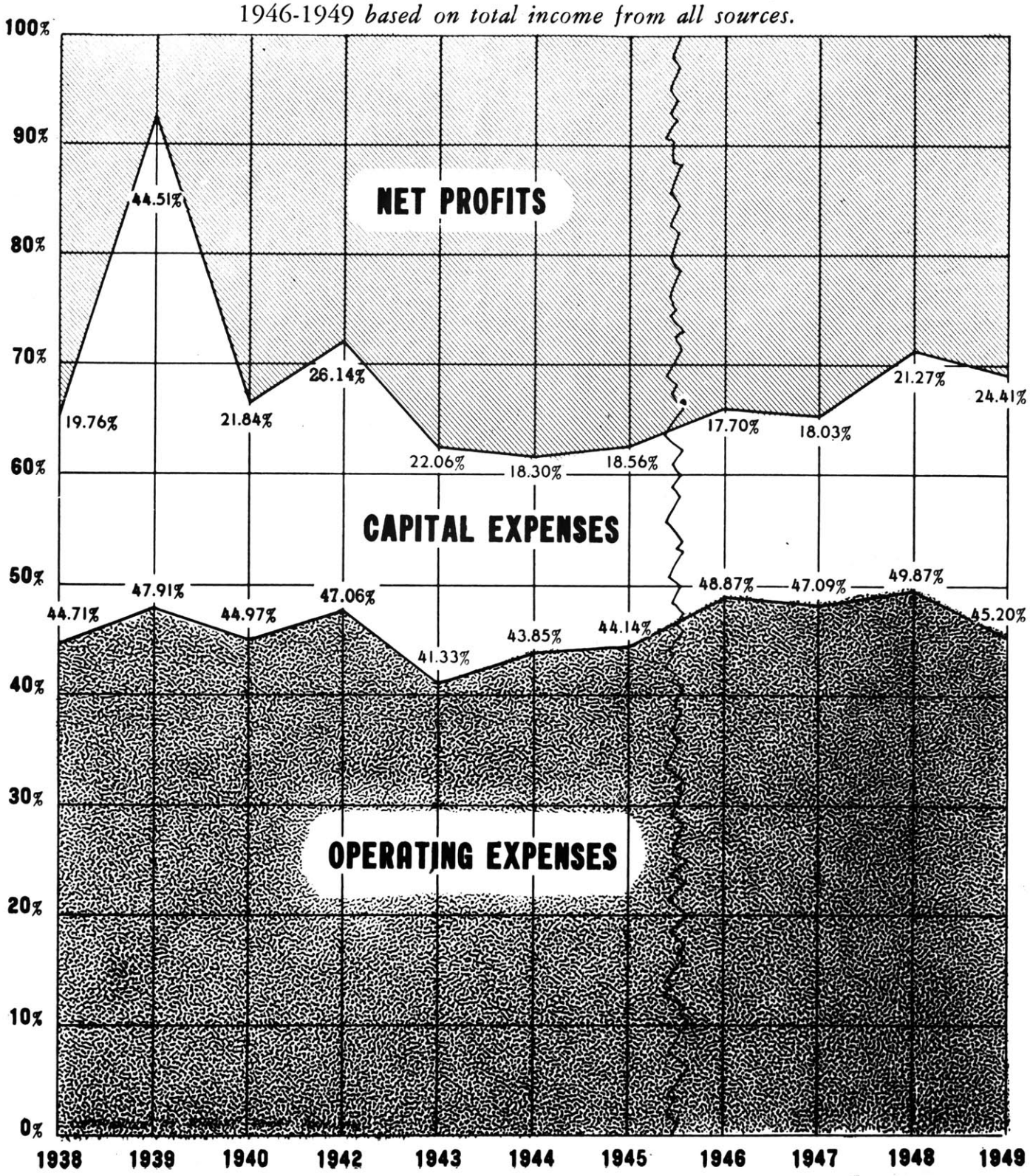
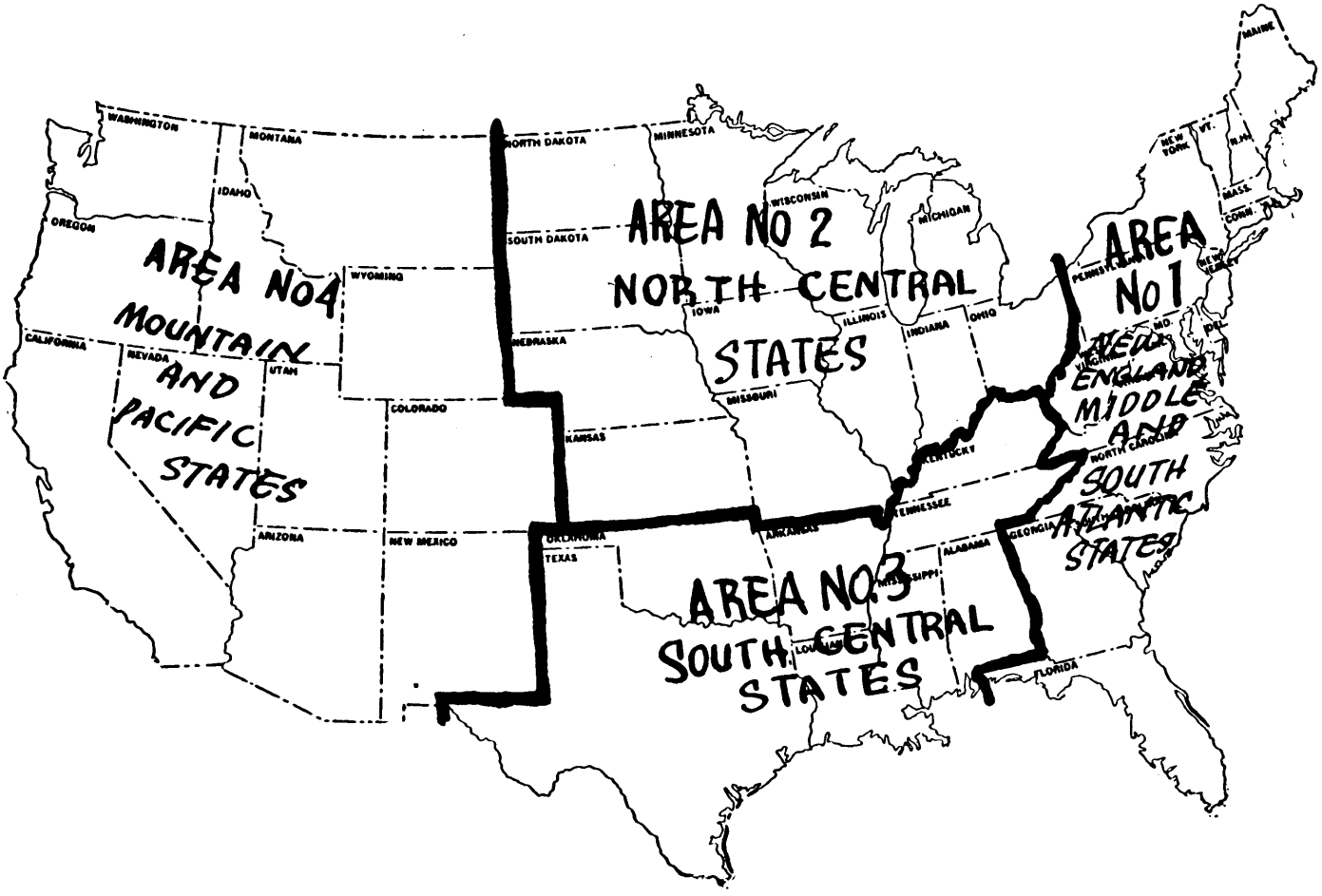
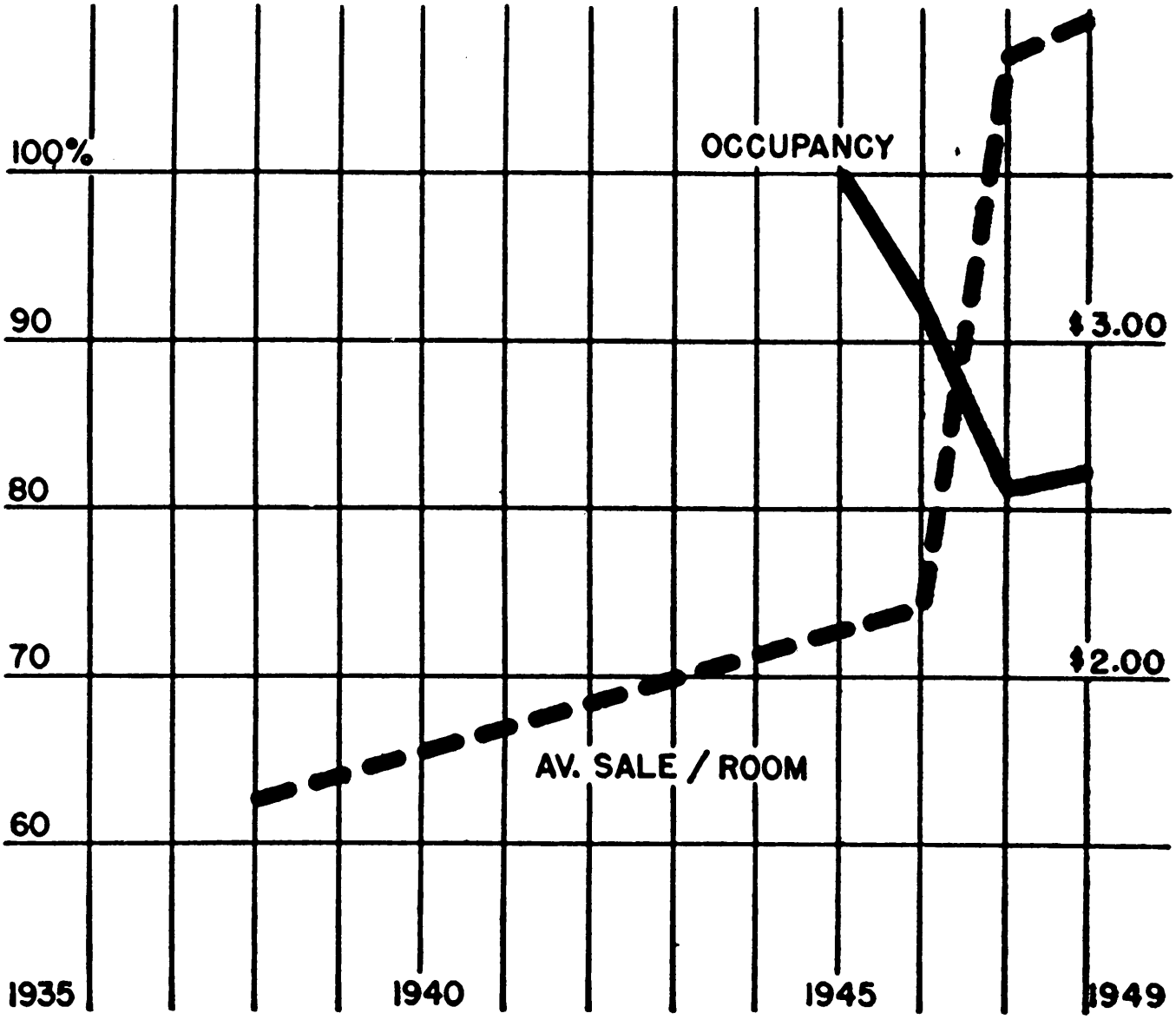


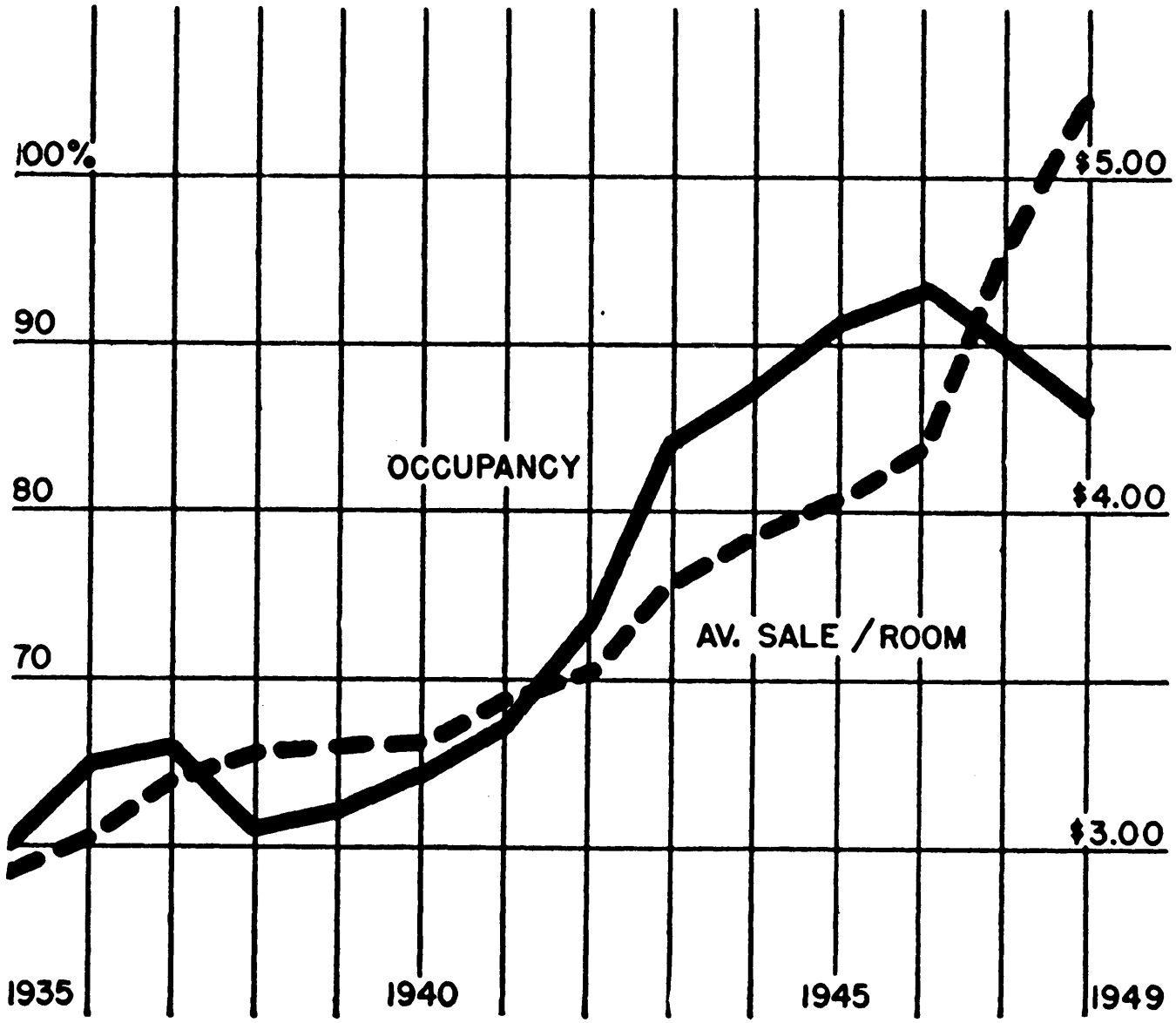
FIGURE NO. 7—AREA BREAKDOWN
(Applying to Figure 5)





MOTEL OCCUPANCY, AVG. SALE PER R'M.

Source: Tourist Court Journal



HOTEL OCCUPANCY, AVG. SALE PER R'M.

Source: Survey of Current Business

Chain System

The tremendous growth of the motel business has been attracting big capital investment. One group under the name of Tourinns is starting an organization which plans to eventually have 90 locations at a cost of better than $300,000 each. Despite the extravagant claims as to the number of these large establishments few have materialized to date. The majority of successful motels today are run by an energetic husband and wife team. On the basis of a number of studies, the New York firm of hotel accountants, Horwath & Horwath, list the following disadvantages of the chain system: non-resident-owner operation; difficulty of maintaining standards; long hours and the possibility of organized 3-shift labor working against a chain. Most of these are overcome by a franchise type of organization with profit-sharing, owner-managers and with the advantages of mass buying, financing, and advertising. Examples of this method in use today are the oil company gas stations and Howard Johnson Restaurant franchise. It seems logical that the highway motel chain (as distinguished from the resort motel) should attempt to get the most money and not the big money. Statler Hotels, Bond bread, Ford cars, and Howard Johnson Restaurants are all products designed to do this--none may cause excitement but all are so completely averaged out that there is nothing to cause displeasure. For successful chain operation it is necessary to establish an atmosphere which is characteristic of all and every establishment. Moving from one Statler Hotel to another one always finds the same competent

services, the morning paper, the Servidor, and the Cafe Rouge.

