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THESIS
on

The Design and Specification of a Dwelling House,

Submitted ^{to} by the Faculty of the

O R E G O N A G R I C U L T U R A L C O L L E G E

for the degree of

Bachelor of Science.

by

Redacted for Privacy

Approved

Redacted for Privacy

Dept. Mech. Eng.

THESIS

The design and specification of a dwelling house constitutes the thesis of the student ARVID ANDERSON of the class of '08.

This thesis consists of two parts, namely: drawings and written description or specification. The drawings and specifications are to be considered as co-operative, the latter are necessary to express what can not be fully shown in the drawings and this purpose is to state the character of the work and materials, as distinguished from the sizes and quantities shown in the drawing.

-: Specifications :-

for the Erection and Completion of a
Residence Building.

-: General Condition :-

The drawings will consist of plans of the building at every floor level elevations of every side of the building, the sectional drawings of the heights, and detail drawings of the main stairs and Cornice and various parts of the finishing work, all drawn to a scale as indicated on the several sheets.

The Contractor will make no alternations in the drawings; should any error occur he shall duly notify the designer who will made the proper corrections.

The drawings and all written figures and details are to be considered as part of, and illustrating these specifications and must be carefully followed. Should any thing be shown on the drawings and not mentioned in the specification or vice versa, the same must be considered as part of the work to be done, unless excepted in the contract. Where figures and scales do not agree in all cases follow the figures.

The contractor shall construct and maintain proper enclosures, fences etc around the premises for the protection, if necessary and convenience of the public during the progress of the work.

The Contractor shall furnish all labor, transportation, apparatus, scaffolding, materials and utensils

necessary for performing the work in the best manner and in accordance with drawings and these specifications.

The Contractor shall be liable for all violations of law caused by materials and shall obtain official license for all temporary obstruction use of streets etc. At the completion of the work the contractor shall remove all rubbish and waste materials from the premises.

The owner reserves the right to reject any or all bids and the accepted bidder shall give a surety bond in the sum of One Thousand Two Hundred (\$1,200) dollars for the faithful performance of the contract.

The Contractor will be required to furnish all materials unless otherwise specified and do all labor to complete the entire building ready for occupancy. With the exception of steam heating.

-: EXCAVATION :-

Excavate for basement as required by plans and sections of the soil from excavation to be distributed over the premises as directed by the owner. Fill in around walls and footings as required and leave in good condition.

-: CONCRETE :-

Foundation and basement walls to be built according to plans and sectional drawings. The concrete work of all footings, basement walls and exterior foundation will be composed of 1 part Portland cement, and 8 parts clean gravel.

The exposed parts of the outside walls above grade line shall be plastered with mortar composed of 1 part cement and 3 parts of clean sharp sand.

After the contractor has stretched his lines he must notify the owner so that he can check and see that he has the proper grade and dimensions. The Contractor shall figure on all brick-work as here after mentioned or shown on plans, necessary to complete the entire mason work throughout in accordance with the plans, and these specifications.

Place a 3" tiling line around building which shall have an even grade from highest place to outlet. A 6" sewer line shall be laid with an even grade, to main sewer, and all upright leaders shall be connected to it.

--: CARPENTER WORK:--

The whole of the dimension lumber throughout the building to be of dry fed fir, free from knots, sap and other imperfections detrimental to the strength.

All common boards for sheathing, flooring, linings etc. to be good, dry and sound.

--: Posts and Girders :-

Posts and girders in basement to be of sizes marked and girders being well spiked. Carefully block under ends of girders where they rest on walls with cement, and in each case give the ends at least 6" bearing.

Posts to have flat concrete footings.

--: Plates on Concrete Walls :-

There will be 2" X 8" wall plates well bedded in cement mortar on all concrete walls on which the joists rest. All joists will be placed 16" on centers and be sized to widths. All joists over 10' 0" with 1" X 4" cross bridging well fitted and nailed at each end with two 10d. nails. Double joists well spiked to be used under all partitions. Put in all double joists and trimmers where necessary to secure a perfectly strong and secure job. Joists, where they meet on cross partitions to lap well and to be securely spiked together. The whole of the first and second floors to be covered with common sized 1" boards, to be laid obliquely, close fitted and well nailed to each joists.

--: FINISH FLOOR:--

The living room and dining-room to be floored with thoroughly dried 1st class oak flooring laid perfectly tight. Halls, kitchen, and bedrooms to have 1st class fir floor 3 $\frac{1}{4}$ " face, all well and carefully laid with 30# red rosin sized building paper under. All joints to come over joists below, and carefully smothered off at completion.

Set up $\frac{3}{4}$ " grounds at all openings for finish so that all casings and other finish will have an inch lap over plaster, and also set up all necessary rough timber framing to receive the various finished wood work.

--: Outside Wood-work:--

All walls to have 2" X 4" studs set 16" on centers, doubled at all openings, four at all outside angles and three at all inside angles well trussed over all wide openings as may be necessary to secure a perfectly strong job. Single 2" X $\frac{3}{4}$ " sills and double 2" X 4" plates.

Outside walls to be covered with 6" 1st class fir rustic to be put on in a skillful manner with close joints and with nails sunk for puttying; 30# red rosin sized building paper to be used under rustic on all outside walls.

$\frac{7}{8}$ " X 4 $\frac{3}{4}$ " casings to be used for all openings with moulded cap.

--: Inside Wood Walls.:--

All walls to have single 2" sills and double 2" plates where the walls are marked 6". The studs will be 2" X 4" set 16" on center, double at sides of all

openings and well trussed over openings in bearing partitions.

Set one row of straight 2" X 4" bridging between all inside studs on both floors.

Provide all necessary centers for brickmason to build his arches by, and all necessary cutting in joists, studs, plates, etc. for the plumbing and heating contractor; and electrician and make good after same. Also furnish and set up all necessary finishing woodwork for the plumber to secure pipes and fittings to.

--: Roof :-

The roof to be constructed and framed together in a workman-like manner with timber of dimension indicated on section and detail drawings or as hereafter mentioned. All roof rafters will be 2" X 4" set 16" on centers. The deck on the right side of the roof to be constructed of 2" X 8" planks; crosspieces every 16", covered with sized 1" boards and good tim painted with metallic paint. The top to be even with the ridge of the main roof. The rafters to be well supported as necessary to partitions below.

The roof as a whole will be covered with surfaced common boards well nailed. With no space between boards greater than 3".

