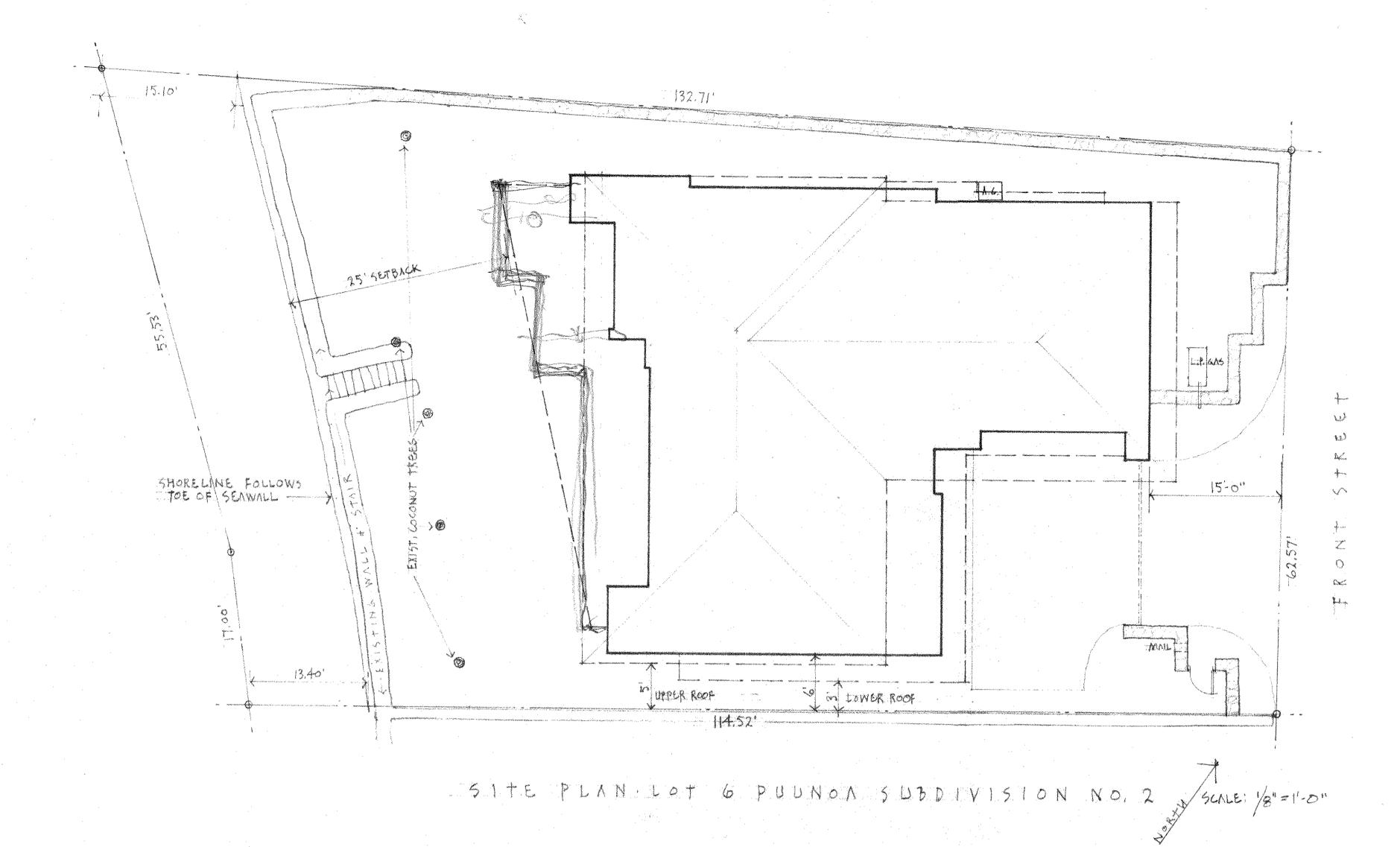
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	SITE PLAN
9	MAIN FLOOR PLAN
63	UPPER FLOOR PLAN
4]	ELEVATIONS - EAST & WEST WINDOW PETAILS
3	ELEVATIONS-NORTH & SOUTH
(3)	BUILDING SECTIONS - 14"=1"0" WALL SECTION - 1/2"=1"0" - DETAILS
3	BUILDING SECTIONS - 1/41/21-0" STAIR SECTION - 1/211=1-01
8	CABINETS- KITCHEN I WORKROOM PLANS ELEVATIONS
<b>E</b> D	PETAILS
LO	ELECTRICAL PLAN - MAIN FLOOR
111	ELECTRICAL PLAN - UPPER FLOOR
19	GPECIFICATIONS