An experienced hotel architect explains that the traditional minimum hotel size of 100 rooms is based on the fact that the minimum staff required for competent service can handle up to this number of rooms. Any smaller number of rooms would remove only maids, the lowest paid employees, from the payroll. Obviously a correct balance of earning capacity to payroll is necessary.

Also it is important in all phases to consider the relationship between operating efficiency and capital expenditure. An initial saving at the expense of the former will be spent many times during the life of the motel. Because of the high cost of construction at the present time a new motel will be compelled to charge higher rates than those built years ago, and top quality facilities must be provided to justify these rates to the motorist. Even so, these rates should be below those of the first rate hotels in the area.

Restaurants and Gasoline Stations

Coffee shops have long been excellent income producers for hotel operators and there is every indication that they can be an important feature of the motel. Many small operators fear their lack of experience would cause them to lose money, or that potential room guests might be lost if they were dissatisfied with the food. These possibilities seem very unlikely in a well-organized chain system with experienced personnel. The coffee shop type of installation seems to be more correctly related to the highway mo-

tel than does the restaurant with complete facilities and high overhead. The latter could always be a future addition, depending upon existing competition in the immediate vicinity and the ability to draw customers from surrounding towns or neighborhoods, and from highway travelers other than overnight guests. When eating facilities are provided guests will expect them to be open early in the morning and late at night thereby requiring a flexible installation that can be operated by a minimum number of employees during slack periods. Where kitchenettes are provided in rental units a limited number of food supplies could be handled by the coffee shop.[15]

The gasoline station like the coffee shop should only be included in a motel project if it is possible to relate it to the rental units in such a way that it can function adequately at all hours without disturbing the guests.

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15. A 1950 survey of the motel market by the American Motel Magazine shows that some financial institutions will refuse loans unless a certain percentage of the rental units have kitchenettes.

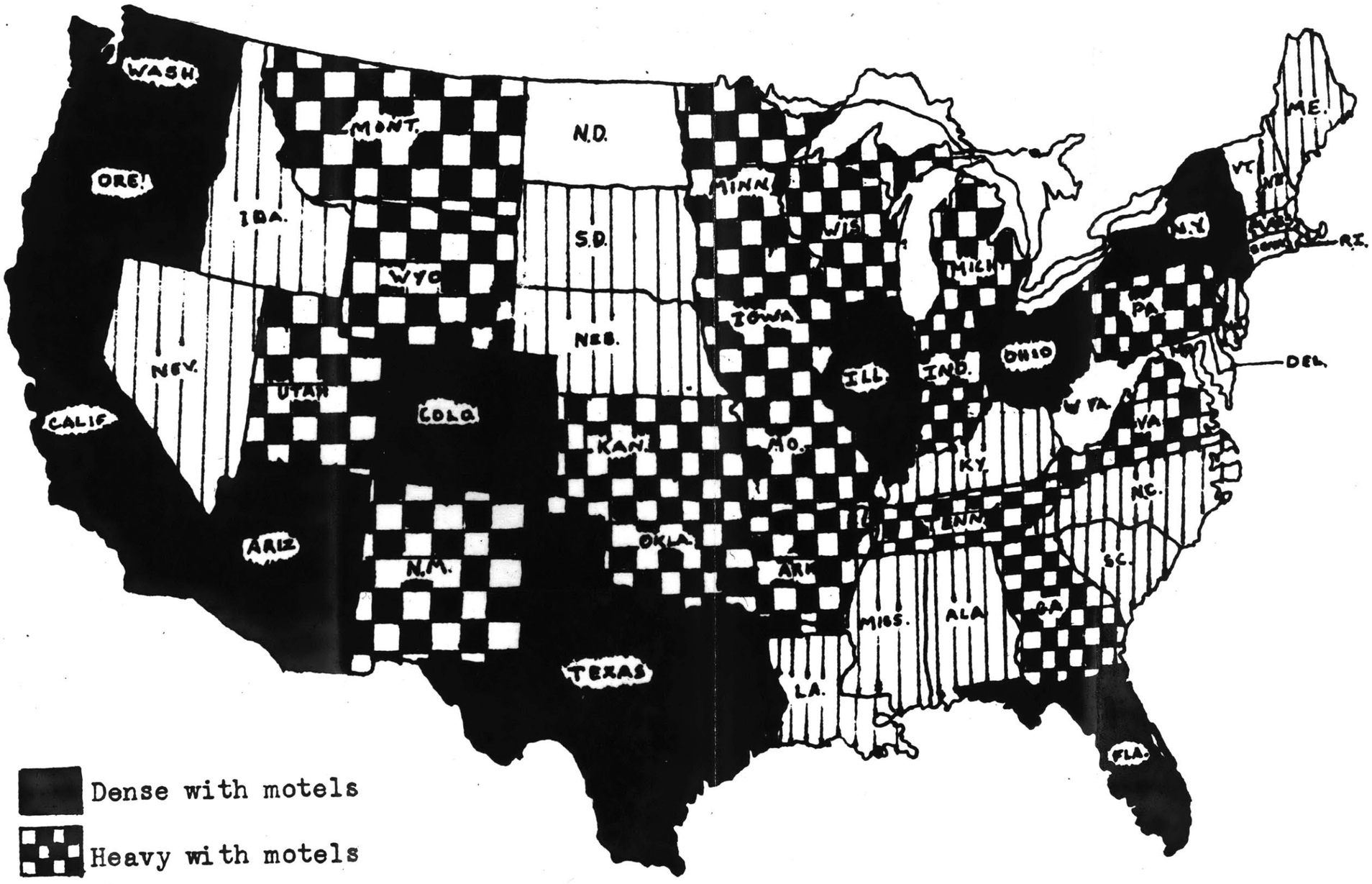
SITE SELECTION

The factors presented here and considered specifically in the selection of the site for the initial motel in the proposed chain system would in general be similar to those used in the evaluation of future sites.

New England was chosen as the area for starting the chain system because of the need for the types of facilities offered by the motel and the proximity of the client's present construction operations. A check of various surveys show that New England has a lower motel density than other sections of the country while the traffic flow is very high. [16] Existing motels in this area are usually small groups of cabin-type buildings, most of which do not operate during the winter months or qualify for listing with AAA or Duncan Hines. In Massachusetts approximately 30 are listed by these two sources and the majority of these are vacation cottages on Cape Cod or in the Berkshires rather than highway motels. In the Boston area only one was found worthy of listing.

Boston, because of its size and historical attractions, as well as its lack of high quality motel facilities, was chosen as the locality near which the first motel should be located. Since these motels are to be operated on a year around basis, sites should be located within convenient driving distance of cities for the businessmen and sightseeing tourists who are apt to stay for more than one night. On the east coast where the distance between cities is never

16. See Density Charts, pages 42, 43.



Dense with motels

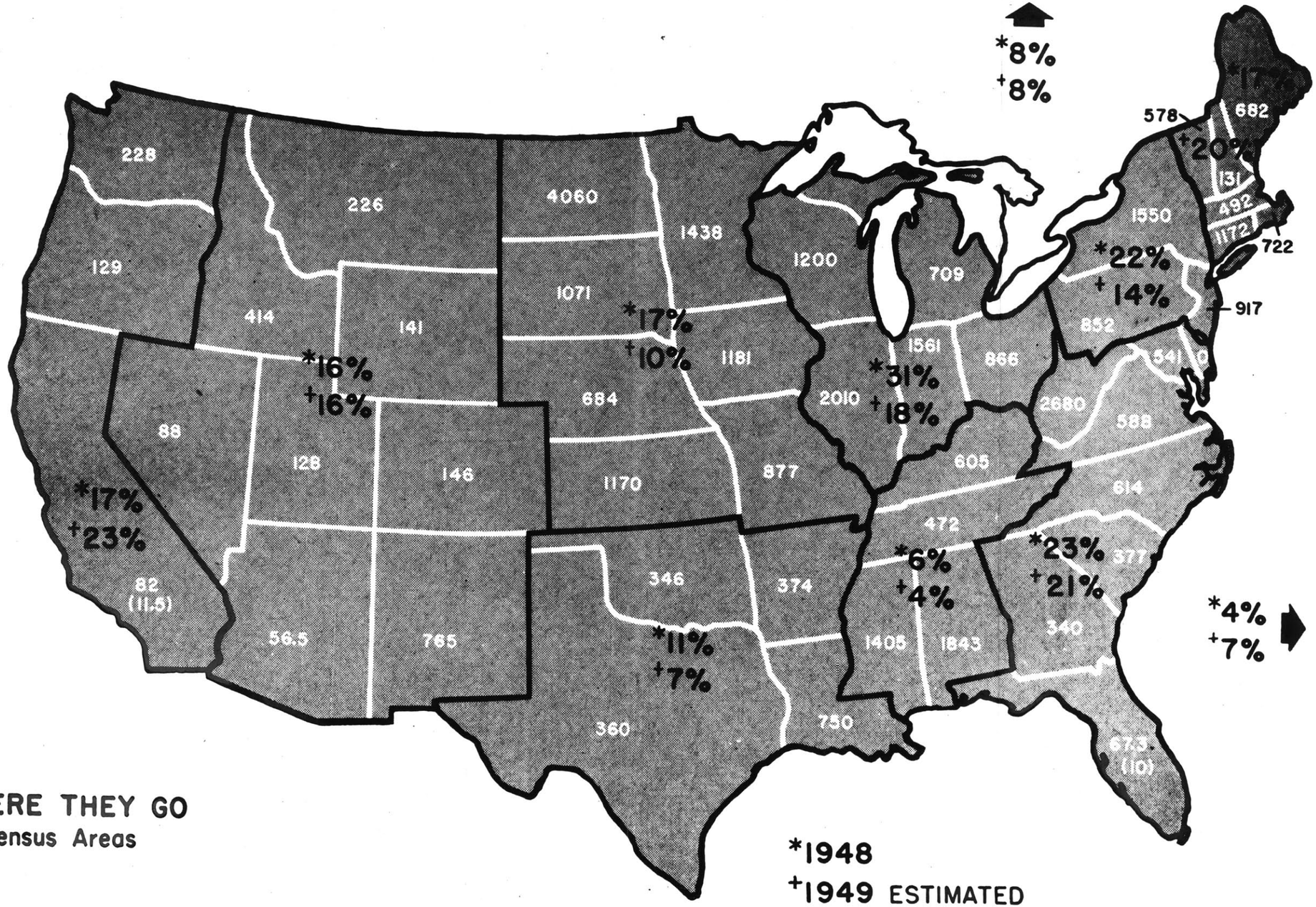
Heavy with motels

Medium with motels

Light with motels

MOTEL DENSITIES

Source: American Motel Magazine



WHERE THEY GO
By Census Areas

Small figures show motel density (ratio, total rural surfaced highway mileage to number motels listed by A.A.A. — and for Fla. and Calif., total courts). Large figures: where vacation travelers go

*1948
+1949 ESTIMATED

more than an average day's ride there seems to be little argument for placing motels at the intersections of main highways as is done in the west where stop-overs are necessary between cities and points of interest.

The location of the initial site is on highway 9, the Worcester Turnpike, astride the Framingham - Natick town line. [17] Points which determined the selection of this specific site are listed below.

Relation of Site to Highway

1. Main highways 15 and US 20 to Boston from the south and west funnel into route 9.
2. The site is on the right hand side of the highway going toward Boston, and adequate frontage if available on a straight stretch of road.
3. The distance to Boston is 18 miles and suburban communities can be easily reached via the circumferential highway 128.
4. A traffic count made by the Massachusetts Department of Public Works at the approximate location of the site indicates that the average total number of passenger cars passing in a 24-hour period is 14,460. There are 8,007 traveling toward Boston and 6,453 away from Boston. From studies made by the Department of Public Works it can be estimated that approximately 30% of these cars are passing the site between 4 p.m.

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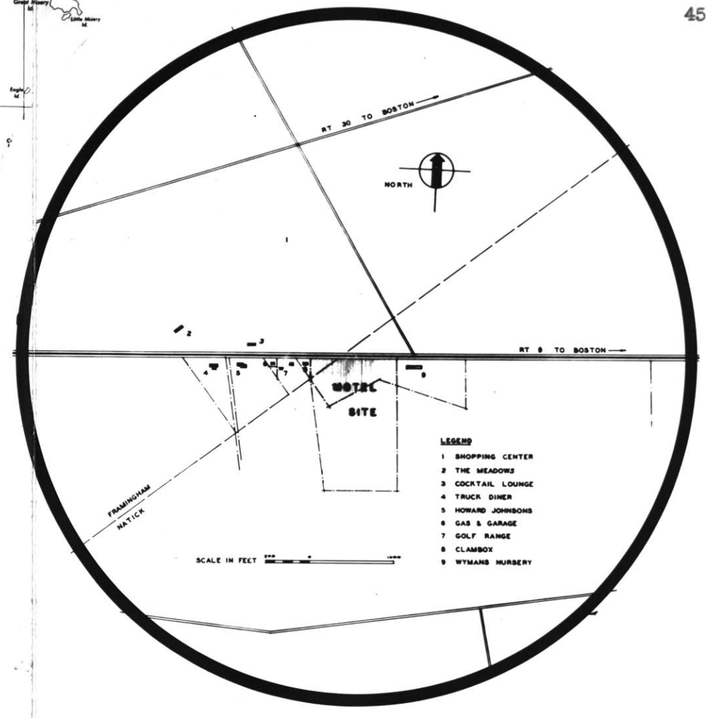
17. See map, page 45.



U.S. ROUTE 1

PROPOSED EXTENSION CHARLES RIVER EXPRESSWAY

ROUTE 128 CIRCUMFERENTIAL HIGHWAY

ROUTE 9

and midnight, the hours when travelers are most likely to be looking for overnight accommodations. Approximately 2,200 out-of-state cars are estimated to pass the site daily. [18] A check with other commercial establishments in the vicinity of the site revealed that many travelers stop daily to inquire about overnight accommodations.

5. The new circumferential highway 128 and the new turnpike replacing route 15 which connects with the Connecticut parkways should draw traffic traveling to and from points north of Boston. At present much of this traffic uses conjested US 1 through the metropolitan area. This is one reason that a site location near the junction of US 1 and 128 was disregarded. Also, despite a high traffic count at this intersection, much of the travel was found to consist of daily trips between Providence and Boston. An ideal location would be near the intersection of routes 9 and 128, but this is in a densely populated area and no land is available. The actual site selected is among the first available sites west of this intersection.
6. The current federal, state, and local highway and traffic planning programs have no proposals for the next fifteen to twenty years which would be seriously

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18. See Traffic Count chart, page 47.

Commonwealth of Massachusetts Department of Public Works

TRAFFIC MOVEMENT SUMMARY TABLE
(Copy)

Date 3/8/50 Location Route 9 City or Town Framingham

Day of Week Wednesday Weather Clear

	Passenger Cars	East Bound	West Bound
11:30-12:00 a.m.		163	162
12:00-12:30 p.m.		142	151
12:30- 1:00 "		165	145
1:00- 1:30 "		172	152
1:30- 2:00 "		190	151
2:00- 2:30 "		198	172
2:30- 3:00 "		183	166
3:00- 3:30 "		243	168
3:30- 4:00 "		245	174
4:00- 4:30 "		250	201
4:30- 5:00 "		410	276
5:00- 5:30 "		308	233
Total		2669	2151

Calculations Based On Information Supplied By

Department of Public Works

Six hour afternoon count times 3 equals a twenty-four hour count.

2669 x 3 = 8007 east bound

2151 x 3 = 6453 west bound

14,460 total

30 per cent of this total, or approximately 4300 cars, are estimated to be passing the site between 4:00 p.m. and midnight.

15 per cent of this total, or approximately 2200 cars, are estimated to be from out of state.