The whole to be covered with best quality cedar shingles laid 5" to the weather. All shingles to be free and clean from imperfections, at least 10" from the butt. Double shingles at hips and eaves. Use all necessary good

shingles at hips to secure a perfectly water-tight job. All valleys to be laid open 3" and formed with 14" tin well soldered, carefully flashed around all timbers and walls.

All tin before using, shall have one good coat of metallic paint on underside and two on upperside after it is laid.

When completed the whole roof shall be a perfect and tight job and the contractor shall be held liable for any leak or defect which may occur within six months of its completion. The cornices shall be framed and build up as indicated on the plates and details.

-: Chimney :-

All chimneys to be built as shown on planes, with exposed work all of carefully selected common brick deeply pointed in black mortar. All flues to be of sizes marked, and carefully plastered on inside. Build in all necessary tin aprons in cement at roof for the tinner to flash up to.

The fireplaces are to be built complete with fire-brick backs and facings; all brick below the flat arch are to be laid in fire clay with close joints. Provide cast iron throats, patent dampers and slides. Samples of brick and tile are to be submitted for approval.

-: Mortar :-

All mortar used in chimneys to be fresh burned lime well slacked and clean, sharp sand mixed in proportion

of one part lime to three parts sand. The upper part extended above roof to be laid in cement.

-° Mill Work :-

-: Windows :-

Basement sash to be 13/8 " thick with 1 $\frac{3}{4}$ " thick double rebated frame, of sizes shown, hang each on two 3 X3 strong steel pin butts, and each to have two 4" steel barrel bolts.

All windows throughout the house will have 7/8" blind stops, 1 3/8" sash 1 $\frac{3}{4}$ " sills pitching one in six, and seven eights heads. All two sash windows will be hung with cast-iron weights. Single sash windows hang with good quality steel butts and to have strong bronze spring catches.

All glass throughout will be selected sheets of double strength glass, free from waves, bubbles and other imperfections. The top sash on several windows where indicated in drawings to have best quality leaded glass.

All doors throughout will be of the sizes and thicknesses shown on plans, five cross-panel doors. Outside doors will be of the forms shown on elevations.

All doors to have 1 $\frac{3}{4}$ " rebated frames of fir to match adjacent finish.

-:Main Finish:-

All principal rooms on first floor as, Living room Diningroom, and Hall to be finished in flat-grained fir for dark stain finish. All to have $\frac{3}{4}$ " X 5" casing with

moulded head as detailed.

The Bathroom to have 5' 0" high wainscoting made of 4" V ceiling with common wainscot capsould.

Bantry to be fitted up as shown on plans with table tops glued and tongued, and cupboards as shown in detail drawings, etc all complete.

Under each of the large windows looking towards the conservatory, make paneled wainscoting as indicated on details, perfectly smooth at completion.

2: Ceiling Beams:-

Beams on ceiling in living room and dinningroom shall be 5" X 6" well fastened, and perfectly smooth for varnish.

-: Columns :-

Two 6" turned columns with neat base, and corresponding Ionic capital shall be placed where indicated on plans.

-: Picture Moulding:-

Of same wood and finish, around all principal rooms on first and second story.

3: Stairs :-

Front stairs will have 1 1/8" treads with moulded nosings and bed moulds, grouzed back and front for 7/8" raisers. Newels to be boxed and capped with neat moulding all according to detail.

The whole stairs will be carefully built and supported on three 2" rough carriages and left a perfect job of

its kind. The whole stair to be flat grained fir with exception of treads and hand rail which will be vertical grain fir.

The outside porches will be constructed as indicated on the plans and sections. The flooring of these porches will be of $7/8$ " X $3\frac{1}{4}$ " laid in a thorough manner with white lead joints perfectly tight. The outside steps to be carefully built up on heavy 2" plank carriages, set every 2" apart, the treads in each case having $\frac{1}{4}$ pitch from risers to nosing. Porch columns to be neatly built up with base and capitals as shown in elevations.

All cornices and dormes, etc. to be built up in a workmanlike manner, strictly according to drawings. Porch ceilings will be ceiled with $7/8$ " X 4" ceiling.

-:Hardware:-

To cost one hundred and ten dollars, (\$110.00) for all trimmings of doors and windows and fittings in china closet and pantry, closets, drawers, etc, allowance to cover net cost to Contractor. Owner shall select hardware where he chooses, and carpenter to furnish correct list of same and the latter to put it on in a workmanlike manner.

-:Plastering Specifications:-

-: Lathing:-

Lath shall not be placed closer together than $\frac{1}{4}$ " or farther than $3/8$ ". No lath shall be put on vertically

or run behind partitions from one room to another. All lath shall break joints at every sixth course and shall be securely nailed on with 3d nails. No knotty or imperfect lath shall be used.

-:Plaster:-

All rooms, with the exception of the conservatory, will be plastered. All to have two coats of plaster. First coat to be of wood fiber plaster and sand, in the proportion of one of sand to four of plaster. First, or scratch coat shall be applied with sufficient force to secure good clinches and thoroughly cover all lathed surfaces. Finished coat shall be applied with unfibered plaster and floated to a perfectly even and smooth surface and so applied that there will be no marks or joints or other defects shown in finished wall surface. All plastering shall be flush with the grounds so that all good finish will be snug to plaster and make a neat job.

The mason shall repair all defects in plaster after all other craftsmen have completed their work, and shall clean up all plaster and leave the building clean upon completion of his work. The whole to be calcimined, the owner to select the color.

-:Conservatory:-

The whole to be covered with 2nd class ceiling perfectly dry. Provide benches under each window as shown on plans. Construct a small stair leading to the larger bedroom above as shown on plan. Conceal the carriages of

the stairs with ceiling. Support the upper part of the stair with large brackets, the same to be well smothered off for paint.

Provide two lights with hinges on the roof, and one on the outside wall so that they can be easily operated. The whole to be built up in a workmanlike manner, and strictly follow the drawings.

-: Electric Wiring:-

This building is to be wired for electric lights located as shown on plans the work to be done to conform with the rules of the Pacific Coast Underwriters.

Place in kitchen a three ball annunciator with push button at front door; one on second floor and one in living room. All switches to be of approved pattern.

--:Painting:-

a:Interior Finish:-

Samples of all colors to be submitted for Owners approval. All inside finish to be well filled, and is to have one coat stain and shellac and two coats of varnish; all wood-work about kitchen and bath-room to have two coats of a hard oil with high gloss. Finish all exterior doors in same manner.

