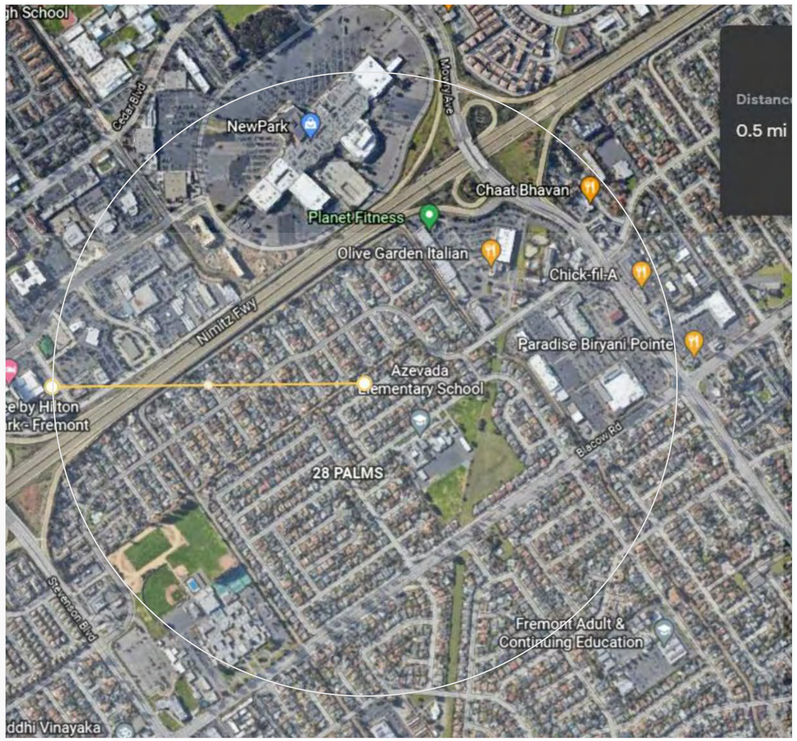
NOT FOR CONSTRUCTION






# Addition & ADU for
# Mrs. Sadaf Ahmad
## 39459 BLUE FIN WAY FREMONT, CA 94538

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SCOPE OF WORK:

MAIN HOUSE COMPLETE REMODEL OF SINGLE STORY 2-CAR GARAGE HOME. REMODEL INCLUDES INCREASING SQUARE FOOTAGE OF THE MAIN HOUSE AND AN ATTACHED ADU.

PROPERTY ADDRESS:

39459 BLUE FIN WAY FREMONT, CA 94538

LEGAL DESCRIPTION:

LOT 90, BLOCK 4, TRACT NO. 2338, 28 PALMS UNIT NO. 3 45 MAPS 21-22

ZONING CLASSIFICATION:

(TITLE 20 ZONING ) : R-1-8 MEDIUM DENSITY RESIDENTIAL ZONE

APN: 531-20-78

OCCUPANCY GROUP:

R-1-6

CONSTRUCTION TYPE: TYPE V-B

REQUIRED SETBACKS/HEIGHT LIMITS:

MAIN STRUCTURE:

MIN. FRONT YARD: 25'

MIN. SIDE YARD: 5'

MIN. REAR YARD: 10'

MAX. BUILDING HEIGHT: 35'

LOT SIZE: 5,977 SF = 0.137 ACRES

FLOOR AREA RATIO:

2012/5977 X100 = %33.6

ADDITION: 1008 SF

LOT COVERAGE:

2925.9/5977 X 100 = %42.2

- DETERMINATION OF HISTORIC SIGNIFICANCE: THE STRUCTURE IS A SINGLE-FAMILY HOME BUILT AFTER 1945 IN A NUMBERED TRACK: LOT A TRACT 2877 AND HAS NO HISTORIC SIGNIFICANCE.

AFS (AUTOMATIC FIRE SPRINKLER) SYSTEM WILL BE INSTALLED.




AERIAL PHOTO

## PROJECT TEAM


Owner: Mrs. SADAF AHMAD
39459 Blue Fin Way Fremont, Ca 94538
Tel: (857) 277- 8912

Architect: PixelArch, LTD., Architecture and Civil, Structural & Mechanical Engineering
24001 Calle De La Magdalena, unit 3896
Laguna Hills, CA 92653
Tel: 415 316 7162
info@pixelarchltd.com

PE on board: Barrett Croock PE
barrettcrook@kittyhawkengineering.com
Energy Consult LLC
(424) 247-7658
www.title24ez.com


BUILDING CODE REQUIREMENTS

THE GENERAL CONTRACTOR SHALL FULLY COMPLY WITH THE FOLLOWING INTERNATIONAL CODES, 2019 CALIFORNIA BUILDING STANDARDS CODE (CAL. CODE REGS., TITLE 24 )
COMPLIANCE WITH CITY OF FREMONT MUNICIPAL CODES.
CALGREEN CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11 OF TITLE 24
CBC CALIFORNIA BUILDING CODE (PART 2 OF TITLE 24)
CCR CALIFORNIA CODE OF REGULATIONS
CEBC CALIFORNIA EXISTING BUILDING CODE (PART 10 OF TITLE 24)
CEC CALIFORNIA ELECTRICAL CODE (PART 3 OF TITLE 24)
CEC CALIFORNIA ENERGY CODE (PART 6 OF TITLE 24)
CEC CALIFORNIA ENERGY COMMISSION
CMC CALIFORNIA MECHANICAL CODE (PART 4 OF TITLE 24)
CPC CALIFORNIA PLUMBING CODE (PART 5 OF TITLE 24)
CRSC CALIFORNIA REFERENCED STANDARDS CODE (PART 12 OF TITLE 24)
DPH IDENTIFIES CODE PROVISIONS BY THE DEPARTMENT OF PUBLIC HEALTH
IBC INTERNATIONAL BUILDING CODE
IFC INTERNATIONAL FIRE CODE
IEBC INTERNATIONAL EXISTING BUILDING CODE
IRC INTERNATIONAL RESIDENTIAL CODE
NEC NATIONAL ELECTRICAL CODE
NFPA NATIONAL FIRE PROTECTION ASSOCIATION


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Tel: (415) 316-7162 info@pixelarchltd.com
www.pixelarchltd.com


Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021

Scale:

DRAWING TITLE:

COVER SHEET


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A-0

# SPECIFICATIONS

DIVISION 00 - CONDITIONS OF CONTRACT

0.01 Terminology

- Referenced Organizations
  a. ACI American Concrete Institute (www.concrete.org)
  b. AISC American Institute of Steel Construction (www.aisc.org)
  c. AITC American Institute of Timber Constructio (www.aitc-glulam.org)
  d. ANSI American National Standard Institute (www.ansi.org)
  e. APA American Plywood Association (www.apawood.org)
  f. ASHRAE American Society of Heating, Refrigeration, and Air Conditioning Engineering (www.ashrae.org)
  g. ASTM American Society for Testing and Materials (www.astm.org)
  h. AWI Architectural Woodwork Institute (www.awinet.org)
  i. AWS American Welding Society (www.aws.org)
  j. AAMA Architectural Aluminum Manufacturers' Association (www.aamanet.org)
  k. CRI Carpet and Rug institute (www.carpet-rug.org)
  l. CEC California Energy Commission (www.energy.ca.gov)
  m. CRSI Concrete Reinforcing Steel Institute (www.crsi.org)
  n. FS Federal Specification (http://apps.fss.gsa.gov/pub/fedspecs/)
  o. GA Gypsum Association (www.gypsum.org)
  p. GANA Glass association of North America (www.glasswebsite.com)
  q. ICC International Code Council (www.iccsafe.org)
  r. NIST PS National Institute of Standards and Technology, Product Standards (www.nist.org)
  s. NEMA National Electrical Manufacturers Association (www.nema.org)
  t. NFPA National Fire Protection Association (www.nfpa.org)
  u. NFRC National Fenestration Rating Council (www.nfrc.org)
  v. NOFMA National Oak Flooring Manufacturers Association (www.nofma.org)
  w. NPCA National Paint and Coatings Association (www.npca.org)
  x. NRCA National Roofing Contractors Association (www.nrca.net)
  y. WDMA National Wood Window and Door Association (www.wdma.com)
  z. PDCA Painting and Decorating Contractors of America (www.pdca.org)
  aa. SDI Steel Door Institute (www.steeldoor.org)
  ab. SMACNA Sheet Metal and Air Conditioning Contractors National Association (www.smacna.org)
  ac. TCNA Tile Council of North America (www.tcna.org)
  ad. TPI Truss Plate Institute (www.tpinst.org)
  ae. TRI Tile Roofing Institute (www.tileroofing.org)
  af. UL Underwriters' Laboratories Inc. (www.ul.com)
  ag. WCLIB West Coast Lumber Inspection Bureau (www.wclib.org)
  ah. WI Woodwork Institute (www.woodworkinstitute.com)
  ai. WWPA Western Wood Products Association (www.wwpa.org)
- Definitions
  1. Contract Documents: The Contract Documents shall include the drawings, specifications, structural calculations, soils report, and California Energy Code compliance forms. These documents are intended to supplement and complement each other. In case of conflict, contact the Architect.
  2. Owner: The term "Owner" shall mean the Owner or the Owner's authorized representative(s).
  3. Contractor: The term "Contractor" shall mean the general contractor or the general contractor's authorized representative(s).
  4. Architect: The term "Architect" shall mean PixelArch ltd. authorized representative(s).
  5. Engineer: The term "Engineer" shall mean the structural engineer or the structural engineer's authorized representative(s).
  6. Builder: The term "Builder" shall mean a person or entity who is both an Owner and Contractor, and whose responsibilities are for both Owner and Contractor.

DIVISION 01 - GENERAL REQUIREMENTS

1.01 Scope of Work:

- Contractor shall provide all labor, materials, equipment, permits, and services necessary for construction of the building and site improvements conforming to the contract documents. Drawings and specifications represent finished structure.
- The contractor shall be responsible for means and methods of construction including shoring and temporary bracing and shall take all necessary measures to insure the safety of all persons and structures near or adjacent to the site.
- Care shall be taken to protect from any damage all trees and vegetation on the site and on adjoining properties. Any trimming or other alteration done to trees shall be done so only by approval of the Owner.
- The Architect will not be providing the Owner with regular on site contract administration and is available only at request of the Owner. The Contractor is solely responsible for the quality control and construction standards for this project.
- These plans are for general construction purposes only. They are not exhaustively detailed nor fully specified. The drawings were prepared to a level of completion satisfactory for building permit purposes and for construction by a knowledgeable and experienced contractor. The Contractor is responsible for preparation of any supplemental details, product specifications, coordination and installation of all materials and equipment.
- Mechanical, electrical, and plumbing systems are shown for intent only. These systems shall be design/build by the Contractor. The Contractor shall be responsible for all necessary permits, drawings, calculations, and California Energy Code.
- These drawings and specifications are divided into sections for convenience only. Contractors, subcontractors and materials suppliers shall refer to all relevant sections in bidding and performing their work and shall be responsible for all aspects of the work regardless of where the information occurs in the drawings.
- Clean-Up: The Contractor will remove all debris from the building site and in general keep the work as clear of rubbish as possible during the course of the work. Before filing the Notice of Completion, the building will be fully cleaned, including all glass polished, floors scrubbed and cleaned, and the building shall be suitable for immediate occupancy by Owner.

1.02 Quality Control

- All work shall comply with applicable requirements of all governing codes, regulations and ordinances. These shall include the latest adopted editions of: The California Building Code (CBC), California Residential Code (CRC), California Electric Code (CEC), California Plumbing Codes (CPC), California Mechanical Code (CMC), California Energy Code (CENC), California Green Building Standards Code (CAL Green), OSHA regulations, and all other health and safety codes, ordinances and requirements adopted by governing agencies. In the case of conflicts between these regulations and the contract documents, the most restrictive shall apply.
- The Contractor shall verify, at the site, all conditions affecting work and shall review the contract documents for any areas of question affecting cost, construction and warranty and any drawing dimensional or note conflict, discrepancy, illegibility or omission. All areas of question shall be brought to the attention of the Architect in writing before commencing any work and/or submitting any bid. Commencement of any work shall constitute acceptance by the Contractor of all conditions affecting work.
- Workmanship throughout shall be of the highest quality of each trade involved.
- The Contractor, before commencing work, shall notify the Owner in writing of any work that cannot be fully guaranteed or executed within the intent of the drawings prior to the bid submittal.
- All construction shall be in strict conformance with manufacturers' latest written specifications. All discrepancies between these specifications and the contract documents prepared by the Architect and his consultants shall be brought to the attention of the Architect before commencing work.
- Reference to product manufacturer or trade names are for minimum performance standards only. Submittal equals may be allowed upon approval by the Architect. Material and detail substitutions made by the Contractor without written approval by the Architect shall void any responsibility or liability of the Architect as to performance, repair cost, ancillary damage or the performance of related materials and details.
- Cutting and patching includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition. Use materials for cutting and patching that are identical to existing materials.
- Do not cut and patch structural work in a manner that would result in a reduction of load carrying capacity or load-deflection ratio. Submit proposal and obtain Architect's and Engineer's approval before proceeding with cut and patch of structural work.
- Quality control services include inspections and tests performed by independent agencies and governing authorities, as well as by the Contractor. Inspection and testing services are intended to determine compliance of the work and the requirements specified. Approval by a building official does not mean approval or failure to comply with the contract documents. Inspections and testing shall be performed at the request of the Owner, the Architect and/or governing agencies and as set forth in these documents. Quality control services are the Contractor's responsibility, including those specified to be performed by an independent agency and not by the contractor. The Contractor shall employ and pay any independent agency, testing laboratory or other qualified firm to perform quality control services specified. Where results of inspections or tests do not indicate compliance with the contract documents, the Contractor shall be responsible for any repair, replacement, correction and re- test that is required.
- All dimensions shall take precedence over scale shown on the plans, sections, and details. Dimensions are to face of studs, face of foundation, face of concrete block, top of sheathing, top of slab, or center of openings, U.O.N. Do not scale drawings. Contractor shall verify all dimensions and review any conflicts or discrepancies with the Architect prior to commencement of work.