Travel Study

In a study made in 1949 by the Bureau of Public Roads, Washington, D. C. the trend of traffic count on "rural highways" set up a definite pattern. The percentages of "foreign car count" are shown below. A "foreign car" is a passenger car bearing a license of a state other than the one in which the count is being made.

It will be noted that in the smaller Northeastern States the percentages are greater than in some of the areas with larger states. In evaluating this information with regard to motel locations these factors should be kept in mind.

Regions	Percentage
New England.	25.38
Middle Atlantic	16.07
South Atlantic	19.03
East North Central	20.74
East South Central	22.46
West North Central	15.41
West South Central	15.04
Mountain	34.24
Pacific	10.56

harmful to the operation of a motel at this site. An increase in traffic flow could be expected during this period if the Charles River Expressway, now under construction, is extended to Norumbega Park as proposed in the Master Highway Plan for the Boston area.[19] (This plan was prepared for the Massachusetts Department of Public Works by the engineering firm of Charles A. Maguire and Associates.) It is the opinion of state highway officials that the time required for initiation and construction of this project is at least fifteen years.

Although nothing has been placed on paper as yet, these same administrators feel that upon completion of the Charles River Expressway a new Western Expressway, continuing on from Norumbega Park, should be constructed to replace route 9 which is already becoming congested in outlying sections as a result of intensive ribbon development. The suggested location for this Western Expressway is approximately that of the present route 30, along which the problem of land acquisition would be least acute. This routing is in accordance with the National System of Interstate Highways of which it would be a part. [20] All highways in this system

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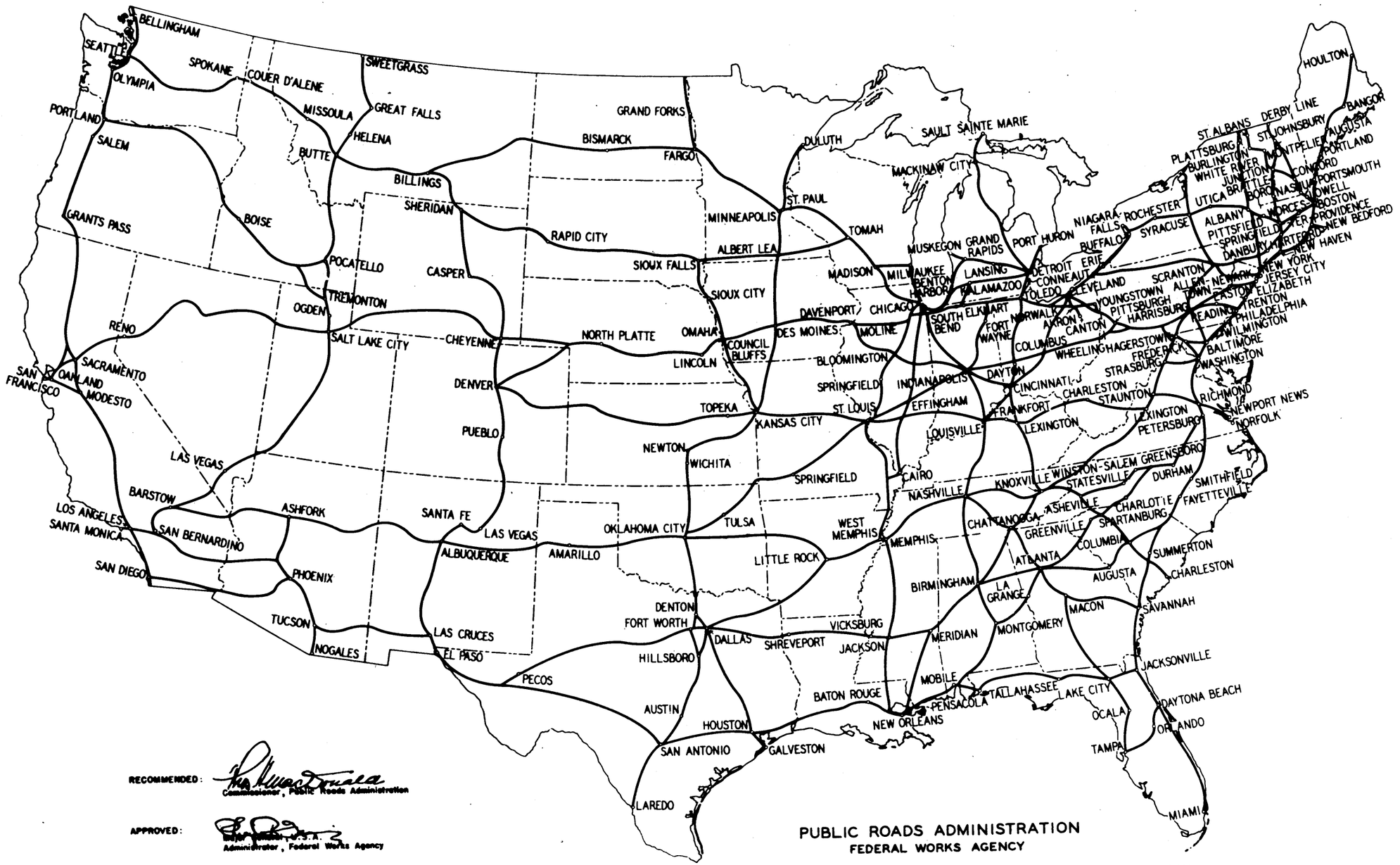
19. See map, page 45.

20. See map, page 49.



RECOMMENDED:
Commissioner, Public Roads Administration

APPROVED:
Administrator, Federal Works Agency

PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

NATIONAL SYSTEM OF INTERSTATE HIGHWAYS

SELECTED BY JOINT ACTION OF THE SEVERAL STATE HIGHWAY DEPARTMENTS
AS MODIFIED AND APPROVED
BY THE ADMINISTRATOR, FEDERAL WORKS AGENCY
AUGUST 2, 1947

P-5593

are to be of the limited access type and follow the recommendations made by the National Interregional Highway Committee, [21] and the Public Roads Administration for marginal land acquisition or control by public authorities. In view of this the fact that some twenty years hence the proposed motel site might be as much as two miles from the main interregional highway does not seem to be a serious disadvantage.

Site Characteristics

1. Land is flat, avoiding acute highway noise and stopping problems, and expensive grading, foundations, and driveway construction on the site.
2. Cost of land is relatively high, but this is balanced to some extent by the availability of all public utilities, fire and police protection, and other public services.
3. The portion of the site in Framingham is zoned for business, but the section in Natick will require approval of the type of business by the zoning board and a change in the zoning classification. Although this may require some time, there seems to be little doubt that it could be accomplished since other sites along this same highway have recently achieved this objective. Initial land acquis-

21. Interregional Highways, 1944 Report. (House Document No. 379 78th Congress, 2nd Session). Public Roads Administration, Federal Works Agency, 1944.

ition should be of sufficient size to allow for expansion or options for purchase should be obtained on the property desired for future use.

4. Along the highway the site is bounded by Wyman's Nurseries and greenhouse on one side, and by the Clambox eating establishment on the other. A dense growth of trees and shrubs on the portion of the site next to the Clambox screen its parking and service areas, while the nursery should be a desirable feature in itself.

   Also in the immediate vicinity are Ken's Cocktail Lounge, The Meadows (a firstclass roadhouse nightclub), a new eight million dollar shopping center which includes a movie theater and some thirty stores presently being constructed by the Middlesex Trust and the National Suburban Centers organizations, a Howard Johnson Restaurant, a truck diner, a filling station and garage, and a golf driving range.

5. While many cheap cabins are located further west on route 9 only the Sunset Plaza Tourist Court is between the proposed site and the center of Boston in Natick at the route 27 junction. Although this court is given a "good" rating by the AAA, it is completely hidden from the road and directly behind a mediocre diner and a noisy filling station. The rooms themselves seem to be the basis of this "good" rating,

while the site and design have much to be desired. The 36 rooms are paired in small, poorly designed but well constructed stucco bungalows, spaced approximately 10 feet apart around an open air gravel parking lot. The operator of this court reports a high ratio of business guests.

ARCHITECTURAL PROGRAM

The following program is in part based on a check list for motel construction which was prepared by Frederic Arden Pawley for publication in Hotel Management Magazine and the Architectural Record, and on information contained in the United States Department of Commerce book, Establishing and Operating a Year-Round Motor Court. While this program is intended to be a general one in order to make it applicable to other sites in a chain system, certain phases are necessarily treated more specifically. Various operational items have also been included to indicate the scope of services and conveniences which can be offered.

General Planning

Number of Units: Initial construction (Stage One) of 100 rental units is large enough for economical volume-production by the builder, and if it is feasible the future expansion (Stage Two) to a proposed total of approximately 200 units should be undertaken at one time.

Expansion: This should be horizontal, by additional structures rather than by additions to existing buildings, except for the restuarant. There are few two-story motels despite possible construction and maintenance economics, and in view of the large

number of units in the project this type should be considered as the means of obtaining more efficient land use. An ultimate plan should be visualized at the start of the project in order to avoid eventual crowding with poor access and other bad relationships. It should include all proposed rental units, administrative and maintenance facilities, restaurants and filling stations.

Flexibility and Variety: Flexible planning is involved in providing for off-season closing of certain units, a good argument for dividing the total number of rental units into groups of four, six, eight, twelve and sixteen to a building with separate utilities or cut-offs for each building. Attempts to achieve variety by architectural tricks soon become dated and lose their appeal. Combining small individual cabins with an economical driveway system has produced most of the monotonous and unattractive motels on the highways today. Multi-unit buildings present more imposing and interesting masses from the highway and are less expensive to build than the separate units.

Circulation: Climate considerations will affect planning of circulation. Covered access to rooms should be provided for guests and maids.

Character: This should be developed in all phases of planning and operation. Character could be obtained by using certain features repeatedly throughout the chain system. However, these

should be of a subtle nature, not orange roofs, cupolas, or gaudy signs.

Site Plan

Entrance: Access should be easy from either side of the road. Highway frontages and sight distances for motorist are important factors in stopping cars. A car going 60 miles per hour will stop comfortably in about 400 feet. (One going 40 miles per hour, 200 feet.) Relationship of entrances to filling stations and restaurant to main motel entrance is important.

Driveways and Parking: Plan driveways and parking for operation and appearance.

1. Route first to the office with local temporary parking, then to parking space, carports or garages and finally to exit.
2. Curved alignments, cul de sac's, staggered setbacks and angular placement of buildings can be used to increase privacy and improve building orientation as well as to break up the rigidity of the traditional U-shaped "tourist court" plot plan. A difficult and important problem to solve is that of providing enough of a view of the rental units from the highway to attract guests without depriving them of the advantages of the suburban or country surroundings or subjecting them to the highway noises. Every effort should be directed to assure the motorist that the motel is not a hideaway which is characterized by the problems of social mobility mentioned previously.

3. Plan driveways to avoid the rake of car headlights across bedroom windows.

4. Hard surfaced driveways and parking areas reduce noise, dust, and room maintenance. Blacktop decreases sunlight glare and bad appearance of oil drippings. The drainage of driveways, parking areas and general site is extremely important, reducing maintenance as guests enter rooms directly from outdoors. There is also a psychologically bad effect in driving into a motor court on a rainy evening and finding pools of water everywhere.

Landscaping: Trees, shrubs, flowers, lawns and every natural feature should be exploited for its attraction value and made easy and economical to maintain. Landscaping can also cut off undesirable views, afford windbreaks, shade, background and some degree of noise screening. Vern O. Knudsen states that "hedges or trees with dense foliage act as sound absorbers and reflectors, and their effectiveness increases with the extent (thickness, height, and density) of growth. A cypress hedge 2 feet thick has sound-obstructing value of about 4 db." [22] Local and regional planting varieties and schedules, required amount of water, help for maintenance, planning and details to facilitate maintenance, are all factors which in these large-scale projects indicate the desirability of retaining a landscape architect, at least as a consultant.

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22. Knudsen, Vern O. and Harris, Cyril M., Acoustical Designing In Architecture, New York 1950, p. 223.

Administration

Covered Drive: For the protection of guests, for discouraging trucks.

Lobby: For guest registration, rent payment, information, waiting, and for convenience sales.

Office: This is for the safe, bookkeeping, purchasing, publicity, etc. Careful planning can permit the manager to oversee many functions of operation and save considerable time and effort in supervision.

Sample Rooms: A room located off the lobby seems justified in a project of this size. It should be similar to the unit of which there are the largest number, while models of other types could be on display.

Lounge: Common space which guests may use if they wish for social purposes, reading, letter writing, and waiting. It should have comfortable durable furnishings, good lighting, and may have a radio, television, bridge tables, desks.

Public Toilets: These may be located to serve both the restaurant and administration building.

Telephone Switchboard: Complete telephone service throughout the rental units is proposed as a bid for traveling salesmen.

Other Facilities: Telephone booths, utility room, etc.

Maintenance

Linen: Operators are agreed on the desirability of a central linen storage room under strict supervision. This should contain sewing facilities and be located adjacent to the laundry. Local, locked linen and room supplies should be provided for each maid. These should include space for:

sheets	tissue
pillow cases	matches
face towels	writing materials
bath towels	postcards
bath mats	paper cups
soap	sterilized glasses

There should be a minimum of four sets of everything changed daily for each room. This means one set will be in use, one in the laundry, and two on the shelves. Usual maid allowance is one for each ten rooms, including those necessary during the heavy arrival hours to answer requests for extra cots, blankets, towels, etc.

Housekeeping storage: For cots and rolling utility beds, mattreses, and pillows. Also used for cleaning equipment and supplies, floor maintenance appliances, slop sinks, and specially designed maid's carts with shelves and racks for linen and room supplies, cleaning supplies and equipment.

Shop: For repairs and maintenance--electrical, plumbing, heating, painting, glazing, furniture, etc.

General Storage: For grounds equipment (mowers, hand tools,

ladders, snow plow, shovels), garden furniture, recreational equipment. Jeeps or small trucks should be equipped for snow plowing, distributing linen and supplies, repairs, and possibly a limited amount of room service.

Rental Units

Identification of Units: Signs throughout the site, at parking places and on room doors should be designed to permit guests to orient themselves easily.

Planning and Flexibility: Some buildings should be planned so that adjacent rental units can be converted into two or three room suites, or used as apartments in times of changing business due to a depression, housing shortage, or emergency which would limit use of cars. The current trend is to make all rooms large enough for two double beds whether furnished that way or not. Single rooms provided primarily for traveling salesmen should also be large enough for refurnishing as doubles. Acceptable double-room sizes range from 14 x 14 (196 square feet) to 16 x 18 (288 square feet), exclusive of baths and closets. These are larger than the average city hotel double rooms and give the motel another selling point.

The following table gives average room sizes which are to be found in transient hotels.

HOTEL BEDROOMS [23]

Approximate Room Sizes

Rooms	Square Feet Minimum	Square Feet Maximum
Single bedrooms	80	120
Double bedrooms	120	240
Twin bedrooms	160	260
Sample rooms	210	360
Parlors	160	260
Suite combination rooms:		
Living rooms	160	260
Double bedrooms	120	240
Twin bedrooms	160	260
Baths and closets*		
Bathroom - tub, with shower	28	37
Bathroom - tub, separate shower	40	45
Bathroom - shower only	20	35
Recess for basin	3	6
Dressing rooms	30	40
Wardrobe closets	3¼	20
Closets for folding built-in beds:		
Double bed	12¼	18 3/4
Individual twin bed	6	13 3/4

*Bath and closet areas are additional to room areas. These averages have been taken from sizes of modern transient hotels in actual operation. Resort- and apartment-hotel sizes are slightly more.

Closets: Since the majority of business is made up of one-night guests, closet space can be kept to a minimum, but adequate space for luggage layout and storage should be provided.

Furniture and Furnishings: It is important to recognize the trend toward the convertable living room-bedroom in the newer motels and hotels and plan rooms of this type in order to avoid early obsolescence. Extra bed capacity can be provided by sofa beds or folding utility beds, which can be rolled easily on large rubber casters. The idea that a psychological, home-like effect is gained

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23. Time-Saver Standards, F.W. Dodge Corp., New York, 1946. P. 172.

by the provision of a full size dresser and other elaborate furnishings which are never used by guests should be discarded. Combining and building in as much furniture and lighting as possible will ease maintenance and produce a safer, more livable room. Venetian blinds, with or without draperies, are still considered essential for privacy and maximum ventilation. These blinds are always difficult to clean and absorb and re-radiate solar heat inside the room, but at present there is no inexpensive substitute product for the light control they provide when the conventional window must be opened and privacy and ventilation maintained.