The conservatory to be finished with two coats of lead and oil.

--:Exterior Finish:-

All exterior finish to be painted two coats, after priming of white lead and linseed oil.

--:Plumbing:-

The plumber shall furnish all materials and perform all labor for the execution and completion of this work in first class manner. All plumbing shall be free from defects and tested in the presence of the owner before being covered with plaster or other finish.

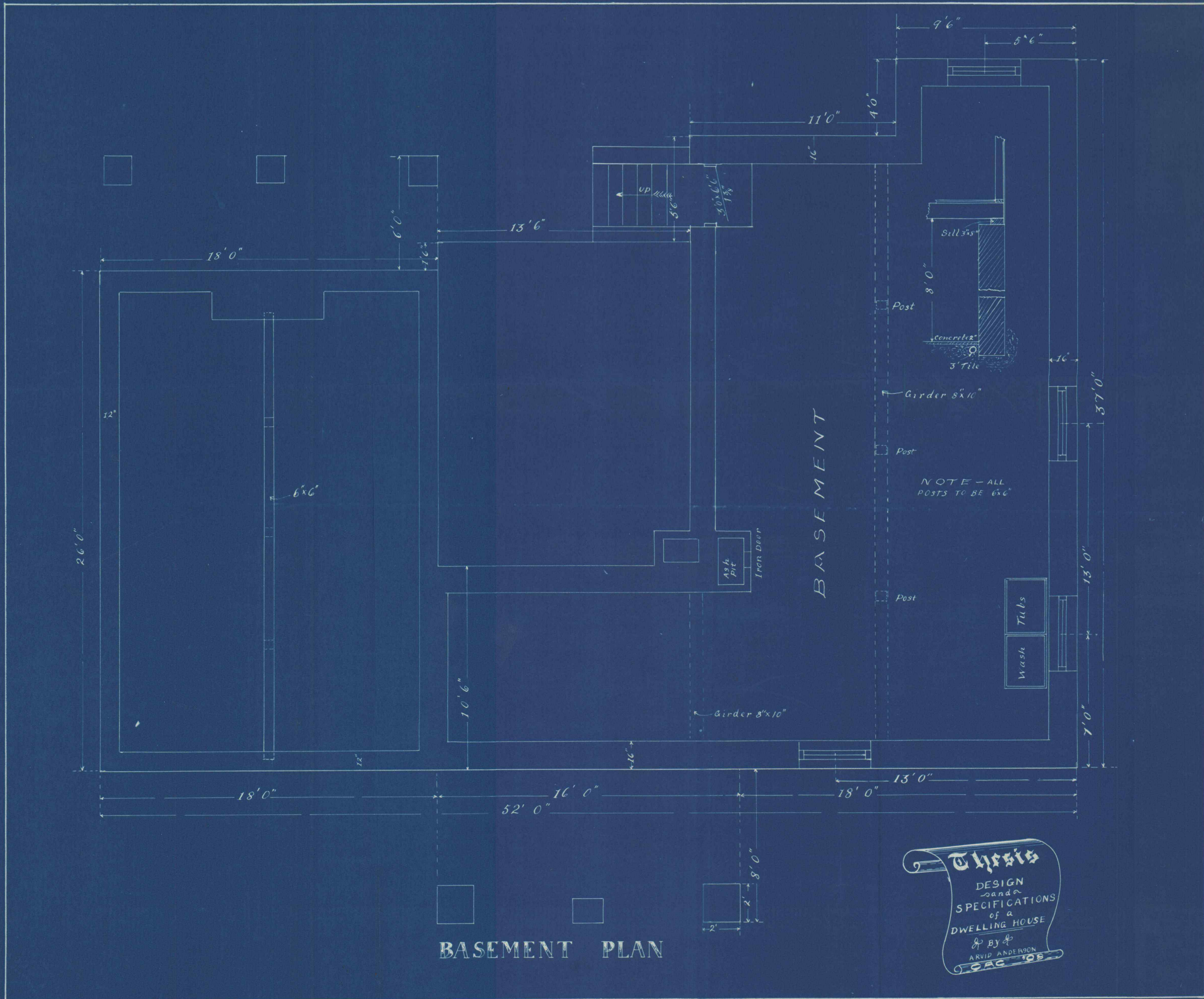
All joints in cast iron pipes shall be made with oakum and motten lead; all to be calked firmly in place. Connect water-closet to pipe line with 4" soil pipe line and connect all other fixtures to soil line with 3" soil pipe. All fixtures shall be properly vented and the vent pipe extended above roof line. All fixtures shall be properly trapped and accessible as near the fixtures as possible.

Place in kitchen one 30gal. galvanized iron boiler, and connect the same with sink, bathroom, and washtubs in basement.

Place two hose faucets, one on right and one on left side, on the exterior of the building.

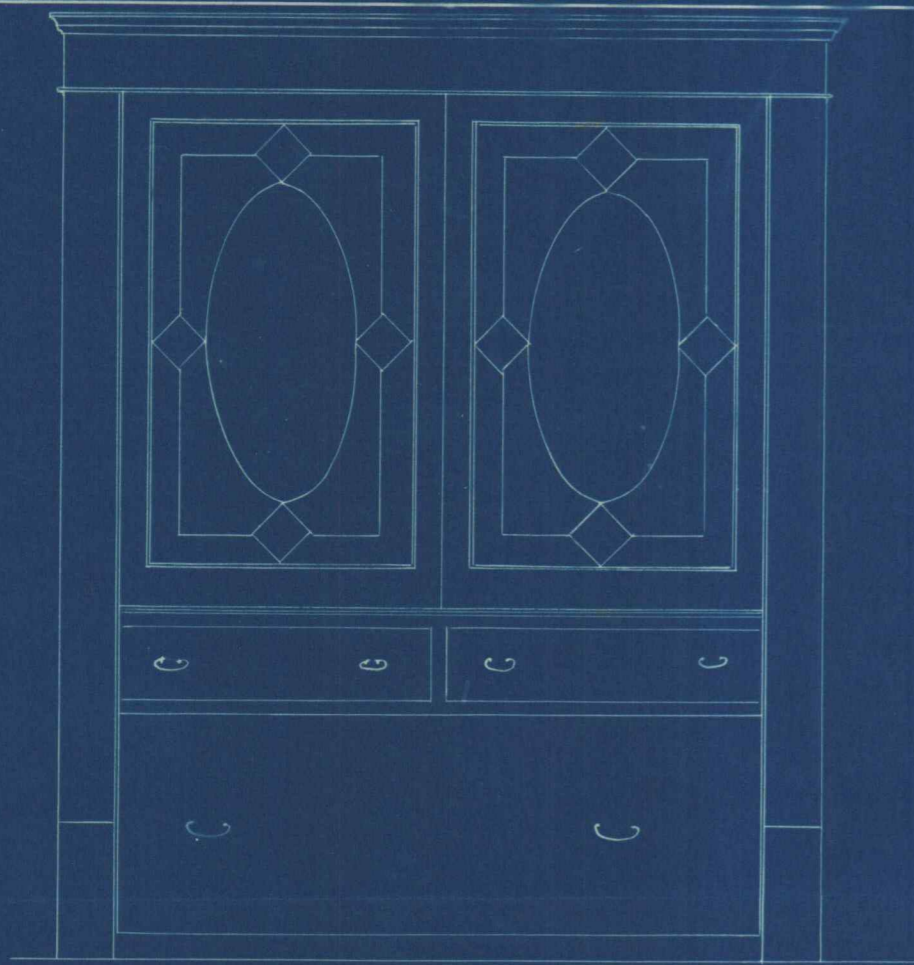
Connect street main to fixtures with $\frac{3}{4}$ " galvanized iron pipe.