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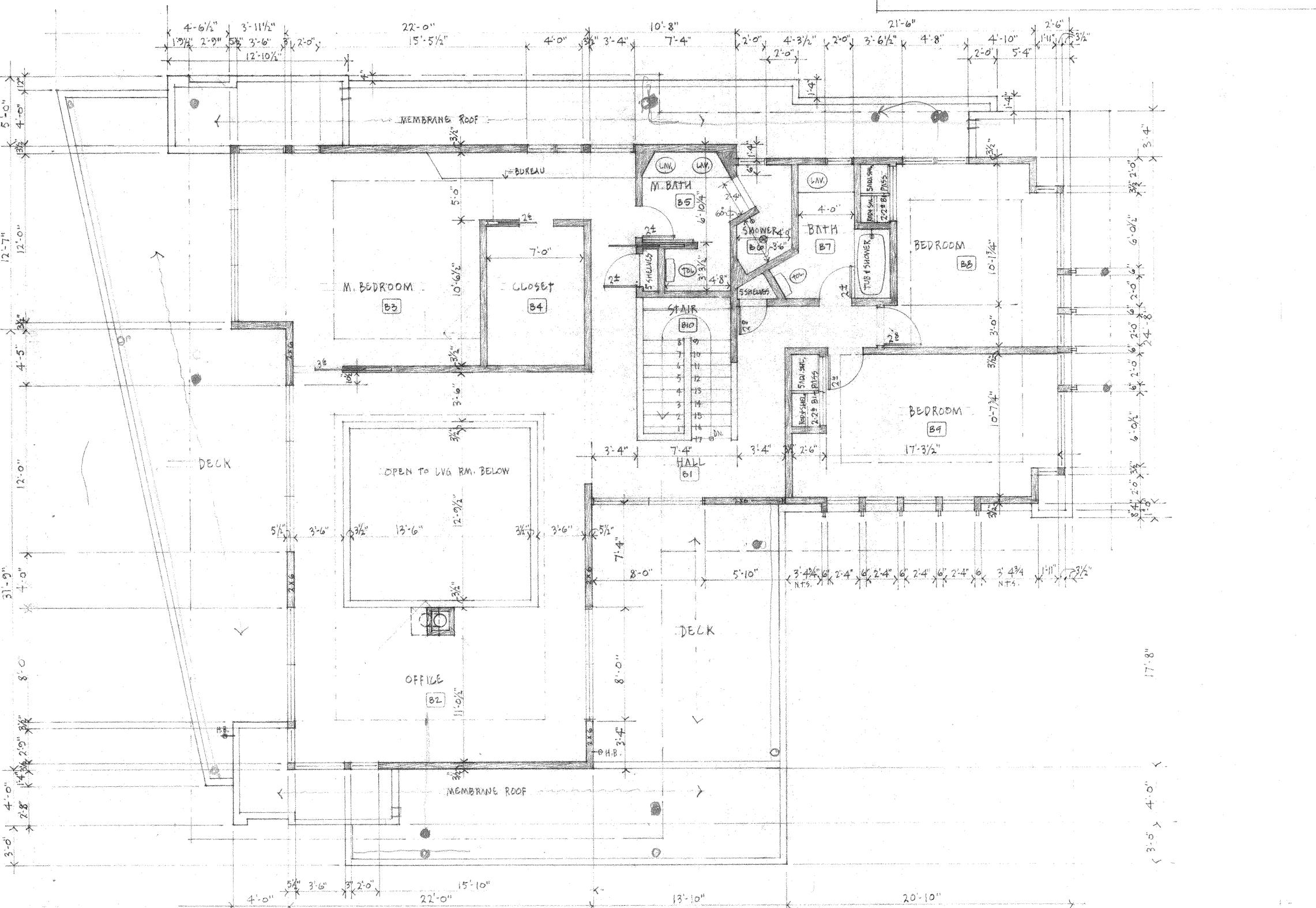
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LAHAINA, MAUI, HAWAII

DAVID & MARGE IHLE



UPPERFLOOR PLAN 14"=1'-0"

## IHLE RESIDENCE LAHAINA, MAUI, HAWAII

## **SPECIFICATIONS**

NOTICE TO BIDDERS

Should any bidder find discrepancies in, or omissions from, the plans or specifications, or should there be any doubt as to their intent, he shall immediately request clarification from the Architect. The Bidder must familiarize himself with all Federal, State, and local laws, ordinances, building codes, regulations, and property covenants, which in any manner- affect those engaged in or employed on the work, or the materials or equipment used, or which -in any way- affect the conduct of the work. If not specifically stated on the plans or in these specifications, the appropriate code shall govern sizes, qualities and quantities of all work. If anywhere, either on the plans or in the specifications, anything is contrary to or below in size, quality or quantity to the above regulations, such items shall be brought to the Architect's attention.

INSTRUCTIONS TO BIDDERS

1. Each bidder, by making his bid, represents that he has read and understands the Bidding Documents, and that he has visited the site and has familiarized himself with the local conditions under which the work is to be performed.

2. No bidder shall modify, withdraw, or cancel his bid or any part thereof for thirty (30) days after receipt of bid.

3. Each bid shall be based upon the materials and equipment described in the bidding documents. If the bid is based on substitute materials or equipment, a complete description of the substitutions shall accompany the bid.