Bathrooms: All tile bathrooms (about $400 for tile work) are required for top grading by the better associations because of superior maintenance. A new prefabricated bathroom currently being introduced on the market by the Fiat Manufacturing Company has a maintenance rating much higher than the conventional tile bathroom and the cost is considerably less.

Kitchens: Units should be interspersed throughout the project rather than grouped in one location so that individual buildings may be shut off and still retain a variety of types of units. This would also facilitate conversion of units into apartment use.

Weather: Studied location and window area, provisions of calculated roof overhangs for sun control and considerations of pre-

vailing seasonal winds can make considerable difference in heat load and summer and winter comfort. Planning for cross-ventilation is recognized in motel publicity as a selling point the city hotel can offer to only a few guests.

Sound Control: "The acoustical problem in guest rooms is primarily one of sound insulation. The amount of insulation between adjacent rooms in a hotel usually is determined by the window route if open windows are depended on for ventilation. Under such circumstances, the T. L. (transmission loss) would be less than 25 db; little would be gained by providing walls with a high T. L." [24] Careful consideration should be given to the location of windows in relation to noise from adjacent rooms and from street noise. Some help can be gained by having windows open in such a way that the panes reflect sound away from the windows of the adjacent room. T. L. is only 20 db where separate guest rooms are connected by ordinary door construction. In two story buildings where mill construction is used, the impact noise reduction is extremely important. Floor wearing surfaces should be chosen which will muffle impacts against them.

Heating: For floor slab on grade construction a radiant panel system is proposed. Many engineers prefer ceiling panels because the time lag in heating and cooling is less, but in this construction floors would likely be cold. A room temperature of 45° to

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24. Knudsen and Harris, op. cit., p. 372.

prevent freezing of pipes means that the floor slab would be at approximately 70°. The only really serious time lag occurs when the slab becomes completely cold. It is presumed that demands could be anticipated accurately enought to always have ready several rooms at comfortable temperatures. In general, however, even if the temperature is lower, a radiantly heated room is more comfortable than one which has been quickly warmed by radiators or hot air registers.

Parking: Ultra violet rays of sunlight, condensation of dew, evaporation of rain, freezing and thawing of snow and ice, spotting by birds, trees and insects are all harmful to automobile finishes. These destructive elements plus the desirability of unpacking the car and getting the luggage to the room while under cover indicate a need for at least the carport type of shelter.

Construction

The present proved cost-cutting techniques and materials in use by the builder should be given careful consideration in the development of new methods of construction. Typical examples of the various savings which he gains are contained in the results of the national poll conducted by the Architectural Forum. These findings are shown on the following page.

Techniques and Materials Used to Reduce Costs
Listed in Order of Their Dollar-and-Cents Importance [25]

Power tools	11%	
Precutting of lumber	11%	
Preassembly of parts	7%	35%
Site fabrication	6%	
Close supervision	14%	
Dry wall construction	12%	
Quantity buying	7%	
Volume production	4%	11%
Standardization of parts	5%	
Uniformity of design	3%	8%
Slab floor construction	6%	
Asphalt tile flooring	2%	8%
Subcontracting	4%	
Asbestos cement siding	4%	
No subcontracting	2%	
Forced air heating	1%	
Prefabricated parts	1%	

Mill Type Construction: Standard mill construction was originally used in the building of the textile mills in New England but the relatively close column spacing required has prevented its use in housing the modern industrial processes which have developed. In 1938 the National Lumber Manufacturer's Association made a comprehensive study of the use of a plank and beam floor and roof system for residential construction. The costs of a floor using 6 foot plank spans were compared with a standard joisted construction from data collected in the building of the Fairway Hills Laboratory Community near Washington, D. C. Both types of floors were built by the same workmen under similar conditions. The following comparative data covers construction from the top of the rough floor, including sills, headers, beams, sheathing, siding,

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25. "Merchant Builder Survey", Architectural Forum, April 1950, p. 94.

bridging and man-time.

Per Square Foot of Floor Construction [26]

Item	Plank Floor	Average of Two Joisted Floors	Saving by Use of Plank Floor
Labor time	2.35 minutes	3.165 minutes	26.3%
Lbr.required	2.88 bd. ft.	3.375 bd. ft.	14.7%
Lumber cost	$.0828	$.1102	24.8%
Total cost	$.12	$.1550	22.6%
Heat Loss	.236 B.T.U.	.314 B.T.U.	24.8%

Per Thousand Board Feet of Lumber

Item	Plank Floor	Joisted Floor	Saving by Use of Plank Floor
Labor time	810 minutes (13.5 hrs.)	938 minutes (15.625 hrs.)	13.6%

These savings become even more impressive when it is noted that the plank and beam floor was the first these carpenters had built while they had constructed many joisted floors. The following are some of the advantages of the plank and beam system as listed by the National Lumber Manufacturers Association. [27]

1. The number of peices which the carpenter must handle, saw, align and nail are reduced, e. g., for a floor with 6 ft. plank spans only about one-fourth as many beams (joists) are set.
2. There are fewer points at which the floor must be nailed to the supporting beams.
3. No bridging is required because the ratio of width-to-depth

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26. "Plank-and-Beam Floor and Roof System For Residential Construction", a National Lumber Manufacturer's Publication, 1940. P. 3.

27. Ibid.

of beam is low, and the planking provides stiff lateral support for the beams.

4. Less lumber is required for the beams because ordinarily a more efficient design is possible, i. e., the lumber can be stressed more nearly up to its safe working stress. Beam sizes may be chosen from a greater number of commercial sizes and therefore with less excess of material.
5. A larger percentage of lower grades of lumber can be used.
6. Increased insulation is provided without extra cost.
7. Waste of material is reduced by the use of multiples of standard lumber lengths.
8. Fewer different lengths and sizes of lumber are handled and placed.
9. The construction details of the framework are, in general, simpler.
10. The exterior wall height and over-all height of building for the same ceiling heights are reduced as the ceiling height is taken from floor to the exposed ceiling surface between beams. This means there is more usable cubage in a house of the same size or the same usable cubage in a house of smaller size. The reduced building height and reduced distances from the floors to the ground afford savings in paint, siding, sheathing, framing, stairs, chimney, downspouting, and exterior steps.
11. The layer of finish ceiling material such as lath and plaster

may be eliminated because the underside of the plank will serve as a finished ceiling.

The wall type proposed and used with the plank and beam floor and roof system by NLMA is the typical stud wall. Since the structural requirments in mill construction can largely be met by just the planks, beams, and posts, the use of studs which are structural members themselves, to support only the enclosing materials is uneconomical. The possible substitutes for the job done by the many pieces and layers of material in the stud wal include plank sidewalls and the many types of certain wall panels now available.

Restaurant and Gasoline Station

In view of the competition from other eating establishments in the vicinity of the site chosen for the initial motel, construction of the restaurant should not be undertaken until the additional rental units in Stage Two are being built. At this time, when the motel is 80% full, there would be approximately 240 potential guests who might patronize the restaurant, and 160 cars which might stop at the filling station. A seating capacity of 35 should be adequate for initial operations, but site planning should allow for expansion. Peak volume of business will be at breakfast since the majority of guests will have left the motel by noon and many guests will stop for supper before arriving at motel. Counter-type seating gives a quicker

turnover, provides the greatest operating flexibility, and is in character with the type of meals and fountain service which will be offered.

A two-pump gasoline station should also be constructed in Stage Two with facilities for lubrication and tire repair.

Investment and Operating Costs - Stage I

1. Investment:

Buildings	$306,000
Furniture, fixtures	61,200
Sub-total	$367,200
Land (Stage I and II)	100,000
TOTAL INVESTMENT	$467,200

2. Room sales, expenses and profits:

Assuming 85% occupancy or 86 room sales per night, the annual room sales total is

86 x $5.00 x 365 days = $157,000

Room Sales		$157,000
Operating Expenses:		
Salaries and Wages	$23,100	
Executive Salaries	2,670	
Laundry	9,250	
Linen, China Replacement	2,840	
Cleaning	3,220	
Printing, Stationery, Advertising	3,580	
Telephone, Telegraph, Postage	1,510	
Utilities	12,100	
Repairs	7,020	
Other Expenses	7,475	
TOTAL OPERATING EXPENSES		$72,765
Capital Expenses:		
Taxes	5,900	
Insurance	3,850	
Rent	785	
Interest	6,700	
Depreciation	21,000	
TOTAL CAPITAL EXPENSES		38,235
TOTAL EXPENSES		$111,000
NET PROFIT - ROOM SALES		46,000

Net Profit is 29.3% of income from room sales, and approximately 10% on the original investment.

APPENDIX

HOUSE BEAUTIFUL
CLIMATE CONTROL GUIDE

SOLAR ANALYSIS

BASED ON U S WEATHER BUREAU DATA — INTERPRETATION BY DR PAUL A SIPLE — JANUARY 1951

BOSTON AREA

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
D MAXIMUM POSSIBLE, EXTREMES, AND AVERAGES — HOURS OF SUNSHINE (MAX POSSIBLE / MOST / AVERAGE / LEAST)	295 / 208 / 144 / 91	297 / 218 / 166 / 114	371 / 291 / 213 / 158	401 / 343 / 227 / 106	452 / 347 / 267 / 160	455 / 390 / 283 / 183	461 / 374 / 292 / 220	429 / 339 / 270 / 200	374 / 290 / 227 / 120	343 / 253 / 197 / 90	295 / 217 / 142 / 88	284 / 180 / 81	4457 / 2781 / 2562 / 2265
PERCENT OF POSSIBLE	49 %	56 %	58 %	57 %	59 %	62 %	63 %	63 %	61 %	57 %	48 %	47 %	57 %
E AVERAGE CONDITIONS — CLEAR AND CLOUDY DAYS (PARTLY CLOUDY 3-7)	9 9 13	10 10	10 9 12	9 10 11	9 12 10	10 9 11	9 13 9	11 11 9	12 9 9	11 10 10	9 9 12	9 9 13	118 110 129
F AVERAGE B T U S PER HOUR STRIKING A HORIZONTAL SURFACE ONE FOOT SQUARE — SOLAR HEAT (CLEAR DAY / AVERAGE DAY)													
G APPROXIMATE MID-MONTH ELEVATIONS — SUN HEIGHT THROUGHOUT THE DAY	27° NOON	35° NOON	46° NOON	58° NOON	67° NOON	71° NOON	69° NOON	62° NOON	51° NOON	39° NOON	30° NOON	25° NOON	
H APPROXIMATE MID-MONTH DIRECTIONS — HOURLY DIRECTION OF SUN APPARENT SOLAR TIME	4 52 N 7 28	5 31 N 6 58	6 06 N 6 12	6 41 N 5 21	7 14 N 4 39	7 38 N 4 22	7 35 N 4 35	6 59 N 5 09	6 10 N 5 39	5 19 N 6 12	4 41 N 6 48	4 33 N 7 18	

APPARENT SOLAR TIME
LOCAL NOON WHEN SUN IS ON MERIDIAN OF THE OBSERVER, DUE SOUTH, AND HIGHEST OF THAT DAY

SUNRISE AND SUNSET GIVEN IN LOCAL CIVIL TIME TO OBTAIN EASTERN STANDARD TIME, SUBTRACT 4 MINUTES FOR EACH DEGREE YOUR POSITION IS EAST OF THE 75°TH MERIDIAN

WIND ANALYSIS

I 1 NIGHT MIDNIGHT TO 6 AM												
I 2 MORNING 6 AM TO NOON												
I 3 AFTERNOON NOON TO 6 PM												
I 4 EVENING 6 PM TO MIDNIGHT												
I 5 STRONGEST WIND AVERAGE AND	NE 50 MPH W 12 4 MPH	NE 5 MPH W 12 7 MPH	S 56 MPH W 12 9 MPH	NE 47 MPH W 12 1 MPH	NE 43 MPH SW 11 2 MPH	NE 38 MPH SW 10 7 MPH	SW 47 MPH SW 13 MPH	NE 38 MPH SW 9 9 MPH	S 73 MPH SW 12 5 MPH	S 48 MPH N 11 2 MPH	NE 63 MPH W 12 0 MPH	SE 47 MPH W 12 2 MPH	S 73 MPH W 11 5 MPH

PERCENT OF TIME WITH CALMS UP TO 3 M.P.H.

PERCENT OF TIME WITH WINDS 4 TO 15 M.P.H. FROM EACH DIRECTION INDICATED

PERCENT OF TIME WITH WINDS 16 TO 31 M.P.H. FROM EACH DIRECTION INDICATED

PERCENT OF TIME WITH WINDS OVER 32 M.P.H.
0 1%
0 2%
0 3%
0 4%
0 5%
0 6%
0 7%

SCALE OF PERCENT
0 20 40
10 10 30

APPLIES TO WINDS FROM EACH OF 8 DIRECTIONS AND TO DIAMETER OF CALM CIRCLE

JOS F HIRSCH

HOUSE BEAUTIFUL

PRECIPITATION ANALYSIS

BASED ON U S WEATHER BUREAU DATA — INTERPRETATION BY DR PAUL A SIPLE — JANUARY 1951

BOSTON AREA

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
J PRECIPITATION — AVERAGE AND EXTREMES	8.84 / 3.64 / 0.35	9.98 / 3.40 / 0.45	11.75 / 3.94 / TRACE	10.83 / 3.73 / 0.20	10.83 / 3.41 / 0.25	9.13 / 3.22 / 0.27	12.38 / 3.46 / 0.75	12.10 / 3.93 / 0.37	11.95 / 3.33 / 0.21	8.84 / 3.38 / 0.06	11.63 / 3.84 / 0.59	9.04 / 3.66 / 0.26	67.72 / 42.94 / 27.20
K SNOW — AVERAGE AND EXTREMES; TEN INCHES OF SNOW MELTS TO ABOUT ONE INCH OF WATER	14.7 / 35.7 / 11.9 / 0.3	16.5 / 35.3 / 12.5 / TRACE	12.0 / 33.0 / 7.3 / T	9.1 / 28.3 / 2.0 / 0	T / T / 0					0.5 / 0.5 / TRACE / 0	12.0 / 17.8 / 1.7 / 0	12.3 / 24.6 / 7.6 / TRACE	96.4 / 43.0 / 16.5 / 9.0
L PRECIPITATION DAYS	12 RAIN, 11 SNOW, THUNDERSTM 1, FOG	10, 10, 1	12, 7, 1, 1	11, 3, 1, 1	11, 2, 1	10, 3, 1	10, 5, 1	10, 4, 1	9, 2, 2	9, 2	10, 3, 1	11, 8, 1	125 RAIN, SNOW 42, THUNDERSTM 18, FOG 14
M MAXIMUM RATE OF RAINFALL — MINUTES HOURS													

HUMIDITY ANALYSIS

N RELATIVE HUMIDITY — AVERAGE DIURNAL CYCLE

O VAPOR PRESSURE — AVERAGES AND EXTREMES EXPRESSED IN MILLIMETERS OF MERCURY

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
HIGHEST	12.3	12.8	11.9	11.9	18.8	19.4	23.0	24.6	23.0	18.2	15.8	11.5	24.6
25%	4.4	4.6	5.2	6.3	9.6	13.3	16.9	16.9	12.8	9.9	6.5	4.6	11.1
AVERAGE	2.9	3.0	3.6	5.0	7.4	11.1	14.2	14.2	10.3	7.4	4.6	3.2	6.3
50%	1.8	1.8	2.6	3.9	5.8	9.6	11.5	12.3	8.2	5.2	3.4	2.2	3.7
LOWEST	0.5	0.5	0.6	1.7	2.5	4.2	5.8	6.3	4.6	1.7	0.9	0.7	0.5

% OF TIME PRESSURES OCCUR

JOS. F. HIRSCH

HOUSE BEAUTIFUL
WATER CONTROL GUIDE

THERMAL ANALYSIS

BASED ON U S WEATHER BUREAU DATA — INTERPRETATION BY DR PAUL A SIPLE — JANUARY 1951

BOSTON AREA
[illegible] MASS.