-:#####:-
A. A.



BASEMENT PLAN

Thesis
 DESIGN
 and
 SPECIFICATIONS
 of a
 DWELLING HOUSE
 by
 ARVID ANDERSON
 SAC 108

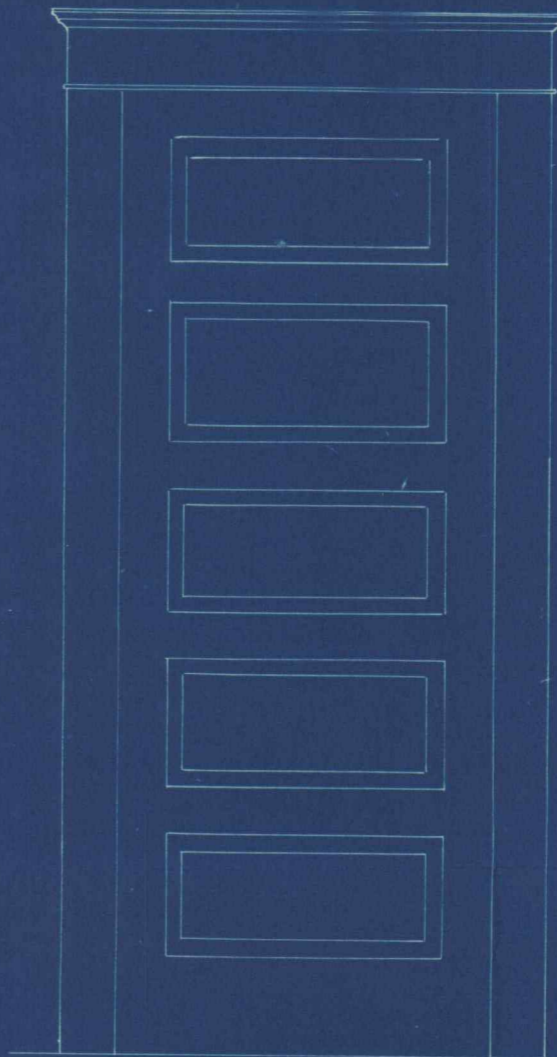


CHINA CLOSET