4. Bidders acknowledge the right of the Owner to reject any or all bids. and to waive any informality or irregularity in any bid received.

**GENERAL CONDITIONS** 

The Standard Form of the General Conditions of the American Institute of Architects, Document A-201, 1987 edition, forms the General Conditions of the Contract, except as modified by the Project Manual. A copy may be obtained from the Architect upon request. The General Conditions apply to all work of each section of these Specifications.

SUPPLEMENTARY GENERAL CONDITIONS

The General Conditions of the Contract for Construction, AIA Document A201-1987, Fourteenth Edition, are a part of the Contract Documents. The following supplements modify the General Conditions. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions remain in

Article 2: Owner

Delete Subparagraph 2.2.5 and substitute the following: 2.2.5 The Contractor will be furnished free of charge four (4) copies of Drawings and Project Manual. Additional sets will be furnished at the cost of reproduction, postage and handling.

Article 9; Payments and Completion

total contract amount.

9.3 Applications for Payment - Add the following Clause 9.3.1.3. to Subparagraph 9.3.1: 9.3.1.3 Until substantial completion, the Owner shall pay 90 percent of the amount due the Contractor on account of progress payments. Upon Substantial Completion the owner will pay 95 percent of the

Contractors Insurance and Limits shall be approved by Owner before beginning construction.

SPECIAL CONDITIONS

1. The Complete Contract Work as covered by the Project Contract Documents consists of constructing a single family residence described herein and on the Drawings.

2. Temporary services required during construction such as water. electricity, telephone and sanitary facilities shall be furnished and paid for by the Owner. The Owner shall pay for all energy costs for operation of the permanent system during construction. 3. All necessary permits, inspections and certificates of approval shall

be obtained and paid for by the appropriate Contractor.

4. Work shall be started immediately upon signing the contract and shall be completed as rapidly as possible. 5. The Contractor shall confine his operations to areas within the

existing property lines. He shall protect other areas from damage. 6. The General Contractor shall be the Prime Coordinator of the work. He shall notify the subcontractors of the Schedule of Work, and see that all subcontract work is performed at the proper time and in sequence to maintain the Schedule.

7. Measurements shall be verified at the building site by each subcontractor before ordering materials or doing any work. 8. The Contractor shall provide protection from the elements for all

completed work and stored materials. 9. Extra compensation will be paid only when ordered in writing by the

10. All materials and workmanship furnished by the Contractor shall be warranteed for periods required by State law as described in Paragraph 3.5.1 and other paragraphs of the General conditions

2. SITEWORK

2.1. General

A. Provide labor, equipment and materials for excavating, filling. back filling, soil correction measures, grading and related items necessary to complete work shown on Drawings and noted in the specifications.

B. Excavation and backfilling of plumbing, cooling, sewer, water and electrical work shall be included as part of the work in their respective divisions.

2.2. Excavation

Excavate for installation of footings, foundation walls and concrete slabs on grade. Soil bearing capacity shall be at least one (1) ton per square foot. It shall be the responsibility of the Contractor to verify the soil conditions and insure that this value will not result in damaging differential settlement to the structure. The Owner shall pay for any necessary soil tests. Fill under concrete slabs to extent shown with granular free-draining material compacted to proper soil bearing capacity.

2.3. Filling, Grading and Compaction A. Remove all debris from the excavation before backfilling. Do not backfill until Architect has inspected and approved the work. Take precautions to avoid damage during backfilling. Backfill around the structure with granular, free-draining material.

B. Shape the site to the extent shown. Rough grade the site to a plane parallel to finished grades. Rough grade elevations shall be held below finished grade elevations to accommodate topsoil which shall be respread to a uniform thickness required by landscape specifications. C. Furnish and install a minimum of 4" compacted granular fill under

all concrete slabs on grade. See Sections for extent.

3. CONCRETE SEE STRUCTURAL

3.1. General A. Provide labor, equipment and materials for complete installation of the reinforced concrete footings and foundation walls, concrete slabs on grade, sidewalks, steps, entryway, and all other concrete work shown on Drawings.

By Install inserts and pipe sleeves for mechanical trades. 3.2. Malerials and Mixing

A. Concrete for garage floor slab shall be 4,000 psi, 28-day compressive strength, with water reducing agent and 5% to 7% air entrainment. All other concrete shall be 3,000 psi, 28-day/ compressive strength. Minimum of five sacks of cement/per cubic yard. W/C rahip--0.68.

B. Portland cement: ASTM, C-150, Type 1. C. Aggregates: ASTM C-33, maximum size for footings 1-1/2" and for slabs-3/4", and for exposed aggregate 1/2". D. Reinforcing bars: ASTM A-615, Grade 60/

E. Welded wire fabric: ASTM A-285. F. Vapor barrier: 6-mil polyethylene under slabs on grade. G. Concrete Mixing: at job site, use drum-type batch machine mixer in conformance with ACI-301. Ready-mix concrete shall comply with

ASTM C-94 3.3. Placement and Finishing A. Footings shall be placed on hatural undisturbed, compacted soils, or solid rock. Level the soil under concrète footings and the granular fill under concrete slabs.

