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**A Residence for Mr. and Mrs. Leonard Mordecai**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

BACHELOR OF ARCHITECTURE THESIS

ROBERT BEDNAREK, AUGUST 17, 1952

88 Gainsborough St.  
Boston 15, Mass.  
August 17, 1952

Professor Lawrence B. Anderson  
Head of the Department of Architecture  
Massachusetts Institute of Technology

Dear Professor Anderson;

Submitted herewith is my undergraduate thesis,  
A Residence for Mr. and Mrs. Leonard Mordecai, in  
partial fulfillment of the requirements for the  
degree Bachelor of Architecture.

Yours very truly,

Robert Bednarek

TABLE OF CONTENTS

Letter of Submittal. . . . . 1

Table of Contents. . . . . ii

The Program. . . . . 1

The Site. . . . . 6

The Laws . . . . . 8

The Cost Pattern . . . . . 9

Bibliography . . . . . 12

Mr. and Mrs. Mordecai expect to adopt their new plan for living within the next three years. They will sell their house in Newton and build a smaller house in Swampscott, on Boston's North Shore. Mr. Mordecai intends to give up part of his practice as a life insurance underwriter in Boston, and will work about six months out of the year. Out of town vacations will be taken in the winter months instead of in the summer, usually in December, January, and February. The family will be smaller then--just Mr. and Mrs. Mordecai and occasional guests. Most frequent guests will be their three children. At present their two sons are in college--Boston University School of Medicine and Denver University Law School--and their daughter attends high school in Newton.

They want to live simply and without ostentation. They never entertain for business reasons and guests will be treated as members of the family. There will be no servants, except a maid or two for special parties and hired housecleaning crews once or twice a year.

The house must give its owners an absolute minimum of trouble. Meal preparation, laundry, and housecleaning must be quick and efficient. Furniture and materials must be attractive without requiring special attention. More specifically, they don't want to maintain rugs,

except possibly one in the bedroom and a small rug in the living room. Floor finishes must look good without constant care. Curtains and drapes are considered nuisances. Fussy ornaments, trim, moldings, etc. which would catch dust are out. So are changes in level which would be difficult to negotiate with cleaning equipment. They don't want any plastered walls. Built-in furniture is to be used wherever practical within limitations of the budget. There must be an arrangement, possibly a shower or water tap for bathers to get the sand off their feet before they come inside. There must be convenient storage space throughout the house.

Indoor space requirements include a living-dining room, master bedroom and bath, at least one other bath, 2 guest bedrooms, utility and storage rooms, and a 2-car garage.

The clients request a living room of about 700 square feet including a dining area at one end. They will do a great deal of reading here, and will listen to the radio or to records occasionally, but television will be in another room and not much attended. The present radio-phono will not be kept, so a new unit may be built in. At present the unit takes space 18"x36"x36", the

LP records 12"x12"x12", and the 78rpm records 6 lineal feet. The piano will be kept. It is a small grand model 57"x68"x38", and black. A fireplace is requested. They play bridge, and the floor should be available for dancing. 60 lineal feet of bookshelves should be provided and there should be plenty of flat surfaces to take magazines and newspapers without looking littered. A small writing desk is needed, and storage for the games, bridge tables, firewood, etc. which are used there. The present sofa and two armchairs will be kept (sofa 76"x33"wx28"h, chairs 27"x 32"hx39"l) as probably will an odd chair 27"x30"x32"h. Orientation should be to the view and to the south if possible. An adjoining terrace or porch is desired as an extension to the living space and for dining.

The dining end of the room must have a convenient relation to the kitchen so the dishes and food need not be carried too far. Storage should be provided for linen, dishes, and trays. A space 16'x6'x2' is now used for these items. Most meals, including breakfast, will be eaten here, even when only two people are present. Large dinner parties will be held very infrequently, but there must be room to expand the table to take 8 people. The present dining furniture will be replaced.

