THE DRAWINGS AND SPECIFICATIONS FOR A STEEL FRAME HOUSE

Thesis for the Degree of B. S.

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1929

A THESIS

OF

THE DRAWINGS & SPECIFICATIONS

FOR

A STEEL FRAME HOUSE

SUBMITTED TO THE FACULTY

OF THE

MICHIGAN STATE COLLEGE

FOR A

DEGREE OF BACHELOR OF SCIENCE

BY

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THE INTRODUCTION OF A STEEL FRAME HOUSE

In introducing any new product or method of construction, one must prove that its advantages are worth the change it necessitates in the established methods now being used or that it is more economical than the present product or method. At the present time and age however one can not afford to be pessimistic about somthing that is new or different, if such were the case the advancement of society would be retarded which should not be. The trend of the modern age is for advancement. We must keep up with advancement or we are to be of little use to society as a whole. Reference might be cited to several instances where new methods or new products have been introduced which were scoffed at when put into use or upon the market, but these same things have proven to be very helpful and productive to society.

In introducing the Steel Frame type house with reinforced concrete floors, which is not exactly new but is still in its infancy, the buying public should not scoff at the proposition but consider it seriously. The first cost has been estimated to be approximately ten (10%) per cent higher than wood construction; this was based on the old method of using bolts but with the new methods of using Electric Welding the cost can be cut down to some extent. This This house would also be absolutely fire-proof which would cut down the need of carrying Fire Insurance which if taken over a period of ten (10) years would amount to an appreciable sum. Even if Insurance was carried on a Steel Frame House the rate would be decidedly low

and a marked saving would be affected.

In the past few years steel its self has come to the foreground to a very noticeable extent, as the manufacture has been perfected and its uses increased. There is no reason why steel should not be used every place where it can/ The only thing that would bar it would be the cost and one should not let a few dollars stand in the way of a structure which will be the place he is to live in, the place where he will receive and entertain his friends and above all, the place where he will bring up his family. The ordinary business or professional man protects his family by providing ample life insurance, why should he not also provide a good home which can be enjoyed by them, a standing monument of his fore-thought and good judgment? The Home is termed by some prominent men "A Sanctuary". Its construction and appearance must express the high ideals which inspired its creation and the sentiment that keeps it alive and makes it the dearest place on earth. People that plan and build such homes, want comfort, convenience and a building of permanence. Only by the nearest approach to perfection can they give expression to their ideal of a home.

Where the home is built strictly as a business propesition, uninspired by sentiment the same lofty ideals serve a useful purpose. Permanence in a building is always an objective and it is only through the use of good things of quality that permanence can be provided. This applies especially to home construction. Petty cheapness should have no place in your plans. Quality is the determining factor which makes for pride of owership and greater investment value when it is built into your dwelling as well as being apparent to the eye.

An indication of the great economy of quality is found in the definite guarantees that manufacturers of quality products extend to their customers. Such manufacturers have priceless business reputations to maintain in order to progress with the years, it is equally imperative that they add constantly to their prestige.

The further you follow the ideal of quality, the safer you can plan, the more economically you can operate and the greater the satisfaction you will enjoy. This obtains even in the selection of the contractor who will build your home. Insistence upon the use of high quality building material immediately classified him above the average and definitely indicates that he is the best contractor to construct your home.

Plan and build your home toward an ideal. Carry it through faithfully so that you have the pride of owership which is inspired by perfection, and alone gives real satisfaction.

Specifications of work to be done and materials to be furnished in the erection and completion of a Steel Frame House for Mr._____at_____according to plans, details and these specification prepared by:

Jay E. Parkhurst,
Canditate for a Degree of Bachelor of Science.

BONDS:

Bidders shall include in the amount of their bids the cost of bonds for the faithful performance of the work and payment of bills for labor and material. One bond shall be for thirty (30%) percent of the amount of the contract for the faithful performance of the contract and another bond for the same amount for the guarantee of payment of all bills for labor and material required to complete this contract. Each bond shall also cover guarantee for a period of two years from date of final certificate against defects of material, workmanship or payment of bills. Bonds to be approved by the Owner.

INSURANCE:

The Owner of this house will obtain and pay for Fire and Wind Insurance on this building to be assigned to the Owner and Contractor as their interest may appear.

LOCATION:

The site of this building is located at_____ and must be inspected by the contractor before submitting his bid.

SCOPE OF WORK:

These specifications cover the general construction work for the erection and completion of this house, complete in all respects as expressed or implied in these specifications.

The contractor shall provide all sundry work and materials necessary for the erection and completion of this building as called for or implied in these specifications and accompanying drawings.

Grades will be furnished by the Owner as they are required by the contractor.

The contractor will assist and work with the Owner or other contractors such as; Heating contractor, Electrical contractor or Plumbing contractor as may be required to carry out the work and leave the building complete.

At such times during the construction of the building as may be deemed necessary by the Owner, the contractor shall clear away all debris both in building and on grounds and leave the building broom clean and to the entire satisfaction of the Owner.

PROPOSALS:

Sealed proposals will be received at the office of the Owner, Mr._____up to and including_____ __,19____at two (2) o'clock P. M. Eastern Standard Time, for the furnishing of all materials and performing all labor required for the erection and completion of a Steel Frame House for Mr._____ _____ at _____. Bids will be received on the General Construction work according to these plans and specifications prepared by Jay E. Parkhurst.

Plans and specification may be seen at the office of the Architects_____and may be obtained for the deposit of $_____for each set of plans taken which will be returned upon receipt by the Architects of plans and specifications in good condition within time agreed upon when same are obtained.

All bids shall be made in schedule form on blanks which shall be secured at the office of the Architects.

Each proposal must be accompanied by a certified check of five percent (5%) of the amount of the proposal, made payable to the Owner Mr.__ _____, which shall be forfeited to the Owner if the bidder whose proposal has been accepted, fails to enter into contract or to furnish the required bonds within seven (7) days after the award of the contract.

Bids must be sealed and marked "Bids for The Steel Frame House of Mr._____".

The Owner, Mr._____, reserves the right to reject any or all bids.

The unsuccessful bidders will be returned their checks upon the final award of the contract executed and approved.

Bids shall be made strictly according to proposal sheets, otherwise they will receive no consideration.

General Conditions.

APPLICATION OF CONDITIONS:

These general conditions shall apply to and govern all branches of the work with equal force whether the work is done under one entire

contract or under several separate contracts ; both for the general construction of the building and for all other contracts for the building is applicable to same.

SUBSTITUTION OF MATERIAL:

In figuring this work, if the contractor wishes to substitute any material or manufacture other than that specially mentioned in these specifications as priviledged by the word "Equal" he must state same in his proposal; otherwise the material or manufacture will be demanded in the construction of the work and no substitution whatever will be allowed. In case any such substitution of any material or manufacture is made they must first be approved by the Architect before purchased; and all workmanship and material shall conform to and be governed by the specifications written for the original material or workmanship.

PROTECTION OF SHADE TREES AND SIDEWALKS:

Contractor must take all precautions to protect trees on and surrounding the building site. He shall also protect the present sidewalks and if same are damaged during construction of the building the contractor must make same good at his own expense.

SCHEDULES FOR BIDS AND ESTIMATES:

Contractors bidding upon any work shall file with the Architects an itemized schedule of their proposition upon request from the Architects either before or after contracts are let.

The contractor to whom the contract is awarded must file with the Architect a complete schedule of all quantities of materials and labor and the cost of each, before an estimate will be allowed.

The contractor will be responsible for the accuracy of the schedule but it shall not be considered a part of the contract. It shall be used as a basis for settlement with the contractor and shall govern the cost of additions or omissions from the work as provided for hereinafter.

CO-OPERATION OF DRAWINGS AND SPECIFICATIONS:

The specifications and accompanying drawings are intended to describe and provide for a finished piece of work. They are intended to be co-operative and what is called for in either shall be as binding as if called for in both. The contractor must understand that the work herein described shall be complete in every detail, notwithstanding every item involved is not particulary mentioned, and the contractor will be held to provide all materials and labor necessary for the completion of the work intended to be described in its entirety; and may not avail himself of any manifestly unintentional error or omission. No alleged oral admission or condonation of inadvertent neglect on part of the Architect will be accepted as an excuse for poor work or omission of any work or materials.

ERRORS OR INCONSISTENCIES:

Shall any error or inconsistency appear or occur in drawings or specifications, the contractor before proceeding with the work shall make mention of the same to the Architects for the proper adjustment; and in no case shall he proceed with the work in uncertainty. For all delays and extra materials occasioned by such mistakes resulting from this (either real or imaginary) the contractor shall be held responsible for not having them explained or corrected.

DETAILED INSTRUCTIONS:

Should it appear that the work herein intended to be done, or any part of the matters relative thereto, are not sufficiently detailed or explained on the said drawings or in said specifications, the contractor shall apply to the Architect for further drawings or explanations as may be necessary, and the contractor shall conform to the same as part of his contract, so far as they may be consistant with the original drawings and specifications; and in the event of any doubt or question arising respecting the true meaning of the drawings and specifications, reference shall be made to the Architect thereon shall be final and conclusive.