B. Erect wood footing forms and place reinforcing steel. Deposit concrete in forms in hofizontal layers and in a manner to avoid inclined, construction joints. Consolidate placed concrete. C. In areas to receive concrete slabs on grade, treat sand cushion with termite control and place the vapor barrier immediately before placing steel mesh and concrete. Take special precautions to avoid tearing or puncturing the vapor barrier. Repair all damaged areas before placement/of concrete. Deposit and consolidate concrete/slabs in a continuous operation within the limits of construction joints. Work concrete thoroughly around reinforcing and into corners. Bring slab surface to correct level, and smooth with buil float or darby. Slope surface uniformly and gradually to elevations shown on the Drawings and to floor drains.

D. Finishing concrete slabs-apply a trowel finish to slabs scheduled to remain exposed to view (garage floor only). Finish shall be free of trowel marks, uniform in texture, and appearance, with a surface plane tolerance not exceeding 1/8" in 10'-0".

4. MASONRY LEE GIRLUCTURAL

Provide labor, materials and equipment for the complete installation of all-concrete unit masonry work and all stone masonry work, including all joint reinforcing, masonry backup materials, and masonry wall corefill, / anchor bolts, bucks, etc. furnished under other sections of this Specification. Build in all anchors, flashing, etc. as required by other trades.

4.2. Materials A. Concrete block shall be hollow, load-bearing, modular units conforming to ASTM C-90, Grade N-1 and S-1, standard weight. Moisture content-30% maximum. B. Portland Cement: ASTM C-150, Types X, II, or III, Type M.

C. Hydrated lime: ASTM 5-207, Type S pressure-hydrated. D. Sand: ASTM C-144. Use aggregate with 100% passing a No. 16 sieve. E. Wall reinforcing: Dur-O-Wall, Ladur type, standard gauge. F. Reinforcing bars: ASTM A-915, Grade 6

G. Core fill: 3,000 psi concréte, 28-day compressive strength. H. Stone - native blue rock to match existing wall on adjacent

property to the south.

4.3. Placement A. Concrete upit masonry walls shall be constructed of concrete block units of the sizes and shapes shown on the Drawings, Mortar shall be one (1) part Portland Cement and one quarter (1/4) part time putty to three (8) parts sand. Reinforce horizontal joints as indicated. Joint reipforcing shall overlap at corners. Fill and reinforce vertical cores whider bearing points with mortar and one (1) # 5 continuous rod  $\searrow$ Concrete block shall be laid running bond. All joints shall be tooled concave. All masonry work shall be performed by masons skilled in their trade.

5. METALS SEE STRUCTURAL

Provide labor, materials and equipment for the fabrication and installation of structural steel and miscellaneous metals. Major items are listed below. Review the Drawings for all minor items to be provided.

5.2. Materials A. Materials shall be fabricated of new stock conforming to the \*following standards:

Structural Steel Shapes Cast Steek Malleable iron Sheets and Plates

Steel Tube Shapes

Anchors, Bolts, etc.

ASTM A-48 ASTM A-47/ Cold-rolled where exposed to view ASTM A-500 Shall meet the requirements of

ASTM A-6 OF ASTM A-36

applicable AISC and ACI Codes. 5.3. Fabrication A. Unless detailed otherwise, items shall be fabricated and finished in accordance with recommendations contained in the NAAMM

Architectural Metals Handbook. B. Miscellaneous metal work shall be formed true to line with accurate angles and surfaces, and straight sharp edges. Weld corners and seams continuously, complying with AWS Recommendations. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.

C. Paint all structural steel and ferrous miscellaneous metals with Wisconsin Paint Company's #4080 Shop Coat Primer or equal. 5.4. <u>Items/included</u>

Items furnished in this section shall include, but not be limited to ,the following: 1) steel beams

2) pipe columns 3) anchors, connections and support members and anchor bolts. 6. WOOD AND PLASTICS

6.1. General Provide all labor, materials and equipment necessary for complete installation of rough and finished carpentry including, but not limited to, the installation of millwork, insulation, vapor barrier, and interior and exterior trim.

6.2. Materials GE GRUCTURAL A. Framing Materials

1) Studs: 2x4's standard and better SPF, 2x6's #2 and better. 2) Dimension lumber, joist, lintels and rafters #2 and better

3) Manufactured joist and rafters: TJI, or equal, of sizes noted on 4) Manufactured beams and lintels: micro-lam and para-lam, or

equal, of sizes noted on drawings. 5) Roof trusses shall be designed by the prefabricated wood truss supplier. Provide shop drawings of trusses showing design calculations preprared and certified by a structural engineer registered in the State of Hawaji. Truss supplier shall furnish all hardware necessary for the somplete installation of the trusses such as hangers, splice plates, blocking and truss

connectors. 6) Provide rough bucks, furring, blocking and cant strips as

detailed on the drawings. 7) Wood members installed in connection with roofing and flashing, wood members abutting concrete or unit masonry and wood members exposed to weather shall be pressure treated to

8) All exposed and concealed wood members shall be treated to prevent terminte infestation according to accepted State and local

B. Sheathing, Subfloor, Underlayment 安定 子記の内で表し 1) Roof sheathing shall be 3/4" CDX plywood

2)-Shear wall sheathing shall be 7/16" O.S.B. 3) Subfloor shall be 3/4" CDX T&G plywood, glued and screwed with #8 x 1-1/2" screws.