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
A1 VERY HOT													
A2 HOT				0.3	1.0	1.8	6.6	6.9	1.1	0.2			1.5
A3 WARM		0.1	0.7	4.1	18.5 / 0.7	49.8 / 8.1	76.8 / 34.2	75.7 / 35.5	34.8 / 8.6	12.9 / 0.9	2.8 / 0.1		23.2 / 7.4
A4 COOL	8.9 / 4.3	5.3 / 1.8	19.0 / 5.1	40.8 / 11.1	74.9 / 44.2	48.4 / 84.8	16.6 / 64.9	17.4 / 64.1	63.7 / 74.3	71.9 / 46.4	41.3 / 18.2	8.6 / 3.4	34.8 / 35.4
A5 CHILLY	54.9 / 35.9	65.8 / 39.9	72.1 / 49.8	54.8 / 73.3	5.6 / 52.4	7.1	0.9	0.4	0.4 / 17.1	14.9 / 46.4	51.6 / 56.9	69.6 / 43.1	32.3 / 35.2
A6 COLD	35.3 / 51.5	28.8 / 51.9	8.2 / 44.4	15.6	2.7					0.1 / 6.3	4.3 / 24.7	21.8 / 51.9	8.1 / 20.6
A7 VERY COLD	0.9 / 8.3	6.4	0.7								0.1	1.6	0.1 / 1.4

DEGREES FAHRENHEIT: 105, 85, 65, 45, 25, 0, -25

AIR TEMPERATURE — HIGHEST ON RECORD / LOWEST ON RECORD

DEW POINT TEMPERATURE

1.5 — 87° DESIGN TEMP

0.1 — 10° DESIGN TEMP

8.2 = TOTAL PERCENT OF AIR TEMPERATURE FOR GIVEN ZONE

0.7 = TOTAL PERCENT OF DEW POINT TEMPERATURE FOR GIVEN ZONE

MEAN DAILY MAXIMUM TEMPERATURE (USUALLY OCCURS MID-AFTERNOON)

MEAN MONTHLY TEMPERATURE

MEAN DAILY MINIMUM TEMPERATURE (USUALLY OCCURS BEFORE SUNRISE)

B HOT AND COLD DAYS

□ ONE DAY — ⏢ LESS THAN A DAY

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
MAX OR ABOVE 90°												1	9
MIN OR BELOW 32°	26	24	19	4		2	4	2	1		10	22	
MIN OR BELOW 0°	1	1										1	3

APR: BOSTON AVERAGE LAST FROST APR 13

MAY: BOSTON LATEST FROST ON RECORD MAY 16

JULY: BOSTON, MASS GROWING SEASON LONGEST 228 DAYS AVERAGE 199 " SHORTEST 150 "

AUG: NOTE: BOSTON GREATLY AFFECTED BY PROXIMITY TO OCEAN. AVERAGE LENGTH OF GROWING SEASON DROPS OFF FROM 200 DAYS TO 160 DAYS WITH IN 10 OR 15 MILES WESTWARD.

SEPT: BLUE HILL OBSERV GROWING SEASON AVERAGE 176 DAYS

OCT: BOSTON AVERAGE FIRST FROST OCT 29 EARLIEST FROST ON RECORD OCT 3

C DEGREE DAYS

MONTHLY TOTALS OF AVERAGES AND EXTREMES

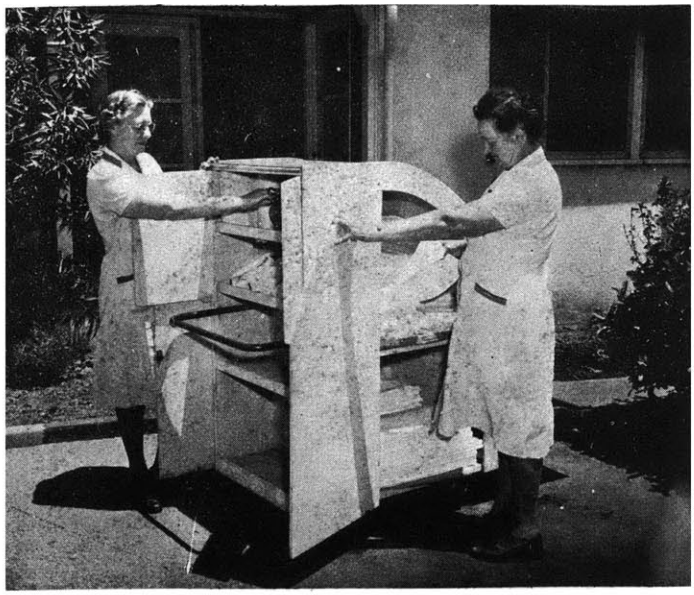
TOTAL NUMBER OF DEGREES THE DAILY MEAN FALLS BELOW 65°F

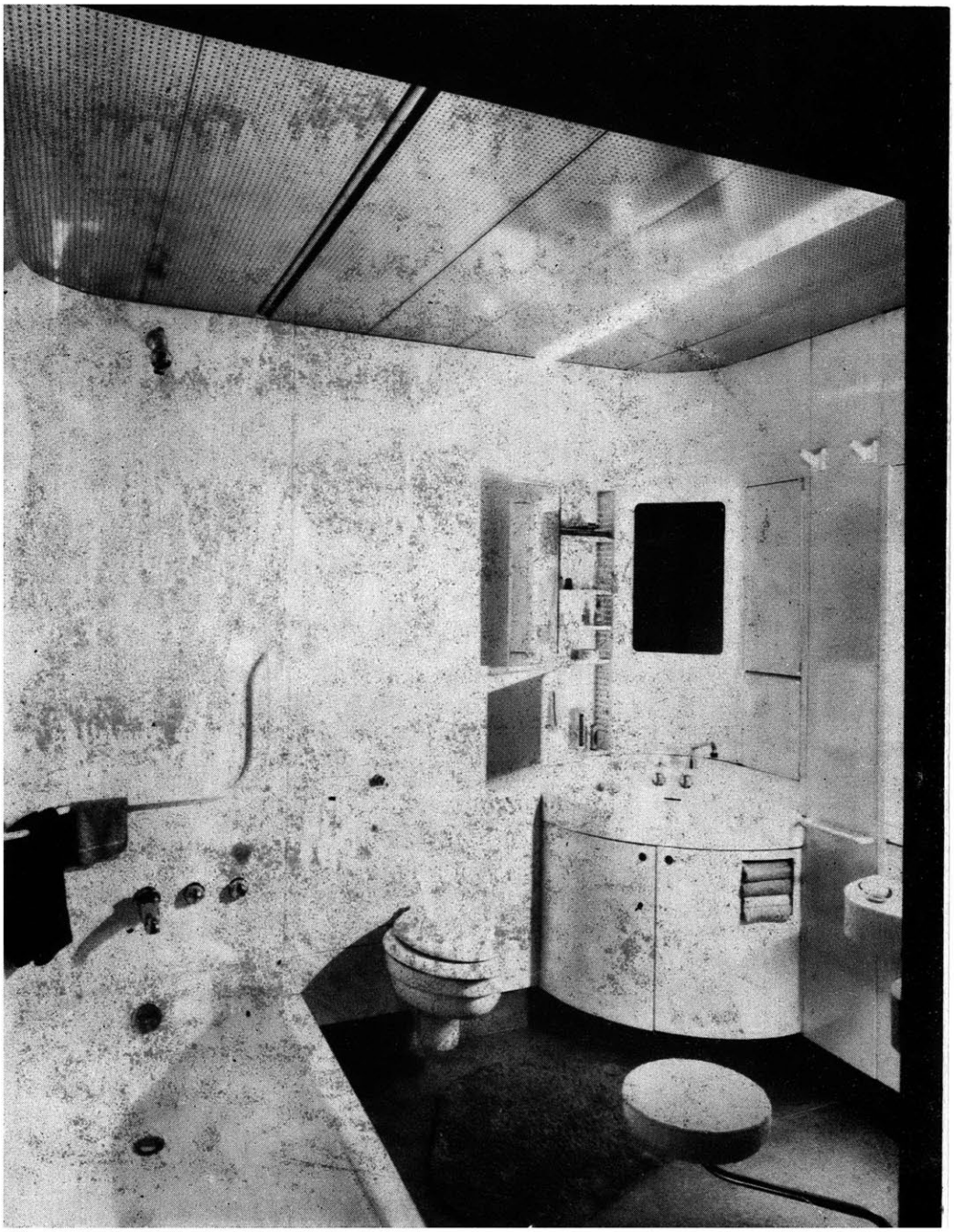
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
MOST	1366	1332	1066	649	443	114	15	30	165	484	800	1281	6637
AVER	1108	1025	841	538	245	66	7	15	98	338	647	1008	5936
LEAST	816	754	582	388	107	14	0	0	22	173	466	760	5053

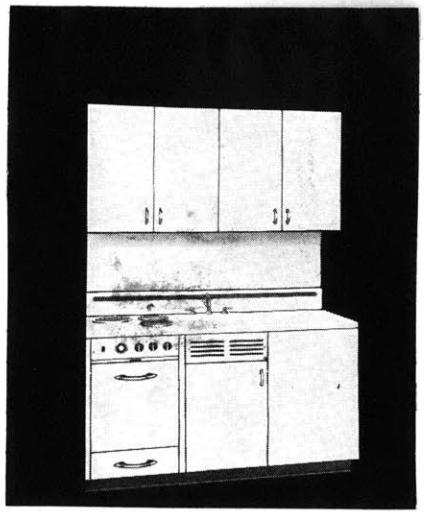
1400, 1300, 1200, 1100, 1000, 900, 800, 700, 600, 500, 400, 300, 200, 100

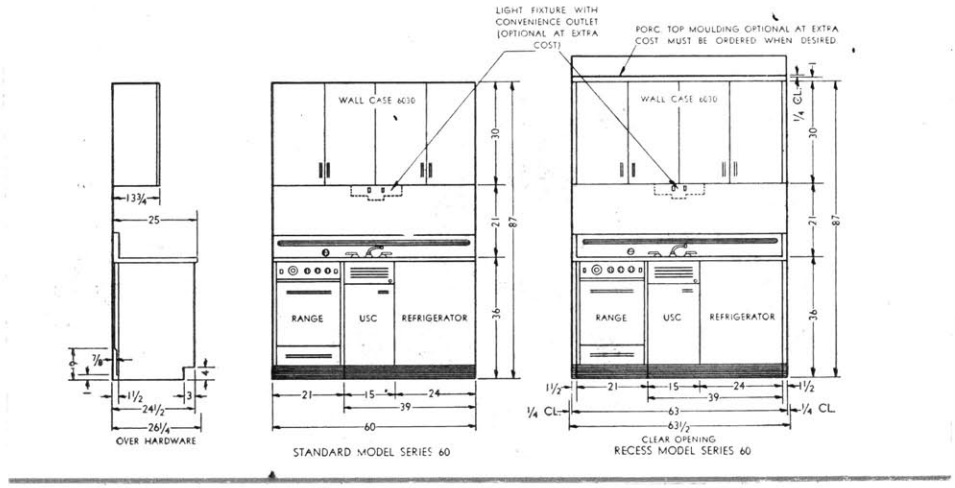
BELOW 65°F

JOS F HIRSCH









SERIES 60

With gas or electric range. Available 60″ long for installation against building wall with kitchen ends exposed. Also available 63″ long with Sink top having integral ends and fillers for installation in recess.

Catalog No.	*Range*	*Length*	*Height*	*Sink Top*
G-60-RS	Gas	60″	87″	Standard
G-60-RE	Gas	63″	87″	Integral ends for recess
E-60-RS	Elec	60″	87″	Standard
E-60-RE	Elec	63″	87″	Integral ends for recess

GAS RANGE
4 top burners, 3 standard, 1 giant. 2 oven burners, separate bake and broil. Oven dimensions: width 16″, clear depth 19″, overall height 15½″, clear height under broiler burner 11⅜″. Available for use with all types of gas. Automatic oven control. Approved by American Gas Assn.

ELECTRIC RANGE

1 Large surface unit	2100 watts
2 Standard units (1250 watts each)	2500 watts
1 Convenience outlet	660 watts
2 Oven burners: separate bake and broil. Oven burner at maximum "preheat"	4600 watts
Connected load	9860 watts

Wired for 115/230 volt, 60 cycle, AC current. Wired for other voltage on special order. Oven size: width 16″, clear depth 19″, height overall 15½″, clear height under broiler burner 11½″. UL approved.

REFRIGERATOR

Storage volume (net)	4.4 cubic feet
Shelf area (net)	9.9 square feet
Ice cubes	*3.2 lbs.—42 cubes*

*Frozen food compartment has capacity for additional 4 trays (84 cubes) or 12 standard frozen food packages.

SINK
Sink and range top one continuous piece of heavy 14 gauge steel with acid resisting porcelain finish. 3½″ drain opening with crumb cup strainer, chrome plated deck type aerated faucet.

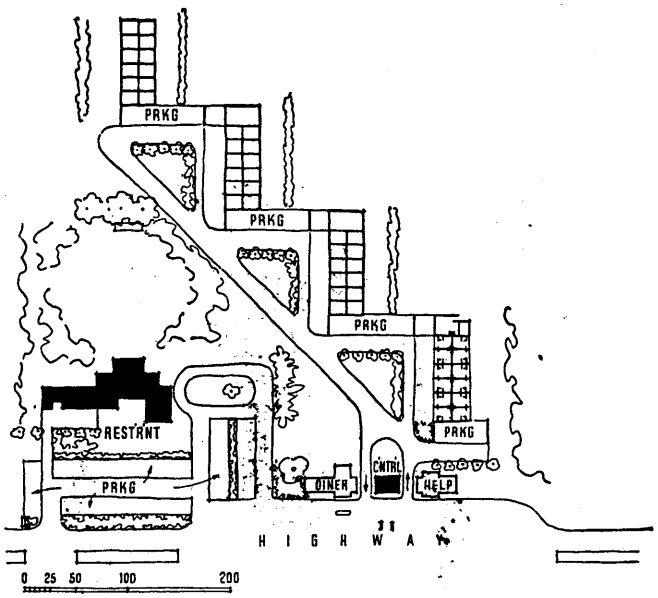
UPPER STORAGE CABINET

Storage volume (net)	12 cu. ft.
*Shelf Area (net)	15 sq. ft.

