

SUMMER RESIDENCE AND STUDIO  
FOR  
PROF. AND MRS. KLAUS LIEPMANN

Report submitted in partial fulfillment of the requirement  
for the degree of Bachelor in Architecture.

~~GEORGE~~/B. HABERKORN

MAY 16, 1952

356 Westgate West  
Cambridge 39, Mass.  
May 16, 1952

Dean Pietro Belluschi  
School of Architecture & Planning  
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Dear Dean Belluschi:

As partial fulfillment of the requirements for the degree of Bachelor in Architecture, I respectfully submit this thesis entitled "Summer Residence and Studio".

~~George B.~~ Haberkorn

## ACKNOWLEDGMENTS

I wish to take this opportunity to express my appreciation to my clients, Professor and Mrs. Liepmann, for the many evenings they devoted to this project. Their enthusiasm has never ceased to be an inspiration to me.

My thanks to my thesis advisers and to Professor Beckwith and Professor Newman in particular for their very much appreciated guidance.

To Mr. John Grew and Mr. John Coughlin of Meredith & Grew Inc. for their assistance in site selection.

To Professor Shea of the Civil Engineering Department and Professor Hesselschwerdt of the Mechanical Engineering Department for their assistance with my surveying and heating problems, respectively.

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## THE CLIENTS

Professor Liepmann is professor of music at M.I.T.. Music is his work and relaxation and he wishes his home to not only fulfill the demands of family living, but to create the necessary environment for his music. He is a violinist and choral director besides being an instructor of music. At present he is devoting all the time he can to the writing of a book on music.

Mrs. Liepmann enjoys music very much also. She participates by singing in choral groups, the M.I.T. Choral Society, for example. Mrs. Liepmann practices professional dressmaking in Cambridge

The Liepmann's have an eighteen year old daughter, Lisa, who is attending college. Lisa's most important demand of the program was that it have definite provisions for isolating her father and his violin when he practiced. This was seconded by Mrs. Liepmann. Prof. Liepmann made the complimentary demand that he is provided with an area in which he may practice without fear of being disturbed in any way.

## THE CONSTRUCTION OF A PROGRAM

When I first met with my clients I was given fairly definite site requirements for the Liepmanns knew exactly what they wanted. On the same evening we worked out the preliminary program for a year round residence that was thought of as ideal...., suiting all the demands that they could think of. I later composed my notes of that evening and they were approved by the Liepmanns.

The present site was found. It fulfilled all the major requirements perfectly..., so perfectly infact, that it was decided that the program should be restudied with the idea of building the house in stages.

The new program was in the process of being studied much more thoroughly than the previous one because the client had had more time to meditate over the first one...., and more important was the fact that this new program for a real site seemed to have a possibility of being carried out.

During this meeting Mrs. Liepmann challanged the once assumed fact that the commuting distance need not be considered in site selection. Was not the commuting distance between their home (in Cambridge) to work about perfect and would any longer distance be satisfactory? Mrs. Liepmann must be in Cambridge three days a week for her work and Prof. Liepmann must be there on weekdays and frequently on Saturdays and Sundays.

Other factors involving the desirability of making their year round residence near Gloucester or anywhere other than Cambridge were analyzed by the Liepmanns. The resulting conclusion was reached that their winter home could only be in the area of Cambridge, while the selected site seemed ideal for a summer and winter weekend residence.

Prof. and Mrs. Liepmann have always wanted a summer place, but at the time of the writing of the first program it was felt that if the ideal site could be found, why not consider it as the place for a year round home. Finding the wonderful site has made the problem more realistic.

Resolved that it be a summer residence with occasional use during the winter. In order to bring the summer residence within the realm of an economic feasibility we worked on a program that would allow the house to be constructed in stages. This proved almost impossible to do as the minimum house for the Liepmanns still must have no halfway method of isolating Prof. Liepmann's studio, and they must have a large living room for the gathering of fellow musicians and visitors. The decided nucleus was all that Prof. and Mrs. Liepmann might ever have needed, except for a master bedroom and carport. And as the plan evolved it was thought practical to include that final room in the initial construction stage. The carport or possibly a garage would be completely independent of the house in any case and this would be designed and constructed at a later date, if found necessary.

## THE SITE REQUIREMENTS

Prof. and Mrs. Liepmann wish to live by the sea. It would be desirable, but not a necessity, if part of the sea frontage of the site were beach to allow swimming. They would like the site to provide privacy... obtained from a wooded area, rather than a large area. The site need not be near schools nor within walking distance for shopping or church.

Prof. and Mrs. Liepmann expressed interest in the North Shore between and including Marblehead and Gloucester,... and in particular, the area of Magnolia.