MEASUREMENTS:

The general contractor and all sub-contractors employed upon this building shall verify all measurements at the building for dimensions, arrangement and construction of their respective works. The approving of shop drawings by the Architect does not release the contractor or sub-contractor from responsibility for correctness of measurements, figures, etc.

NOTES ON PLANS AND SPECIFICATIONS:

When figures and dimensions differ, the attention of the Architects shall be promptly called, for their reversions and corrections and the contractor shall be held responsible for the correctness of the executed work. It is therefor distinctly understood that he shall satisfy himself of the correctness of the drawings before giving or rendering orders on any part of the work, as he will be held responsible therefore.

The contractor must keep himself familiar with the drawings and specifications concering all parts of the work and must compare the work done with the drawings.

The contractor shall not make any alternations in plans, details or specifications; neither shall he interpret anything not fully understood but must refer all such to the Architect.

The specifications shall be thoroughly understood and the intent of them rightly followed.

SUB-LETTING OR WORK:

The contractor shall not assign or sub-let the whole or any part of his work without the written consent of the Architect.

OWNERSHIP OF PLANS AND SPECIFICATIONS:

The plans and specifications are instruments of service only and are and shall remain the property of the Architect; and they shall not be copied nor used for any other work than herein described and intended.

GRADES, LINES, ETC:

The Owner shall establish the lot lines, shall determine the grades and shall determine the position of this building on the lot and the contractor shall carry out his work according to same.

LIABILITY INSURANCE:

Each contractor and sub-contractor shall provide, maintain and pay for all accident and liability insurance for all workman employed by him in connection with the work on the building during the entire progress of the work and protect the Owner from all

damages which may arrive through any accident which may happen to any workman or person about the premises or passing the same and which results from either contract or extra work under his charge. All of said Liability Insurance shall be maintained strictly in accordance with the laws relating to same in the state of _____ and the contractor must on request of Owners, show satisfactory proof of the maintainance of said Liability Insurance.

ACCESS TO BUILDING:

The Owner Shall have access to the building at any time during the construction of the same.

GUARDS:

The contractor shall provide safety lights at night to protect the public from danger and shall provide all other guards both day and night as may be necessary.

PERSONAL ATTENTION:

The contractor shall give this work his personal supervision and shall place a fully competent foreman in charge of the work at the site.

DISCHARGE OF INCOMPETENT WORKMAN:

Any careless or incompetent workman must be discharged and removed from the work by the contractor and when directed to do so by the Architect.

POWERS OF OWNERS TO FURNISH MATERIALS OR TO COMPLETE WORK:

Should the contractor become insolvent or at anytime refuse or

neglect to provide a sufficiency of properly skilled workmen or the materials of the proper quality, or failing in any respect to prosecute the work with promptness or diligence or failing in the performance of any of the agreements herein contained; such refusal, neglect or failure being certified to by the Architect, the Owner shall have the right after three days written notice to the contractor to provide such material and labor and to deduct the cost thereof from any money then due or thereafter to become due to the contractor under this contract. If the Architect shall certify that such refusal, neglect or failure is sufficient grounds for such actions, the owner shall also be at liberty after five days written notice to the contractor to terminate the employment of the contractor from the said work and to enter upon the premises and take possession for the purpose of completing the work comprehended under this contract, of all materials, tools and appliances thereon and to employ any other persons or person to finish the work, and provide materials therefor; and in case of the discontinuance of the employment of the contractor he shall not be entitled to receive any further payment under this contract until the said work is wholly finished, at which time, if the unpaid balance of the amount to be paid under this contract shall exceed the expense incurred by the Owner in finishing the work such excess shall be paid by the Owner to the contractor, but if the expense shall exceed the unpaid balance, the contractor shall pay the difference to the Owner. All above must be audited and certified to by the Architects whose certificate shall be conclusive and binding upon the parties.

TEMPORARY HEAT:

Contractor shall furnish and provide all materials for temporary

heat during the execution of the work, maintaining a temperature of 40°F both day and night to protect from damages from frost. If the regular heating plant can be used, the general contractor must make arrangements with the heating contractor for the use of the same, and must deliver same back to heating contractor in good condition. If the general contractor fails to provide fuel, etc., necessary for the purpose, the Owner shall be at liberty to provide same and charge to general contractor.

CLEARING AWAY DEBRIS:

Each contractor or sub-contractor employed upon the building shall clear away from time to time debris resulting from his work and at completion shall clean away all debris and unused material and appliances due to his work and leave the building broom clean and in perfect and clean condition at completion.

EXCAVATION AND FILLING:

Contractor shall excavate for the basement and place dirt as directed by the Architect. The excavation shall be larger on all sides than required for the footings and walls so that the walls may be properly coated and water-proofed up to the ground line. Provide sand filling on inside of building as required to bring to proper height to receive concrete groute for basement floor. This filling shall be properly puddled and tamped. All surplus earth shall be carried away by the contractor. All work must be left to the entire satisfaction of the Architect at completion.

Drains:

Provide land tile drains on the outside of the building on all sides. The high point shall be in the back sloping uniformly to the point the sewer leaves the house. Tile shall be four (4) inch, use 90 degree elbow tile around corners at approximately the elevation of the footings. Directions will be furnished by the Architect. The contractor shall obtain and pay for all permits.

Drains shall have the joints covered with tar paper and filled around with coarse gravel or broken stone for approximately twelve (12) inches above the tile. All drains must be inspected by the Architect before being covered.

CEMENT:

Cement used in this building shall meet the requirements of the "Specifications and Tests for Portland Cement" as provided by U.S.D.A. Bulletin 1926.

WATER:

Water used in mixing concrete shall be clean, fresh and free from oil alkali or organic matter.

HYDRATING LIME:

All hydrated lime shall be perfectly hydrated. All lime used shall be hydrated unless otherwise called for. All other lime shall be equal to Kelly Island or Bay Shore and shall be slaked at least ten(10) days before using.

SAND AND GRAVEL:

Sand and gravel shall be satisfactory to the Architect and shall be

submitted to him for approval. The maximum size of the aggreate shall not be greater than one(1) inch.

NOTE: no bank run gravel shall be used in this building except by special permission from the Architect.

NOTE: all materials must be approved by the Architect before being used in this building.

FOOTINGS:

Footings shall be at least eight (8) inches thick and extend at least one (1) foot each side of the wall. The concrete shall have a ratio of seven (7) Gal., of water to one (1) sack of cement and a slump of not more than four (4) inches.

BASEMENT WALLS:

Basement walls may be of precast cement blocks that will withstand a compressive stress of at least two thousand (2000) pounds per square inch, or an approved equal.

The height of the wall shall be eleven (11) cement blocks or an equivalent height.

Partitions in the basement shall be of the same type of material as the walls.The blocks shall be coated on the exterior of all exterior walls from the bottom of the footings to the top of walls; on top of all exterior walls receiving brick walls; on the under side of all copings; with two (2) coats of # 16 G F Waterproofing.The interior of all basement walls shall be plastered with neat cement mortar and the interior walls shall be left smooth.

DRAINS UNDER BASEMENT FLOORS:

Provisions must be made for the placing of four (4) inch extra heavy

C. I. sewer pipe under the floor before the floor is laid.

BASEMENT FLOOR:

The floor shall be six (6) inches thick placed upon the sand, the sand being properly tamped , and shall have a ratio of seven (7) Gal., of water to one sack of cement and a slump of not more than six (6) inches. The top one and one-half (1½) inches shall be of a mix of one (1) part cement to three (3) parts sand a slump of not more than three (3) inches.

NOTE: The mixing of all cement shall be in a power mixer and mixed not less than three (3) minutes.

The finished floor shall be trowled smooth and after the cement has taken its initial set it shall be kept wet for one (1) week.

EXTERIOR BRICK WORK:

The contractor shall allow _____ dollars per thousand for the exterior brick when making his bid. The exterior brick will be selected by the Owner. The mason shall see that all sills are properly leveled and all frames plumb before bricking them in. All outside windows and doors openings shall be built of exact sizes to receive the frames.

The exterior brick shall be laid one (1) inch from the sheeting to provide a dead air space.

CHIMNEY AND FIRE PLACE:

Build footings at least one (1).foot larger than base of the chimney and use one-quarter (¼) inch round steel bars spaced six(6) inches on centers each way.

Build chimney as shown of common merchantable brick. Brick shall

be hard burnt.

Chimney shall be faced on the outside with brick as specified for the exterior walls.

Provide fire -clay brick lining for interior lining of the fireplace. It shall extend up to Terra Cotta flue lining. This lining shall extend the full height of the chimney. Fireplace hearth shall be faced with Shale brick and Mantel shall be of Oak, with mouldings.