DIVISION 02 - SITEWORK

2.01 Soils Report:

- All work shall be in conformance with the Soils, Compaction and Geological Report.
- The Contractor shall have the Soils Engineer review and approve in writing to the Building Official and Architect that the foundation and site design are in conformance with the Soils Report prior to commencement of work.
- The Contractor shall be solely responsible for compliance with all recommendations of the Soils Report.
- Prior to the contractor requesting a foundation inspection by the building department, the Soils Engineer shall advise the Building Official and Architect in writing that:
  a. Site grading, subgrade preparation, cutting slopes, excavation, placement of engineered fill material and compaction is in accordance with the Soils Report.
  b. The utility trenches have been properly backfilled and compacted.
  c. The foundation excavations, forming, footing and pier depths, and reinforcement comply with the soils report and approved plans.

2.02 General Requirements

- The site plan is not a survey. It is based on site information provided by the Owner and is for building and site work layout only. The Contractor shall verify on site all grades, soil conditions, ground water, existing improvements, property lines, easements, setbacks, utilities and substructures. Where discrepancies with the drawings occur, contact Architect.
- Grade surface of fill under concrete slabs shall be smooth and even, free of voids, compacted as specified and to required elevation.
- At raised foundations, pad grade under building shall have positive slope to a perforated drain set in gravel trench. Extend pipe to all portions of underfloor area. The drain shall discharge into the street or approved drainage facility.
- Unless otherwise detailed or noted, a perforated drain set in a gravel trench shall be installed around the entire perimeter of the foundation. The drain shall discharge into the street or approved drainage facility. Use only rigid pipe, flexible pipe will not be allowed.
- It shall be the responsibility of the Contractor to take proper erosion control measures. The Contractor shall be responsible for proper surface and subsurface drainage of the site. Slope all finish grading away from buildings, walks, drives or decks and provide catch basins where required.
- Finish grades shall be held down in planting areas. The Contractor shall provide and install a 6" minimum thickness of clean select top soils in these areas.
- Rough grading for slabs-on-grade shall be within 2/10th of one foot, plus or minus.
- Site grading shall be within 5/10th of one foot, plus or minus.
- All roof drainage shall be piped in a closed pipe system to street or approved drainage facility (U.O.N.).
- Builder shall provide landscape development guidelines to Owner that shall include information on site maintenance and development and state such items as "Irrigation system shall be designed to prevent saturation of soil adjacent to building".
- All utilities unless indicated otherwise shall be installed under ground. The Contractor shall be responsible to insure that all trenching within building area shall be backfilled and compacted with structural soils material free of any rocks or other sharp objects which may damage underground utilities.
- Underground piping shall be laid to a minimum 24" depth below finished grade. When utilities are placed in a common trench, all utilities shall maintain separations and coverage both vertically and horizontally, as required by applicable codes.

DIVISION 03 - CONCRETE

3.01 Quality Control

- In addition to complying with all pertinent codes and regulations, comply with all applicable provisions of the latest editions of:
  a. ACI 301 "Specifications for Structural Concrete for Buildings"
  b. ACI 318 "Building Code Requirements for Reinforced Concrete"
  c. CRSI "Manual of Standard Practice"
  d. See Structural Engineer's drawings for additional requirements.

3.02 General Requirements

- Provide underfloor vents as per CBC 1203.3 or CRC R408.1. Add two 6 x 14 vents to garage. All first floor double framed areas shall be vented.
- Provide expansion and control joints in all exterior concrete slabs. Spacing of joints shall be per industry standard (U.O.N.). Verify joint layout with Architect.
- Refer to architectural, structural, mechanical, plumbing and electrical drawings for all moulds, grooves and ornamental clips, location of sleeves, inserts, etc. to be cast in concrete and for extent of depressions, curbs and ramps.
- Finishes:
  a. All interior slabs shall receive trowel smooth finish (U.O.N.).
  b. All driveways, sidewalks, and stairs shall receive broom-smooth finish (U.O.N).
  c. Garage slabs and other interior slabs that wil remain unfinished shall be treated with Lipidolith Hardner by Sonneborn, or equal.

DIVISION 04 - MASONRY

4.01 Quality Control

- Glass Block: Minimum performance specifications shall be as Pittsburgh Corning glass block units. The units shall be the pattern and size indicated on the plans.
- Precast architectural concrete columns and trims: Concrete Designs Inc. (CDI) U.O.N.
- Grout for precast concrete: ASTM A 118.6, Latex Portland Cement, color to match precast concrete.
- Epoxy Grout: ANSI A 108.6 and A118.3. 4.02

4.02 General Requirements

- Concrete Block
  a. Mortar joints to be "flush" (U.O.N.).
  b. Bond shall be "running" (U.O.N.).
- Brick:
  a. Mortar joints shall be "raked" (U.O.N.). Raked joints shall be not more than 3/8" deep, and where exposed to weather, shall be tooled. Brick joints shall be concaved where subject to freezing.
  b. Bond shall be "running" (U.O.N.).
- Stone:
  a. Field Sample: A sample panel shall be built approximately 4 feet by 6 feet. This sample panel may be a part of the project. Veneer installation shall not proceed until the sample panel is accepted by the Architect and Owner. Full size units which have been selected and approved by the Architect and the Owner to show color range, maximum texture range, bond, mortar, tooling of joints, and quality of workmanship shall be used in the sample panel. The remainder of the veneer installation shall be consistent with the approved sample panel.
- Glass Block:
  a. Mortar for glass block installed on exterior walls and other damp location shall be waterproofed with Laticrete 8510 or equal.

DIVISION 05 - METALS

5.01 General Requirements

- All bolt heads and nuts that bear on wood shall have malleable iron washers if exposed or cut washers if concealed.
- Exposed welds shall be ground smooth.
- Shop paint structural steel work , except those members or portions of members to be embedded in concrete or mortar. Paint the initial 2" of embedded areas only. Do not paint surfaces which are to be welded or high strength bolted with friction type connections. After installation is completed, all welded and other abraded areas shall be touched up. On surfaces inaccessible after assembly or erection, apply two (2) coats of the specified primer.
- All exterior steel, exposed, concealed or embedded, or where called for on the Drawings, shall be thoroughly zinc-coat galvanized after fabrication by the hot-dipped method. Touch- up field welds with similar galvanizing product.
- Dissimilar Materials in contact with each other shall be protected to prevent galvanic or corrosive action. Use vinyl pressure tape, polyisobutylene tape, or similar product.
- All metals in contact with pressure treated wood shall be hot dipped galvanized, see Simpson Strong-Tie for recommended finishes for their connectors. Also see structural engineering specifications for further information.

DIVISION 06 - WOOD AND PLASTICS

6.01 Quality Control:

- Materials shall meet or exceed the following standards:
  a. Lumber:
     A. Structural lumber and their wood fasteners shall conform with CBC Chapter 23 and/or relevant chapters of the CRC.
     B. All wood in contact with concrete or masonry or located within 8" of finish grade shall be pressure treated Douglas or Hem Fir with an approved preservative.
     C. All timbers 6 x 8 and larger exposed to view shall be free of heart center (FOHC), with moisture content of 22% maximum.
     D. Max. deflection (DL + LL) shall be: Floor with Tile = L/ 720
- All wood shall be nontropical, reused, reclaimed, or FSC Certified

6.02 General Framing Requirements:

- Blocking:
  a. Block floor joists at all supports, line up double joists under all walls parallel to floor joists and space double joists under plumbing walls.
  b. Provide solid full width blocking or post below all structural posts - continuous to foundation.
  c. Provide blocking and nailers for all finishes and fixtures as required.
  d. Provide blocking in walls at ceiling lines.
  e. Corbles, knee braces, etc., shall be construction select materials. At double framed floors "sleepers" shall be perpendicular to framing below.

6.03 Attic Ventilation Requirements:

- Provide attic and soffit ventilation as per CBC 11203.2 or CRC R806. Vent all double framed areas. See Roof Plan for calculations.

6.04 Finish Carpentry:

- All millwork and case work shall be in accordance with AWI/AWMAC "Architectural Wood Standards" custom or premium grade standards, latest edition.
- All cabinets and millwork shall be selected by the owner.
- Provide 30" clear above kitchen range to unprotected underside of upper cabinetry or 24" clear to metal hood as per CMC Section 916.1 & 916.2.
- Plastic laminates and solid surfacing products shall meet or exceed ANSI/NEMA standards LD.
- Install and anchor all cabinetry to preclude movement, overturning, or distortion to other materials or finishes. Install level and plumb. Comply with manufacturer's instructions for support of supplied units.
- Install all trim in as long of lengths as possible. All splices in finish members shall be bevel splices. Where joints within a piece are required they shall be as unapparent as possible.

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

7.01 Quality Control

Materials shall meet or exceed the following standards:

- Insulation:
  a. Insulation shall be installed per the California Energy Code requirements.
  b. Thermal Batt/Blanket Insulation: Mineral-Fiber Blanket complying with ASTM C 665, Type I (blankets without membrane facing).
  c. Thermal insulation/blown-in blanket insulation glass fiber loose-fill complying with ASTM C 764 Type I (for pneumatic) or Type II (for poured) in attic.
  d. Sound Insulation: Unfaced mineral fiber blanket/batt insulation complying with ASTM C 665, Type I, minimum thickness equal to stud depth to entirely fill the void space, nominal 0.70 to 2.50 -pcf density.
  e. All plumbing walls adjacent to interior living spaces shall be sound insulated with fiberglass batts.
- Concrete Tile Roofing:
  a. All work shall comply with the TRI "Concrete and Clay Tile Installation Manual for Moderate Climate Regions and CBC 1507.3 or CRC 905.3
  b. Concrete Tile Roofing shall be applied according to manufacturers specifications.
  c. The minimum performance standards for concrete tile roofing shall be Eagle Roofing Products (ICC ESR-1900) or equal as approved by Owner and bear a UL Class A fire proof rating. Installed weight shall be a maximum of 900 lbs. per square.
  d. Trim units shall include manufacturer's standard ridge, hip and rake pieces. Color as selected by Owner (U.O.N.). Minimum one nail per tile, two nailes on all rake tile. Minimum pitch shall be as per manufacturer's specifications. Underlayment for concrete or clay tile roofing shall be one layer of 30 lb. asphalt-saturated organic roofing felt, complying with ASTM D 226, 36" wide applied per manufacturer's recommendations. 3-ply built up roof underlayment required for pitch less than 3:12.
  e. Roofing nails shall be aluminum or hot dip galvanized 11 or 12 GA sharp, pointed conventional roofing nails with barbed shanks, min. 3/8" dia. head and or sufficient length to penetrate min. 3/4" into solid decking or to penetrate through plywood sheathing (U.O.N.).
  f. The roofing contractor shall supply to the Owner a written guarantee to repair without cost to the Owner, any leaks due to faulty materials or workmanship, which develop within 1 year from the date of acceptance by Owner of completed building. During this time period, any repair work required because of Act of God, abuse, alterations, or failure to the substrate and/or supporting structure (other than that caused by defects in the roofing work) shall be completed by the contractor and paid for by the Owner, promptly after competion of the required repair work in each instance. The roofing contractor shall furnish the manufacturer's standard limited material warranty for a minimum of 10 years from the date of completion of the roof.
- Asphalt Shingle Roofing:
  a. All work shall comply with the NCRA "Roofing and Waterproofing Manual" and CBC 1507.2 or CRC R905.2.
  b. Asphalt shingles shall be applied according to manufacturers specifications.
  c. The minimum performance standard for asphalt shingles shall be Elk Premium Roofing - Prestique Two or equal as approved by Owner and bear a UL Class A fire proof rating. Trim units shall include manufacturer's standard ridge and hip pieces. Color as selected by Owner (U.O.N.). Minimum pitch as per manufacturer's recommendations.
  d. For asphalt shingle underlayment shall be 15 lb. felt, 2 layers at pitch less than 4:12.
  e. Roofing nails shall be aluminum or hot dip galvanized 11 or 12 GA sharp, pointed conventional roofing nails with barbed shanks, min. 3/8" dia. head and or sufficient length to penetrate min. 3/4" into solid decking or to penetrate through plywood sheathing (U.O.N.).
  f. The roofing contractor shall supply to the Owner a written guarantee to repair without cost to the Owner, any leaks due to faulty materials or workmanship, which develop within 1 year from the date of acceptance by Owner of completed building. During this time period, any repair work required because of Act of God, abuse, alterations, or failure to the substrate and/or supporting structure (other than that caused by defects in the roofing work) shall be completed by the contractor and paid for by the Owner, promptly after competion of the required repair work in each instance. The roofing contractor shall furnish the manufacturer's standard limited material warranty for a minimum of 10 years from the date of completion of the roof.
- Built-up Roofing:
  a. All work shall comply with the NCRA "Roofing and Waterproofing Manual" and CBC 1507.10 or CRC R905.11.
  b. Built-up roofing shall be applied according to manufacturers specifications.
  c. The minimum performance standard for built up roofing for nailable decks shall be Johns Manville 4GNC or equal as approved by Owner and bear a Class A fire proof rating. All products and components shall be by same manufacture. Color as selected by Owner (U.O.N.).
  d. The roofing contractor shall supply to the Owner a written guarantee to repair without cost to the Owner, any leaks due to faulty materials or workmanship, which develop within 1 year from the date of acceptance by Owner of completed building. During this time period, any repair work required because of Act of God, abuse, alterations, or failure to the substrate and/or supporting structure (other than that caused by defects in the roofing work) shall be completed by the contractor and paid for by the Owner, promptly after competion of the required repair work in each instance. The roofing contractor shall furnish the manufacturer's standard limited material warranty for a minimum of 10 years from the date of completion of the roof.
- Metal roof panels:

Deck requirements.