A T L

↑  
NORTH  
SCALE 1" = 1 MI.

## THE SITE SELECTED

It was not my initial plan to burden a real estate office with a probably profitless job of displaying their available sites to me, but factors led me to this. Late February snow made exploration of vacant lots unpleasant and this was either preceded or followed up with the task of finding out whether the property was for sale. I also wondered if I might not be able to secure a piece of property that possessed an old house, and plan to remove the building, but looking into these matters was too complicated.

Prof. Beckwith kindly referred me to Mr. Grew of Meredith & Grew Inc.. Mr. Grew was delighted to be of assistance. A week later Mr. Coughlin (Meredith & Grew's North Shore representative), Prof. Liepmann, and I were standing in a foot of snow in a steady rain marveling at the beauty of the steeply sloped site and the wonderful view across the entrance of Gloucester Harbor to Eastern Point. The site, located about three miles south of Gloucester, fulfilled all the requirements but the beach. In its place the site has a very bold and impressive rocky cliff overlooking the water.

The site has a sea frontage of 100 feet and an average depth of 395 feet. It is bounded by a paved street on one side, to the west, the estate from which this property is being taken to the north, and the Hammond (organ) estate to the South. The property from which it was cut has a house on it that is in good condition, it is visually completely in the background with respect to the site in question, and no property will be sold between the house and the site. The Hammond house is an impressive Danish castle. With no leaves on the trees only its form can be distinguished from the site and in the summer it would not be seen at all from the site.



At the top of the hill looking back at the road



And then towards the sea



From the ledge looking over the cliff to Eastern Point



The vacancy for the house in the side of the hill

Prof. Shea of the Civil Engineering Department loaned me a transit and rod. With only a surveying course as previous experience I found the site necessitated two cold days of work, as it possesses an elevation differential of ninety-two feet, plus many rocks and trees. The most important product from this activity was the fact that I now knew the site. I could never have interpreted my feeling for it from an already prepared survey.

Mr. Coughlin assured Prof. Liepmann and me that most everything was provided for the site. Gas, electricity, and water, of course, and a paved road running past the front door. Not until a few weeks ago when I was speaking with the Building Inspector of Gloucester did I realize that there was no sewer! Nothing can be dumped into the ocean. A more nearly level area for a bed will have to be created below the house, and possibly sand will have to be brought in.

It is thought that the owner would accept \$3,500. in return for the property. The present land tax amounts to \$104. per year, but this price is expected to be raised if the strip is taken away from the estate. The present tax rate is \$52. per thousand and the evaluation would be approximately sixty percent of the initial cost of the house.

## THE PROGRAM

The living room is to be an unusually important element of the house. When Prof. Liepmann is joined by other musicians to form trios or quartets, the gathering will involve the family, and usually a number of guests. The living room should be large enough to comfortably accommodate them. It is desired that the room be orientated so as to have a good view of the ocean, and also provide within it an area of relief from the sea view to provide a stimulating contrast. It would be desirable to have it open on to a porch or terrace. There should be a fireplace with the hearth at floor level. The grand piano they presently own will be used in the living room. It is important that the piano be correctly orientated to the remainder of the room, so that the musicians may group to the right and slightly back of the pianist. Also when the top of the piano is in its raised position, the sound should be directed towards the listening groups. It should be some distance away from an outside wall... Although Prof. Liepmann does not enjoy recorded music, he would like to have a built in radio and phonograph... There should also be storage space for books provided.

Special emphasis was placed on having a separate main entrance. Entering the house thru some portion of the living room was felt to be undesirable.

Whether there should be a separate dining room or whether it should be a part of the living room or part of the kitchen was never clearly decided. In the first program there was to be an area in the kitchen and also one in the living room.

The kitchen need not be very large as Mrs. Liepmann definitely plans to spend no more time in it than it takes her to prepare the

meals. The Liepmanns will searve themselves in their home and have no desire to have hired help. The kitchen should be designed so that it may be shut off from the remainder of the house, to at least hinder cooking odors.

The Liepmanns enjoy being out of doors day or night and would like to be able to dine out of doors when the weather permitted.

The two bedrooms (master and Lisa's) need be just large enough to be comfortable. They should be provided with double beds and their own clothes hanging and drawer space. Lisa's room will be used as a guest room when she is not there. Mrs. Liepmann will use their bedroom as a sewing room. It should have space for a large cutting table. Cupboard space should be provided for a collapsable ironing board and for storage for the sewing model form.

After discussion it was decided that the bathroom should have both a bath tub and a shower.

Besides having a good sized linen closet, it was felt that there should be a small area for the storage of suitcases when the Liepmanns are at the house, and for the storage of valuables when they are not.