4) Installation shalf conform to APA Guide to Plywood Sheathing for Floors. Walls and Roofs." NOTE: All sheathing and subflooring shall be of non-formeldehyde content.

1) Interior window and door trim, door frames, and trim unless otherwise noted shall be birch. 2) Baseboard shall be 1/2" x 2-1/2" birch. 3) Stair treads and risers shall be particle board. Skirts and

handrails shall be birch. 4) Closet poles shall be 1-3/8" round hardwood. 5) Closet shelves shall be 3/4" particle board with melamine faces

6) All birch specified shall be select for appearance. 7) Roof deck trim, exterior door and window trim, and fascias shall be "D" and better cedar.

8) Provide an allowance of \$40,000 to furnish and install cabinets. counter tops and built-in furniture.

6.3. Installation 1) All carpentry work shall be erected plumb and true, following the best practices of the trade. Finish work shall be neatly cut and fitted. 2) All lumber shall be S4S except as noted. 3) Provide backing for nailing of finish materials. 4) Millwork materials shall be new and kiln-dried. Surfaces shall be factory sanded after fabrication to provide a smooth, even surface for

application of field finishes. 5) Use hot-dipped galvanized nails for exterior nailing and fininsh or cabinethead nails for interior nailing. Replace all split or damaged finish material.

7. THERMAL AND MOISTURE PROTECTION

7.1 General Provide all labor, materials and equipment necessary for the complete installation of insulation, dampproofing, tile roofing, recessed gutters, rubber membrane roofing, and roof ballast pavers. Examine all sufraces to which materials furnished under this section are to be applied. Notify General Contractor in writing if unsatisfactory conditions exist. Do not begin work until corrections are made.

7.2 Insulation 1) Batt insulation shall be Manville's or equal fiberglass friction-fit insulation R13 for walls, and R19 for roofs and

soffits. 2) Provide sill sealer where wood plates and stude abut masonry. 3) Fill all voids between rough framing and window and door frames with fiberglass batt insulation or expandable foam

4) Building wrap shall be Tyvek or approved equal.

7.3 Dampproofing 1) Sonneborn Hydrocide Mastic heavy-fibrated coating, 6 mil poly. 2) Clean the substrate of all projections and substances detrimental to the work. Install dampproofing in strict conformance with manufacturer's recommendations to a minimum uniform thickness of 1/8". 3) Provide protection for dampproofing during backfilling.

7.4 Sheet Metal 1) Sheet metal materials shall conform to following standard

specifications: a. Zinc-coated steel sheet--commercial quality carbon steel sheets with minimum of 0.20% copper content complying with ASTM A-526; hot dip galvanized to comply with ASTM A-525, G-90: 0.0179" thick (24-gauge) except otherwise indicated on the

b. Provide type of solder and fasteners recommended by producer of the metals for fabrication and installation. 2) Sheet metal work shall comply with details and profiles shown on Drawings and with the SMACMA "Architectural Sheet Metal Manual" recommendations for fabrication of work as indiacted herein:

a. For non-moving seams, provide soldered flat-flock seams, except as otherwise indicated. Comply with metal producer's b. Provide for thermal expansion of all exposed sheet metal work exceeding 15'-0" running length except as otherwise indicated. c. For flashing and trim, expansion joints shall be 10'-0" maximum spacing and located 2'-0" from corners and intersections. d. Conceal fasteners and expansion provisions where ever possible. Fold back edges on concealed side of exposed edges to

form a hem. 7.5 Tile Roofing

> 1) Tile roofing shall be Cotswold Stone style concrete roof tiles as manufactured by Vande Hey-Raleigh Mfg, Inc. or approved equal. Color selected by Architect. 2) Tile roofing shall be installed in strict compliance with the manufactures recommendations and with the requirments of the State Building Code.

7.6 Membrane Roofing

1) Membrane roofing shall be "Carlisle" Tire and Rubber Co. or approved equal, single ply rubber membrane. 2) Membrane roofing shall be installed in strict compliance with the recommendations of the manufacturer of the material and shall include all flashing and other materials required to result in a waterproof installation.

7.4 Roof Ballast Pavers Roof ballast pavers shall be 12"x12"x1-1/2" LONDON WALKS as manufactured by the Hastings Pavement Company or approved equal with a ground/sandblasted sufrace, installed on 1/4" asphalt impregnated protection board. Color selected by Architect.

8. WINDOWS AND DOORS

A. Provide all labor and materials and equipment necessary for complete installation of windows, doors, and hardware. Examine surfaces and areas to which materials furnished shall be applied. Notify General Contractor in writing if unsatisfactory conditions exist. Do not begin work until corrections are made.