Metal roof panel roof panels shall applied to a solid or closely fitted deck. Except where the roof covering is specially designed to be applied to spaced supports.

Deck slope.

Minimum slopes for metal roof panels shall comply with following:

1. The minimum slope for lapped, no soldered seam metal roof panels without applied lap sealant shall be three units vertical in 12 units horizontal (25-percent slope).
2. The minimum slope for lapped. No-soldered seam metal roof panels with applied lap sealant shall be one-half unit vertical in 12 units horizontal (4-percent slope). Lap sealants shall be applied in accordance with the approved manufacturer's installation instructions.
3. The minimum slope for standing-seam metal roof panel systems shall be one-quarter unit vertical in 12 units horizontal (2-percent slope).

Material standards.

Metal-sheet roof covering systems that incorporate supporting structural members shall be designed in accordance with chapter 22. Metal-sheet roof coverings installed over structural decking shall comply with Table 1507.4.3(1). The materials used for metal -sheet roof coverings shall be naturally corrosion resistant or provided with corrosion resistance in accordance with the standards and minimum thicknesses shown in Table 1507.4.3(2).

TABLE 1507.4.3(1) METAL ROOF COVERINGS

| ROOF COVERING TYPE | STANDARD APPLICATION RATE/THICKNESS |
|---|---|
| Aluminum | ASTM B209. 0.024 inch minimum thickness for roll-formed panels and 0.019 inch minimum thickness for press-formed shingles |
| Aluminum-zinc Alloy coated steel | ASTM A792 AZ 50 |
| Cold-rolled copper | ASTM B370 minimum 16 oz./sq ft and 12 oz./sq ft high yield copper for metal-sheet roof covering systems. 12 oz./sq ft for preformed metal shingle systems. |
| Copper | 16 oz./sq ft for metal-sheet roof-covering systems, 12 oz./sq ft for preformed metal shingle system |
| Galvanized steel | ASTM A653 G-90 zinc-coated |
| Hard lead | 2 lbs./sq ft |
| Lead-coated copper | ASTM B101 |
| Prepainted steel | ASTM A755 |
| Soft lead | 3 lbs./sq ft |
| Stainless steel | ASTM A240. 300 Series Alloys |
| Steel | ASTM A924 |
| Terne and terne-coated stainless | Terne coating of 40 lbs. per double base box. Field painted where applicable in accordance with manufacturer's installation instructions. |
| Zinc | .0277 inch minimum thickness. 99.995% electrolytic high grade zinc with alloy additives of copper (0.08%-0.20%). Titanium (0.07%-0.12%) and aluminum (0.015%). |

TABLE 1507.4.3(2) MINIMUM CORROSION RESISTANCE

| | |
|---|---|
| 55% Aluminum-zinc alloy coated steel | ASTM A792 AZ 50 |
| 5%Aluminum alloy-coated steel | ASTM A875 GF60 50 |
| Aluminum-coated steel | ASTM A463 T2 65 |
| Galvanized steel | ASTM A653 G-90 |
| Prepainted steel | ASTM 755 |

Metal roof panels shall be secured to the supports in accordance with the approved manufacturer's fasteners. In the absence of manufacturer recommendations, the following fasteners shall be used:

1. Galvanized fasteners shall be used for steel roofs.
2. Copper, brass, bronze, copper alloy or 300 series stainless-steel fasteners shall be used for copper roofs.
3. Stainless-steel fasteners are acceptable for all types of metal roofs.
4. Aluminum fasteners are acceptable for aluminum roofs attached to aluminum supports.

Underlayment and high wind:

Underlayment applies in areas subject to high winds [$V_{ult}$ greater than 110mph (49 m/s) as determined in accordance with section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacture's installation instructions. Fasteners are to be applied along the overlap not more than 36" (914 mm) on center.

Underlayment installed where $V_{asd}$ in accordance with section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D226 type II, ASTM D4869 type IV , or ASTM D1970. The underlayment shall be attached in grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except at eave edges that shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gage [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or minimum of 3/4" (19.1 mm) into the roof sheathing.

Exception: As an alternative, underlayment complying with ASTM D 1970 shall be permitted.

f. The roofing contractor shall supply to the Owner a written guarantee to repair without cost to the Owner, any leaks due to faulty materials or workmanship, which develop within 1 year from the date of acceptance by Owner of completed building. During this time period, any repair work required because of Act of God, abuse, alterations, or failure to the substrate and/or supporting structure (other than that caused by defects in the roofing work) shall be completed by the contractor and paid for by the Owner, promptly after competion of the required repair work in each instance. The roofing contractor shall furnish the manufacturer's standard limited material warranty for a minimum of 10 years from the date of completion of the roof.

- Flashing:
  a. All work shall comply with the SMACNA "Architectural Sheet Metal Manual".
  b. All metal flashing to conform to ASTM A 653, commercial grade (zinc coated G 90).
  c. All metal flashing shall be 26 gauge for work less than 8" wide, 20 gauge for work over 8" wide or as indicated on the drawings. Use 20 gauge minimum for clips.
  d. Sheet metal flashing shall be installed at all locations where different material intersect such as roof to wall, roof to roof, deck/balcony/landing to wall, penetrations into walls, chimneys and as detailed. Flash and counterflash as required to make watertight.
  e. The center of all flashing for all through vents and all electrical service connections, shall not be less than 16" from center of any valley. See manufacturer's printed installation instructions recommendations for roofing tile.

DIVISION 07 - THERMAL AND MOISTURE PROTECTION (CONTINUED)

- Sheathing Paper:
  a. Provide sheathing paper under exterior metal lath and plaster, under wood siding, under masonry veneer, under metal flashings and where indicated or detailed.
  b. Use Tyvek House Wrap.
  c. Lapping: Horizontal Joints: Lap paper as detailed and not less than 3 inches; Wall Corners: Wrap paper to overlap not less than 18 inches each side of corner; Vertical Joints: Lap paper not less than 6 inches.
  d. Lap paper over head flashings and base screeds, roof and waterproof membranes, and under sill flashings. Treat penetrations and other details as necessary for adequate weather protection.
  e. Wall openings: Individually flash all exterior openings for fixtures such as windows, doors and vents as detailed to make them water tight.
- Flexible Flashings:
  a. Fortifiber system.
  b. Moisstop E-Z seal adhesive flashing for dampproofing at all exterior door window heads and jambs.
  c. Fortiflash 40 mil waterproof flashing for waterproofing at all horizontal plaster surfaces, horizontal penetrations, and windowsills.
  d. Moiststop sealant for sealing around windows.
- Deck Waterproofing:
  a. The minimum performance standard for waterproof sheet membrane at waterproof decks with tile or concrete finish shall be WR Grace "Bituthene 3000". All products and components shall be by same manufacturer. Install in strict accordance with manufacturer's written instructions to assure waterproof integrity.
  b. The minimum performance standard for traffic coatings at waterproof decks shall be Excel-Coat pedestrian membrane system or Excel-Coat Fire System for fire-rated decks by Excellent Coatings Inc.. All products and components shall be by same manufacturer. Install in strict accordance with manufacturer's written instructions to assure waterproof integrity.
  c. Quality Assurance. Pre-installation conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include review of special details and flashing. This meeting shall include the representatives of the General Contractor, Applicator, Manufacturer, and Architect. A trained employee of the manufacturer shall be on site periodically during membrane waterproofing work to review installation procedures.
  d. Water test: Deck membranes shall be water tested and approved immediately before installation of finish materials. Water tests shall be witnessed by the Architect. A water test is conducted by closing any deck drains and erecting temporary dams where required to retain water on the waterproofing material surface, then flooding the surface to a minimum depth of 2". Care must be taken so that the weight of water retained does not exceed the load carrying capacity of the structural deck, and that the height of the water does not exceed the lowest flashing. For well sloped decks, tests should be segmented to avoid deep water near drains. The water tests should be conducted on a warm day (i.e. 65 degrees F. minimum). The water should be allowed to remain on the deck for 24 hours minimum, during and after which the areas beneath the membrane should be inspected for leaks. If leaks are detected, the test should be stopped, repairs made, and the area retested. When the test is successful, the drains should be opened and the temporary dams should be removed. Temporary protections boards should be installed over the tested area, and the area roped off to prevent construction traffic across the surface until drainage composite or permanent protections board has been installed.
- Roof Accessories
  a. The minimum performance standard for prefabricated acrylic skylights shall be Bristolite "AL-CM- 2" (ICC ER-2469) or equal as approved by Owner. Color as selected by owner. Install as per manufacturer's instructions.
- Firestopping
  a. Furnish UL Design No. from the "Fire Resistance Directory - Volume II" for each required penetration type and configuration. Indicate which materials will be used in firestopping the penetration.
  b. Firestopping materials shall conform to CBC Section 713 for fire resistance standards and requirements for penetrations in walls and partitions and floors.
  c. Through-Penetration Firestopping Materials: Hilt Construction Chemicals, Inc., International Protective Coatings Corp., Specified Technologies, Inc., The ReclorSeal Corporation, Tremco, Inc., 3M Fire Protection Products. Provide mortar, sealants and caulk, putty, wrap strips, pillows, bags, and other types required for UL Design No. for each penetration to receive firestopping.
  d. Mineral Fiber Firestopping Materials: Semirigid mineral fiber insulation, nominal 4-pcf density; complying with ASTM C612, Type IA and IB.
  e. Firestopping at Electrical Boxes and Utility Outlets: Utility penetrations in walls, ceilings, or floors requiring protected openings shall be firestopped and sealed with an approved material securely installed, capable of maintaining its integrity when subjected to test temperature was specified in ASTM E814. Steel electrical outlet boxes which exceed 16-square inches in area shall be protected by 3M "Moldable Putty Pads", Specified Technologies, Inc. "SpecSeal Series SSP Putty Pads."
  f. Provide solid continuous firestopping wherever the penetration or addition of a construction element through or adjacent to a fire-rated floor, wall or partition creates a discontinuity of such a rates separation. Application limited in size and configuration to tested systems.
  g. Penetrations: Penetrations include conduit, cable, wire, pipe, duct and other elements which pass through one or both outer surfaces of a fire-rated floor, roof, wall, or partition. Fill penetrations as indicated in applicable UL Design No. Verify that annular space around sprinkler pipes through fire-rated walls and floors is provided as required by NFPA 13.
  h. Fire Rated Partitions: Fire-rated or smoke-rated partitions shall be firestopped with a firestop sealant as listed in UL "Fire Resistant Directory." Apply minimum 3/8-inch bead at intersection of finish material and adjacent surface, both sides and along entire perimeter.
  i. Identify firestop systems after installation. Identify the firestop system that has been installed and include the appropriate UL Design Number.
- Caulking and Sealants/Locations:
  a. Sealant Locations: Locations such as ceramic tile, plumbing fixtures, and other where mildew resistant sealant is required. Location where high degree of movement is anticipated. Joints and cracks around windows, thresholds, door frames, wall penetrations, connections and other joints necessary to seal off building from outside air and moisture. Between exterior wall sole plate and slab on grade. All joints necessary to make the building watertight and to prevent the passage of dirt, dust, wind, air or water. At interior insulated sound walls. Fire stopping at penetrations of fire rated assemblies.
  b. Minimum product standards for sealants shall be as follows:
     Exterior Window and Door Frames and Masonry to Cement Plaster: Sonolastic NP 2, by Sonneborn or equal.
     Color to match wall surface.
     Interior Sound Walls at Sill: Tremco Acoustical Sealant or equal.
     Wood Sole Plate to Concrete, Window Sills and Door thresholds: Dow Corning 790 Silicone Building Sealant or equal.
     Color: Natural Stone.
     Painted Exterior Windows Frames to Metal Frames or Flashing: Dow Corning 999A Glazing Sealant or equal.
     Color: Clear.
     Caulking for Joints in Floor Slabs on Grade: PRC Rubber Caulk 230, two-part self-leveling polyurethane, Shore A hardness 35.
     Joint Fillers: Closed cell inert polyurethane or polyethylene as recommended by caulking manufacturer. Width or diameter of preformed backing material to be 1-1/4 to 1-1/3 times the width of the joint to be sealed. Fire stopping at penetrations of fire rated assemblies: 3M Fire Protection Products CP 25WB Caulk (U.O.N.), see details.
  c. Caulking and sealants shall be installed per manufacturer's written specifications. Consult manufacturer when sealant cannot be applied within recommended temperature ranges. All exposed caulking shall be free of wrinkles, sags, air pockets, ridges and embedded impurities. After joints are completely filled, they shall be tooled to a slight, neat concave joint.
  d. Sealants shall be compatible with all materials they are in contact with.

DIVISION 08 - DOORS AND WINDOWS

8.01 Quality Control

Material shall meet or exceed the following standards:

- Wood Doors:
  a. Doors shall meet or exceed the standards of the AWI/AWMAC "Architectural Wood Standards", Section 9, Custom Grade (U.O.N.).
  b. Wood doors shall be 1-3/4" thick solid core at exterior doors and where noted at selected interior doors. 8' interior doors shall be 1-3/4" thick, 6'-8" interior doors shall be 1 3/8" thick.
- Stile & Rail Wood Doors:
  a. Masonite International Corporation, molded panel series, or equal. See Window & Door schedule. Final windows and doors style to be selected by owner.

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Date: Nov. 10, 2021

Scale: 1/4" = 1' - 00"

DRAWING TITLE:

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# SPECIFICATIONS

b. Factory fit doors to suit frame-opening sizes indicated.
c. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3.
d. Comply with final hardware schedules, door frame Shop Drawings, DHI A 115-W Series standards, and hardware templates.
e. Doors for Opaque Finish: Apply one coat of wood primer specified in Division 09 "Painting" to faces and edges of doors.