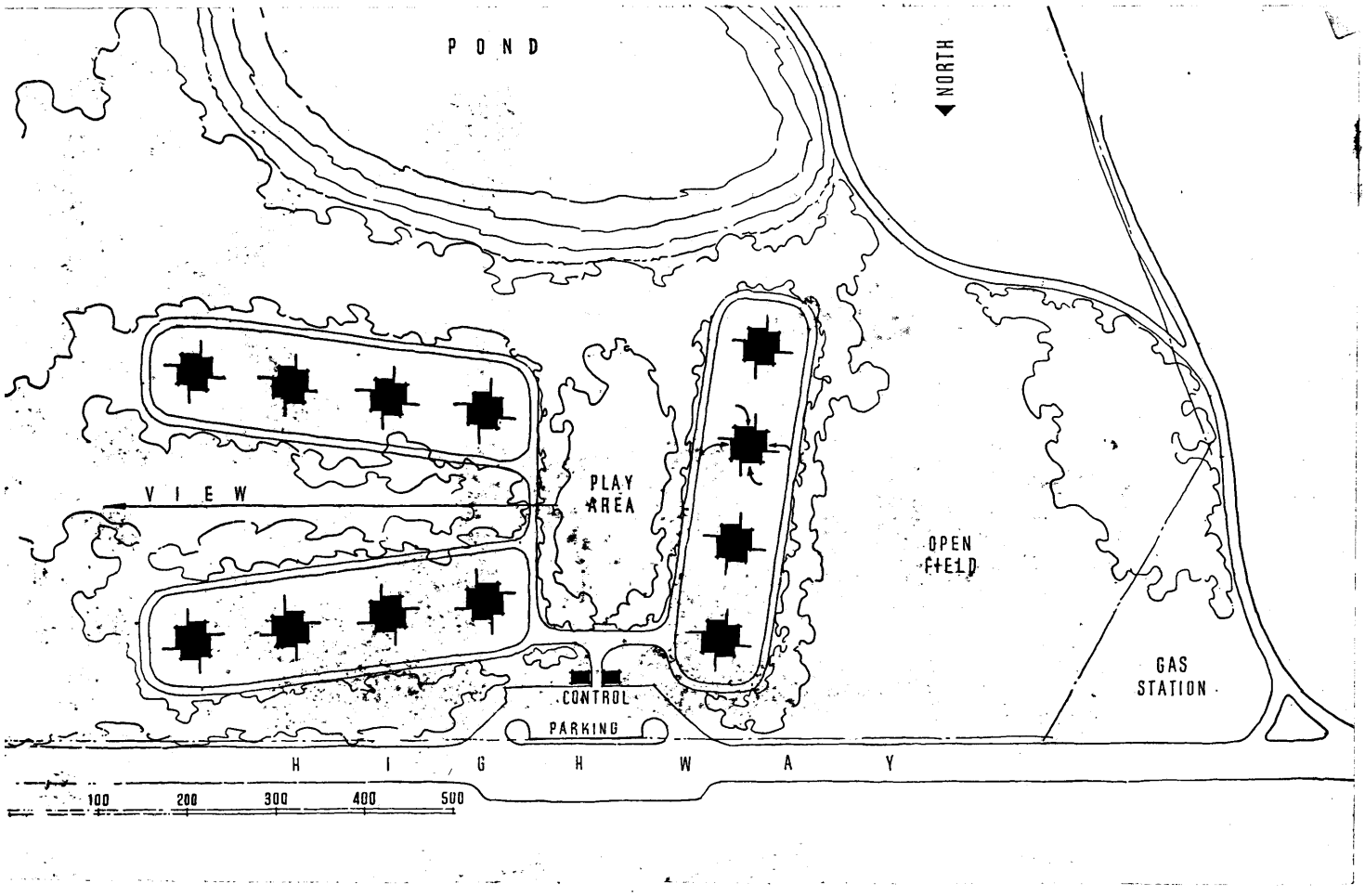
*Additional Shelf area available by intermediate Shelf unit 19″ long and full depth of cabinet.

SHIPPING WGTS. (Domestic) Approx.
Base Section **607 lbs.** Upper storage cabinet **188 lbs.** Complete kitchen **795 lbs.**

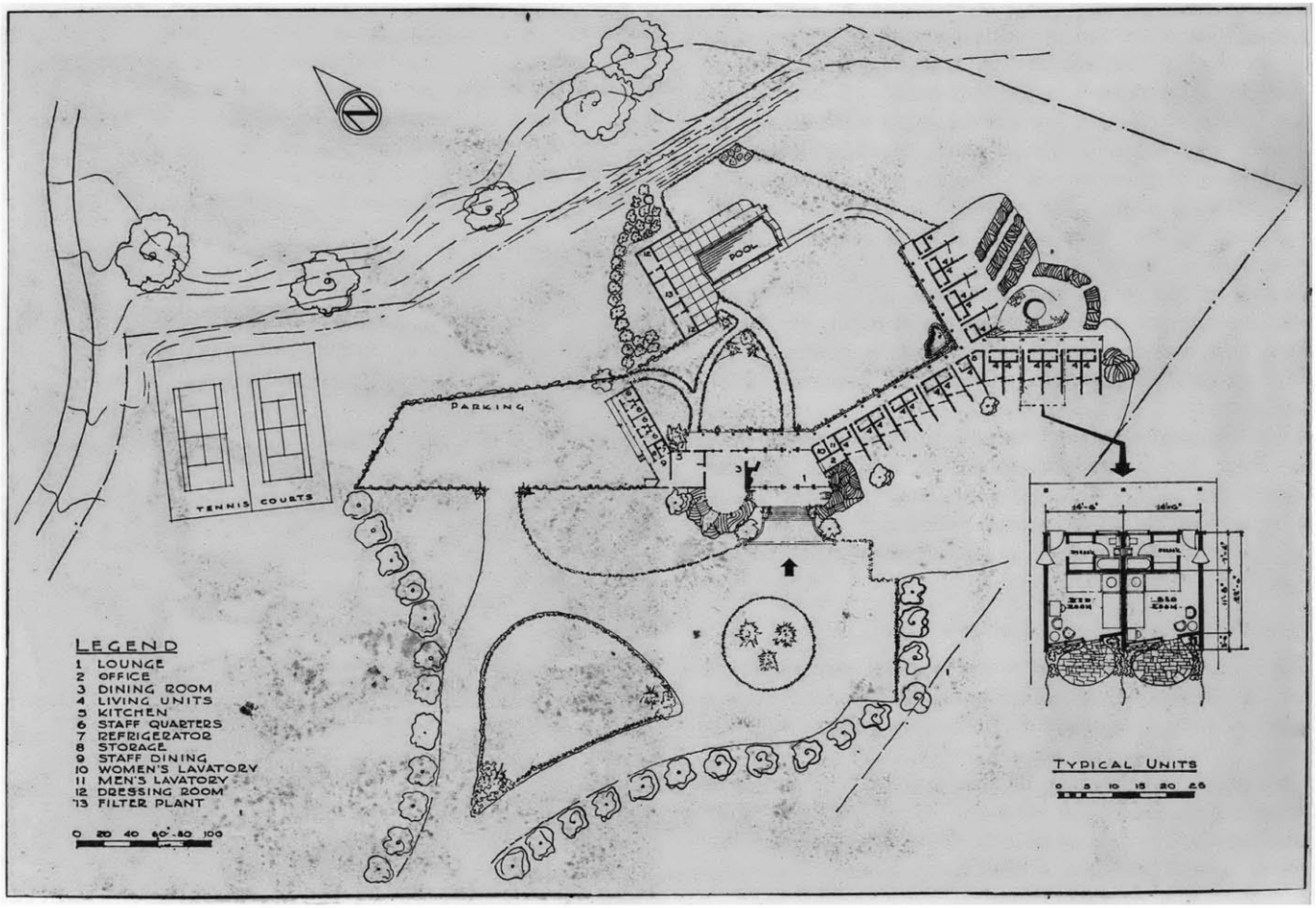
FOR COMPLETE INFORMATION WRITE FOR BULLETIN No. 649

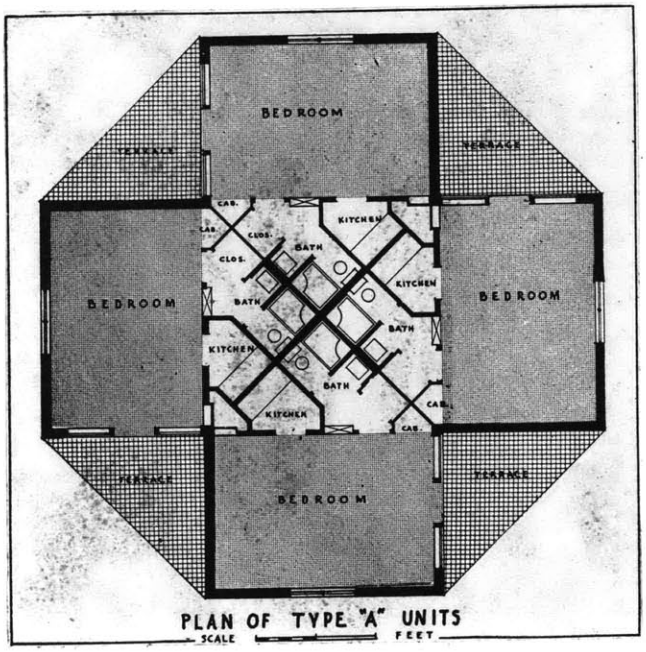


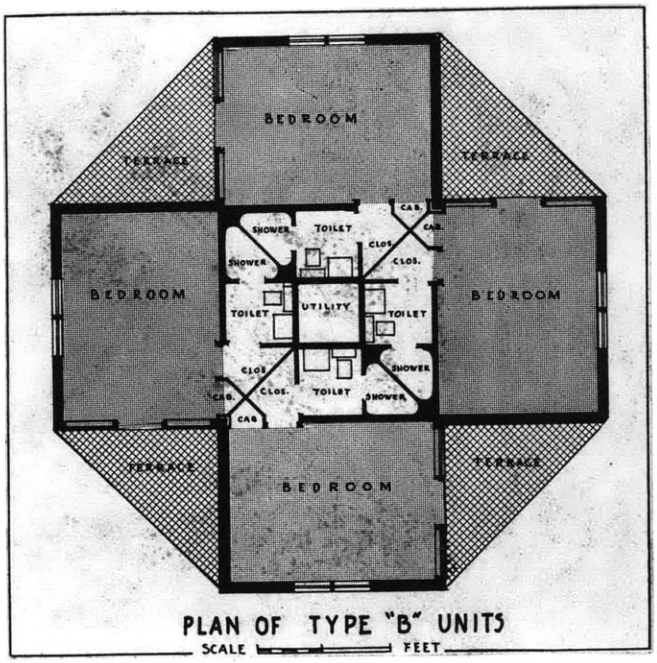
The plot plans by Architect David Fried of two proposed motor courts for the vicinity of Boston, Massachusetts,

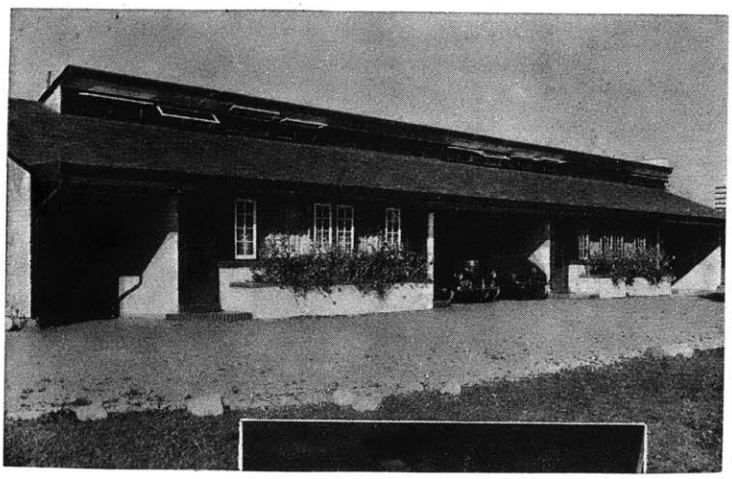


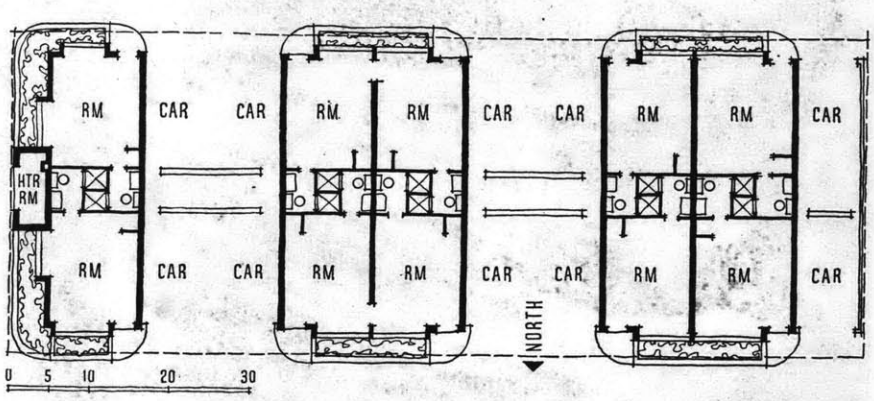
Designed by Architect Robert R. Jones, Carmel Valley Inn stands 500 feet back from the roadway. Built in one continuous rambling structure of angling wings, this modern one-story hotel belongs in the luxury class of highway accommodations. The stucco has a coral tone; the sash is off white; the trim is olive green and the porch soffit is in yellow. On the opposite page and below is the lobby entrance with the dining room at left. The plan shows only a part of the guest room wing, illustrated at right. A $20,000 swimming pool and a patio are in the rear of the building where they receive protection from predominant west winds. To obtain a wide view the main axes of the building were laced parallel to the valley.




BEDROOM
TERRACE
TERRACE
CAB.
CAB.
CLOS.
CLOS.
BATH
KITCHEN
KITCHEN
BEDROOM
BEDROOM
BATH
KITCHEN
BATH
KITCHEN
CAB.
CAB.
TERRACE
BEDROOM
TERRACE
PLAN OF TYPE "A" UNITS
SCALE
FEET

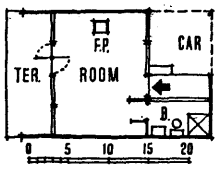

BEDROOM
TERRACE
TERRACE
SHOWER
TOILET
CAB.
CAB.
CLOS.
SHOWER
CLOS.
BEDROOM
TOILET
UTILITY
TOILET
BEDROOM
CLOS.
SHOWER
CAB.
CLOS.
TOILET
SHOWER
CAB.
TERRACE
BEDROOM
TERRACE
PLAN OF TYPE "B" UNITS
SCALE
FEET

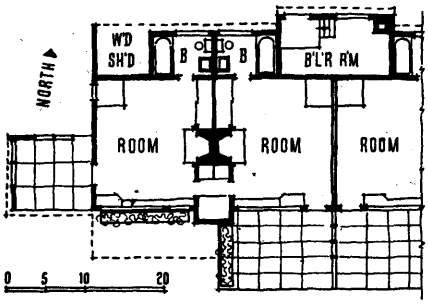


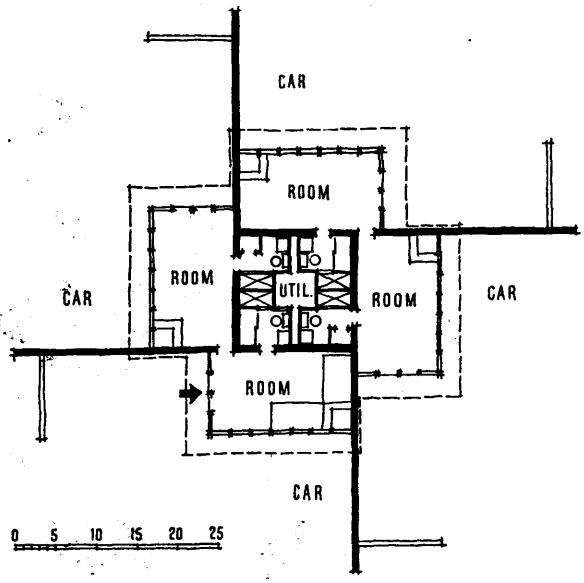


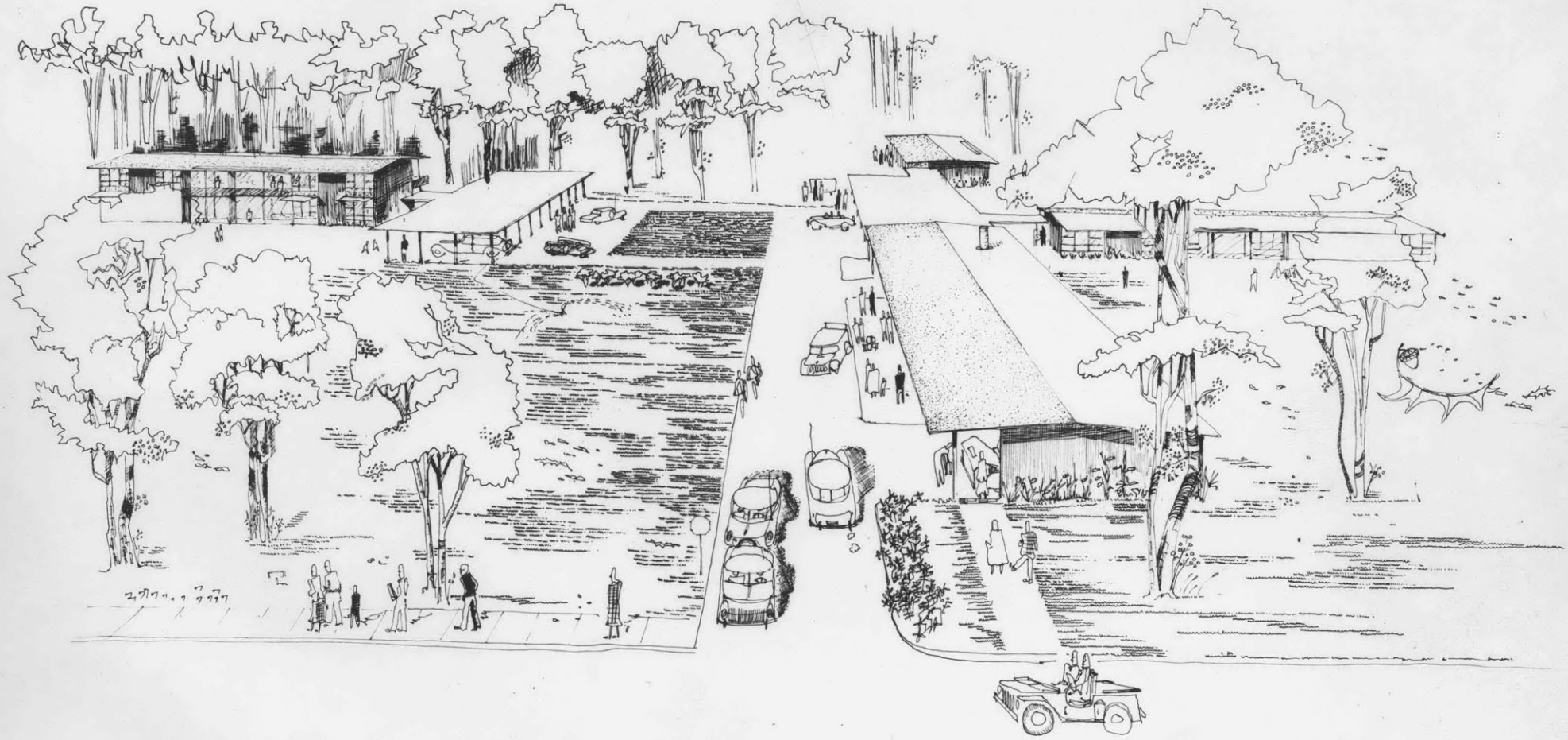
Motel Pam, near Columbus, Ohio (plan above and large photographs opposite page) was designed by Tibbals, Crumley & Musson, architects. The chief feature of this design is the cabins back-to-back in groups of four, with a utility core down the center and clerestory windows.