1) Operating windows shall be Kawneer series 5200, or approved equal, complete with hardware and insect screen. Windows shall be single glazed. 2) Sliding glass and insect screen pocket doors shall be Kawneer

1010 HT Series or approved equal, flat track, single grazed, factory painted aluminum frames, certified to meet windload requirements. Color to be selected by Architect. 3) Sliding glass doors shall be Kawneer 990 Series or approved equal, single glazed, factory painted aluminum frames, certified to meet windload requirements. Provide screen panel. Color to be

selected by Architect. 4) Thresholds and frames for exterior doors and sidelights shall be birch.

5) Garage door shall be flush panel Raynor "Ranger" or approved equal, textured wood fiber door of size shown on Drawings. Furnish two portable transmitters. Furnish and install a 1/2 hp electric door operator.

6) Passage doors shall be 1-3/4" solid core select birch. 7) Bi-pass and Bi-fold doors shall be 1-3/8" hollow core select birch and shall be equipped with complete track assembly. 8) Finish Hardware: An allowance of \$1,800.00 to cover the cost of finish hardware materials for passage doors. 9) Glass: Provide all labor, materials and equipment necessary for complete installation of fixed glass to the extent shown on the Drawings. Comply with State and Federal Codes and Laws with regard to safety and labeling.

a. Provide safety glass where required. b. One-quarter inch (1/4") polished plate glass shall be Class 1, quality Q-3.

c. Glazing sealants shall be Tremglaze and Monolastic.

d. Setting blocks and spacers shall be neoprene. e. Glass shall be installed airtight and watertight and in strict compliance with Glass and Sealant Manufacturer's specifications. Glass shall be bedded and back-puttied. The caulk joint between glass and the loose stop shall be sealed with Monolastic. 10) Storm Shutters: Provide all labor, materials and equipment necessary for the complete installation of storm shutters as

located on the drawings. Storm shutters shall be 2.18" extruded aluminum with an electrostatic paint finish as manufactured by the Rolladen Inc or approved equal.

9. FINISHES

9.1 Gypsum Board Walls and ceilings scheduled for gypsum board finish shall be U.S. Gypsum Gold Bond or equal, bevel-edged gypsum board, installed with drywall screw and with all joints taped and finished for painting. 1/2" gypsum board on all walls and 5/8" gypsum board on all ceilings, unless noted on the plans. Use water resistant gypsum board in areas scheduled to receive ceramic tile finish except around bathtub and in shower stall shall use Durock cement board or approved equivalent. Follow manufacturer's recommendations for installation and finishing. Where gypsum board abuts other finishes such as wood beams, etc. furnish and install U.S. Gypsum or equal 200-B metal trim spaced away from other materials, approximately 1/16". Carpenter shall furnish and install space shims. Furnish and install 5/8° Fire Code Gypsum Board where scheduled. Furnish and install 5/8" Fire Code Gypsum Sheathing at exterior locations where sheduled.

9.2 Stucco A. Provide all labor, materials, and equipment necessary for the complete installation of stucco on exterior wall and soffit surfaces to

the extent shown on the drawings. B. Stucco shall be a three coat intallation on metal lath and shall be installed in strict compliance with ANSI A42.3, ANSI A42.2, State Building Code and the highest standards of the trade. C. The finished coat shall be factory prepared and colored with a pigment selected by the architect from manufacturers standard colors. D. The finished coat shall be textured to a heavy sand float finish. Provide samples of the texture for the architect's approval. E. Soffit vents shall be supplied and installed by the stucco contractor. Vents shall be continuous, pre-finished metal. Color

selected by Architect. 9.3 Tile Work

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1) Provide all labor, materials, and equipment necessary for the complete installation of ceramic tile, stone, and quarry tile. Examine surfaces and areas to which matrerials furnished shall be applied. Notify General Contractor in writing if unsatisfactory conditions exist. Do not begin work until corrections are made. 2) In areas scheduled to receive ceramic tile, stone, and quarry tile floors or walls, provide a materials allowance of \$10.00 per square

3) All ceramic tile, stone, and quarry tile shall be installed in strict compliance with the current edition of the Tile Council of America specifications for setting and grouting tile installed over the various substrates encountered in this project. Grout color will be selected by the Architect. Installers shall be experienced and highly skilled in their trade.

9.4 Painting, Staining and Finishes 1) Provide all labor, materials and equipment necessary to complete installation of paint, stain and finishes to the extent indicated on the Drawings and herein.

2) All materials shall be as manufactured by Pratt and Lambert, Cabot's, Watco or approved equals. Paint shall be delivered to the project in original containers with seals unbroken and labels in place. Colors will be as selected by the Architect.

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3) Interior Finishes

A) Doors, cabinets, trim and millwork -- three (3) coats of satin polyurethane finish or approved equal. Sand between coats. B) Gypsum board ceilings--one (1) coat of Pratt and Lambert's Lyt-All flowing flat or approved equal over one (1) coat of manufacturer's recommended primer. Colors selected by the Architect.