Provide and set Colonial damper, also provide and build in ash pit dump and cast iron frames for soot and ash pits. Build in all thimbles.

Build an eight (8) inch concrete cap for chimney.

The floor for two (2) feet in front of the hearth shall be of tile laid at the same elevation as the finished floor of the room. The joints between the tile and the wood floor shall be matched so as to leave no cracks or unevenness at the joint.

The tile shall be of a color and quality approved by the Architect.

The contractor shall allow_____dollars per square foot for these tile.

FIRST AND SECOND FLOOR:

Both the first and second floors shall be of Hy-Rib construction placed upon Steel I Beams. The Hy-Rib shall be three-quarter (¾) inch copper bearing. Truscon or an approved equal. The Hy-Rib shall be laid with the rib up and all joints shall be lapped at least eight (8) inches. Seven-thirty seconds (7/32) inch round steel rods shall be placed eight (8) inches on centers perpendicular to the Hy-Rib. The Hy-Rib shall be securely fastened to the steel I beams which are shown on the drawings, at least every two(2) feet and fastened

The floor shall be of Nailcrete two,one-half (2½) inches thick mixed in the following proportions: one (1) bag Nailcrete, two (2) bags Portland Cement,four (4) cubic feet of sand, mixed at least three (3) minutes and with just enough water to give a plastic mix and no more.

A hard wood floor of approximately two (2) inch strips of one (1) inch material which shall be Oak or Hard Maple shall be laid over this and properly nailed except in the Kitchen and Bath Room which shall be tile of approximately the same quality as specified for the front of the Fire Place.

All joints between the tile and the wood shall be smooth and left in a perfect condition.

The Hy-Rib shall be fastened to the I beams with clips as manufactured by Truscon or an approved equal.

ROOF:

The roof shall be a two (2) inch slab with Hy-Rib, Steel Rods and Nailcrete , the same as specified for the first and second floors.

This slab shall be covered with a Tile Roof and shall be left complete in every respect. The roof shall carry with it a guarantee for at least twenty (20) years.

The Ridge Board shall be constructed of the same tile as the roof, and shall be securely fastened to the roof and left in a workman like manner.

The evetroughs shall be of number _____ gauge copper securely fastened to the eves and given a good slope to the front if the house.

The down spouts shall be of the same gauge copper and shall be securely fastened to the wall and enter the Basement at least eighteen

(18) inches above the ground, and taken from there to a connection to the sewer. The down spouts shall be of square or rectangular cross-section. All joints shall be properly soldered and left absolutely water tight and in no way subject to leaks.

The portion of the roof extending over the ends of the house shall be reinforced extra with one-quarter (¼)inch steel rods;perpendicular to the rafters; spaced three (3) inches on centers and extending two (2) feet past the first rafter.

The chimney shall be laid up past the eves and the vent for the sewer shall be installed before the roof is poured.

SHEETING:

Sheeting on all exterior walls shall be of Masonite Structal Insulation,Gyp-Lap or an approved equal. Sheeting shall be securely fastened to the steel studs as shown in the Steel Framing Manual for Architects and Builders, Bulletin # 11 Detail #31, and their specifications;and shall leave all joints tight and all sheeting securely fastened to the studs. The wire clips shall be long enough to extend into the exterior brick and give a good bond.

PLASTERING ON INTERIOR WALLS:

Plastering on interior wall shall be done on 3/8 inch copper bearing Hy-Rib, securely fastened to the studs at least eighteen (18) inch intervals. All joints between the Hy-Rib shall lap at least four (4) inches and be securely fastened at least eighteen (18) inch intervals.

All inside corners shall be reinforced with Truscon Cornite or an approved equal securely fastened to the 3/8 inch Hy-Rib.

All outside corners shall have Truscon or an approved equal corner bead. This shall be securely fastened to the Hy Rib.

The plaster shall be Kelly Island or an approved equal. There shall be three (3) coats applied and the third coat shall be given a sand finish except in the bath room which shall have a white tile on the wall five feet high and the remainder of the wall and the ceiling shall have a sand finish as before specified.

All work shall be plumb, straight and true.

CEILINGS:

The ceiling of the first floor shall be of the same construction as the side walls and the Hy Rib shall be securely fastened to the I beams by clips as furnished by Truscon, or an approved equal.

Ceilings of the second floor shall be supported by three (3) inch 5.4 pound channels which shall be securely fastened to the rafters either directly or by suspension. The suspension member 1/4 inch steel rod. The Hy Rib shall be fastened to the channels as before specified.

Steel;

The steel shall be that Manufactured by "The Steel Frame House Co" as described in their Bulletin #11 or an approved equal.

The sills shall be securely anchored to the foundation with three-quarter (3/4) inch bolts at least every six (6) feet, the anchor bolts shall extend into the foundation at least one (1) foot.

In fastening all joists to plates, joists to sill, rafters to ridge board or plate or studding to plates or sills, the Specifica-

tions in the Steel Framing Manual for Architects and Builders, Bulletin # 11 published by the Steel Frame House Company of Pittsburg, Pa., shall govern, but there shall in no case be less than two (2) three-quarter (3/4) inch bolts per member which shall be headed.

In fastening the channels to the rafters for the ceiling of the second floor the same method shall be used.

The contractor may submit as an alternate an Elictric Welded job if he wishes, in place of the angles and bolts.

All steel must be free from rust and have two (2) coats of mineral paint before being shipped from the factory.

TILE FOR KITCHEN, BATH ROOM , AND IN FRONT OF FIREPLACE:

The tile shall be United States Quarry Tile Co., Sparta Ceramic Co., or an approved equal.

STAIRS:

Stairs shall be of four (4) inch 5.4 pound channels with one (1) inch bars threaded and bolted to the channels with a nut on each side of the channels to hold them in place. These bars shall be steel and spaced so as to give a seven (7) inch riser every seven (7) inches.

The treads shall be made of Nailcrete with a two (2) inch slab the same as specified for the roof.

The treads shall be covered with hard wood to match the floors. The width of the hard wood tread shall be ten(10) inches.

WINDOWS:

Windows shall be Steel Casements of Truscon, Grenfire or an approved equal, all window frames shall be set square and plump and properly insulated so as to keep out wind, snow and rain.

Each window shall be equiped with Swing Type Screens and arranged so that glass may be substituted for the screens and all joints must be tight. Windows shall be equiped with Geared under Screen Adjuster # 25, Truscon Manufacture.

DOORS:

The outside door on the front of the house shall be solid Oak or an approved equal and shall have three (3½) glass windows in its top not less than six (6) inches by eighteen (18) inches. This door shall be properly fitted to the steel frame and must work satisfactory upon acceptance of the house by the Owner.

The outside grade door shall be of Yellow Pine or an approved equal. It must fit as before specified.

The interior doors shall be of Oak or an approved equal and must fit as before specified.

The door between the kitchen and dining room shall swing both ways.

There shall be plastered arches between the kitchen and breakfast room and also between the living room and dining room. These shall be left, at completion in a satisfactory workman like manner.

INSULATION:

The under side of the rafters from the ridge down to the ceiling of the second floor, the upper side of the channels supporting the

ceiling shall be covered with Masonite or an approved equal Insulating Board. All joints shall be tight and the work left in an entirely satisfactory manner.

In all exterior walls the partitions shall be filled with Wool-Felt or an approved equal.

All windows shall be insulated with Wool-Felt and all joints shall be such as to allow no wind to come through.

All doors opening to the atmosphere shall be weather stripped and left in an entirely satisfactory manner.

FINISHING WOODWORK:

All doors, casings and mop boards shall be sanded smooth, stained and varnished, with the highest quality of Varnish obtainable, three (3) coats. the first and second coats of Varnish shall be sanded off smooth and the last coat shall be absolutely clear and smooth.

The floors shall receive the same as specified for the above.

The kitchen woodwork shall be finished in glossy white Enamel, receiving one (1) coat of filler and two (2) coats of Enamel.

The bath room's woodwork shall be finished in white the same as specified for the kitchen. The Medicine closet shall receive the same paint as above specified.

CUPBOARDS CHINA CLOSETS AND BOOK CASES:

The contractor shall allow _____ dollars to build cupboards, china closets and book cases.

CORNICE:

The contractor shall plaster on the under side of the eves

with a neat cement mortar. This shall be left in a workman like manner but need not be trowled smooth.

HARDWARE:

The hardware used in this house shall be Sergant, Yale or an approved equal. The contractor shall allow _____dollars for the hardware to be used in this house.

GLASS:

Glass for basement windows shall be polished wire glass.

All other glass shall be AA Double Strength Sheet.

Sheet glass shall be free from all bubbles and waves, and also free from all putty and paint marks at completion.

Contractor shall make good all broken glass at the completion of the building.