- Fiberglass Doors & Frames
  a. Performance Requirements:
     A. Door opening assemblies: Maximum flame spread 25 in accordance with ASTM E 84, self-extinguishing in accordance with ASTM D 635.
     B. Fire rated assemblies: Comply with requirements of UL 10B, NFPA 252, and ASTM E 152; UL ratings indicated on drawings with doors and frames bearing rating labels.
  b. Therma-Tru Corporation, Fiber-Classic Door System, or equal.
  c. Door Faces: 1/16 inch minimum thickness, fiberglass-reinforced thermoset composite, wood-grained in natural northern red oak patterns, stainable and paintable.
  d. Door Edges: Machinable kiln-dried pine, primed to match color of faces, lock edge reinforced with engineered lumber core, lockset area reinforced with solid blocking for hardware backup.
  e. Door Bottom Edge: Moisture-proof and decay-proof composite.
  f. Core: Foamed-in-place polyurethane, CFC-free, density 2.0 pcf minimum, K-factor of 0.14 for minimum thermal transmittance. Standard factory sizes may be edge trimmed or end trimmed in shop or field to suit replacement door size requirements.
  g. Weatherstripping: Jacketed thermoset closed-cell foam, press-fit in kerfs at jamb stops in frames. Extruded thermoplastic elastomer, finned and chambered design, press-fit into bottom edge of doors. Corner pads at bottom margin corners from jacketed thermoset closed-cell foam.
  h. Hinges & Strikes: Steel, zinc-plated, brass or chrome finish. Screws plated and finished to match hardware. Minimum hinge size 4 x 4 x .098 inches. Strikes are proprietary adjustable type, permitting in-out adjustment of door in frame, up to 3/16 inch. Final hardware to be determined by owner.
  i. Frames: Milled from 5/4 kiln-dried pine, profiled with ½ inch stop.
- Fire Ratings:
  a. Frame assemblies and fire rated doors shall carry equal rating. Fire rated doors and frames indicated shall carry Underwriters Laboratory Label for exposures indicated. Construct and install assemblies to comply with NFPA Standard No. 80. Hardware shall include smoke gasketing and self closures and be UL listed.
- Doors, General Requirements
  a. Accessible under-floor areas shall be provided with a minimum 18-inch by 24-inch opening unobstructed by pipes, ducts, and similar construction per CBC 1209.1.1 or CRC R408.4.
  b. Provide attic access opening ( 22" x 30" min.) readily accessible with a 30" min. clear head room above access in all attic spaces with a minimum vertical height of 30" per CBC 1209.2 or CRC R807. See CMC 904.11.1 for FAU's in attics.
  c. Doors between conditioned and unconditioned spaces shall be fully weatherstripped.
  d. All hardware shall be located per industry recognized standards and shall comply with applicable fire and building code requirements.
  e. Door stops shall be furnished wherever an open door or any item of hardware thereon strikes a wall, column, or part of the building construction.
  f. All swinging doors shall be accurately hung to fit snug against all stops and shall hang free from hinge bind.
- Sectional Doors
  a. Insulated Steel Sectional Doors: Overhead Door Corporation, 297 Series, or equal.
     A. Five (5) section doors, 19 1/8" ht
     B. Panel thickness: 1"
     C. Panel: Galvanized embossed smooth steel skin
     D. Insulation: CFC Free Polyurethane, R = 9/31
     E. Finish: Epoxy Primer and 2-coat baked on polyester paint.
     F. Weather Seal: EPDM Premium bulb-type bottom 2" Hot-dipped Galvanized vertical and horizontal tracks
     G. Rollers: Self-lubricating nylon
     H. Struts: Three ( 3) minimum per door.
  b. Door opener: Overhead Door Corporations, Signature Screw Drive, Model 250, or equal
     A. Motor: ½ hp
     B. Controller: Multi-function remote
- Metal and Vinyl Windows and Sliding Glass Doors
  a. Metal and vinyl units shall meet or exceed ANSI/AAMA 101 specifications.
  b. All units shall have a nail on flange (U.O.N.).
  c. Frame color as selected by Owner.
  d. The minimum performance standard shall be Milgard.
- Wood and Clad Windows and Doors
  a. Wood and clad units shall meet or exceed the following AAMA/WDMA/CSA 101/I.S.2/A440.
  b. Frame color as selected by Owner.
  c. The minimum performance standard shall be "Anderson."
- Glazing and Windows, General Requirements:
  a. Provide tempered glass where required by the C.B.C. in all hazardous areas such as sliding glass doors, French doors, glass panels adjacent to doors and walking surfaces, glass panels in tub and shower enclosures, etc.
  b. Provide screens at all operable sash.
  c. All escape or rescue windows shall have a minimum net clear openable area of 5.7 square feet. The minimum net clear openable height dimension shall be 24 inches. The minimum net clear openable width dimension shall be 20 inches when windows are provided as a means of escape or rescue they shall have a finished sill height not more than 44 inches above the floor.
  d. U-valves shall be determined in accordance to NFRC 100.
  e. Air infiltration shall meet the air infiltration requirements of the CEC.
  f. Water infiltration shall be tested in accordance with ASTM E 331.
  g. Window system manufacturer shall certify that its system can structurally perform to the following criteria for the local project wind conditions:
     A. Maximum deflection of 1/175 of the span
     B. Allowable stress with safety factor of 1.65.
  h. Test reports certified by an independent test laboratory must be made available upon request.
  i. Mirrors shall be float glazing select silvering quality, electrically deposited copper- backed mirror glass. Joint locations to be approved by Architect prior to commencement of work.
  j. All windows and doors shall be certified and labeled in accordance with California Energy Commission requirements and the National Fenestration Rating Council and comply with the California Energy Code compliance documentation.

DIVISION 09 - FINISHES

9.01 Quality Control

Materials shall meet or exceed the following standards:

- Stucco - 1 coat system
  a. 1" polystrene system shall be La-Habra-Wall (ICC-ES ER- 4226) or approved equal.
- Stucco - 3 coat system
  a. Application shall be in compliance with applicable sections of ANSI A 42.2 "Portland Cement and Portland Cement-Lime Plastering, Exterior (Stucco) and Interior" and ANSI A 42.3 "Lathing and Furring for Portland Cement and Portland Cement-Lime Plastering, Exterior (Stucco) and Interior.
  b. In addition, materials shall meet or exceed the following:
     A. Portland cement: ASTM C 150, Type I, natural color.
     B. Special finishing hydrated lime: ASTM C 206, Type S. Aggregates: ASTM C 144, all sand to pass No. 8 sieve.
     C. Cement Plaster Finish Coat: A packaged blend of Portland cement (ASTM C 150), hydrated lime (ASTM C 206), and properly graded quality 20 mesh aggregate, with integral color and paint finish.
     D. Mixes: Job-mixed cement plaster mix, Bondcrete or Mortaseal Mason's Lime with Portland Cement and Sand in accordance with ANSI A 42.2, Type L.
     E. Proportions:
        1. Scratch Coat: 1 bag Portland cement, 3/4 to 1 bag lime to 6 cu. ft. sand.
        2. Brown Coat: 1 bag Portland cement, 1 bag lime, 6 to 7 cu. ft. sand.
        3. Finish Coat: 1 bag Portland cement, 2 bags lime, 7 to 10 cu. ft. sand. See drawings for location of cement plaster finish coat.
     F. Maximum Slump: 2-1/2 in. using Slump test ASTM C 143, modified slump cone 2 in. x 4 in. x 6 in.
     G. Wall Metal Lath: At vertical surface: No. 17 gauge galvanized stucco netting meeting Federal specification QQ-L- 101 with two horizontal No. 19 gauge galvanized wires at 6 inches O.C. over two layesr s of Grade 'D" paper ( 60 min.).
     H. See Division 07.
     I. Lath at horizontal soffit: Galvanized mesh, 3.4 lbs/sq. yd. over 1 layer of Grade 'D' paper (60 min.).
     J. Staples: 14 gauge wire staples, divergent points, 3/4 inch crown, lin. legs.
     K. Nails (if soffit supported by wood framing): 1 3/4 inch 11 gauge, 3/8" head, 3/4" washer.
     L. Stucco accessories shall meet or exceed the cirteria of ASTM C 1063

- Cement Plaster, General
  a. Finish texture and color shall be as approved by Owner.
  b. Climate conditions: Air temperature must be 40°F. minimum and rising when applying cement plaster or exterior finish coat. Air temperature must remain above 40°F. for a minimum of 24 hours. Consult National Weather Service before beginning work. Protect cement plaster and exterior finish coat from uneven and excessive evaporation during hot, dry weather.
  c. Allowable Tolerances: Maximum deviation from true plan 1/8 inch in 10 feet as measured by straight edge placed at any location on surface.
  d. Field Sample: A sample panel shall be prepared approximately 2 feet by 2 feet. This sample panel will be a separate part of the project. Installation shall not proceed until the sample panel is accepted by the Architect and Owner. The sample shall show color, texture, and workmanship of finished work. The sample panel shall remain on the project for comparison purposes with the actual work.
  e. Other materials where applicable:
     A. Polystyrene Board and Architectural Moldings:
        1. ASTM C-578 Type 1. Nominal 1 lb/c.f. cured expanded polystyrene.
        2. Flame spread and smoke development equal to or less than 24 and 450 respectively per ASTM E- 84/UL listed.
        3. Insulation board shall carry the seal of the RADCO testing agency.
     B. Fabric: A balanced, open weave, glass fiber fabric, complying with ASTM D 1682, standard mesh, as recommended for wrapping polystyrene board and moldings.
     C. Primer/Adhesive Mixture: A field-mixed blend of standard polymer-based primer adhesive and Portland cement. For use as a primer and leveler over cement plaster brown coat and for use as an adhesive for fabric and polystyrene board and moldings.
     D. Acrylic Resin Bonding Agent: Bonsel, Tammsway, or approved equal. For use on concrete or masonry before application of cement plaster.
     E. Add Mixtures: No add mixtures or plastic cements will be allowed without approval of the Architect.
     F. Synthetic Exterior Finish Coating: A 100% pure acrylic resin based, textured, factory-mixed coating having integral color, for exterior use. Minimum standards shall be Dry-Vit Systems Inc., or approved equal.
  f. Curing: Wet base as necessary before application with fine fog spray to produce uniform moist condition.
     A. When required, apply bond coat to concrete base and moist cure for minimum of 24 hours before applying first coat of cement plaster.
     B. Do not apply brown coat sooner than 48 hours after application of scratch coat.
     C. Do not apply cement plaster finish coat sooner than 14 days after application of brown coat.
     D. Inspect and repair base coats before application of finish coat.
     E. Cure base coats minimum of 48 hours after application.
     F. Maintain moist conditions by fine fog spray.
     G. Cure finish coat for minimum of 7 days.

- Siding
  a. Fiber-Cement Siding & Soffit: Siding & soffit made from fiber-cement board that does not contain asbestos fibers; complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; & has a flame-spread index of 25 or less when tested according to ASTM E 84.
  b. The minimum performance standard for Fiber-Cement Siding shall be CertainTeed Corp. Simulated Shingle and Lap Siding: Product as specified in the drawings; .Exposure as per Manufacturer's recommendation; Finish Factory Sealed.
     Soffit: Cedar texture, 16" wide x 12' long; Finish shall be Factory Sealed.
  c. Siding Accessories: Provide starter strips, edge trim, corner cap, & other items as recommended by siding manufacturer for bldg. configuration.
  d. Nails: Length as required to penetrate minimum 1-¼ inch (32 mm) into solid backing; hot-dipped galvanized or stainless steel.
  e. Install in accordance with manufacturer's instructions & drawing details.
     A. Read warranty & comply with all terms necessary to maintain warranty coverage.
     B. Use trim details indicated on drawings.
     C. Touch up all field cut edges before installing.
     D. Pre-drill nail holes, if necessary, to prevent breakage.
  f. Siding Installation:
     A. Starting: Install a minimum ¼ inch thick lath starter strip @ the bottom course of the wall. Apply planks
     horizontally with minimum 1-¼ inch wide laps @ the top. The bottom edge of the first plank overlaps the starter strip.

     Allow minimum 1-inch vertical clearance between roofing & bottom edge of siding.
     Align vertical joints of the planks over framing members.
     Maintain clearance between siding & adjacent finished grade.
     Locate splices at least one stud cavity away from window & door openings.
     Allow 1/8" space between both ends of siding panels that butt against trim for thermal movement; seal joint between panel & trim with exterior grade sealant.

     Joints: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.

     Place fasteners no closer than ¾ inch & no further than 2 inch from side edge of trim board & no closer than 1 inch from end. Fasten maximum 16 inch on center.

  g. Completion:
     After installation, seal all joints except lap joints of lap siding. Seal around all penetrations.
     Paint all exposed cut edges.

     Finish Painting: Specified in Division 09, Section "Painting".

SECTION PAINTING

1.5. PAINTING

A. COATINGS SCHEDULE: The consultant shall prepare a schedule listing all surfaces in generic terms, all coating or finish operations, the types of finish materials and the number of coats of each material. Preferred finishes for certain locations or surfaces are as follows:

1. INTERIOR WOODWORK: Natural finish - stain, 2 coats sanding sealer, 2 coats semigloss varnish. If polyurethane varnish is used, delete sanding sealer. Painted finish - primer and 2 coats semi-gloss alkyd enamel.
2. METAL DOORS AND FRAMES: Shop coat, touch up and 2 coats semi-gloss enamel.
3. NEW GYPSUM WALLBOARD OR INTERIOR PLASTER: Spackle as required, primer and 2 coats semi-gloss alkyd enamel or 2 coats semi-gloss latex.
4. EXISTING PREVIOUSLY PAINTED GYPSUM WALLBOARD OR INTERIOR PLASTER: Primer and 1 coat semi-gloss alkyd enamel or semi-gloss latex. If surface is poor, remove finish to substrate, repair and finish the same as new gypsum wallboard or plaster. Refer to Section 09 00 00, Miscellaneous Requirements, Subparagraph 1.3.A.2, Surface Preparation.
5. INTERIOR CONCRETE OR CONCRETE BLOCK (Unpainted): 1 coat self-sealing heavy filler-type primer and 2 coats semi-gloss alkyd enamel or 2 coats semi- gloss latex. For laboratories requiring chemical resistance, replace the alkyd or latex paint with epoxy two-component finish.
6. EXTERIOR WOOD PLATFORMS OR BENCHES: Use Behr Plus 10 Solid Color Stain or approved equal in accordance with manufacturer's directions.
7. EXTERIOR PORTLAND CEMENT PLASTER (STUCCO): Use integral color, or paint.