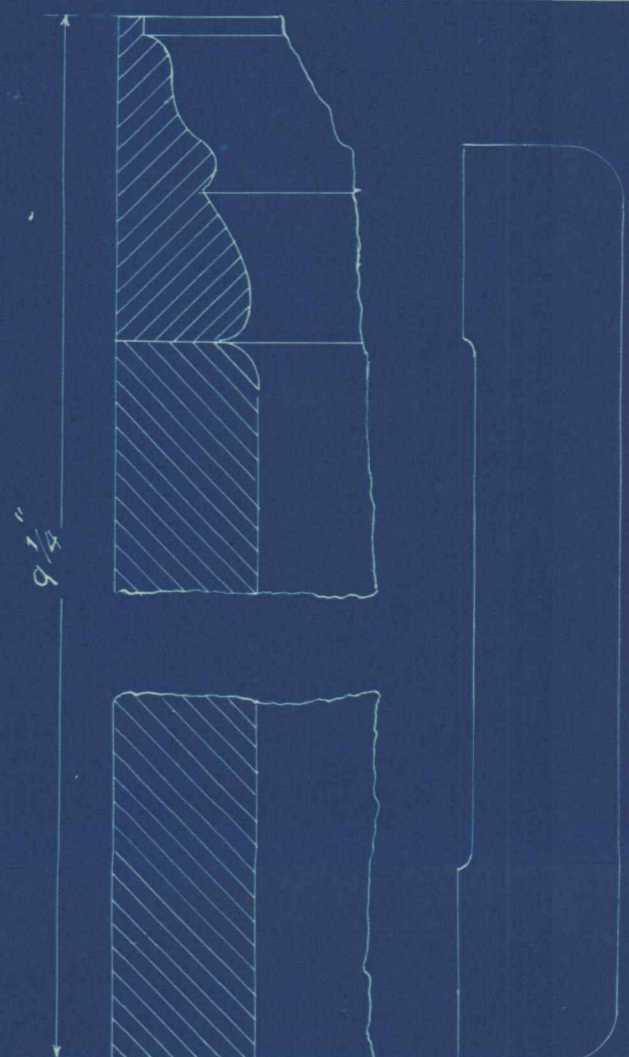
Scale $\frac{3}{4}'' = 1'$



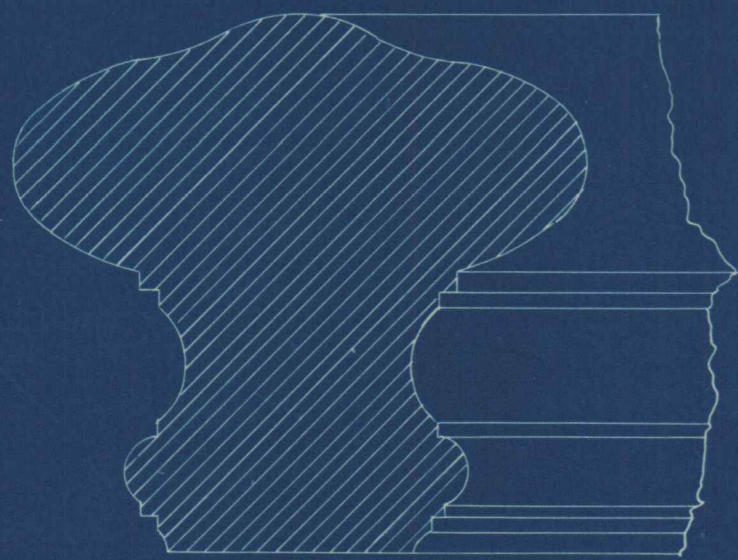
SECTION



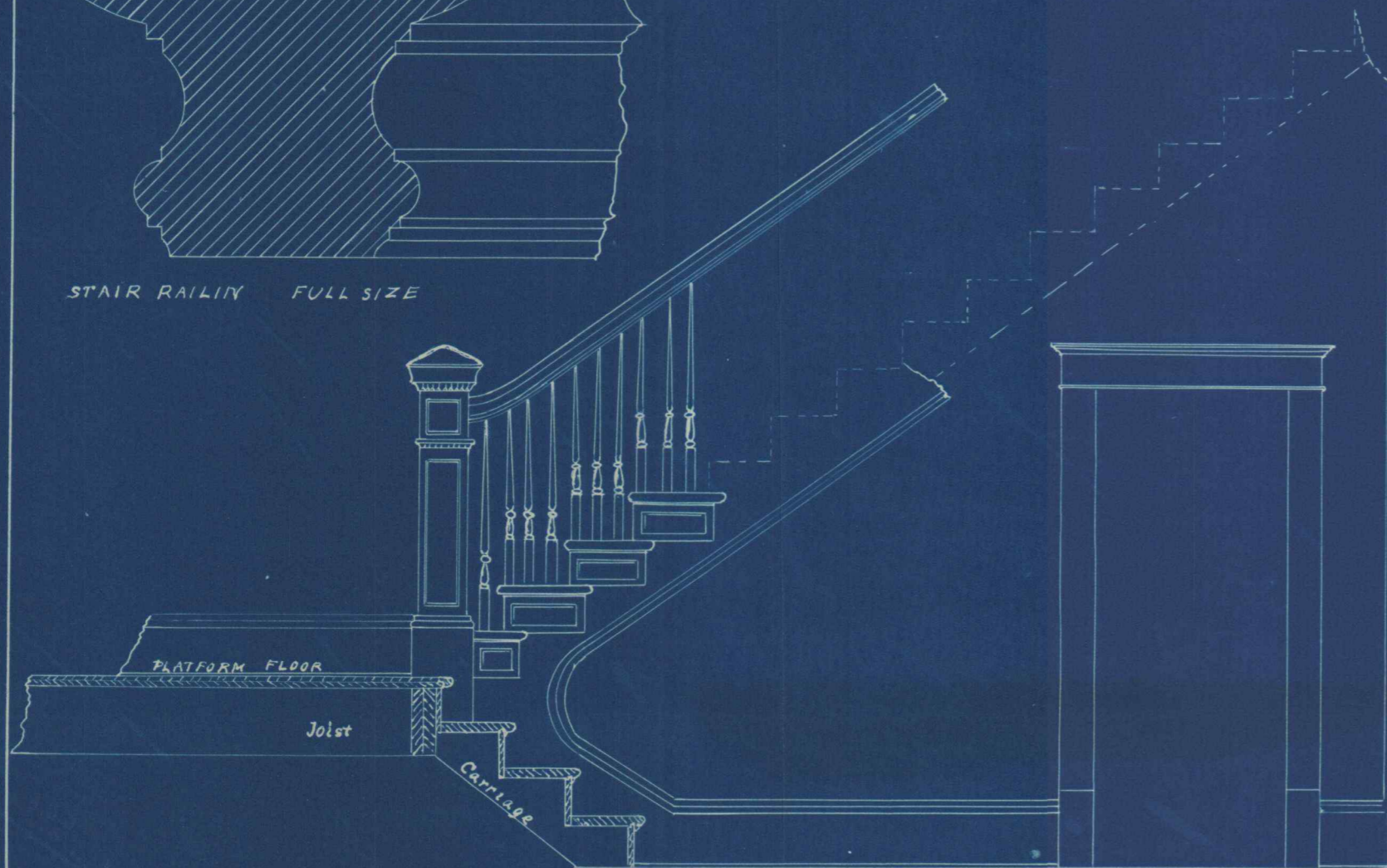
INSIDE DOOR and TRIM
Scale $\frac{3}{4}'' = 1''$