CLOTHES CHUTE:

Clothes chute shall be eighteen (18) inches square on the out side and lined with sheet metal. All joints and surface must be absolutely smooth and have no sharp edges. Build up eighteen (18) inches above second floor and leave opening in chute at first floor. Finish outside of clothes chute to match woodwork of second floor but it may be plastered in the kitchen.

ELECTRICAL SPECIFICATIONS.

SERVICE:

The service to this House shall be three (3) wire 110-220 volt and shall be brought to the Basemeht in 1¼ inch conduit. The service switch shall be Bull Dog, Square D or an approved equal, sixty (60) ampere switch. The service switch shall be set.in the Basement at regulation height from the floor.

PANNEL:

One (1), six (6) circuit, dead front distrubition pannel shall be set near the main the main switch in the Basement.The distrubition pannel shall be Frank Adams or an approved equal.

CIRCUITS:

All work must be in rigid conduit. Size of conduit, size of wire and number of wires in any conduit shall conform to the Underwriters Specifications.

Provide one (1) fifteen (15) ampere heater circuit in Bath Room.

Provide one (1) circuit for the garrage which shall leave the Basement under ground with galvanized conduit and be run with lead covered wire.

SWITCHES AND SWITCH PLATES:

All switches shall be tumblar type. All cover plates for switches and outlet plugs shall be Bakelite.

Contractor shall allow _____ dollars for Fixtures.

NOTE:

Anything not covered by these specifications must conform to the Underwriters Specifications or Special City Rules.

PLUMBING SPECIFICATIONS.

WASTE PIPE:

All waste pipe shall be of extra heavy C.I. properly traped and vented according to the Plumbing Code of the City; but in no case shall the vent pipe be less than four (4) inch C.I. Install a ball trap in Basement where sewer leaves .

COLD HARD WATER LINES:

All cold hard water lines shall be 3/4 inch run in a workman like manner to the sink in the Kitchen, the Bath Room Lavatory and Closet. Laundry Tubs in the Basement and sill cocks, one on each side of the house. The sill cocks shall be Crane, or an approved equal, Stop and Waste valve shall be installed in these lines just inside the building.

HOT AND COLD SOFT WATER:

Hot and cold soft water lines shall be 3/4 inch,run,in a workman like manner to the Kitchen sink, the Bath Room Lavatory and Tub and the Laundry Tubs in the Basement.

WATER SOFTENER:

The water softener shall be Crane-Warlo Electro-Matic having a capacity of Onethousand five hundred gallons, or an approved equal.

HOT SOFT WATER HEATER:

The soft water heater shall be Electric similar to Crane number C 38160 size 4.

FIXTURES:

The Bath Tub shall be Crane number C 3308-LA six (6) foot tub complete with shower attachments, or an approved equal.

Lavatory in Bath Room shall be Crane number C 270- S1, or an approved equal. It shall be equiped with hot and cold soft water connected to the double faucet and provisions made for a cold hard water faucet of similar pattern.

Closet shall be Crane number C 10400 or an approved equal;

Kitchen sink shall,be Crane number C 19188-L2 or an approved equal

Laundry Tubs in Basement shall be Crane number C 21160 or an approved equal, with hot and cold soft water , cold hard water in each tub.

Soap Dish shall be Crane number C 25304 or an approved equal and shall be installed on the wall side of the of the tub conveniently above the tub in the wall.

Toilet Paper Holder shall be Crane number C 25360 or an approved equal installed conveniently to the closet.

Two (2) Towel Bars ,thirty (30) inches long shall be Crane number C 25170 or an approved equal shall be installed convenient to the lavatory and bath tub as directed.

Medicine Cabinet shall be Crane number C 26902 size 25½ X 37½ inches or an approved equal, installed symetrically over lavatory.Medicine Cabinet shall have a plane mirror and plate glass shelves, it shall be hung square and plumb.

HEATING SPECIFICATIONS:

The Heating Plant shall be American Radiator Company or an approved equal Hot Water Heating Plant . The heating plant shall carry with it a written guarantee that it will keep the house at seventy-two (72) degrees F at all times.

COMPUTATIONS.

ROOF

Wind load		20 # per sq. ft.
Snow "		10 # " " ".
Concrete		16 # " " ".
Steel rafters		10 # " " ".
Take a 4' spacing		
Wind	20 x4 =	80 #
Snow	10 x 4 =	40 #
Concrete	16 x 4 =	64 #
Steel	10 x 1 =	10 #
Uniform load of		194 # per foot of rafter

SHEAR

194 x 8.06 1560 # reaction

BENDING MOMENT for 8.06' $\frac{w\,l^2}{8}$

$\frac{194 \times 8.06 \times 8.06}{8} \times 12 = 18900$ " #

$\frac{M}{s} \quad \frac{18900}{16000} = 1.18$

BENDING MOMENT for 16.12'

$\frac{194 \times 16.12 \times 16.12}{8} \times 12 = 75600$ " #

$\frac{M}{s} \quad \frac{75600}{16000} = 4.72$

USE A 5 " 10.0 # I BEAM

Reactions of rafters say 16000 # supported say 18' apart

16000 x $4\frac{1}{2}$ 72000 # say 8000 #

From tables 4-$1\frac{1}{2}$ x$1\frac{1}{2}$"x1/8" angles will support 12200 # with out ties for 7',,but on account of plastering space studs

approximately 2' apart.

Use a support in center of ridge beam

$\frac{M}{S}$ $\frac{8000 \times 18 - 1600 \times 32}{16000}$ = 6.0-

Use a 6" 12.5 # I beam.

From tables 2 - 1½" x1½" x1/8" angles will support 2550 # for an 8' column.

SECOND FLOOR

LOADS

Live	40 #	per sq. ft.
Concrete	8 #	" " " per inch thick.
Wood floor	6 #	" " ".
Hy-Rib	1 #	" " ".
Joist, steel	15 #	" linear ft.

Take a 2½" floor, concrete weighs 20 # per sq. ft.

Space joist 3.0' 82.0 # per foot for load

BENDING MOMENT

Take length of 13.5'

$\frac{246 \times 13.5 \times 13.5 \times 12}{8}$ = 67200 " #

$\frac{M}{S} = \frac{67200}{16000} = 4.2$

Take a 14.0' length

$\frac{246 \times 14 \times 14 \times 12}{8}$ 72200

$\frac{M}{S} = \frac{72200}{16000} = 4.5$

Use a 5.0" 10 # I beam

SHEAR

Max. Shear 246 x 7 = 1720 #

Use 2 angles 1½"x1½" x 1/8"

WEIGHT OF PARTITION

Steel lath	3.0 #	per sq. ft.
Plaster	20.0 #	" " "

Total weight per foot of partition 23.0 x 8 184 #

Maximum spacing 3.0' 184 x 3 552.0#

Angles O. K.

8.0'ARCH BETWEEN LIVING ROOM AND DINING ROOM

$\frac{8+2}{8}$ x 1820 = 1590 # = R_v

$\frac{6+3}{8}$ x 1820 = 2050 # = L_v

Moment 2050 x 4 - 1820 x 2 = 4560 #

1590 x 4 - 1820 x 2 4540 #

$\frac{M}{s} = \frac{4600}{16000} = .288$ Use a 5" 10.0 # I beam

Which is also large enough for the plates

FIRST FLOOR

Loads

Live load	50 # per sq. ft.
Concrete	8 # " " " per inch thick.
Wood floor	6 # " " ".
Hy-Rib	1 # " " ".
Steel joist	15 # " linear ft.

Take a 2½" floor. Space joist 3.0'