1.6. ITEMS TO BE NOTED IN SPECIFICATIONS

A. TOP AND BOTTOM EDGES OF WOOD DOORS: Shall be sanded and sealed after fitting and finished with at least 2coats of varnish or paint.
B. TOPS AND BOTTOMS OF METAL DOORS: Shall be painted with the same materials and number of coats as used on the door faces.
C. DRY FILM THICKNESS: Shall be specified for all coats of paint on metals.
D. ACCENT COLORS: If it is anticipated 5%or more of the scheduled finishes will be in accent colors, attention should be called to this fact. Estimated percentage of accent colors should be given as an aid to bidders in preparation of bids. A statement should be made to the effect that the information given in no way restricts the consultant in his final selection of colors.
E. COLOR CODING FOR PIPING: Include finish painting of insulated and uninsulated piping in the General Contract documents and include color banding of finished piping in the appropriate contract documents.

.1.7 INTERIOR PAINTING

A. Finish coat to be semi-gloss in all corridors and stairwells. Use washable type of finish material on walls for ease of maintenance and cleaning.

.1.1 WALL COVERING & GRAPHICS

A. No vinyl wall covering on the interior face of exterior walls.
B. Materials must conform to ASTM E. 84-Research code carefully to determine class of fire and smoke resistance required for the specific application.
C. Vinyl wall covering must satisfactorily pass class A physical requirements for type II wall covering as listed in G.S.A. CCC-W408-A and CFFA Quality Standards for vinyl coated fabric wall covering.

DIVISION 10 - SPECIALTIES This Section not used.

DIVISION 11 - EQUIPMENT

11.01 Quality Control

- All appliances will be selected by the Owner. All appliances shall be Energy Star rated.
- Gas fired appliance shall be equipped with intermittent type ignition devices (except tank type water heaters).
- All combustion equipment, except range hoods and dryers, shall be closed combustion.
- Provide recessed connections in wall for water and waste at clothes washer space and water shut off for refrigerator icemaker. If washer is located on a second floor or above, provide a G.S.M. pan under washer with drain to outside. Washer standpipe shall extend between 18 and 30 inches above its trap. The trap shall be between 6 and 10 inches above the floor (CPC Section 804).
- Clothes dryer exhaust duct will be limited to 14' maximum length including 2, 90° elbows and 4" minimum diameter CMC 504).
- Kitchen hood and clothes dryer ducts shall be of metal and have a smooth interior surface. Kitchen hood ducts for downdraft grill-range may be Schedule 40 PVC when installed below concrete slab floors (CMC 504.2). Dryer duct may have six feet (maximum) of approved flexible duct (CMC 504.3).
- Makeup air equal to exhaust rate shall be provided for all kitchen range hoods exceeding 400 CFM.
- Rooms containing bath tubs, showers, spas and simular bathing fixtures shall be mechanically ventilated in accordance with the CMC (CBC 1203.4.2.1).
- Environmental air ducts (vent fans, range hoods, dryers, etc.) shall not terminate less than 3 feet from property line, or 3 feet from opening into the building (CMC 504.5).
- Dishwasher shall be connected to a drainage system or food waste disposer with the use of an approved dishwasher airgap fitting (CPC Section 807.4).
- Solar PV Systems shall provide a minimum of 10% of the Title 24 Proposed TDV energy.

15.01 General Requirements

- Mechanical and plumbing systems shown on archetcural drawings are shown for location intent only. These systems shall be engineered by others. The contractor shall be responsible for proper installation, placement, and performance.
- Fire sprinkler system when required shall be "design-build" and are not a part of the architectural documents. Layout of sprinkler heads shall be submitted to the Architect for revision. Fire sprinkler plans and calculations shall be submitted to the Building Department for review and approval prior to installation. Automatic fire sprinkler system shall be designed and installed in accordance with NFPA 13D or CRC R313.3 as a minimum.
- Anchor or strap water heater and HVAC units to structure to resist earthquake motion (CPC Section 508.2 and CMC Section 303.4).
- Water heater and HVAC units shall be accessible for inspection, service, repair, and placement without removing permanent construction (CMC Section 304.7)
- Furnaces and water heaters shall not be installed in or be accessible through rooms designed as bedrooms, bathrooms or wardrobe closets (CMC Section 304.5 and CPC Section 509).
- Water heating and HVAC units installed in garages where they may be subjected to damage shall be suitably guarded against such damage by being installed behind protective barriers or by being elevated or located out of the normal path of vehicles. Such equipment when located in a garage shall be installed so that the pilots or burners are at least 18" above the floor level (CMC Section 307 & CPC 508.14).
- Warm-air furnaces installed in attics or furred spaces shall be installed as per CMC Section 904.11 and include the following:
  a. A minimum 22 inch by 30 inch access but large enough to accommodate the removal of the largest component of FAU (maximum 20 feet from furnace unless passageway height is over 6 feet).
  b. Continuous solid flooring not less than 24 inches wide from access to furnace.
  c. A level working platform minimum 30 inches in depth along entire firebox side of furnace.
  d. A permanent 110V electrical outlet and lighting fixture (controlled by switch located at required access) at or near furnace.
  e. FAU shall be listed for installation in attics and on combustible flooring - clearances shall be as specified in the listing and as per CMC Section 303.
  f. Provide G.S.M. pan and drain below FAU with cooling coil at attic installed furnaces.

15.02 Heating, Ventilation and Air Condition (HVAC) *Requirements for On-demand Water Heater as this house will use on-demand type water heaters.*

- All work shall comply to the applicable standards of the ASHRAE handbooks and the SMACNA standards.
- A concrete pad shall be provided for grade mounted condensers.
- HVAC installer shall be NATE or part of n EPA-recognized HVAC installer training organization.
- All recirculating space conditioning systems shall have filters rated a minimum of MERV 8.
- HVAC supply flow rates shall be tested and shall be within ± 20% or ±CFM of ACCA J calculated rates.
- Pressure differences between bedrooms and the est of the house shall be less than 3 Pa.
- HVAC systems shall have at least 2 space-conditioned zones with independent thermostats.

15.03 Plumbing

- American Standard Inc. plumbing products shall be the minimum performance product standard for plumbing fixtures. The Owner will select all plumbing fixtures. Water closets shall be 1.28 gallon/flush maximum (U.O.N.). Shower heads 2.5 and faucets shall be 2.2 gallons per minute (GPM) maximum flow rate (U.O.N.).
- Waste and Vent System: All soil, waste and vent piping shall be approved ABS per local code (U.O.N.). All soil pipes penetrating or within rated fire walls shall be cast iron. All sewer pipes under driveway shall be cast iron. Provide minimum of 1/4" per foot slope for horizontal drainage pipe. (CPC Section 718). Cleanouts shall be installed as per CPC Section 719. Cleanout locations shall be located in least visible areas. All plumbing vents shall be combined into a minimum amount of roof penetrations. All roof penetrations shall occur to the rear of the main ridge.
- Domestic Water Piping System: All hot water lines shall be insulated with R- 4 insulation. Water service main piping shall be one inch minimum or larger as per load and pressure requirements. Provide shut-off valve at foundation wall. Hot and cold water supply shall be copper. No water supply will be allowed under concrete building slab. All runs shall be made so that branch connections occur at fixture locations where fittings can be installed. System shall be as free as possible from fittings and sharp turns. Provide hose bibs as per drawings with tee fittings above ground for future sprinklers installation at front and rear of house (U.O.N.). Provide a non-removeable backflow preventor or vacuum breaker at all hose bibbs (CPC Section 603).
- Water Heating System: Water heater shall be size and type as specified in the California Energy Code. Water heater shall have R-12 insulation blanket (U.O.N.). Insulate the first 5 feet of the hot and cold water pipes with R-4 insulation. If water heater is located on a second floor or above, provide a G.S.M. pan under water heater with drain to outside. Water heaters shall be provided with a pressure relief valve as per CPC Section 505.4.
- Domestic Gas Service: All gas piping shall be new and shall be black steel or galvanized (U.O.N.). No gas piping shall be installed in or on the ground under any building or structure and all exposed gas piping shall be securely supported and located where it will be protected from physical damage (CPC Section 1211
- Plumbing projecting through or embedded in concrete or masonry shall be protected during the placing of concrete and placed in an oversized sleeve or approved expansion wrap to allow for expansion, contraction and structural movement (CPC Section 313).
- All copper pipe connections to ferrous piping shall be made with dielectric couplings or isolation flanges.
- Each house shall receive a whole house water meter, Assured Automation WM-PC- 100 Series Water Meter, or equivalent.

DIVISION 16 - ELECTRICAL

16.01 General Requirements

- Electrical systems shown on architectural drawings are shown for intent only. These systems shall be engineered by others. The contractor shall be responsible for proper installation, placement, and performance.
- Materials and equipment shall be new and listed by Underwriter's Laboratories, Inc. (U.L.) and bear their label wherever standards have been established and their label service is regularly furnished.
- Service Distribution:
  a. Main electrical service shall be 200 AMP minimum (U.O.N.)
  b. Main service panel electrical load calculations shall conform to CEC Section 220.
  c. Install a main service disconnect as per CEC 230-70.
  d. Provide grounding at service entrance to comply with CEC Section 250.
  e. Branch circuit load distribution shall conform to CEC Section 210.
  f. Panels and sub-panels shall not be located in closets or similar confined spaces. (CEC 110-26).
  g. Aluminum wire smaller than No. 6 A.W.G. shall not be used in electrical wiring.
  h. Protection of wiring shall be as per CEC Sections 320-334.
- Receptacle Outlets:
  a. Outlet boxes on opposite sides of rated walls (wall separating garage from dwelling) shall be separated by a horizontal distance of 24 inches (CBC Section 713.3.2).
  b. Provide GFCI (GFI) protection per CEC Section 210-8(a).
  c. Outlet locations shall comply with CEC Sections 210-50 and 210-52.
  d. Switched outlets shall be one-half hot (U.O.N.).
- Lighting:
  a. All light fixtures shall be LED (U.O.N.).
  b. All light fixtures shall comply to CEC Section 410 for type, ratings, and installation.
  c. Fixture locations shall comply to CEC Section 210-70 and 410.
  d. Ceiling mounted junction boxes shall be capable of supporting 60# minimum (U.O.N.) and supported as per CEC Section 410-36.
  e. Fixtures installed in clothes shall comply to CEC Section 410-16.
  f. Install switches at 47" above finished floor to top of switch box (U.O.N.).
- Smoke Detectors: Install 110 volt smoke detectors with battery backup as per CBC Section 907.2.11.2 or CRC R314 and conforming to NFPA 72. Install the detector in strict accordance with the manufacturer's printed installation instructions.
- Provide combustion air to HVAC units as per CMC Section 703; and to water heaters as per CPC Sec. 507.
- Installation of HVAC and plumbing systems shall insure properly balanced and quiet operation.
- All work shall comply to the California Energy Code.
- Vibration isolation of mechanical equipment shall be incorporated into the installation.
- Carbon Monoxide Detectors: Locate carbon monoxide alarms as per CBC 420.4 or CRC R315.
- All exterior lighting shall be Dark Sky qualified and shall have either a PV cell, motion sensor, or photo sensor controls.