C) Gypsum board walls: one (1) coat Pratt & Lambert "Accolade" flat enamel over one (1) coat manufacturer's recommended primer. Colors selected by the Architect.

4) Exterior Finishes A) Fascias, columns, beams, balcony framing members, windows, garage door, deck railings and trim-one (1) coat of Cabot Semitransparent stain or approved equal. Colors to be selected by the Architect.

B) Exterior wood doors--three (3) coats of satin Polyurethane finish or approved equal. Sand between coats. C) Galvanized metal--treat surfaces as recommended by paint manufacturer to receive paint. Two (2) coats of Cabot's Solid Color stain or approved equal. Color selected by Architect. D) Wood door sills -- three (3) coats of satin polyurethane finish.

5) Installation All materials shall be installed in strict compliance with manufacturer's specifications and shall be applied to clean, dry surfaces. Grading marks, chalk marks, dirt, weather stains, etc., shall be removed from exposed framing members, siding, etc., and all surfaces scheduled to be painted shall be sanded and dusted by the Painting subcontractor before painting begins. Remove items such as finish hardware and switch plates and protect glass, finished flooring, exposed concrete blocks, etc. during painting operations. Spread paint evenly with no sags or runs.

10. SPECIALTIES

General Provide all labor, materials, and equipment necessary for complete installation of specialties items contained in this section to extent shown on the Drawings. Comply with State and Federal Codes and Laws with regard to safety and labeling.

2. Mirrors: Mirrors shall be 1/4" copper-backed polished plate glass. 3. Shower doors: Provide an allowance of \$350,00 to furnish and install

one shower door at location shown on the drawings. 4. Fireplace: Furnish and install Heat-n-Glo gas fired fireplace unit at location shown on the drawings.

11, EQUIPMENT

Materials and Installation A. The following items will be furnished by the Owner and shall be installed by the General Contractor in conjunction with his applicable subcontractors: gas range, clothes washer, clothes dryer, dishwasher, microwave oven, refrigerator, ice maker, garbage disposer and water

C. Fold out ironing board. D. Central vacuum cleaning system

13. SPECIAL CONSTRUCTION Swimming pool and equipment

15 MECHANICAL 15.1 PLUMBING

> 1. General A. Provide all labor, materials and equipment necessary for the complete installation of natural gas piping and a plumbing system including hot and cold domestic water distribution system and soil and waste system, serving all plumbing fixtures shown on the Drawings and miscellaneous equipment listed under that heading in the

specifications. B. The plumbing system shall be installed in strict compliance with State and Local plumbing codes and ordinances. C. Soil and waste systems shall be tested by hydrostatic pressure of5 psi for a period of two (2) hours and must be absolutely tight. D. Water systems shall be tested by hydrostatic pressure of 100 psi for a period of two (2) hours and must be absolutely tight. E. Refer to the General Conditions for Warranty of the plumbing

F. Plumbing vents shall be located on the north and west facing slopes of the roof.

Materiais A. All materials shall be new and shall be the product of a nationally recognized manufacturer. B. Waste and vent piping shall be plastic with solvent weld joints. Plastic waste piping shall be wrapped with sound-deadening insulation and caulked with non-hardening caulking where it passes through

plywood flooring. C. Water piping shall be hard copper with soldered joints. Hot and cold water lines shall be insulated

D. Hose bibbs shall be 3/4". See plans for locations. 3. Work and Equipment Included A. Provide floor drains where shown on Drawings and cleanouts where required by Code. B. Provide shut off valves at each plumbing fixture. C. Shut off valves shall be ball valves.

D. Provide valves and fittings for connection of Owner's water

insulation for energy efficiency. A ten-year guarantee against

operational defects shall be provided. Provide catalog cuts of the

softener. Water softener shall treat all hot and cold water lines except lines to exterior hose bibbs E. Provide plumbing connections to the dishwashers, clothes washer, refrigerator, and ice maker. F. Provide one (1) 60-gallon gas water heater with extra thick tank

proposed water heater with the bid. Verify with Owner prior to G. Install all appliances provided by Owner. H. Provide gas piping to all gas fired equipment and appliances and to fireplace to serve gas logs furnished by the Owner. I. Extend the soil pipe outside the foundation line to be connected to

the public sewer lines. J. Instant hot water in kitchen sink. 4. Plumbing Fixtures Provide an allowance of \$6000.00 to cover the cost of plumbing

the fixtures. The contract amount will be adjusted to meet the cost of fixtures selected. Installation A. Provide all excavation and backfill necessary for the installation of the plumbing systems. Do not backfill until tests and inspections are complete. Water piping shall not be buried except for service

fixtures and faucets delivered to the site. The Owner will select

B. Coordinate plumbing installation with the installation of materials by other trades. Provide all cutting and patching required for installation of plumbing systems.

15.2 COOLING

safe operation.

approved by Architect.)