Total load per sq. ft. 92.0 pounds

Total load per linear foot 92 x 3 276.0 #

Moment for a 14.0' span

$\frac{276 \times 14.0 \times 14.0 \times 12}{8} = 81200$

$\frac{M}{s} = \frac{81200}{16000} = 5.07$

Moment for a 14.5' span

$\frac{276 \times 14.5 \times 14.5 \times 12}{8} = 87000$

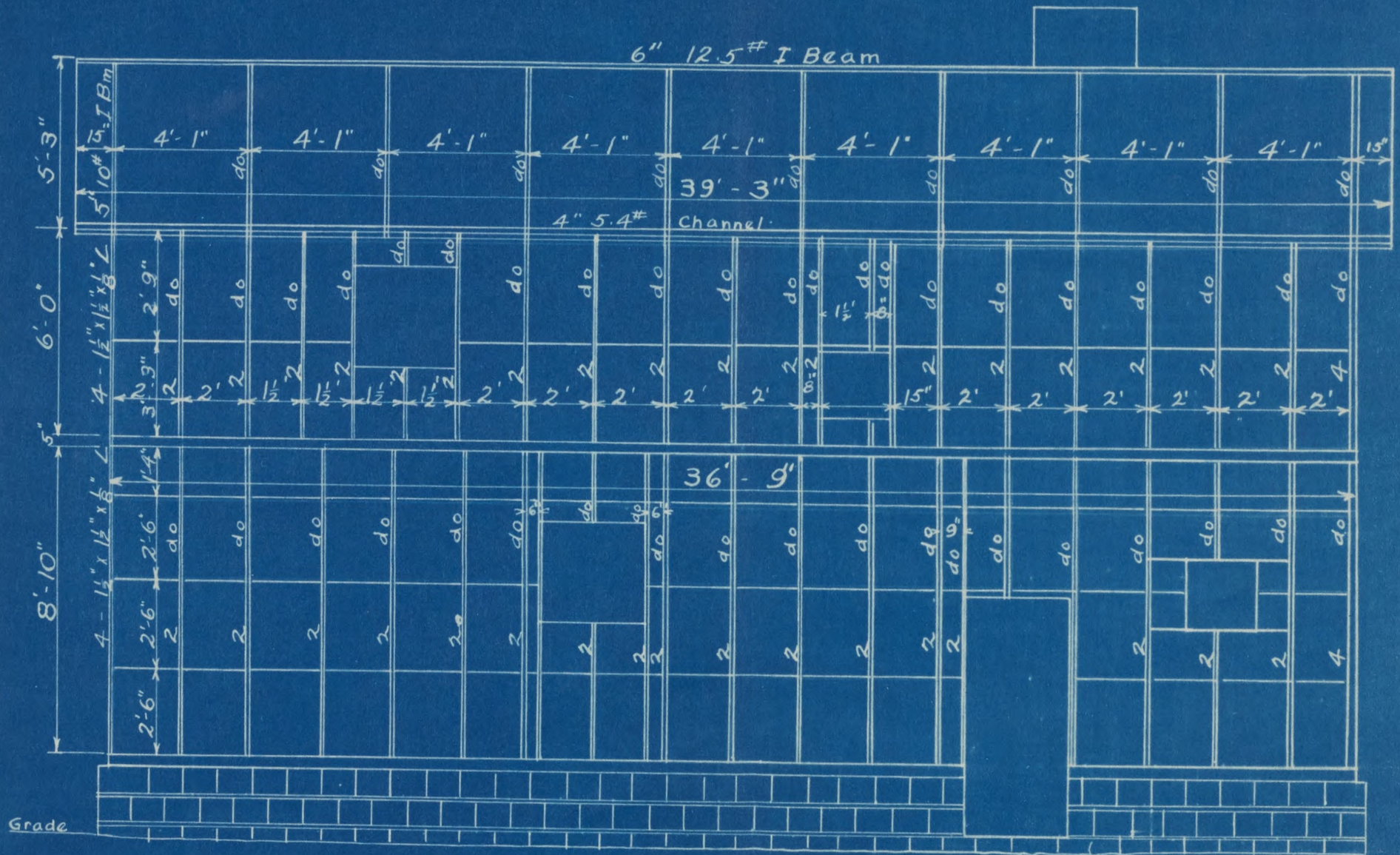
$\frac{M}{s} = \frac{87000}{16000} = 5.45$

SHEAR

276 x 7.0 = 1932 #

STUDS

The studs were taken from the"STEEL FRAMING MANUAL FOR ARCHITECTS AND BUILDERS ", Bulletin # 11, published by the STEEL FRAME HOUSE COMPANY , Pittsburgh , Pennsylvania.



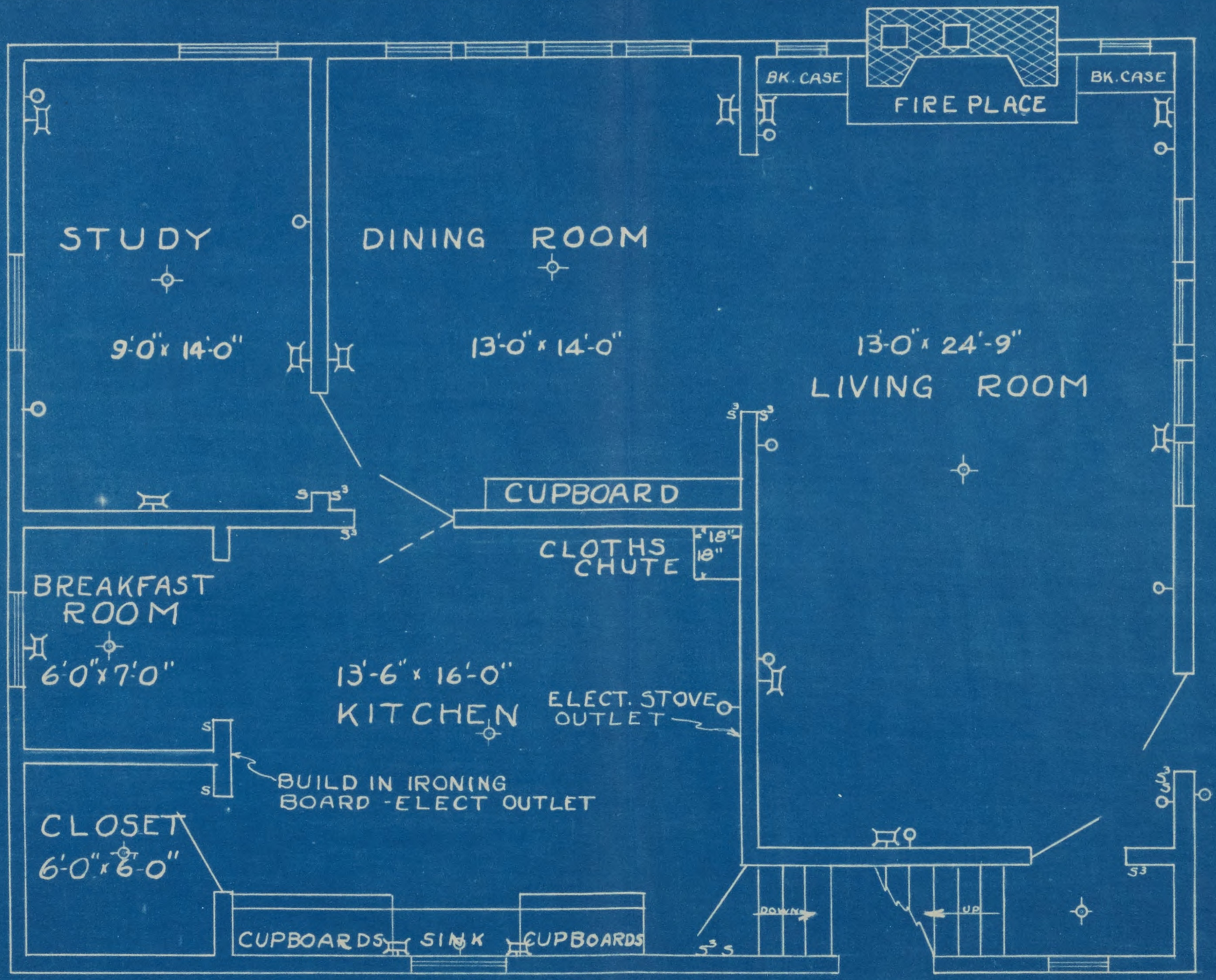
STEEL FRAME - RIGHT ELEVATION

SCALE: 1" = 4'-0"

STEEL FRAME HOUSE

DESIGNED BY: JE PARKHURST.