The small plan at right is a prefabricated unit designed for the Cotrufo Motor Court, Bethlehem, N. H. by Dan Kiley. Below and right are David Fried's designs for Lovett's Inn at Franconia, N.H.





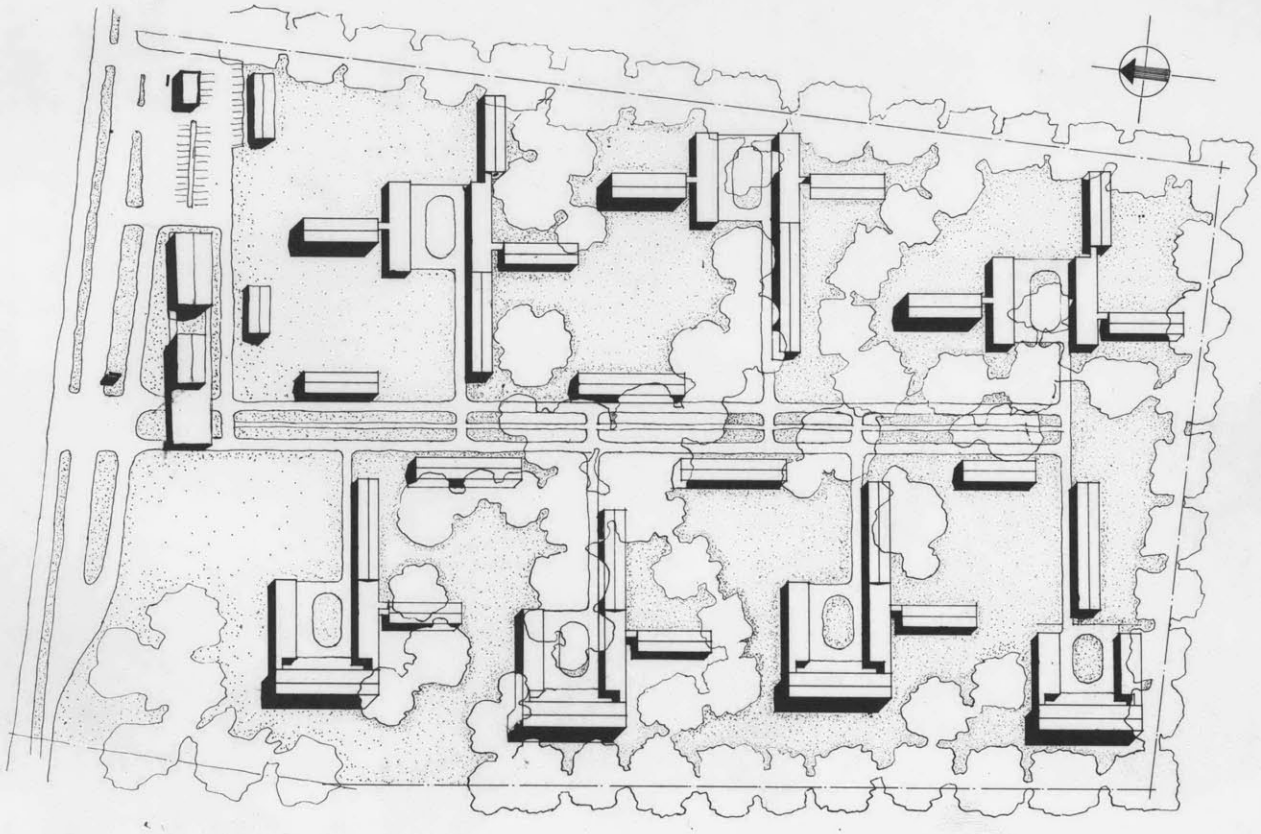




A HIGHWAY MOTEL

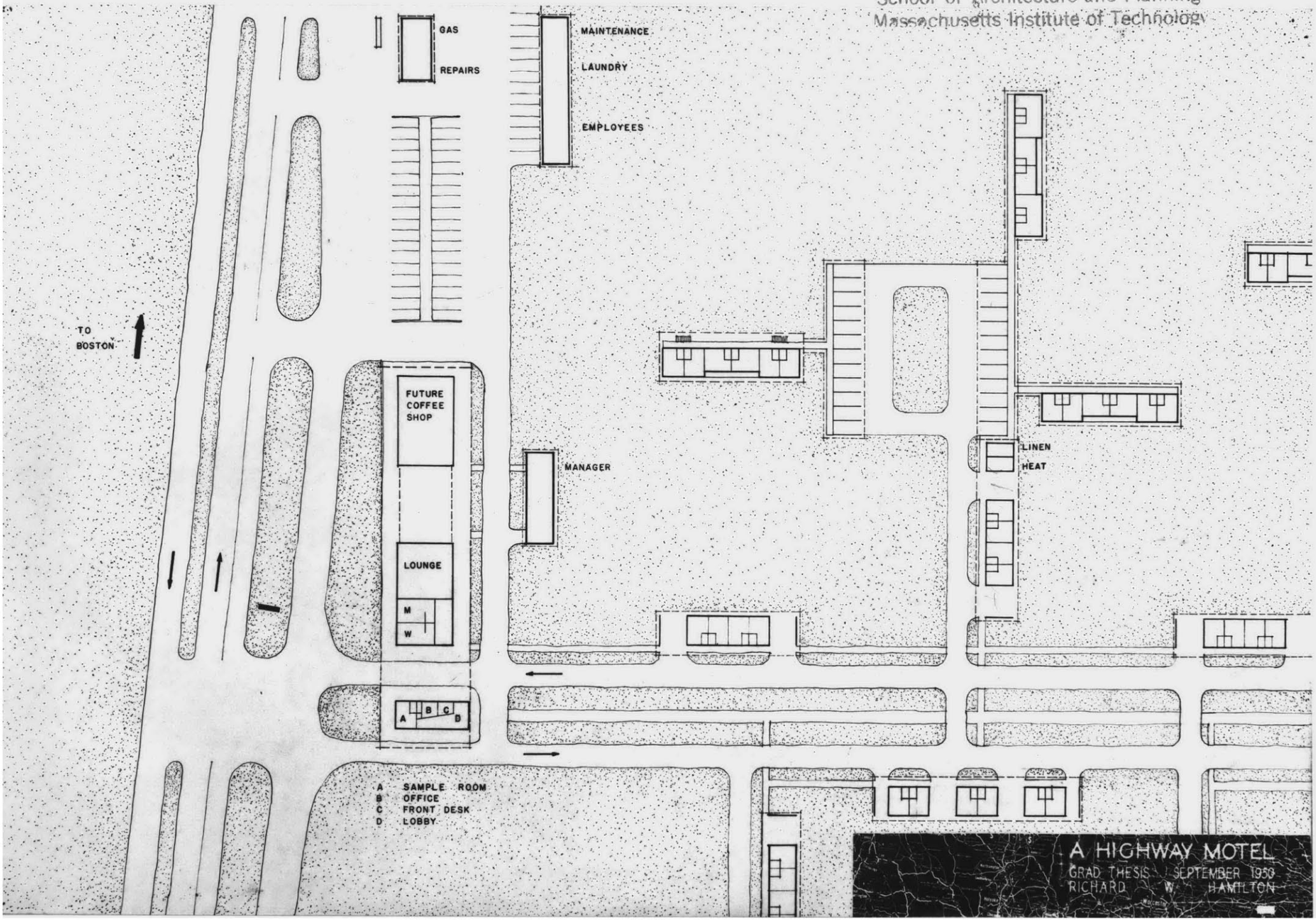
GRAD THESIS SEPTEMBER 1950

RICHARD W. HAMILTON

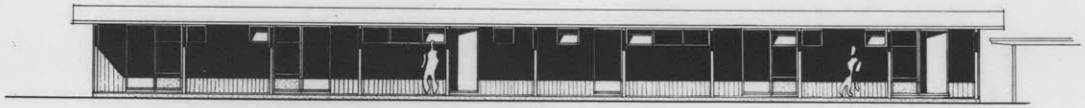


A HIGHWAY MOTEL

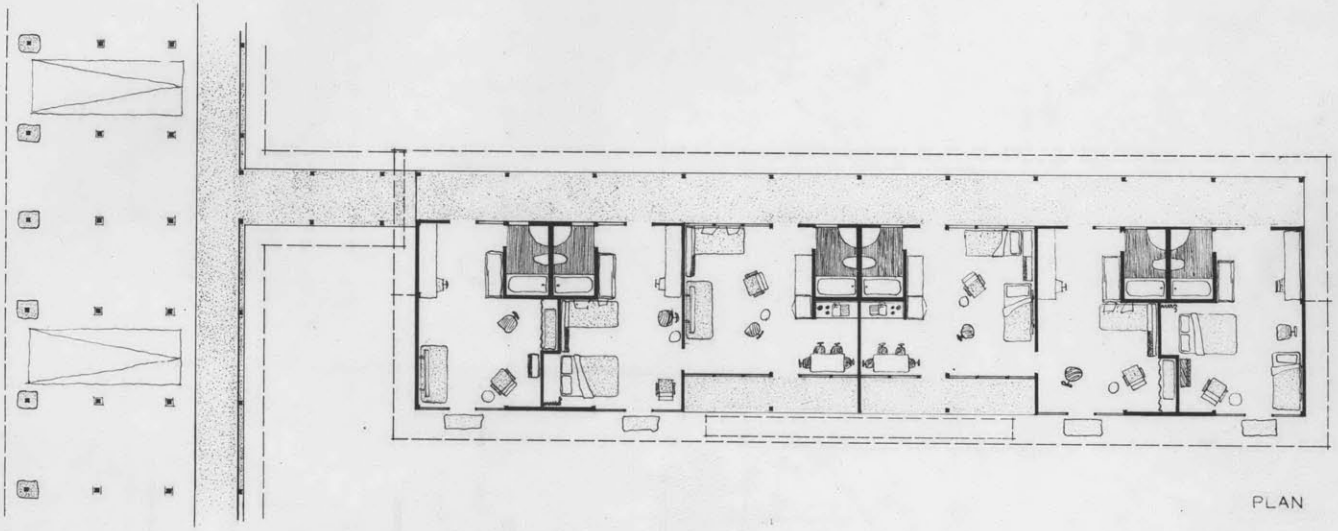
GRAD THESIS SEPTEMBER 1950
RICHARD W. HAMILTON



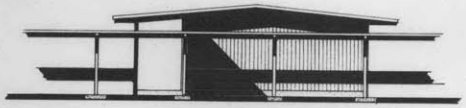
ONE STORY UNIT



EAST



PLAN



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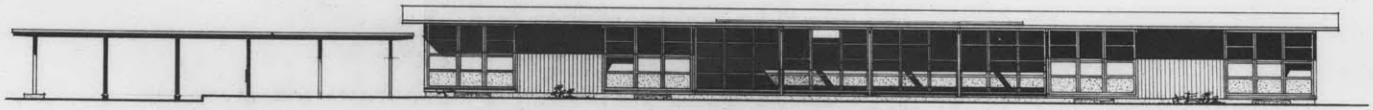

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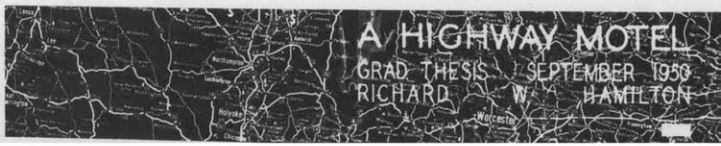
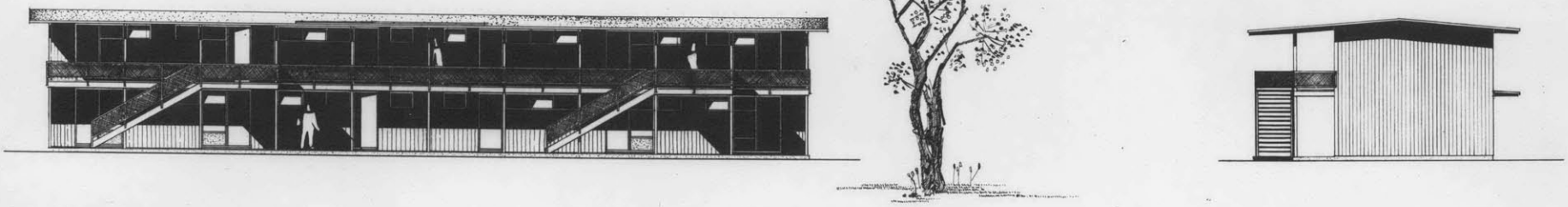