BASE BOARD and CASING
FULL SIZE



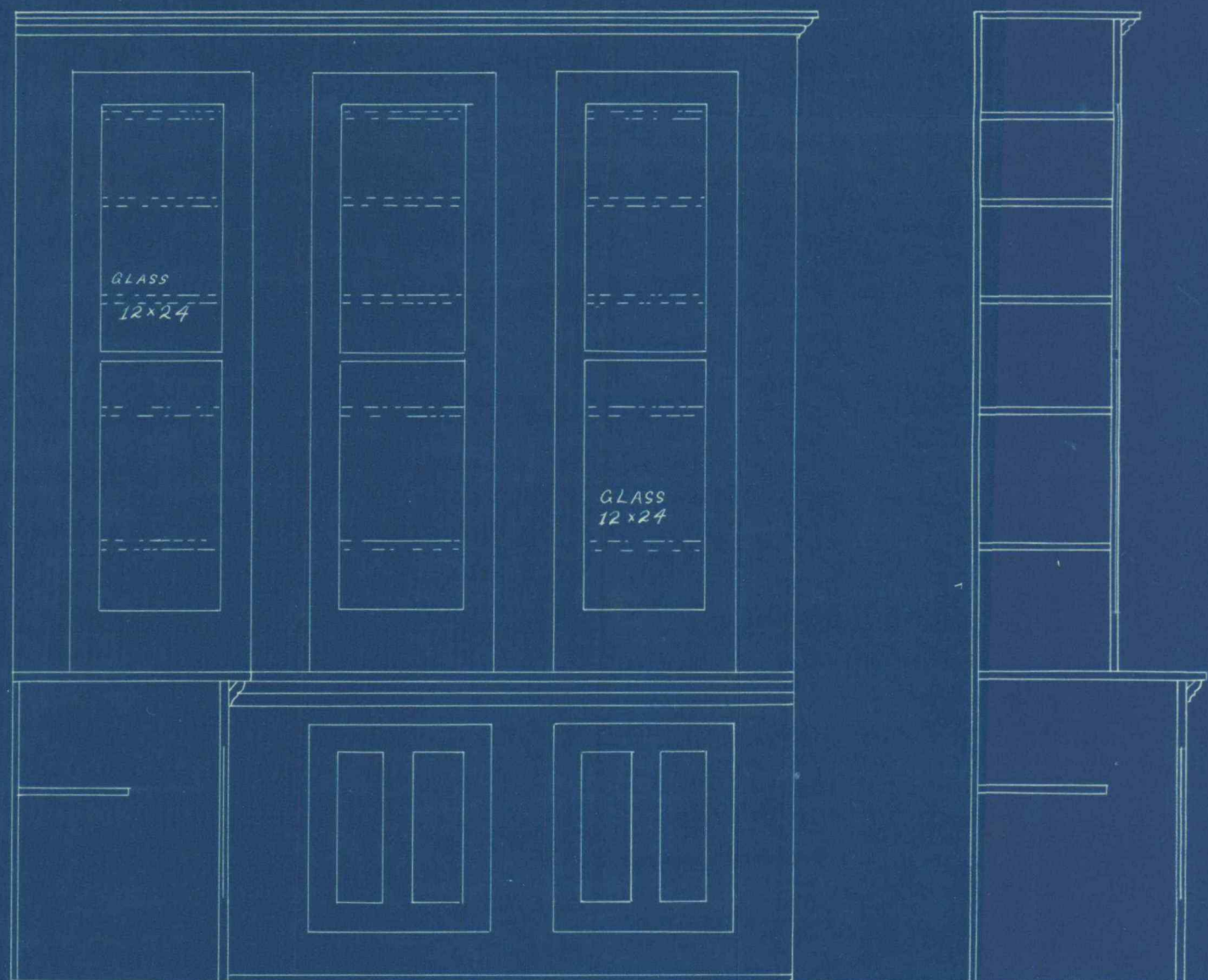
STAIR RAILING FULL SIZE



DETAIL of STAIR

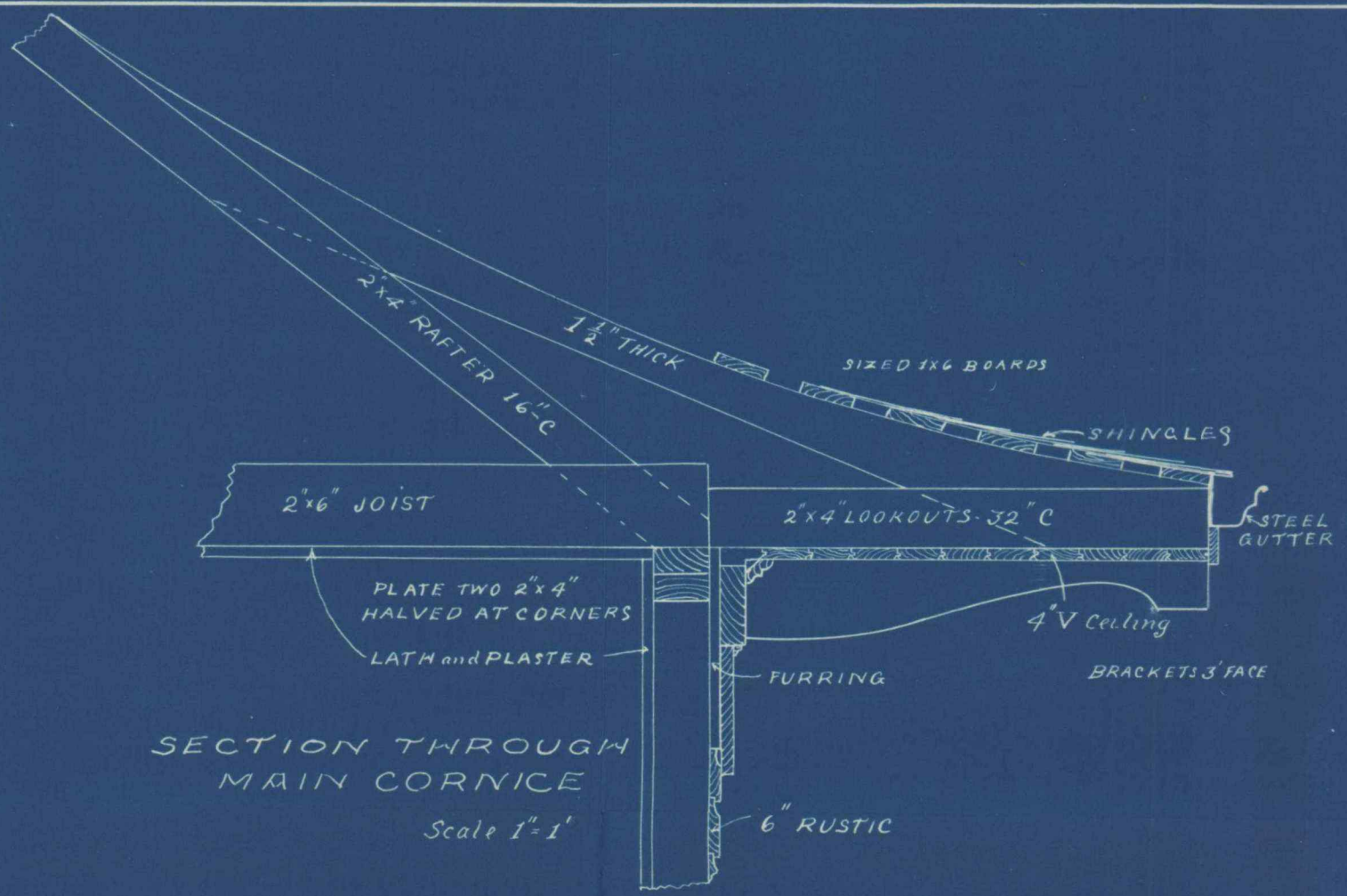