DATE 5/25/29



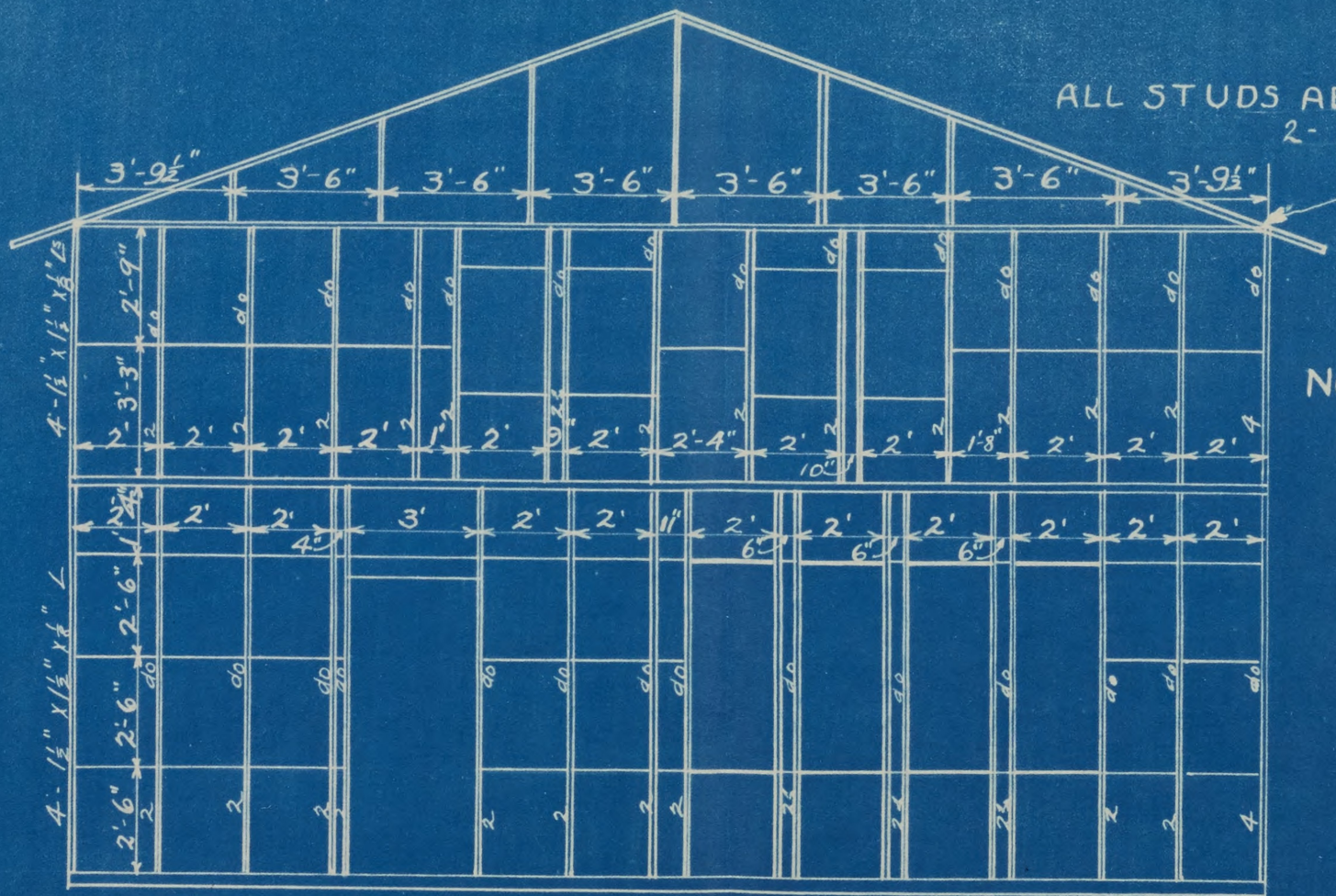
FIRST FLOOR PLAN

SCALE $\frac{1}{4}$" = 1'-0"

STEEL FRAME HOUSE

DESIGNED BY J.E. PARKHURST.

5/25/29



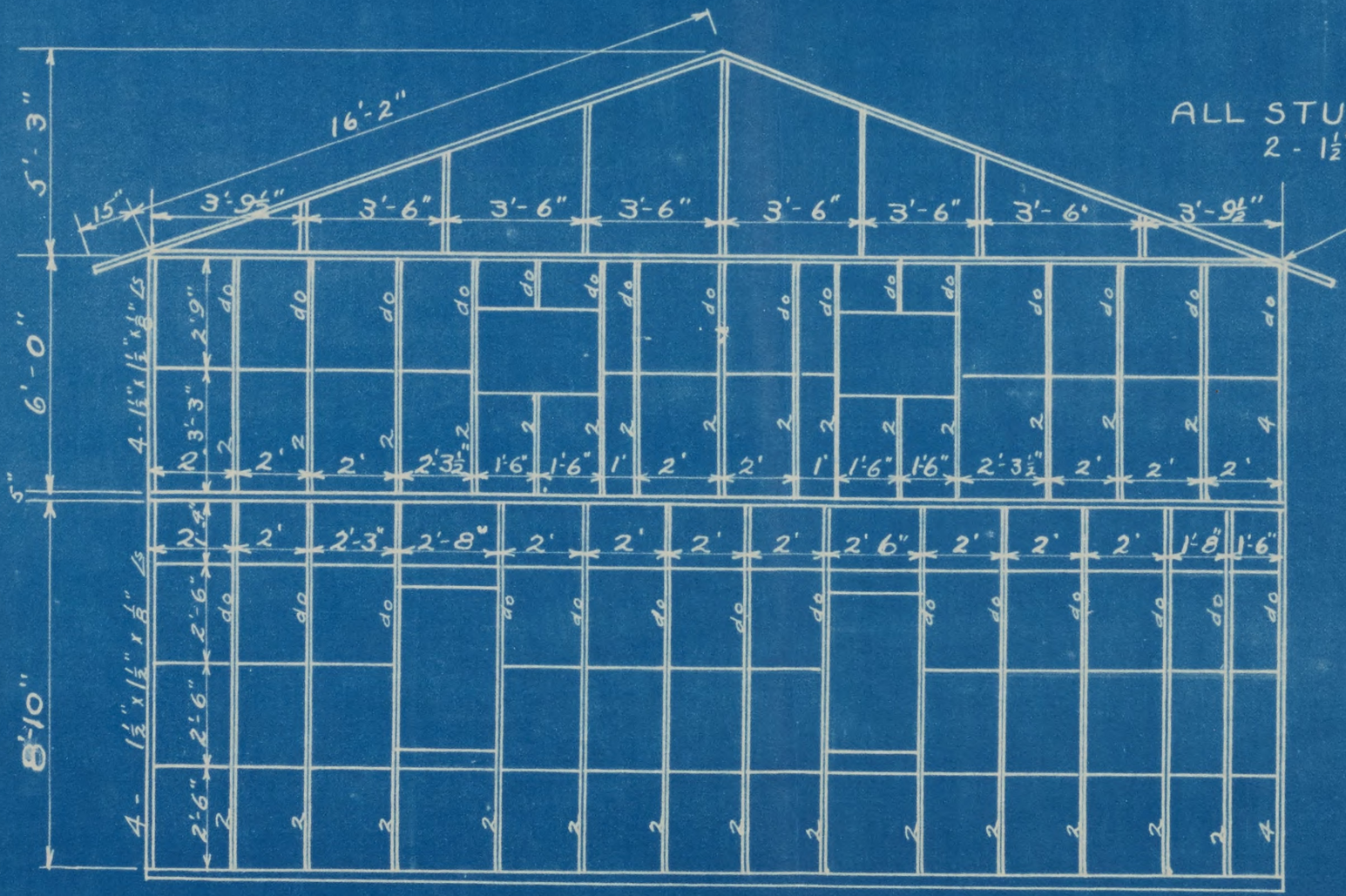
NOTE:
ALL HORIZONTAL BRACES SHALL BE 1-1½" x 1½" x ⅛" L

FRONT ELEV. STEEL PLAN

SCALE: ¼" = 1'-0"