TWO STORY UNIT



EAST

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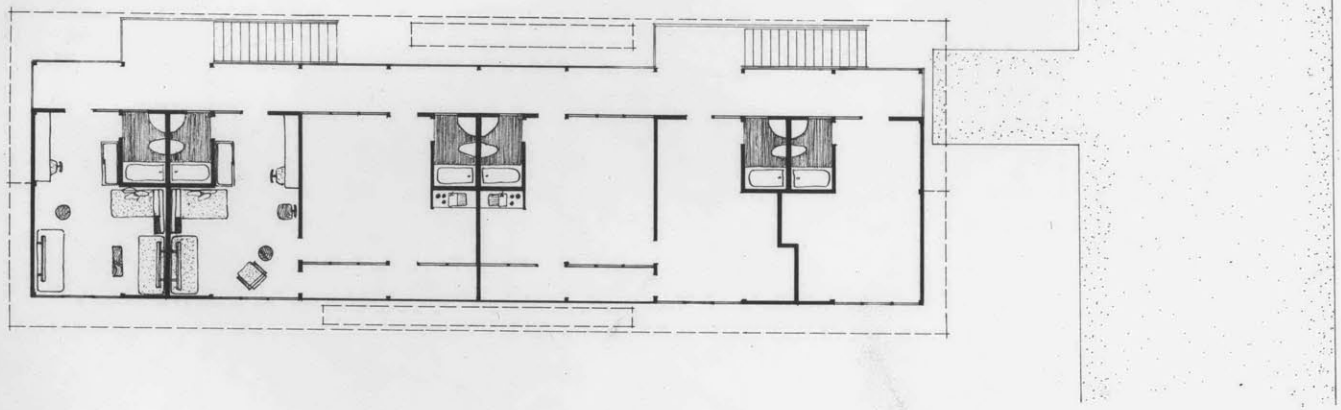
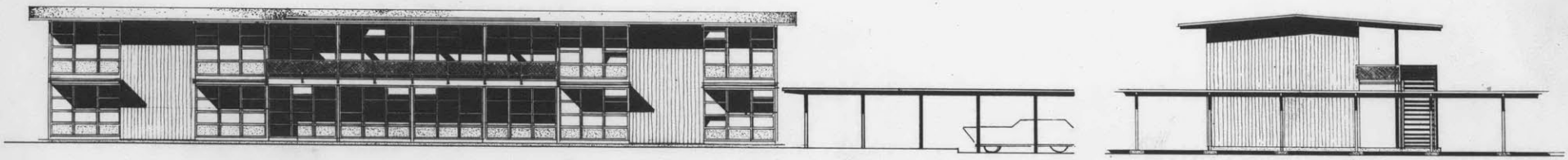
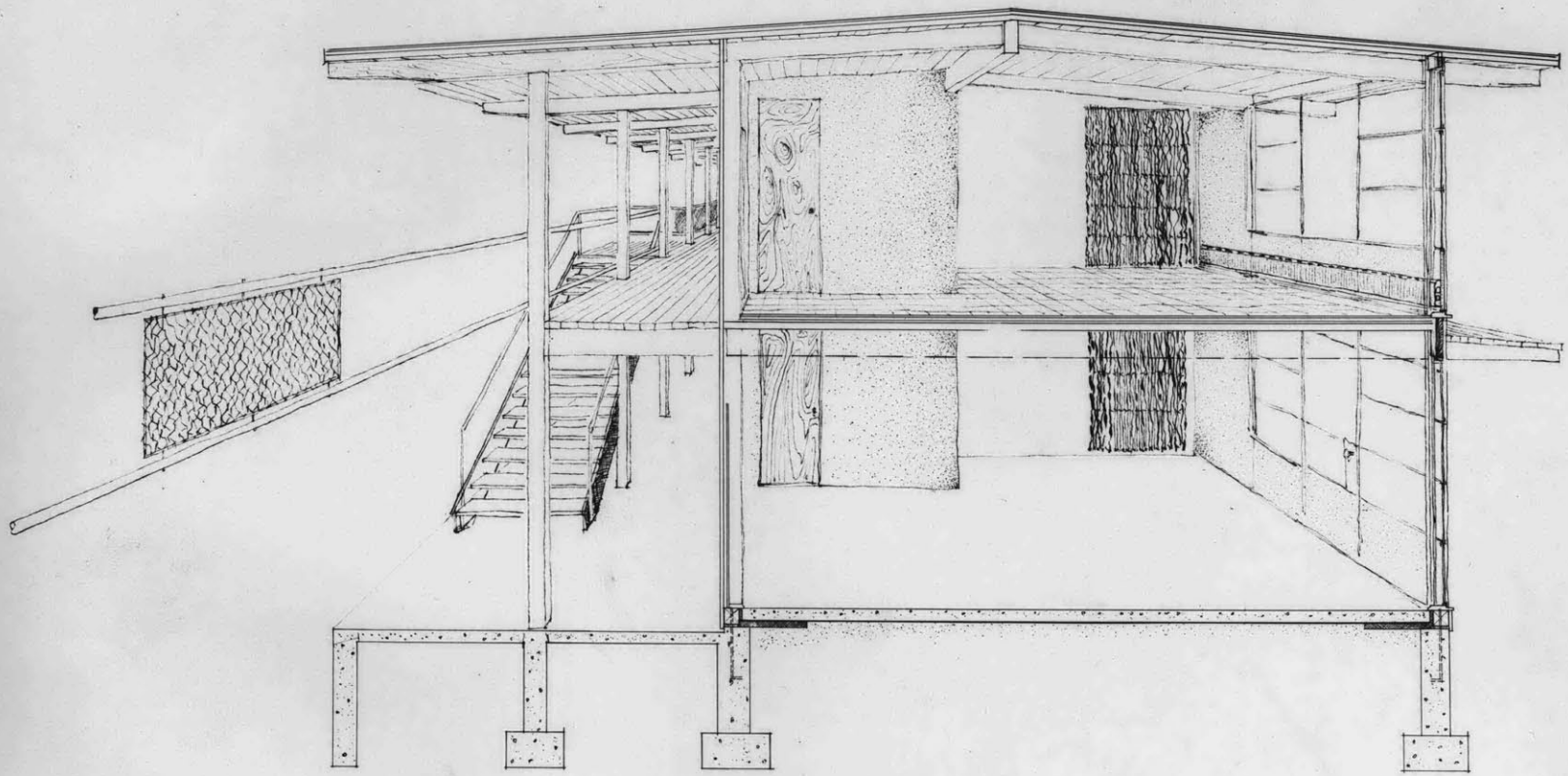




WEST

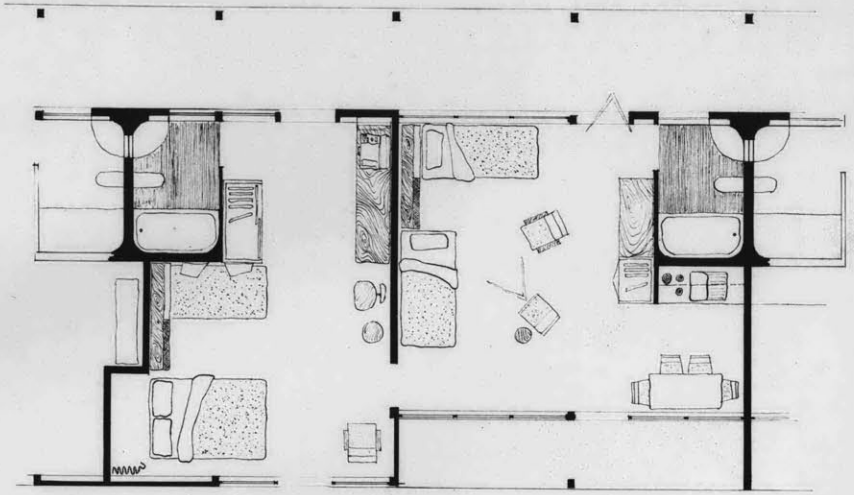
NORTH

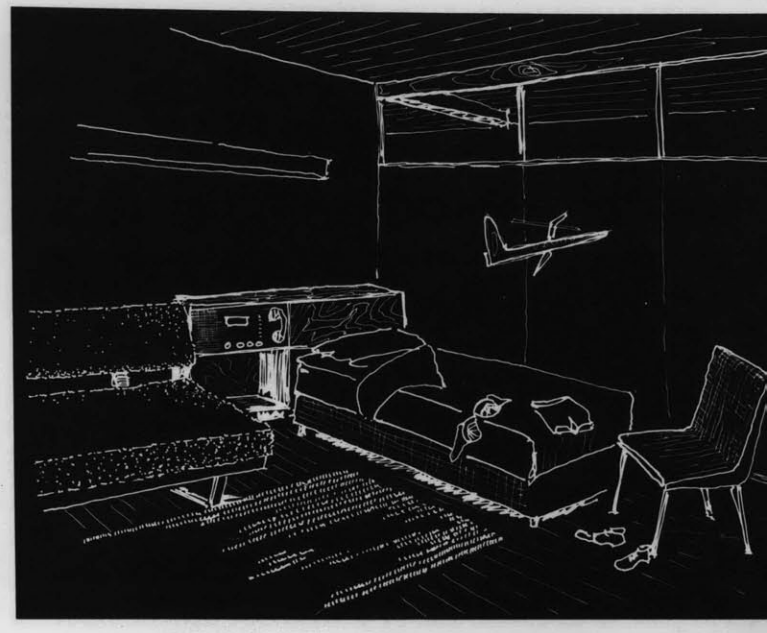
SECTION



A HIGHWAY MOTEL
GRAD THESIS SEPTEMBER 1950
RICHARD W. HAMILTON

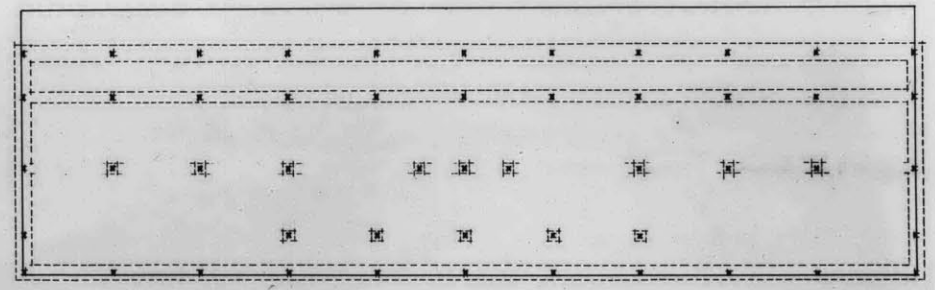
TYPICAL ROOMS



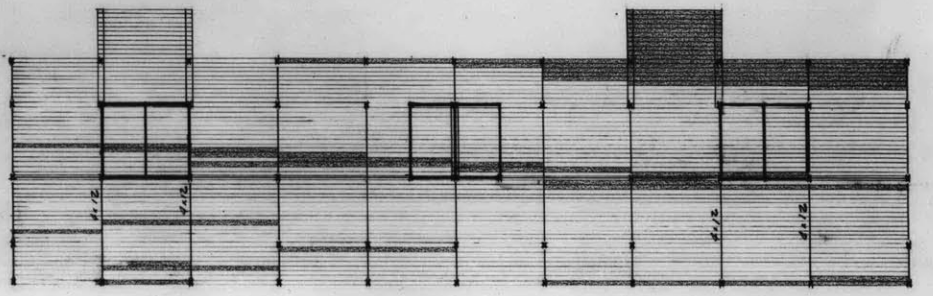


CONSTRUCTION

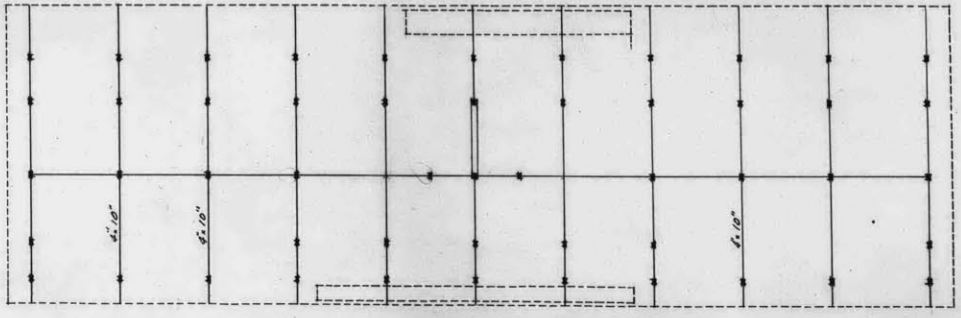
FOUNDATIONS	CONCRETE WALLS AND FOOTINGS
FRAME	WOOD MILL CONSTRUCTION; BEAMS AND POSTS SOUTHERN PINE DENSE STRUCTURAL NO.1 1000 f. OR DOUGLAS FIR COAST REGION DENSE NO.1, 1700 f; CONNECTIONS TECO SPLIT RINGS, JOIST HANGERS, IRON DOGS, STEEL ANGLES, LAG SCREWS
FLOORS	CONCRETE SLAB ON GRADE COLORED WITH STAIN AND WAX, 1" EDGE AND 2'-2½" BORDER CELLULAR GLASS INSULATION, FLOATING SECOND FLOOR 3" T & G PLANK, ½" FIBREBOARD, 1"x3" SLEEPERS, ⅜" PLYSCORD, B.F GOODRICH SYNTHETIC FLOOR COVERING
WALLS	EXTERIOR, 2" T&G PLANK, 1"x3" STRIPS, ALUMINUM BACKED SHEETROCK; INTERIOR, 1⅜" CEMESTO WITH FLUSH SPLINED JOINTS BETWEEN PANELS, DOUBLED AT PARTY WALLS
ROOF	2" T&G PLANK, 2" FOAMGLAS, FELT, PITCH, SLAG
FENESTRATION	CUSTOM MADE STEEL UNITS FROM STOCK SECTIONS
DOORS	EXTERIOR, FLUSH WOOD SOLID CORE, AND STEEL; INTERIOR, FLUSH HOLLOW CORE AND RATOX SCREENS. BETWEEN ROOMS SEALED WITH FELT OR RUBBER STRIPS AT HEAD AND JAMBS AND THRESHOLD.
EQUIPMENT	BATHROOM PREFABRICATED ENAMELED STEEL FIXTUREPANELS BY FIAT MANUFACTURING CO.; KITCHENS MURPHY CABRANETTE SERIES NO. 60; HEATING IN SLAB HOT WATER RADIANT PANELS, SECOND FLOOR RADIANT BASEBOARD, INDIVIDUAL ROOM CONTROL BY PNEUMATIC VALVES AND MASTER CIRCULATOR



FIRST

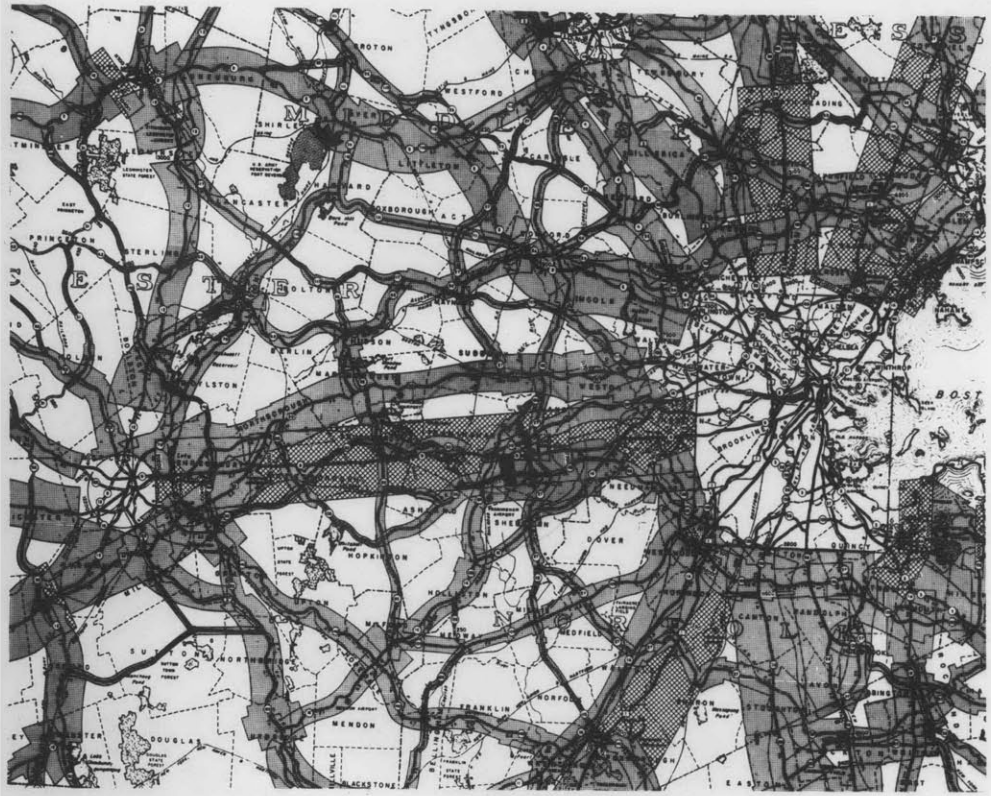


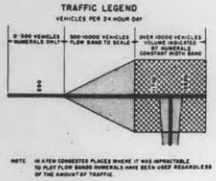
SECOND



ROOF

TRAFFIC FLOW





NOTE: IN A FEW CONGESTED PLACES WHERE IT WAS IMPRACTICABLE TO PLOT FLOW BANDS NUMERALS HAVE BEEN USED REGARDLESS OF THE AMOUNT OF TRAFFIC.

A HIGHWAY MOTEL
GRAD. THESIS SEPTEMBER 1950
RICHARD W. HAMILTON

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