The kitchen needs to be large enough to include the essential equipment and two people. The essential equipment includes refrigerator, electric cooking, one-compartment sink with garbage grinder and dishwasher, workspace, and storage. Adjoining, or in some sort of combination must be storage facilities for canned goods and household supplies which are ordered by the case, and an upright model home freezer 28"x28"x58". All kitchen and laundry equipment must be General Electric products.

The master bedroom has to have a carefully planned storage space. Mr. Mordecai needs 6 lineal feet of space to hang clothes, 5 lineal feet of shoe shelves, storage for 3 dozen shirts, and proportional storage for shorts, socks, hats, ties, sweaters, sports shirts, and small articles. Mrs. Mordecai needs at least 6 lineal feet of hanging space for clothes, half of it clear to the floor, 5 lineal feet of shoe shelves, a place to hang evening dresses, 28 lineal feet of drawers, and a large mirror, but no dressing table. There should be space for twin beds. Through ventilation and a good orientation are requested.

The clients would like to have one of the bedrooms double as a study and an extension of the living room unless the bedrooms are on a separate level. It would provide temporary sleeping facilities for two people.

Their daughter's bedroom will be unoccupied during

the college season except on week-ends. Her room must sleep two people and provide plenty of closets, a bureau, and a desk or low table.

The entrance should have at least 6 feet of hanging space, and a low bench to sit on. Since most of the coming and going will be by car, it should be handy to the garage. Either in the garage or elsewhere must be storage space for bicycles, gardening equipment, luggage, outdoor furniture, and sports equipment. The sports equipment includes golf clubs, skis, fishing rods, tennis rackets, nets for badminton and volleyball, and numerous smaller items.

The clients very definitely do not want a basement so space for the heater and hot water tank must be provided elsewhere. Laundry facilities consist of an electric washer and drier with a small indoor rack for nylons. No outside drying yard is needed and the ironing board could be in the master bedroom.

A sheltered, private area for nude sun-bathing should be provided somewhere on the site.



The Site

The lot, which was selected by the clients, is at 111 Puritan Lane in Swampscott. Its shape is roughly rectangular with the long sides (152 and 192') on the north and south. There is an 88' frontage on Puritan Lane on the west end and an 118' frontage on Galloupe's Point Road, which runs obliquely across the east end. The area is 16,884 square feet. Water, gas, telephone, and electricity are available from Galloupe's Point Road and water from Puritan Lane. There are fire hydrants on both streets. The Town of Swampscott has scheduled construction of a sewer in Puritan Lane for the summer of 1952, but it hasn't been started at this time.

An engineer's survey showing the dimensions and boundary markers of the site and one foot contours for the flat one-third of the site was obtained through the clients from the former owner. The survey was completed by David Wallace and myself.

The western third of the property is almost flat and has no trees. It is chiefly occupied by a large heap of rubbish which was once a stable. There is no excavation, however. The eastern two-thirds of the property is rock ledge mostly covered by a thin layer of soil. The land rises 22 feet in 100 toward the east. This part of the plot is heavily wooded with maple trees varying

in size from seedlings to 24" in diameter. There are a few young oaks and a shaggy old hickory.

About 200 yards away to the west and southwest, the sea is visible over the tops of the intervening houses.

Galloupe's Point Road is owned by the North Shore Realty Co., but maintained by the town at the request and the expense of the abutters. It is assumed there would be no objection by the owner to using it for access to the site.

The site conditions which most affected the siting and planning of the house are these:

1. The only flat area of the site large enough for a one-level plan is at the bottom of the slope, without a view, and cut off from the prevailing summer breezes by the "ranch house" across the street.
2. The only flat area large enough for a garage or living room is at the north-east corner of the site.
3. Rock ledges throughout the upper part of the site make extensive excavation expensive.
4. The sea view is to the west and southwest.
5. Prevailing summer breezes are from the southwest.
6. Floor levels below elevation 60.0 feet mean the sea view is cut off for a person standing, At least levels of 63.0 or 64.0 are needed for a person seated.



### The Cost Pattern

Of course accurate predictions of building costs in 1955 are impossible now. But it is possible to give a rough approximation of the cost pattern at the present time on the basis of the experience of house contractors in the Lynn-Swampscott area.