STEEL FRAME HOUSE

DESIGNED BY: JE PARKHURST
5/25/29

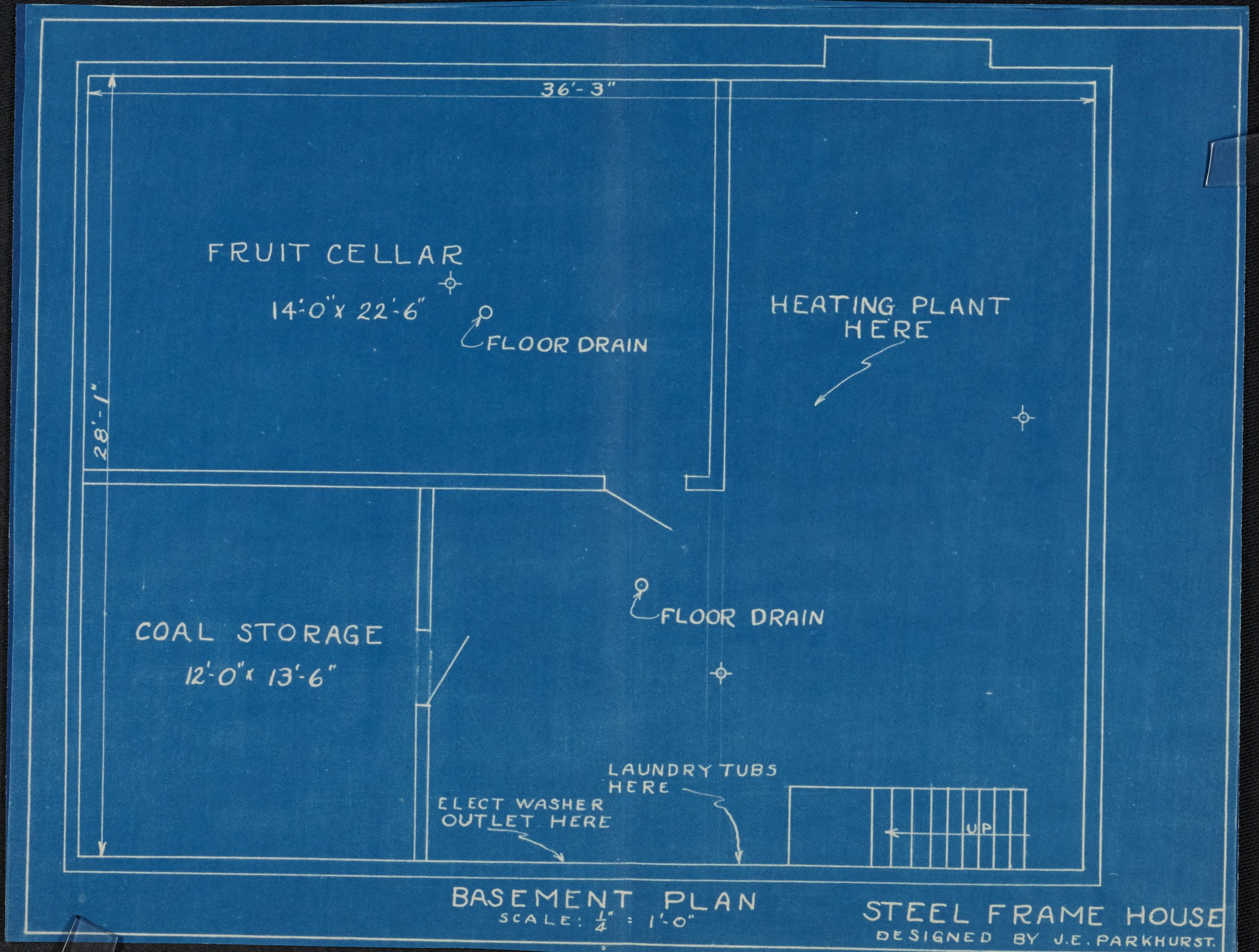


REAR ELEV. STEEL PLAN

SCALE: ¼" = 1'-0"

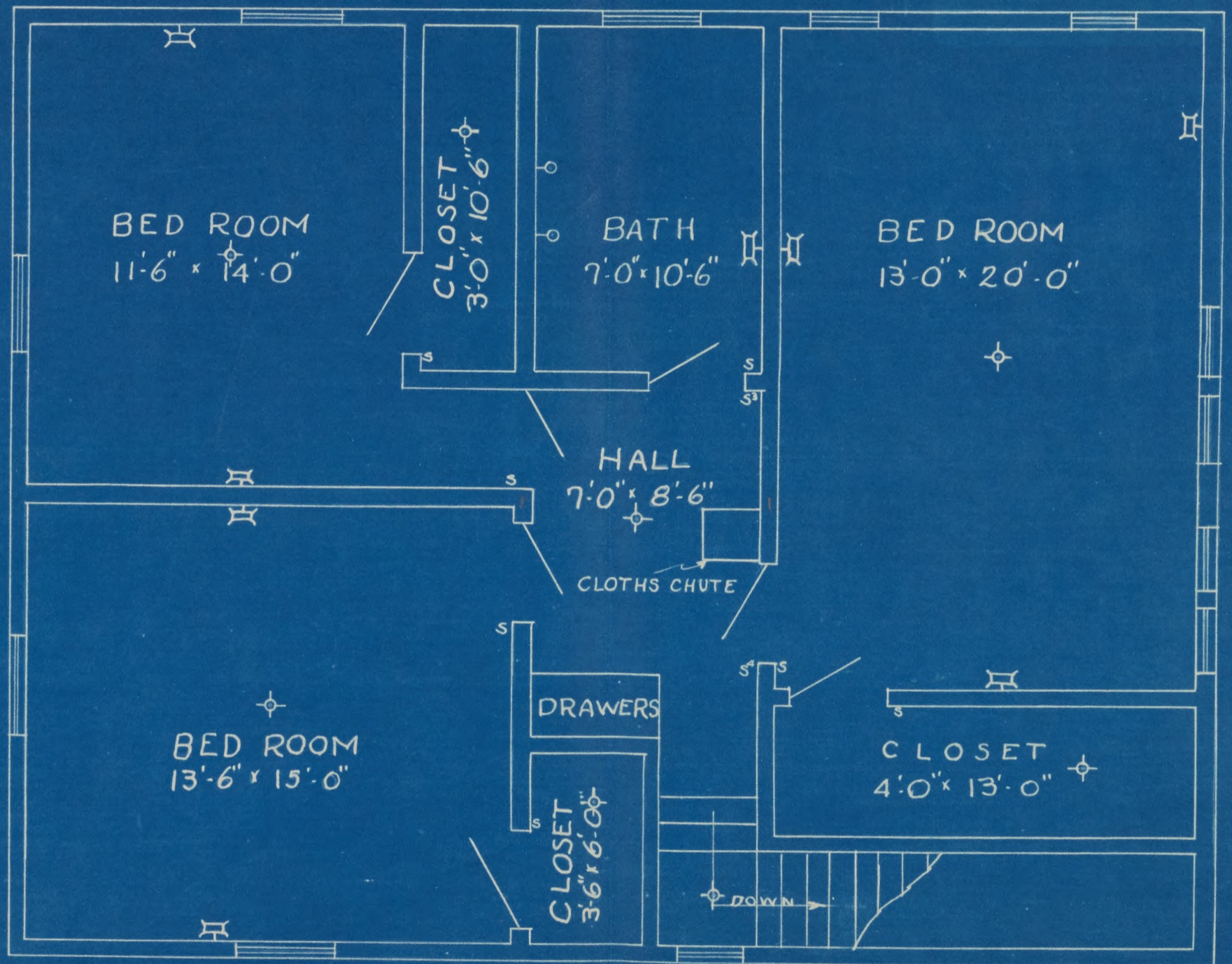
STEEL FRAME HOUSE

DESIGNED BY: J.E. PARKHURST 5/25/39



BASEMENT PLAN
SCALE: $\frac{1}{4}$" = 1'-0"

STEEL FRAME HOUSE
DESIGNED BY J.E. PARKHURST.



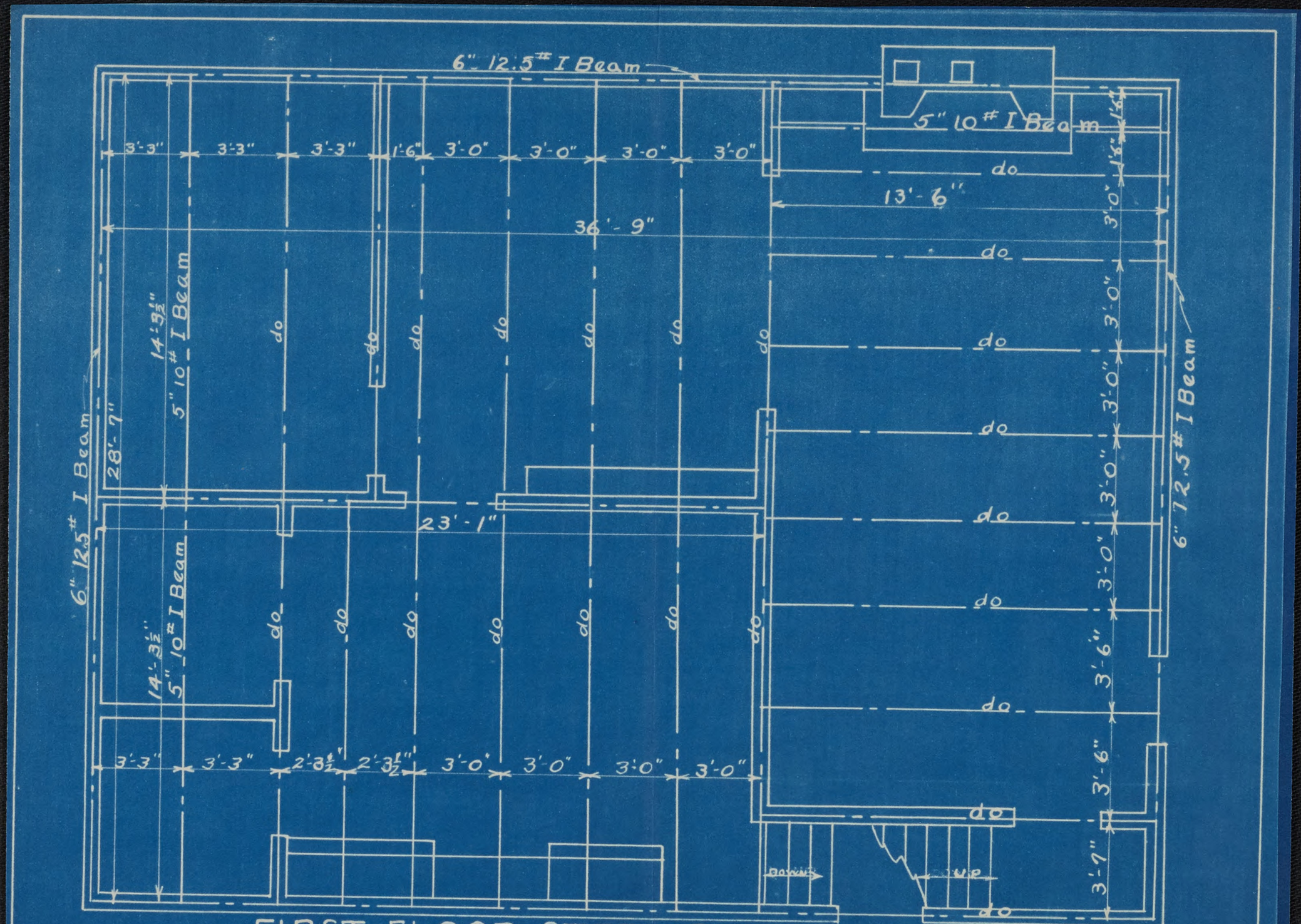
SECOND FLOOR PLAN

SCALE $\frac{1}{4}$" = 1'-0"

STEEL FRAME HOUSE

DESIGNED BY J.E. PARKHURST.