# FLOOR PLAN SHEET NOTES

1. GENERAL CONTACTOR TO BE RESPONSIBLE FOR ADEQUATELY FRAMING, BRACING, AND STRUCTURING ALL WALLS AND OTHER GYPSUM BOARD CONSTRUCTION IN ACCORDANCE WITH APPLICABLE TYPICAL DETAILS CONTAINED IN THESE DRAWINGS. WHETHER OR NOT SPECIFICALLY REFERENCED IN THE PLANS, ALL PARTITIONS SHALL BE BRACED IN ACCORDANCE WITH SEISMIC CODE REQUIREMENTS.
2. COORDINATE AND INSTALL BACKING AS REQUIRED FOR ALL NEW MILLWORK, MARKERBOARDS, EQUIPMENT, FURNITURE, PROJECTION SCREENS, ETC.
3. ALL PARTITIONS ARE DIMENSIONED FROM FACE OF FINISH TO FACE OF FINISH, U.O.N.
4. PARTITIONS SHOWN TO ALIGN WITH FACE OF EXISTING CONSTRUCTION OR NEW PARTITIONS SHOULD ALIGN FINISHED FACE TO FINISHED FACE.
5. DIMENSIONS INDICATED TO BE "CLEAR" OR TO HOLD SHALL BE MAINTAINED AND DISCREPANCIES OR VARIATIONS ON THESE DIMENSIONS SHALL BE REVIEWED WITH ARCHITECT BEFORE BEGINNING CONSTRUCTION.
6. PATCH AND REPAIR (E) WALLS & CEILINGS AS REQUIRED AND PREPARE TO RECEIVE (N) FINISHES AS SCHEDULED, VERIFY EXTEND OF WORK IN THE FIELD.
7. (E) LIFE SAFETY DEVICES TO BE RELOCATED WHERE REQUIRED BY NEW CONSTRUCTION. CONTRACTOR TO VERIFY CONDITIONS IN FIELD. SEE G 2.00 FOR TYPICAL MOUNTING HEIGHTS.
8. PREPARE ALL GYP. BD. WALL SURFACES TO RECEIVE PARTITIONS, AND WALL FINISHES.
9. PROVIDE SIGNAGE AS REQUIRED BY APPLICABLE CODES. SEE G 2.01 FOR TYPES, LOCATIONS, AND TYPICAL MOUNTING HEIGHTS OF SIGNAGE.
10. SEE G1.00 FOR ABBREVIATIONS AND SYMBOLS USED ON THESE SHEETS.
11. FLOOR TOLERANCE: FINISHED FLOOR TO BE LEVELED TO A TOLERANCE OF 1/4" SLOPE IN 10 FEET. GENERAL CONTRACTOR TO IMMEDIATELY VERIFY SLOPE AND REPORT ANY DEVIATIONS FROM ABOVE STATED TOLERANCE TO PIXELARCH LTD.
12. PRIOR TO COMMENCING WORK ALIGNMENT OF DOOR HEADS AND OTHER CRITICAL HORIZONTAL ELEMENTS SHALL BE MAINTAINED AT A CONSTANT LEVEL AND SHALL NOT FOLLOW VARIATIONS IN THE FLOOR PLATES.
13. NEW WALLS TO ALIGN WITH CENTER OF (E) WINDOW MULLIONS U.O.N.
14. AT LEAST ONE FIRE EXTINGUISHER WITH A MINIMUM RATING OF 2-A-10B:C SHALL BE PROVIDED WITHIN 75 FEET MAXIMUM TRAVEL DISTANCE FOR EACH 3,0000 SQUARE FEET OR PORTION THEREOF ON EACH FLOOR. LOCATIONS INDICATED ON THE DRAWINGS SHALL BE VERIFIED WITH THE FIRE MARSHALL AS BEING ACCEPTABLE.
15. REFER TO SHEET G 2.01 FOR TYPICAL MOUNTING HEIGHTS OF LIGHT STROBES, LIGHT SWITCHES, THERMOSTATS, OUTLETS, FIRE EXTINGISHER CABINETS, ETC.
16. THERMOSTATS TO BE LOCATED ABOVE LIGHT SWITCHES, TYP. SEE G 2.00.
17. MULTIPLE LIGHT SWITCHES TO BE GANGED WITHIN A SINGLE COVER-PLATE TO MAXIMUM EXTENT POSSIBLE. WHERE MULTIPLE SWITCHES CANNOT BE GANGED WITHIN A SINGLE COVER-PLATE, SWITCHES ARE TO BE ADJACENT TO EACH OTHER OR AS CLOSE AS POSSIBLE.
18. GC TO PROVIDE ALL APPLIANCES AND FIXTURES, U.O.N.
19. THE CONTRACTOR SHALL "STRIKE OUT" LOCATION OF ALL WALLS, DOORS, MULLIONS, SOFFITS, RAISED FLOOR GRIDS, HOUSEKEEPING AND UTILITY EQUIPMENT PADS, AND OTHER MAJOR ELEMENTS, OR AS DIRECTED BY ARCHITECT AT THE BEGINNING OF THE PROJECT BEFORE PROCEEDING WITH CONSTRUCTION. IF DISCREPANCIES EXIST BETWEEN FIELD CONDITIONS AND THE DRAWINGS NOTIFY ARCHITECT.
20. ALL FURRED WALLS SHALL EXTEND VERTICALLY THRU THE CEILING WHERE INDICATED ON THE DRAWINGS OR TO THE STRUCTURE ABOVE WHERE NO CEILING OCCURS. U.O.N.
21. HINGE SIDE OF DOORS TO BE LOCATED PER DETAILS FROM THE FACE OF ADJACENT PERPENDICULAR PARTITIONS, U.O.N.
22. REFER TO ENLARGED PLANS FOR DIMENSIONS AND INFORMATION WHEN DESIGNATED.
23. THE GENERAL CONTRACTOR SHALL COORDINATE AND PROVIDE APPROPRIATE STRUCTURAL BACKING AND REINFORCING IN PARTITIONS BEHIND ALL WALL-MOUNTED, WALL ANCHORED OR SUPPORTED ITEMS. ALL CONCEALED WOOD USED FOR SUCH SUPPORT SHALL BE FIRE RETARDANT TREATED.
24. IN THE EVENT OF CONFLICT BETWEEN DATA SHOWN ON DRAWINGS AND DATA SHOWN ON THE SPECIFICATIONS, THE DRAWINGS SHALL TAKE PRECEDENCE. DETAIL DRAWINGS TAKE PRECEDENCE OVER DRAWING OF SMALLER SCALE. SHOULD THE CONTRACTOR AT ANY TIME DISCOVER AN ERROR IN A DRAWING OR SPECIFICATION OR A DISCREPANCY OR VARIATION BETWEEN DIMENSIONS ON DRAWINGS AND MEASUREMENTS AT THE SITE OR LACK OF DIMENSIONS OR OTHER INFORMATION, THE GENERAL CONTRACTOR SHALL NOT PROCEED WITH THE WORK AFFECTED UNTIL CLARIFICATION HAS BEEN MADE.
25. REFER TO DOOR SCHEDULE ON SHEET A 9.00 FOR MORE INFORMATION ON SCOPE OF WORK RELATED TO DOORS.
26. PROVIDE BACKING AS REQUIRED PER FURNITURE REQUIREMENTS.
27. THE CONSTRUCTION PLANS INDICATE THE TYPE AND LOCATION OF NEW INTERIOR PARTITIONS, DOORS, WINDOWS, CABINETWORK, ETC. THE BUILDING SHELL AN EXISTING CONDITION.
28. THE FOLLOWING SHALL BE PROVIDED BY THE GENERAL CONTRACTOR AS DESIGN-BUILD SYSTEMS ( *IF SUCH SYSTEMS ARE REQUIRED BY THE CITY* ):
    A. AUTOMATIC FIRE SPRINKLER SYSTEM.
       CONTRACTOR SHALL FULLY COORDINATE THE DESIGN/ENGINEERING PROCESS OF THE ABOVE REFERENCED SYSTEMS AND THE COMPLETE AND PROPERLY FUNCTIONING INSTALLATION THEREOF.
29. THE FOLLOWING MAYBE PROVIDED BY THE OWNER'S VENDORS BUT THE INSTALLATION OF THOSE SYSTEMS SHALL BE COORDINATED BY THE GENERAL CONTRACTOR WITH EACH OF HIS SUBCONTRACTORS FOR THE SYSTEMS NOTED BELOW:
    A. TELECOMMUNICATIONS
    B. SECURITY
       THE GENERAL CONTRACTOR SHALL PROVIDE ELECTRICAL RACEWAY AND POWER TO ALL POINTS DESIGNATED BY THE VENDOR'S FOR EACH OF THE OWNER'S FURNISHED SYSTEMS.
30. ALL PARTITIONS, DOORS, GLAZED OPENINGS, SOFFITS, ETAL., SHALL BE STRUCTURALLY BRACED IN ACCORDANCE WITH SEISMIC CODE REQUIREMENTS.
31. COORDINATE LOCATION AND PROVIDE BLOCKING, BACKINGS AND/OR REINFORCEMENT IN PARTITIONS FOR ALL CABINETS, COUNTERTOPS AND ANY WALL-MOUNTED ITEMS. REFER TO THE PLANS, ELEVATIONS AND DETAILS FOR LOCATION OF ITEMS WHICH MAY REQUIRE SUPPORT. REFER TO DETAIL 1, SHEET A11.01.
32. THE CONTRACTOR IS RESPONSIBLE FOR VERIFING THE DIMENSIONS AND ELEVATIONS AT THE SITE. THE CONTRACTOR AND SUB-CONTRACTORS SHALL COORDINATE THE LAYOUT AND EXACT LOCATIONS OF ALL PARTITIONS, DOORS, ELECTRICAL/TELEPHONE OUTLETS, LIGHTSWITCHES AND THERMOSTATS WITH THE ARCHITECT IN THE FIELD PRIOR TO PROCEEDING.
33. WHEREVER DIAGONAL BRACING IS INDICATED OR OTHERWISE REQUIRED, INSTALL BRACING UNEXPOSED TO VIEW, PARTICULARLY AT SUSPENDED OR DRYWALL CEILING AREAS. IF EXPOSED TO VIEW CONDITIONS EXIST IN THE DESIGN, DO NOT BRACE INTO THE AREA WHERE NO CEILING IS TO BE INSTALLED, OR INTO THE "MORE OPEN"AND VISIBLE SIDE OF BUILKHEAD/SOFFIT WHERE BOTH SIDES SHALL BE WITHOUT A CEILING.
34. FOR TYPICAL PARTITIONS, AND PARTITION DETAILS REFER TO SHEET A 9.10.
35. WHERE NEW PARTITIONS MEET EXISTING MULLIONS OR COLUMNS INSTALL THE NEW PARTITION PERPENDICULAR TO THE EXISTING MULLION OR COLUMN AND ALIGN THE CENTERLINE OF THE NEW PARTITION WITH THE MULLION OR COLUMN U.O.N.
36. WHERE A GYPSUM BOARD PARTITION MEETS FLUSH WITH THE FACE OF AN EXISTING PARTITION, REMOVE THE EXISTING METAL CORNER BEAD BEFORE INSTALLING THE NEW PARTITION.
37. ALIGN NEW PARTITION SURFACES WITH THE EXISTING ADJACENT OR ADJOINING SURFACES WHERE INDICATED. TAPE AND SAND THE JOINTS TO SMOOTH WITHOUT ANY VISIBLE JOINTS. PATCH AND REPAIR SURFACES TO MATCH ADJACENT OR ADJOINING SURFACES.
38. PATCH EXISTING DAMAGED PARTITIONS THROUGHOUT ENTIRE PROJECT AREA TO MATCH ADJACENT SURFACES.
39. CUT AND FIT COMPONENTS AS REQUIRED TO ALTER EXISTING WORK FOR INSTALLATION OF NEW WORK. PATCH DAMAGED AREAS TO MATCH ADJACENT SURFACES.
40. AT OPENINGS IN GYPSUM BOARD WALLS FOR DUCT WORK, RETURN AIR, WRAP HEAD, JAMBS AND SILL OF OPENING WITH GYPSUM BOARD. U.O.N.
41. VERTICAL DIMENSIONS ARE FROM TOP OF FLOOR SLAB, EXCEPT WHERE OTHERWISE NOTED TO BE ABOVE FINISH FLOOR.
42. DIMENSION ARE NOT ADJUSTABLE WITHOUT APPROVAL OF THE ARCHITECT UNLESS NOTED +/- OR VIF.
43. THE GENERAL CONTRACTOR SHALL VERIFY THAT NO CONFLICT EXIST IN THE LOCATION OF ANY MECHANICAL, HVAC, TELEPHONE, ELECTRICAL, PLUMBING AND SPRINKLER EQUIPMENT (TO INCLUDE ALL PIPING, DUCTWORK, CONDUIT, CABLES, ETC.) AND THAT

# 2019 Low-Rise Residential Mandatory Measures Summary

NOTE: Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. *Exceptions may apply. (01/2020)

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| **Building Envelope Measures:** | |
| § 110.6(a)1: | Air Leakage. Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 CFM per square foot or less when tested per NFRC-400, ASTM E283 or AAMA/WDMA/CSA 101/I.S.2/A440-2011.* |
| § 110.6(a)5: | Labeling. Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a). |
| § 110.6(b): | Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.* |
| § 110.7: | Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped. |
| § 110.8(a): | Insulation Certification by Manufacturers. Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS). |
| § 110.8(g): | Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g). |
| § 110.8(i): | Roofing Products Solar Reflectance and Thermal Emittance. The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R. |
| § 110.8(j): | Radiant Barrier. When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs. |
| § 150.0(a): | Ceiling and Rafter Roof Insulation. Minimum R-22 insulation in wood-frame ceiling; or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.* |
| § 150.0(b): | Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value. |
| § 150.0(c): | Wall Insulation. Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102. Masonry walls must meet Tables 150.1-A or B.* |
| § 150.0(d): | Raised-floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.* |
| § 150.0(f): | Slab Edge Insulation. Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a water vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g). |
| § 150.0(g)1: | Vapor Retarder. In climate zones 1 through 16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d). |
| § 150.0(g)2: | Vapor Retarder. In climate zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation. |
| § 150.0(q): | Fenestration Products. Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.* |
| **Fireplaces, Decorative Gas Appliances, and Gas Log Measures:** | |
| § 110.5(e) | Pilot Light. Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces. |
| § 150.0(e)1: | Closable Doors. Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox. |
| § 150.0(e)2: | Combustion Intake. Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.* |
| § 150.0(e)3: | Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.* |
| **Space Conditioning, Water Heating, and Plumbing System Measures:** | |
| § 110.0-§ 110.3: | Certification. Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California Energy Commission.* |
| § 110.2(a): | HVAC Efficiency. Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-K.* |
| § 110.2(b): | Controls for Heat Pumps with Supplementary Electric Resistance Heaters. Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone; and in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.* |
| § 110.2(c): | Thermostats. All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.* |
| § 110.3(c)4: | Water Heating Recirculation Loops Serving Multiple Dwelling Units. Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of § 110.3(c)4. |
| § 110.3(c)6: | Isolation Valves. Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed. |
| § 110.5: | Pilot Lights. Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour ); and pool and spa heaters.* |
| § 150.0(h)1: | Building Cooling and Heating Loads. Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2. |