In conclusion: Prof. and Mrs. Liepmann want their home just large enough to fulfill their living demands. The enclosure of this space must be as inexpensive as possible, but never sacrificing durability of the structure or workability of the plan.

The studio is to be an area where Prof. Liepmann will practice the violin and work on the book he is writing. The conclusion was reached that the area should be independant of the house for the following reasons.

The studio would possess a better atmosphere or one of its own if it were apart from the home. The distance between the two provides a necessary and natural buffer zone, as opposed to having only a closed

door as separation between the living and working areas. The studio can be placed on the site where it will be more conducive to Prof. Liepmann's work, ...and in such a position he would be less apt to be disturbed by visitors.

It is hoped that a more desirable solution to the acoustics problem may be achieved from the separation of this unit. Its position may be fixed in distance from and relation to the house so as to yield a fair degree of acoustic isolation that is demanded. Being an independant structure it affords more design freedom to achieve the internal acoustical qualities desired.

The studio will contain a lavatory and toilet. It was later decided that if a shower were incorporated into the studio, it would be a complete unit and could, by necessity, be used as a guest house.

In the design of the studio the following factors were considered with respect to the acoustic qualities of the space:

- the minimum room volume required for a single artist
- the recommendation that no floor dimension be less than ten feet to keep the fundamental frequency low
- proportioning the room for good frequency response, making the average basic dimensions in a ratio of  
1:1.25:1.58
- achieving thru selection of interior finishes an approximation to the optimum reverberation time for the violin (approximately 0.75 secs.)
- no concave surfaces
- avoiding plane sound reflecting surfaces that are opposite and parallel to each other to avoid flutter
- the use of a broken ceiling pattern of a size determined



by the volume of the room and the reverberation time  
to induce better sound distribution

**Method of Heating:**

The problem of deciding on the most satisfactory way of heating the house was discussed with Prof. Hesselschwerdt of the Mechanical Engineering Department. Small wall unit gas heaters for various parts of the house were decided against, because of fan noise, inefficiency of the total system, and lack of control. A gas heated hot air system has been adopted with a distribution system carried below the floor joists. The ducts, of course, will be insulated. The furnace shall be fired horizontally, rather than the more common vertical type, eliminating one ninety degree bend in the supply duct. For this small heating job it was thought economical not to have a dripped bed for the burner that would have provided straight delivery. It is felt that the fan need not be appreciably larger to take care of the extra bend as now planned.

It is expected from the location of the studio on the site that it will be cold every morning, however, the building has been orientated so as to obtain a south-eastern glass exposure (with no roof overhang), so may be warmed sufficiently by the time it will get most of its use. The studio will be provided with a single electric wall heater.

## GENERAL SPECIFICATIONS

**SITE WORK:** The driveway shall be cleared and filled with cinders and rolled. Slight excavation and grading shall be necessary on the dining terrace and the soil moved to the main terrace. The main terrace will also necessitate slight grading. A slight reverse slope is indicated on the west side of the house to detour some of the rain water around the house. Rocks of a size too large to be moved by the bulldozer shall be left untouched.

**CONCRETE PIERS** shall be formed by using a split cylinder. They shall extend below the ground a distance of not less than four feet or if bed rock is reached before this depth, the pier shall be coupled to the rock as indicated on the drawings. The top of the pier shall be rounded so as to prevent standing water. There shall be no applied finish.

**BEAMS** and posts, joists and studs shall be select structural southern pine. The roof shall be planked with 2 x 6 T&G No. 1 grade board laid perpendicular to the supporting joists. The interior surface of the boards shall be left exposed, except in the heater room and bathroom.

**2" BATT INSULATION** shall be used in walls and 2" PC Foamglas insulation shall be used between exposed floor joists and on roof over the planks and below the flint covered 36" roll roofing.

**SIDING** shall be 1 x 4 T&G, grooved cypress laid vertically over diagonal sheathing. Interior siding for the walls shall match exterior siding in color.

THE FINISHED FLOOR shall be 3/4 x 2 1/4 No. 1 common plain-sawed oak, waxed and polished.

WINDOWS shall be manufactured by the E. K. Geyser Co. of Pittsburgh, Pennsylvania. Glass except in operable sash, shall be 1/4" double strength polished plate. Sills of all windows shall be oak.

ALL DOORS shall be solid. Interior doors shall be tightly fitted.

To my knowledge the house, and its relation to the site fulfills all the requirements of the Zoning Ordinance of the City of Gloucester. And that the structure complies with the Building Code of the City of Gloucester with but a single exception of not using all 4 x 6 posts as required. If this variation were not accepted by the Building Inspector, the change of this dimension would not effect the details, it would merely over design the posts.

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