The obvious way to estimate building costs, to multiply the number of units by the average unit cost for the vicinity, is not too reliable. (By unit cost I mean a dollars and cents price per sq. ft., cu. yd., MBM, or other estimating unit) The special conditions of each job cause it to be different from other jobs in the vicinity. Excavation costs, for instance, cannot be estimated on the basis of the cubic yardage of dirt to be moved alone, even barring complications such as rock ledge. It costs more per yard to dig a trench than a hole, and the cost of moving the bulldozer to the site and back may amount to half the cost of running it for the day. And a concrete finisher can be expected to spend a day finishing a basement floor, no matter what size it is.

Many of the smaller contractors don't know their unit costs because keeping track of the labor costs is too difficult. They prefer to put in their bids on a basis of "The Jones job cost us roughly \$12,000; this one is

about the same area; we can get the mechanical equipment for the same price, let's bid it in at \$13, 301.95." The differential allows for possible increase of material and labor costs and its size reflects both a guess as to the competing bids and how badly the job is needed.

In Swampscott unit costs vary greatly according to the use of union or non-union labor. Union labor is limited to a specific amount of work per day per man, while non-union labor can usually be pushed into doing more work by an enterprising foreman or supervisor.

Other factors peculiar to a job which alter the unit costs are the quality of workmanship and degree of finish demanded, the distance bulky materials must be transported, the complexity of the detailing, and the size of the job.

Low bids may be due to the contractor as well as to the peculiarities of the job. Often he has access to materials at quantity prices. It is common practice for the North Shore area to buy lumber in Maine and haul it down with their own crew and equipment, avoiding the lumber dealer's profit. (They also like to avoid carrying charges on their inventory by building with green lumber.)

A contractor located more conveniently to the job, or with a more efficient crew, can offer lower bids. The biggest reducible item still is labor cost.

On the basis of the usual fixed fee contract, the contractor is not required to divulge his costs to the architect, except for items specially purchased on allowances.

With a cost plus percentage fee contract, the architect checks over the contractors records before payment is made, and all the costs are known. There is the disadvantage that padding of the accounts by the contractor increases the total cost to the owner as well as the contractor's percentage profit.

Bibliography of publications especially useful in the design of this house:

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National Design Specification for Stress-Grade Lumber and its Fastenings, National Lumber Manufacturers Association, Washington, 1950.

Scofield, W.F. and O'Brien, W.H., Modern Timber Engineering, Southern Pine Association, New Orleans, 1949. An easily understood book with examples of different types of design worked out step by step.

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Schroeder, Francis, Anatomy for Interior Designers, Whitney, New York, 1948. Architectural dimensions in terms of the average human figure; complementary to

the Wrights' book, which doesn't much bother with numbers. Most of the data, however, is for the "average man" and must be adjusted to take care of the other sizes or children.

A Step-Saving U-Kitchen, US Dept. of Agriculture  
Miscellaneous Publication #646, Washington, 1948.

A thorough discussion of the requirements for a successful kitchen, excepting dishwasher, garbage grinder, counter-level oven, and quantity storage for staple foods.

Town of Swampscott, Massachusetts, Legislative Acts, By-Laws & Traffic Rules, Swampscott, 1943. Includes the building code, which is currently being revised.

Town of Swampscott, Massachusetts, Zoning By-Law, Swampscott, 1950.

Wright, Mary and Russell, Guide to Easier Living, Simon and Schuster, New York, 1951. A thorough analysis of the job of taking care of a house and a family, with emphasis on planning, material selection, and furniture for easier housework. Contains charts of 46 wall materials and coverings, 44 table top materials and coverings, and 46 types of floor materials and



coverings rated according to durability, type and ease of cleaning, and resistance to individual household hazards.

Wilson, Maud, Considerations in Planning Kitchen Cabinets, Oregon State College Agricultural Experiment Station, Corvallis, Oregon, 1947. 90 pages of detailed data about storage and workspace requirements.

And, inevitably, the architectural encyclopedias: Architectural Graphic Standards, Time Saver Standards, and Sweet's File.