WINDOW in the HALL LOOKING TOWARDS CONSERVATORY

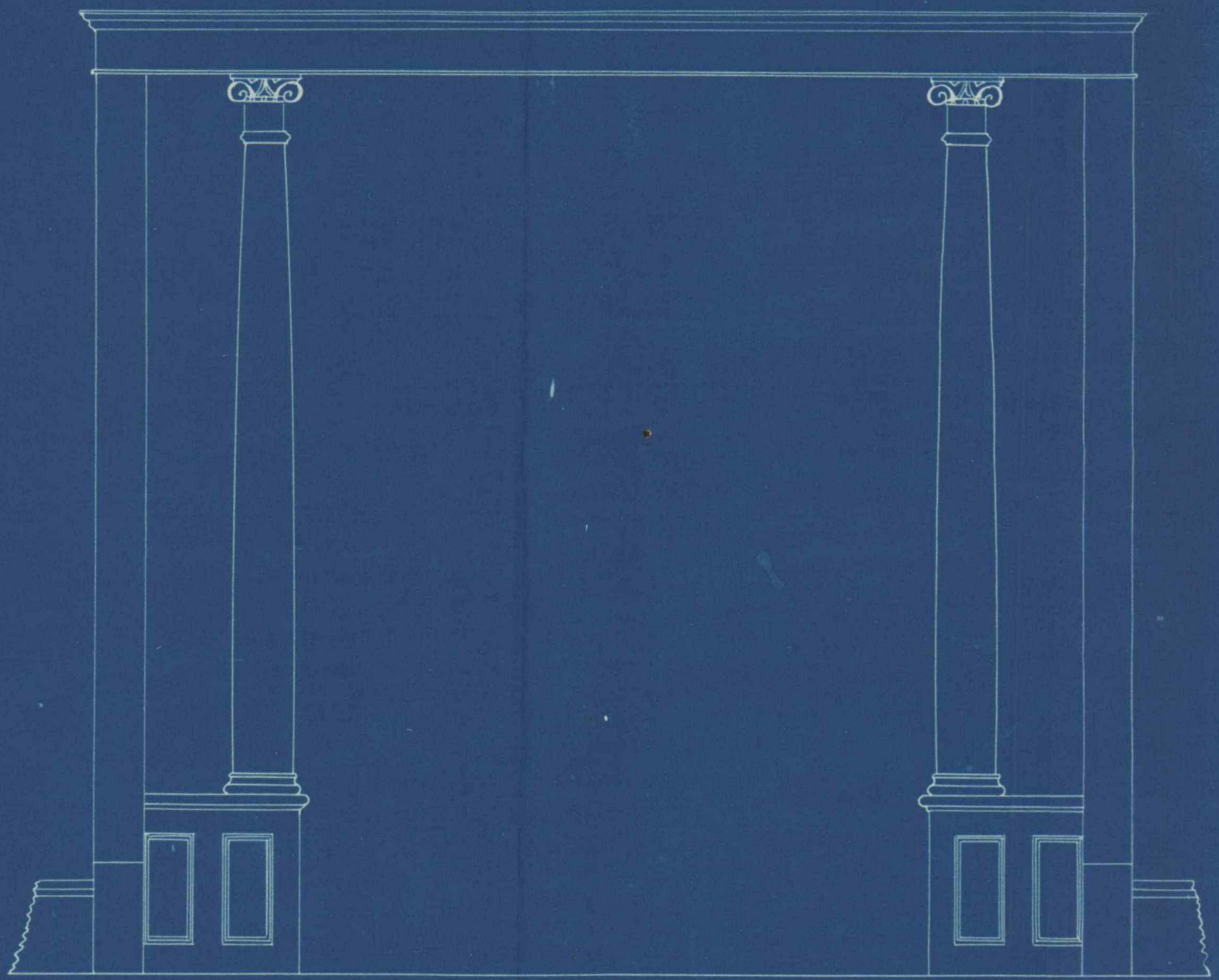


PANTRY CUPBOARD
Scale $\frac{3}{4}'' = 1'$

SECTION



SECTION THROUGH
MAIN CORNICE
Scale 1'' = 1'