# 2019 Low-Rise Residential Mandatory Measures Summary

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| § 150.0(h)3A: | Clearances. Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer |
| § 150.0(h)3B: | Liquid Line Drier. Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions. |
| § 150.0(j)1: | Storage Tank Insulation. Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank. |
| § 150.0(j)2A: | Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation. All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch; all hot water piping with a nominal diameter less than 3/4 inch that is: associated with a domestic hot water recirculation system, from the heating source to storage tank or between tanks, buried below grade, and from the heating source to kitchen fixtures.* |
| § 150.0(j)3: | Insulation Protection. Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve. |
| § 150.0(n)1: | Gas or Propane Water Heating Systems. Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use"; a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; a condensate drain that is no more than two inches higher than the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour. |
| § 150.0(n)2: | Recirculating Loops. Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5. |
| § 150.0(n)3: | Solar Water-heating Systems. Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director. |
| **Ducts and Fans Measures:** | |
| § 110.8(d)3: | Ducts. Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement. |
| § 150.0(m)1: | CMC Compliance. All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ¼ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.* |
| § 150.0(m)2: | Factory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands. |
| § 150.0(m)3: | Field-Fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction. |
| § 150.0(m)7: | Backdraft Damper. Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers. |
| § 150.0(m)8: | Gravity Ventilation Dampers. Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents. |
| § 150.0(m)9: | Protection of Insulation. Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation. |
| § 150.0(m)10: | Porous Inner Core Flex Duct. Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier. |
| § 150.0(m)11: | Duct System Sealing and Leakage Test. When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix RA3. |
| § 150.0(m)12: | Air Filtration. Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a two inch depth or can be one inch if sized per Equation 150.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.* |
| § 150.0(m)13: | Space Conditioning System Airflow Rate and Fan Efficacy. Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.45 watts per CFM for gas furnace air handlers and ≤ 0.58 watts per CFM for all others. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.* |

# 2019 Low-Rise Residential Mandatory Measures Summary

| | |
|---|---|
| **Requirements for Ventilation and Indoor Air Quality:** | |
| § 150.0(o)1: | Requirements for Ventilation and Indoor Air Quality. All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1. |
| § 150.0(o)1C: | Single Family Detached Dwelling Units. Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)1C. |
| § 150.0(o)1E: | Multifamily Attached Dwelling Units. Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling-unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.8. |
| § 150.0(o)1F: | Multifamily Building Central Ventilation Systems. Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance. |
| § 150.0(o)1G: | Kitchen Range Hoods. Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2. |
| § 150.0(o)2: | Field Verification and Diagnostic Testing. Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RA3.7. A kitchen range hood must be verified in accordance with Reference Residential Appendix RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2. |
| **Pool and Spa Systems and Equipment Measures:** | |
| § 110.4(a): | Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.* |
| § 110.4(b)1: | Piping. Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating. |
| § 110.4(b)2: | Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover. |
| § 110.4(b)3: | Directional Inlets and Time Switches for Pools. Pools must have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods. |
| § 110.5: | Pilot Light. Natural gas pool and spa heaters must not have a continuously burning pilot light. |
| § 150.0(p): | Pool Systems and Equipment Installation. Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.* |
| **Lighting Measures:** | |
| § 110.9: | Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.* |
| § 150.0(k)1A: | Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A. |
| § 150.0(k)1B: | Blank Electrical Boxes. The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control. |
| § 150.0(k)1C: | Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must meet all of the requirements for: insulation contact (IC) labeling; air leakage; sealing; maintenance; and socket and light source as described in § 150.0(k)1C. |
| § 150.0(k)1D: | Electronic Ballasts for Fluorescent Lamps. Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz. |
| § 150.0(k)1E: | Night Lights, Step Lights, and Path Lights. Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power and emit no more than 150 lumens. |
| § 150.0(k)1F: | Lighting Integral to Exhaust Fans. Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k).* |
| § 150.0(k)1G: | Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.* |
| § 150.0(k)1H: | Light Sources in Enclosed or Recessed Luminaires. Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires. |
| § 150.0(k)1I: | Light Sources in Drawers, Cabinets, and Linen Closets. Light sources internal to drawers, cabinetry or linen closets are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power, emit no more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed. |
| § 150.0(k)2A: | Interior Switches and Controls. All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A. |
| § 150.0(k)2B: | Interior Switches and Controls. Exhaust fans must be controlled separately from lighting systems.* |
| § 150.0(k)2C: | Interior Switches and Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.* |
| § 150.0(k)2D: | Interior Switches and Controls. Controls and equipment must be installed in accordance with manufacturer's instructions. |
| § 150.0(k)2E: | Interior Switches and Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0(k). |
| § 150.0(k)2F: | Interior Switches and Controls. Lighting controls must comply with the applicable requirements of § 110.9. |

# 2019 Low-Rise Residential Mandatory Measures Summary

| | |
|---|---|
| § 150.0(k)2G: | Interior Switches and Controls. An energy management control system (EMCS) may be used to comply with control requirements if it: provides functionality of the specified control according to § 110.9; meets the Installation Certificate requirements of § 130.4; meets the EMCS requirements of § 130.0(e); and meets all other requirements in § 150.0(k)2. |
| § 150.0(k)2H: | Interior Switches and Controls. A multiscene programmable controller may be used to comply with dimmer requirements in § 150.0(k) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(k)2. |
| § 150.0(k)2I: | Interior Switches and Controls. In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces must be controlled by an occupant sensor or a vacancy sensor providing automatic-off functionality. If an occupant sensor is installed, it must be initially configured to manual-on operation using the manual control required under Section 150.0(k)2C. |
| § 150.0(k)2J: | Interior Switches and Controls. Luminaires that are or contain light sources that meet Reference Joint Appendix JA8 requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.* |
| § 150.0(k)2K: | Interior Switches and Controls. Under cabinet lighting must be controlled separately from ceiling-installed lighting systems. |
| § 150.0(k)3A: | Residential Outdoor Lighting. For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must meet the requirement in item § 150.0(k)3Ai (ON and OFF switch) and the requirements in either § 150.0(k)3Aii (photocell and either a motion sensor or automatic time switch control) or § 150.0(k)3Aiii (astronomical time clock), or an EMCS. |
| § 150.0(k)3B: | Residential Outdoor Lighting. For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrances, balconies, and porches; and residential parking lots and carports with less than eight vehicles per site must comply with either § 150.0(k)3A or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0. |
| § 150.0(k)3C: | Residential Outdoor Lighting. For low-rise residential buildings with four or more dwelling units, any outdoor lighting for residential parking lots or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by § 150.0(k)3B or § 150.0(k)3D must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0. |
| § 150.0(k)4: | Internally illuminated address signs. Internally illuminated address signs must comply with § 140.8; or must consume no more than 5 watts of power as determined according to § 130.0(c). |
| § 150.0(k)5: | Residential Garages for Eight or More Vehicles. Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0. |
| § 150.0(k)6A: | Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that building must be comply with Table 150.0-A and be controlled by an occupant sensor. |
| § 150.0(k)6B: | Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must:<br>i. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0; and<br>ii. Lighting installed in corridors and stairwells must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress. |
| **Solar Ready Buildings:** | |
| § 110.10(a)1: | Single Family Residences. Single family residences located in subdivisions with 10 or more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(b) through § 110.10(e). |
| § 110.10(a)2: | Low-rise Multifamily Buildings. Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b) through § 110.10(d). |
| § 110.10(b)1: | Minimum Solar Zone Area. The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single family residences, the solar zone must be located on the roof or overhang of the building and have a total area no less than 250 square feet. For low-rise multi-family buildings the solar zone must be located on the roof or overhang of the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building project, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone requirement is applicable to the entire building, including mixed occupancy.* |
| § 110.10(b)2: | Azimuth. All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north. |
| § 110.10(b)3A: | Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment.* |
| § 110.10(b)3B: | Shading. Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.* |
| § 110.10(b)4: | Structural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents. |
| § 110.10(c): | Interconnection Pathways. The construction documents must indicate: a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system. |
| § 110.10(d): | Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant. |
| § 110.10(e)1: | Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps. |
| § 110.10(e)2: | Main Electrical Service Panel. The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric". |

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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021
Scale:

DRAWING TITLE:
2019 Residential Mandatory Measures Summary

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**GENERAL INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| 01 | Project Name | 39459 Blue Fin ADU | | | |
| 02 | Run Title | Title 24 Analysis | | | |
| 03 | Project Location | 39459 Blue Fin Way | | | |
| 04 | City | Fremont | 05 | Standards Version | 2019 |
| 06 | Zip code | 94538 | 07 | Software Version | CBECC-Res 2019.1.3 SP1 |
| 08 | Climate Zone | 3 | 09 | Front Orientation (deg/ Cardinal) | 120 |
| 10 | Building Type | Single family | 11 | Number of Dwelling Units | 1 |
| 12 | Project Scope | AdditionOnly | 13 | Number of Bedrooms | 1 |
| 14 | Addition Cond. Floor Area ($ft^2$) | 400 | 15 | Number of Stories | 1 |
| 16 | Existing Cond. Floor Area ($ft^2$) | 0 | 17 | Fenestration Average U-factor | 0.3 |
| 18 | Total Cond. Floor Area ($ft^2$) | 400 | 19 | Glazing Percentage (%) | 14.03% |
| 20 | ADU Bedroom Count | 1 | 21 | ADU Conditioned Floor Area | 400 |
| 22 | Is Natural Gas Available? | Yes | | | |

**Addition Alone Project Analysis Parameters**

| 01 | 02 | 03 | 04 | 05 | 06 |
|---|---|---|---|---|---|
| Existing Area (excl. new addition) (ft2) | Addition Area (excl. existing) (ft2) | Total Area (ft2) | Existing Bedrooms | Addition Bedrooms | Total Bedrooms |
| 0 | 400 | 400 | 0 | 1 | 1 |

**COMPLIANCE RESULTS**

| | |
|---|---|
| 01 | Building Complies with Computer Performance |
| 02 | This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider. |
| 03 | This building incorporates one or more Special Features shown below |





**ENERGY USE SUMMARY**

| Energy Use (kTDV/$ft^2$-yr) | Standard Design | Proposed Design | Compliance Margin | Percent Improvement |
|---|---|---|---|---|
| Space Heating | 7.2 | 7.4 | -0.2 | -2.8 |
| Space Cooling | 2.83 | 2.57 | 0.26 | 9.2 |
| IAQ Ventilation | 4.13 | 4.13 | 0 | 0 |
| Water Heating | 57.26 | 57.26 | 0 | 0 |
| Self Utilization/Flexibility Credit | n/a | 0 | 0 | n/a |
| **Compliance Energy Total** | **71.42** | **71.36** | **0.06** | **0.1** |

**REQUIRED SPECIAL FEATURES**

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- Insulation below roof deck

**HERS FEATURE SUMMARY**

The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the buildng tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry

Building-level Verifications:
- Indoor air quality ventilation
- Kitchen range hood

Cooling System Verifications:
- -- None --

Heating System Verifications:
- -- None --

HVAC Distribution System Verifications:
- -- None --

Domestic Hot Water System Verifications:
- -- None --

**ZONE INFORMATION**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 |
|---|---|---|---|---|---|---|
| Zone Name | Zone Type | HVAC System Name | Zone Floor Area ($ft^2$) | Avg. Ceiling Height | Water Heating System 1 | Water Heating System 2 |
| Addition | Conditioned | HP | 400 | 10 | DHW ex | N/A |





**OPAQUE SURFACES**

| 01 Name | 02 Zone | 03 Construction | 04 Azimuth | 05 Orientation | 06 Gross Area ($ft^2$) | 07 Window and Door Area (ft2) | 08 Tilt (deg) | 09 Wall Exceptions | 10 Status |
|---|---|---|---|---|---|---|---|---|---|
| Add Wall F | Addition | Wall new 2x6 | 120 | Front | 250 | 32.1 | 90 | Extension | New |
| Add Wall L | Addition | Wall new 2x6 | 210 | Left | 165 | 24 | 90 | none | New |
| Interior WallToOther | Addition | Wall Int new | n/a | n/a | 250 | 0 | n/a | | New |
| Interior WallToOther-2 | Addition | Wall Int new | n/a | n/a | 189 | 0 | n/a | | New |
| Ceiling n | Addition | Ceiling attic new | n/a | n/a | 400 | n/a | n/a | | New |

**ATTIC**

| 01 Name | 02 Construction | 03 Type | 04 Roof Rise (x in 12) | 05 Roof Reflectance | 06 Roof Emittance | 07 Radiant Barrier | 08 Cool Roof |
|---|---|---|---|---|---|---|---|
| Attic | Asphalt Shingle | Ventilated | 8 | 0.1 | 0.85 | No | No |

**FENESTRATION / GLAZING**

| 01 Name | 02 Type | 03 Surface | 04 Orientation | 05 Azimuth | 06 Width (ft) | 07 Height (ft) | 08 Mult. | 09 Area ($ft^2$) | 10 U-factor | 11 U-factor Source | 12 SHGC | 13 SHGC Source | 14 Exterior Shading |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W01-Wind-n | Window | Add Wall F | Front | 120 | 2 | 3 | 1 | 6 | 0.3 | NFRC | 0.28 | NFRC | Bug Screen |
| W01-Wind-n-2 | Window | Add Wall F | Front | 120 | 2 | 3 | 1 | 6 | 0.3 | NFRC | 0.28 | NFRC | Bug Screen |
| D08-GlDoor-n | Window | Add Wall F | Front | 120 | 3 | 6.7 | 1 | 20.1 | 0.3 | NFRC | 0.28 | NFRC | Bug Screen |
| W05-Wind-n | Window | Add Wall L | Left | 210 | 6 | 4 | 1 | 24 | 0.3 | NFRC | 0.28 | NFRC | Bug Screen |





**SLAB FLOORS**

| 01 Name | 02 Zone | 03 Area ($ft^2$) | 04 Perimeter (ft) | 05 Edge Insul. R-value and Depth | 06 Edge Insul. R-value and Depth | 07 Carpeted Fraction | 08 Heated |
|---|---|---|---|---|---|---|---|
| Slab On Grade n | Addition | 400 | 42 | none | 0 | 80% | No |