3/25/29



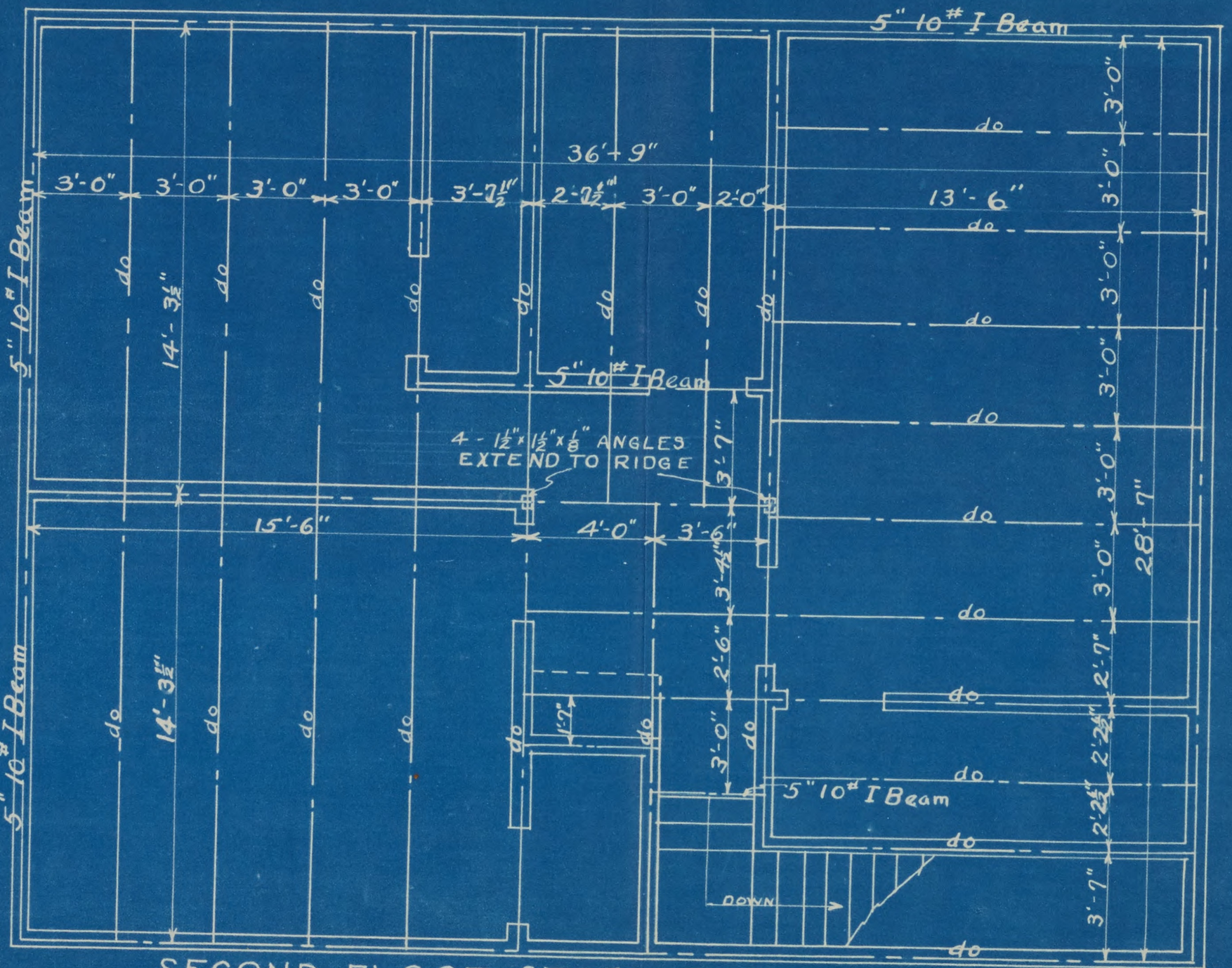
FIRST FLOOR STEEL PLAN

SCALE: ¼" = 1'-0"

STEEL FRAME HOUSE

DESIGNED BY: J.E. PARKHURST

5/25/29

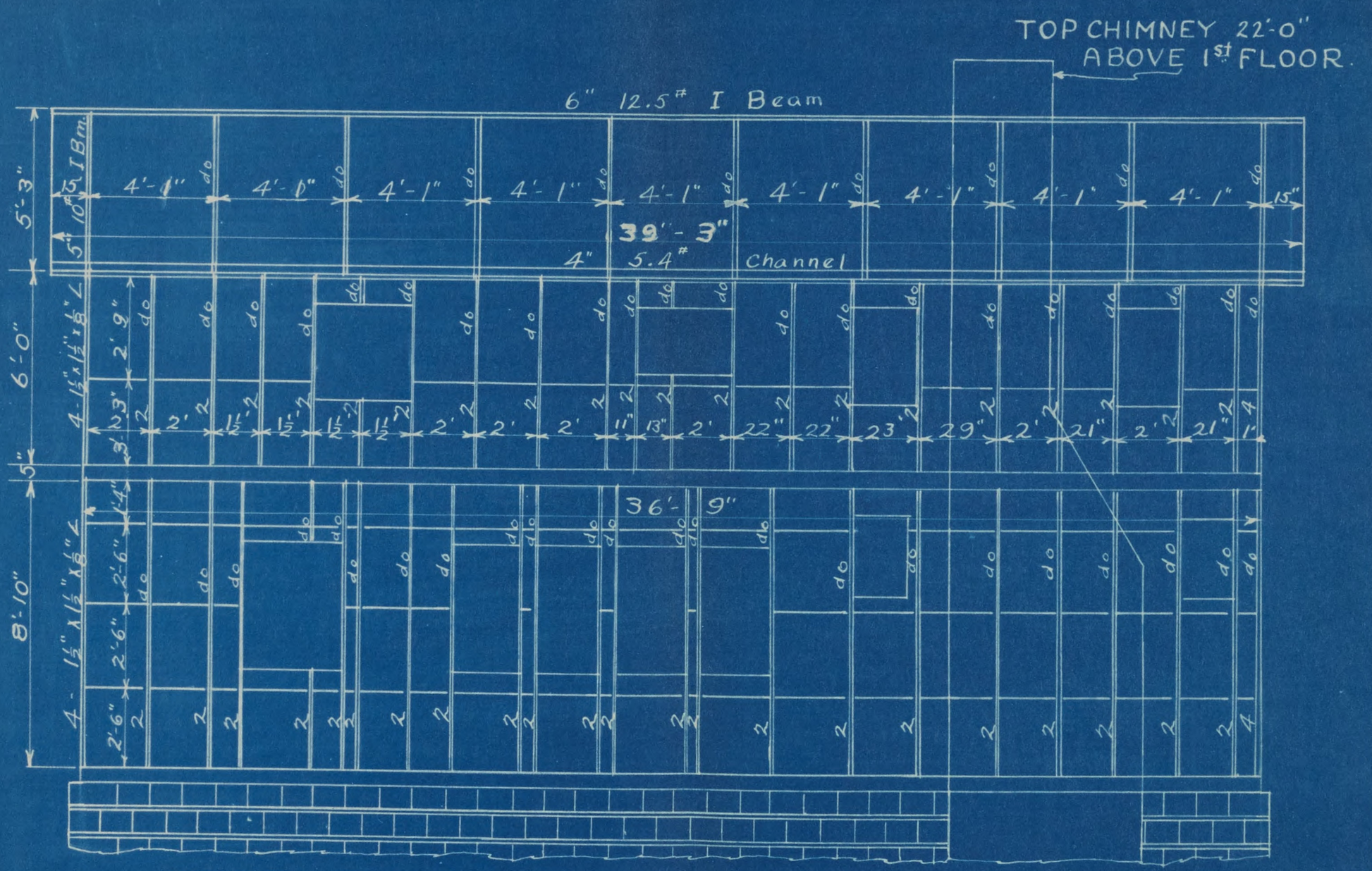


SECOND FLOOR STEEL PLAN

SCALE: ¼" = 1'-0"

STEEL FRAME HOUSE

DESIGNED BY: J.E. PARKHURST
5/25/29



STEEL FRAME - LEFT ELEVATION

SCALE: 1" = 4'-0"

STEEL FRAME HOUSE

DESIGNED BY: J.E. PARKHURST.
DATE 5/25/29