GRILLEWORK BETWEEN HALL and LIVING ROOM
Scale $\frac{3}{4}'' = 1'$

Thesis
DESIGN
and
SPECIFICATIONS
of a
DWELLING HOUSE
By
ARVID ANDERSON
1908

Scale $\frac{1}{4}'' = 1'$



REAR ELEVATION

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By
ARVID ANDERSON
1908

Scale $\frac{1}{4}'' = 1'$



LEFT SIDE ELEVATION

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Scale $\frac{1}{4}'' = 1'$



RIGHT SIDE ELEVATION

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OAG '08

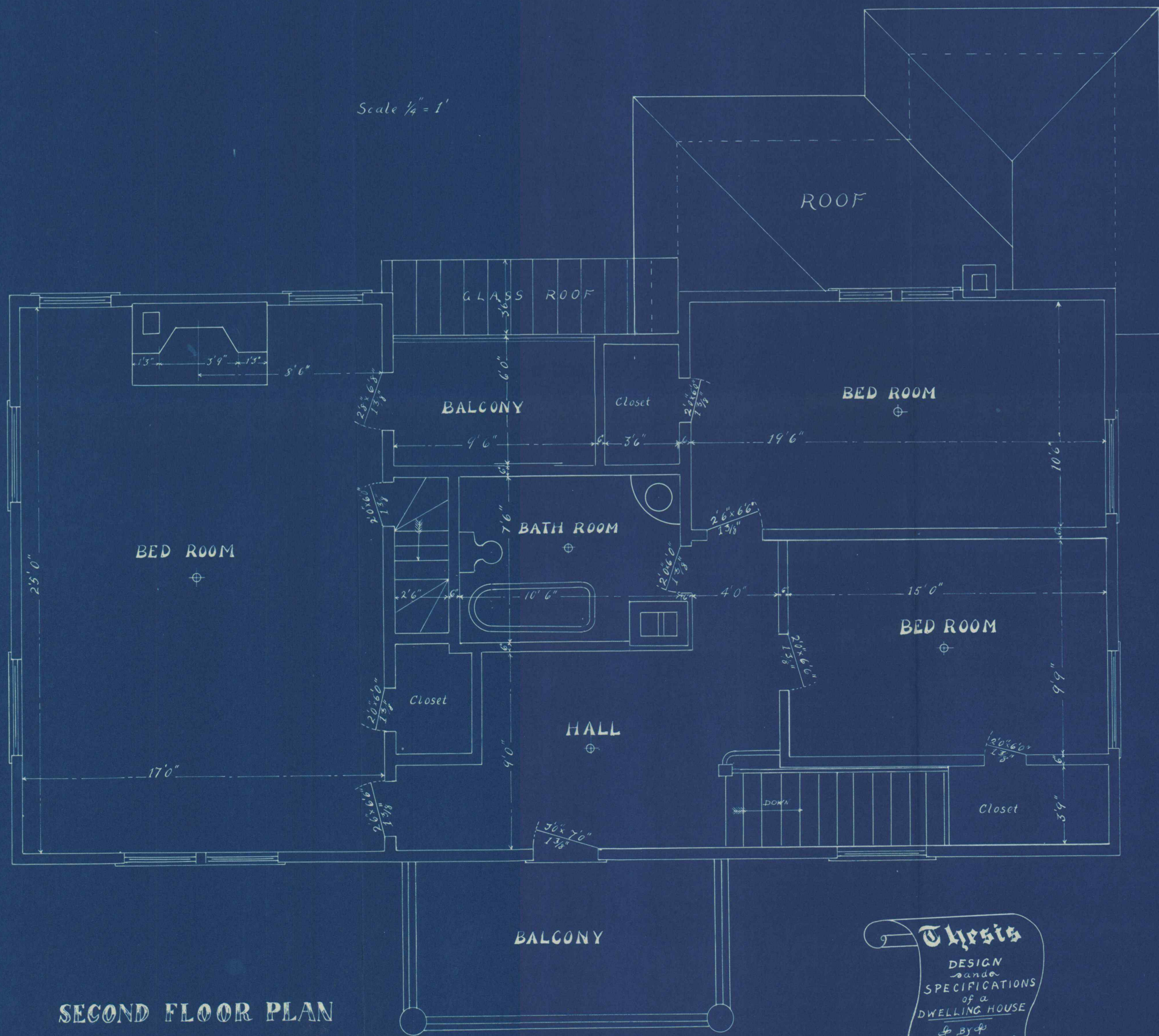
Scale $\frac{1}{4}'' = 1'$



FRONT ELEVATION

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and
SPECIFICATIONS
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DWELLING HOUSE
BY
ARVID ANDERSON
CAC 708

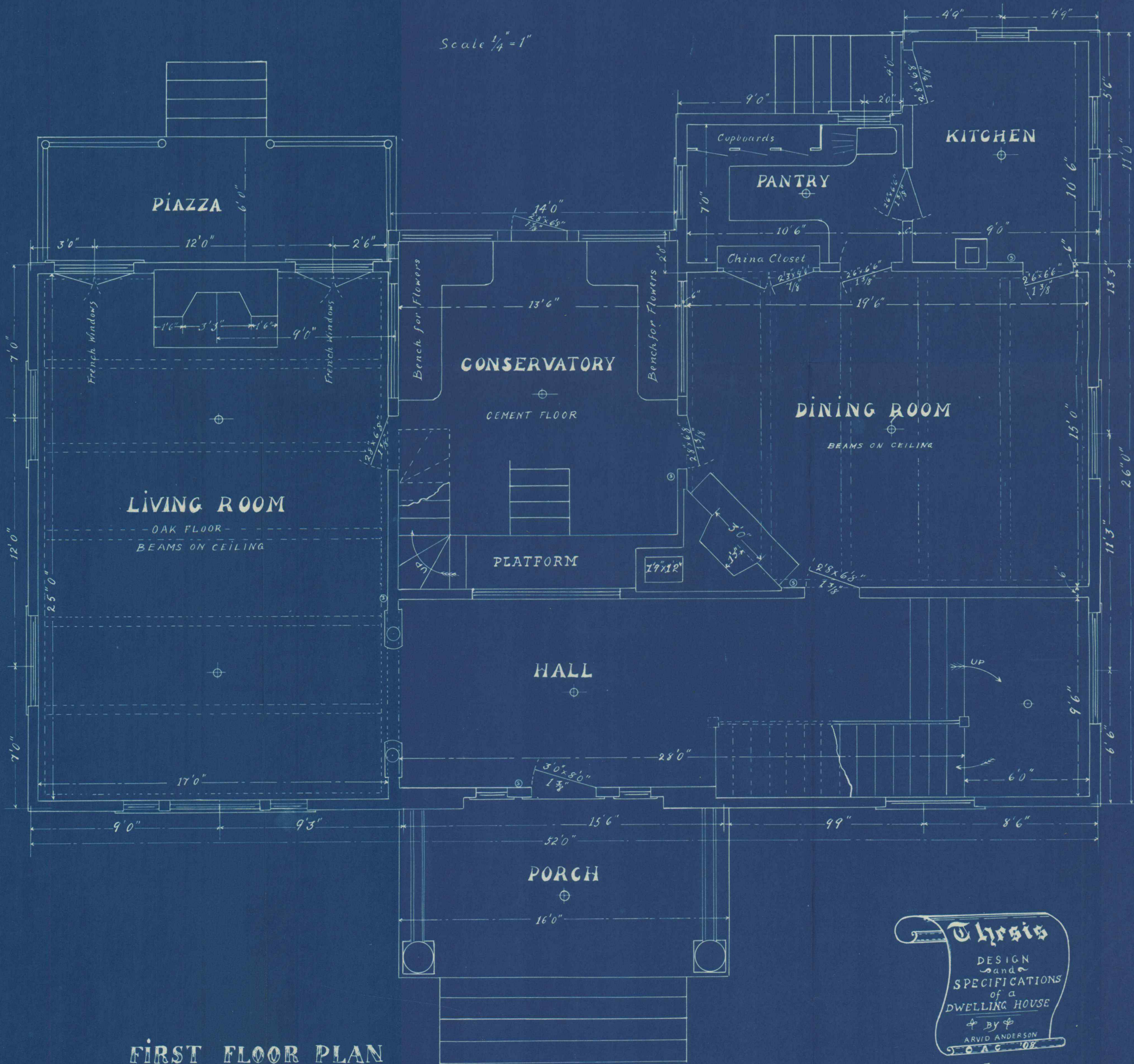
Scale $\frac{1}{4}'' = 1'$



SECOND FLOOR PLAN

Thesis
DESIGN
and
SPECIFICATIONS
of a
DWELLING HOUSE
By
ARVID ANDERSON

Scale $\frac{1}{4}'' = 1'$



FIRST FLOOR PLAN

Thesis
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and
SPECIFICATIONS
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DWELLING HOUSE
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ARVID ANDERSON
1908