1. General A. Provide all labor, materials, and equipment necessary for the complete installation of a forced air cooling system. B. The cooling systems shall be installed in strict compliance with

State and local codes and ordinances. C. The Cooling Contractor shall prepare a layout showing duct and register locations and sizes and equipment specifications for review and approval by the Architect. The cooling systems shall be designed to maintain the temperature uniformly throughout the house at 75 degrees F, when the outside temperature is plus 95

degrees F. The garage shall not be cooled. D. Refer to the General Conditions for warranty of the system. 2. Equipment and Materials A. Cooling units shall be high-efficiency Lenox, or approved equal.

complete with all controls and control wiring required for

B. Ductwork shall be sheet metal constructed of prime materials in accordance with the latest edition of manuals prepared by the Sheet Metal and Air Conditioning Contractors National Association, Inc. Provide balancing and splitter dampers, flexible connections and access doors. Dampers must be accessible without special panels or doors. C. Return grilles and wall registers shall be Lima Wall Register and Grilles. Baseboard registers are not acceptable (locations shall be

Models and outputs subject to Architect's approval. Units to be

D. The cooling bid should include a Honeywell electronic air cleaner. E. Provide exhaust ductwork, backdraft dampers and wall cap for the clothes dryer, range hood, and bath fans as shown on Drawings.

3. <u>Duct Layout</u> Trunk lines serving the main floor and the second floor shall run tight to underside of joists over corridors to the nearest point at which they can rise into the joist space. Outlets shall be ceiling, wall, or floor mounted grilles.

The Cooling Contractor shall balance the cooling system to deliver an even amount of tempered air to each room under all atmospheric. conditions. 5. <u>Installation</u>

A. Provide all excavation and backfill necessary for the installation. Backfill shall be compacted to the same density as that of the natural B. Coordinate cooling installation with the installation of materials

by other trades. C. Provide all cutting and patching required for the installation of the cooling system.

16. ELECTRICAL

by code.

4. Balancing

1. General A. Provide all labor, materials and equipment necessary for the installation of a complete electrical system including power and lighting systems. Wiring as shown on the Drawings and specified

B. The systems installed under this section shall be in strict compliance to N.B.F.U. and to the National, State and Local Codes and Ordinances. They shall be installed so as to pass the inspection of and be granted the approval of the National Board of Fire Underwriters and the State and Local authorities at the completion of the work. The Contractor shall obtain Certifications of Inspection and Acceptance from the respective authorities.

C. Refer to General Conditions for Warranty of Electrical Systems. 2. Materials A. All materials shall be new and of the best quality and shall be the product of a nationally recognized manufacturer.

B. Wiring circuits shall be plastic cable where code allows. Not less than No. 14 wire shall be used for lighting circuits having convenience outlets and motors, unless larger wires are required. C. A maximum of ten (10) lighting outlets are permitted on a circuit.

D. Kitchen and mechanical room convenience outlets shall be on split wire systems. E. All outlets shall be grounded. F. The distribution center shall be provided with a flush-type circuit breaker panel with sufficient number of circuits for lighting and

convenience outlets, and separate circuits for each motor.

G. Wall switches shall be equipped with 10-amp, 110 volt, silent toggle on-off switches with dimmer on side, of operation/type indicated on Drawings H. Convenience outlets shall be 10-amp, 250 volt, duplex flush receptacles. Provide ground fault outlets where shown or required

I. Plates for switches and convenience outlets shall be "Smoothie" plastic, G.E. or approved equal. Color shall be ivory on gypsum board J. All duplex outlets shall be mounted eight inches (8)" to center

above floor and switches shall be mounted 45" to center above floor unless otherwise noted. K. Refer to the drawings for the schedule of light fixtures to be

furnished and installed under this section. 3. Work and Equipment Included A. Provide electrical wiring to thermostats furnished under cooling

B. Smoke detection shall be included in security system provided by

C. Provide power wiring and final connection to electrical equipment as furnished under other sections and as listed under miscellaneous equipment in this specification such as cooling condencers, blowers, water heater, water softener, etc. Cooling contractor will provide control wiring for the cooling system.

D. Provide lighted doorbell pushbutton at Entrance Door and yard entrance with buzzer in Kitchen, located as directed by the Architect. E. Furnish and install lamps for all lighting fixtures provided under this Contract.

4. Service and Service Entrance Provide individual 200-amp, 120/240 V, single phase, three-wire underground service entrance between the transformer on the property line and the meter and the distribution center. The distribution center panel shall be flush-mounted with circuit protection of the circuit breaker type. This subcontractor shall contact the local utility to

determine the extent of work provided by them before submitting 5. <u>Installation</u> A. Provide all excavation and backfill necessary for the installation of

B. Coordinate the electrical system installations with the installation of materials by other trades C. Provide all cutting and patching required for installation of the electrical system.

Provide an allowance of \$10,000 for lighting fixtures

A RESIDENCE FOR

LAMAN MANAH

the electrical systems.

6. Fixtures

DAVID & MARGE IHLE