**OPAQUE SURFACE CONSTRUCTIONS**

| 01 Construction Name | 02 Surface Type | 03 Construction Type | 04 Framing | 05 Total Cavity R-value | 06 Interior / Exterior Continuous R-value | 07 U-factor | 08 Assembly Layers |
|---|---|---|---|---|---|---|---|
| Wall new 2x6 | Exterior Walls | Wood Framed Wall | 2x6 @ 16 in. O. C. | R-23 | None / None | 0.059 | Inside Finish: Gypsum Board<br>Cavity / Frame: R-23 / 2x6<br>Sheathing / Insulation: Wood<br>Siding/sheathing/decking<br>Exterior Finish: Wood<br>Siding/sheathing/decking |
| Wall Int new | Interior Walls | Wood Framed Wall | 2x4 @ 16 in. O. C. | R-0 | None / None | 0.277 | Inside Finish: Gypsum Board<br>Cavity / Frame: no insul. / 2x4<br>Other Side Finish: Gypsum Board |
| Asphalt Shingle | Attic Roofs | Wood Framed Ceiling | 2x4 Top Chord of Roof Truss @ 24 in. O. C. | R-15 | None / None | 0.066 | Roofing: Light Roof (Asphalt Shingle)<br>Roof Deck: Wood<br>Siding/sheathing/decking<br>Cavity / Frame: R-13.0 / 2x4 Top Chrd<br>Under Roof Joists: R-2.0 insul. |
| Ceiling attic new | Ceilings (below attic) | Wood Framed Ceiling | 2x4 Bottom Chord of Truss @ 24 in. O. C. | R-30 | None / None | 0.032 | Over Ceiling Joists: R-20.9 insul.<br>Cavity / Frame: R-9.1 / 2x4 Btm Chrd<br>Inside Finish: Gypsum Board |





**BUILDING ENVELOPE - HERS VERIFICATION**

| 01 Quality Insulation Installation (QII) | 02 High R-value Spray Foam Insulation | 03 Building Envelope Air Leakage | 04 CFM50 |
|---|---|---|---|
| Not Required | Not Required | Not Required | n/a |

**WATER HEATING SYSTEMS**

| 01 Name | 02 System Type | 03 Distribution Type | 04 Water Heater Name (#) | 05 Solar Heating System | 06 Compact Distribution | 07 HERS Verification |
|---|---|---|---|---|---|---|
| DHW ex | Domestic Hot Water (DHW) | Standard Distribution System | Gas Storage (1) | n/a | None | n/a |

**WATER HEATERS**

| 01 Name | 02 Heating Element Type | 03 Tank Type | 04 # of Units | 05 Tank Vol. (gal) | 06 Energy Factor or Efficiency | 07 Input Rating or Pilot | 08 Tank Insulation R-value (Int/Ext) | 09 Standby Loss or Recovery Eff | 10 1st Hr. Rating or Flow Rate | 11 NEEA Heat Pump Brand or Model | 12 Tank Location or Ambient Condition | 13 Status | 14 Verified Existing Condition |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gas Storage | Gas | Consumer Storage | 1 | 50 | 0.9-UEF | <= 75 kBtu/hr | 0 | 78 | 80 gal | n/a | n/a | Existing | n/a |

**WATER HEATING - HERS VERIFICATION**

| 01 Name | 02 Pipe Insulation | 03 Parallel Piping | 04 Compact Distribution | 05 Compact Distribution Type | 06 Recirculation Control | 07 Central DHW Distribution | 08 Shower Drain Water Heat Recovery |
|---|---|---|---|---|---|---|---|
| DHW ex - 1/1 | Not Required | Not Required | Not Required | None | Not Required | Not Required | Not Required |





**SPACE CONDITIONING SYSTEMS**

| 01 Name | 02 System Type | 03 Heating Unit Name | 04 Cooling Unit Name | 05 Fan Name | 06 Distribution Name | 07 Required Thermostat Type | 08 Status | 09 Verified Existing Condition | 10 Heating Equipment Count | 11 Cooling Equipment Count |
|---|---|---|---|---|---|---|---|---|---|---|
| HP | Heat pump heating cooling | Heat Pump System 1 | Heat Pump System 1 | n/a | n/a | Setback | New | NA | 1 | 1 |

**HVAC - HEAT PUMPS**

| 01 Name | 02 System Type | 03 Number of Units | 04 Heating HSPF/COP | 05 Heating Cap 47 | 06 Heating Cap 17 | 07 Cooling SEER | 08 Cooling EER/CEER | 09 Zonally Controlled | 10 Compressor Type | 11 HERS Verification |
|---|---|---|---|---|---|---|---|---|---|---|
| Heat Pump System 1 | Ductless MiniSplit HP | 1 | 10.5 | 9000 | 6750 | 17.4 | 13 | Not Zonal | Single Speed | Heat Pump System 1-hers-htpump |

**HVAC HEAT PUMPS - HERS VERIFICATION**

| 01 Name | 02 Verified Airflow | 03 Airflow Target | 04 Verified EER | 05 Verified SEER | 06 Verified Refrigerant Charge | 07 Verified HSPF | 08 Verified Heating Cap 47 | 09 Verified Heating Cap 17 |
|---|---|---|---|---|---|---|---|---|
| Heat Pump System 1-hers-htpump | Not Required | 0 | Not Required | Not Required | No | No | No | No |

**IAQ (INDOOR AIR QUALITY) FANS**

| 01 Dwelling Unit | 02 IAQ CFM | 03 IAQ Watts/CFM | 04 IAQ Fan Type | 05 IAQ Recovery Effectiveness (%) | 06 IAQ Recovery Effectiveness - SREIAQ Recovery Effectiveness - SRE |
|---|---|---|---|---|---|
| SFam ADU IAQVentRpt | 27 | 0.25 | Default | 0 | n/a |



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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021
Scale:

DRAWING TITLE:
TITLE-24 CERTIFICATE OF COMPLIANCE
MAIN ADDITION

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| **DOCUMENTATION AUTHOR'S DECLARATION STATEMENT** | |
|---|---|
| 1. I certify that this Certificate of Compliance documentation is accurate and complete. | |
| Documentation Author Name:<br>Igor Pichko | Documentation Author Signature:<br>Igor Pichko |
| Company:<br>Energy Consult LLC | Signature Date:<br>2021-11-10 15:05:33 |
| Address:<br>1252 w 22nd st #2 | CEA/ HERS Certification Identification (if applicable):<br>R19-14-30005 |
| City/State/Zip:<br>San Pedro, CA 90731 | Phone:<br>424-247-7658 |

CABEC — California Association of Building Energy Consultants — CERTIFIED ENERGY ANALYST

| **RESPONSIBLE PERSON'S DECLARATION STATEMENT** | |
|---|---|
| I certify the following under penalty of perjury, under the laws of the State of California:<br>1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.<br>2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.<br>3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. | |
| Responsible Designer Name:<br>Darren Asad | Responsible Designer Signature:<br>Darren Asad |
| Company:<br>Pixel Arch LTD | Date Signed:<br>2021-11-11 08:12:45 |
| Address:<br>4525 Carpinteria Ave #636 | License:<br>na |
| City/State/Zip:<br>Carpinteria, CA 93014 | Phone:<br>909-939-2585 |

CalCERTS, Inc. HERS PROVIDER

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Registration Number: 221-P010235872A-000-000-0000000-0000

Registration Date/Time: 2021-11-11 08:12:45

HERS Provider: CalCERTS inc.

CA Building Energy Efficiency Standards - 2019 Residential Compliance

Report Version: 2019.1.300
Schema Version: rev 20200901

Report Generated: 2021-11-10 15:00:39

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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021

Scale:

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TITLE-24 CERTIFICATE OF COMPLIANCE
ADU

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**GENERAL INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| 01 | **Project Name** | 39459 Blue Fin Residence | | | |
| 02 | **Run Title** | Title 24 Analysis | | | |
| 03 | **Project Location** | 39459 Blue Fin Way | | | |
| 04 | **City** | Fremont | 05 | **Standards Version** | 2019 |
| 06 | **Zip code** | 94538 | 07 | **Software Version** | CBECC-Res 2019.1.3 SP1 |
| 08 | **Climate Zone** | 3 | 09 | **Front Orientation (deg/ Cardinal)** | 30 |
| 10 | **Building Type** | Single family | 11 | **Number of Dwelling Units** | 1 |
| 12 | **Project Scope** | AdditionAlteration | 13 | **Number of Bedrooms** | 4 |
| 14 | **Addition Cond. Floor Area (ft²)** | 608 | 15 | **Number of Stories** | 1 |
| 16 | **Existing Cond. Floor Area (ft²)** | 1004 | 17 | **Fenestration Average U-factor** | 0.58 |
| 18 | **Total Cond. Floor Area (ft²)** | 1612 | 19 | **Glazing Percentage (%)** | 17.07% |
| 20 | **ADU Bedroom Count** | n/a | 21 | **ADU Conditioned Floor Area** | n/a |
| 22 | **Is Natural Gas Available?** | Yes | | | |

**COMPLIANCE RESULTS**

| | |
|---|---|
| 01 | **Building Complies with Computer Performance** |
| 02 | **This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.** |
| 03 | **This building incorporates one or more Special Features shown below** |

**ENERGY USE SUMMARY**

| Energy Use (kTDV/ft²-yr) | Standard Design | Proposed Design | Compliance Margin | Percent Improvement |
|---|---|---|---|---|
| Space Heating | 16.6 | 12.58 | 4.02 | 24.2 |
| Space Cooling | 0.97 | 2.88 | -1.91 | -196.9 |
| IAQ Ventilation | 0 | 0 | 0 | |
| Water Heating | 26.83 | 11.9 | 14.93 | 55.6 |
| Self Utilization/Flexibility Credit | n/a | 0 | 0 | n/a |
| **Compliance Energy Total** | **44.4** | **27.36** | **17.04** | **38.4** |





**REQUIRED SPECIAL FEATURES**

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- Floor has high level of insulation
- Insulation below roof deck

**HERS FEATURE SUMMARY**

The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the buildng tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry

Building-level Verifications:
- Kitchen range hood

Cooling System Verifications:
- -- None --

Heating System Verifications:
- -- None --

HVAC Distribution System Verifications:
- -- None --

Domestic Hot Water System Verifications:
- -- None --

**BUILDING - FEATURES INFORMATION**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 |
|---|---|---|---|---|---|---|
| **Project Name** | **Conditioned Floor Area (ft²)** | **Number of Dwelling Units** | **Number of Bedrooms** | **Number of Zones** | **Number of Ventilation Cooling Systems** | **Number of Water Heating Systems** |
| 39459 Blue Fin Residence | 1612 | 1 | 4 | 2 | 0 | 1 |

**ZONE INFORMATION**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 |
|---|---|---|---|---|---|---|
| **Zone Name** | **Zone Type** | **HVAC System Name** | **Zone Floor Area (ft²)** | **Avg. Ceiling Height** | **Water Heating System 1** | **Water Heating System 2** |
| House | Conditioned | HVAC new | 1004 | 10 | DHW alt | N/A |
| Addition | Conditioned | HVAC new | 608 | 9.4 | DHW alt | N/A |





**OPAQUE SURFACES**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Zone** | **Construction** | **Azimuth** | **Orientation** | **Gross Area (ft²)** | **Window and Door Area (ft2)** | **Tilt (deg)** | **Wall Exceptions** | **Status** | **Verified Existing Condition** |
| Alt Wall F | House | Wall alt | 30 | Front | 301 | 97.22 | 90 | none | Altered | No |
| Alt Wall B | House | Wall alt | 210 | Back | 7 | 0 | 90 | none | Altered | No |
| Alt Wall R | House | Wall alt | 300 | Right | 325 | 27.6 | 90 | none | Altered | No |
| Add Wall L | Addition | Wall new 2x6 | 120 | Left | 114 | 24 | 90 | Extension | New | n/a |
| Add Wall B | Addition | Wall new 2x6 | 210 | Back | 275 | 113.9 | 90 | none | New | n/a |
| Add Wall R | Addition | Wall new 2x6 | 300 | Right | 103 | 7.6 | 90 | Extension | New | n/a |
| Interior WallToAdd | House>>Addition | Wall Int ex | n/a | n/a | 396 | 0 | n/a | | New | n/a |
| Interior WallToGar-alt | House>>Garage | Wall Int alt | n/a | n/a | 129 | 17 | n/a | | Altered | No |
| Interior WallToAttic-alt | House>>Attic alt | Wall Int alt | n/a | n/a | 188 | 0 | n/a | | Altered | No |
| Interior WallToOther | House>>Garage | Wall Int ex | n/a | n/a | 225 | 0 | n/a | | Existing | No |
| Interior WallToGar-n | Addition>>Garage | Wall Int new | n/a | n/a | 165 | 17 | n/a | | New | n/a |
| Ceiling alt | House | Ceiling attic alt | n/a | n/a | 714 | n/a | n/a | | Altered | No |
| Ceiling n | Addition | Ceiling attic new | n/a | n/a | 349 | n/a | n/a | | New | n/a |
| Ceiling n-2 | Addition | Ceiling attic new-2 | n/a | n/a | 259 | n/a | n/a | | New | n/a |
| Ceiling gar | Garage | Ceiling attic new-2 | n/a | n/a | 453 | n/a | n/a | | Existing | No |
| Floor Over Crawlspace alt | House | Floor crawl alt | n/a | n/a | 1004 | n/a | n/a | | Altered | No |
| Floor Over Crawlspace n | Addition | Floor crawl new | n/a | n/a | 349 | n/a | n/a | | New | n/a |
| Exterior GWall F | Garage | Wall Gar | 30 | Front | 197 | 128 | 90 | none | Existing | No |
| Exterior GWall L | Garage | Wall Gar | 120 | Left | 226 | 0 | 90 | none | Existing | No |
| Exterior GWall R | Garage | Wall Gar | 300 | Right | 115 | 0 | 90 | none | Existing | No |





**OPAQUE SURFACES - CATHEDRAL CEILINGS**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Zone** | **Construction** | **Azimuth** | **Orientation** | **Area (ft²)** | **Skylight Area (ft²)** | **Roof Rise (x in 12)** | **Roof Reflectance** | **Roof Emittance** | **Cool Roof** | **Status** | **Verified Existing Condition** | **Existing Construction** |
| Cathedral-alt-F | House | Ceiling cath alt | 30 | Front | 7 | 4.8 | 8 | 0.1 | 0.85 | No | Altered | No | |
| Cathedral-alt-R | House | Ceiling cath alt | 300 | Right | 301 | 0 | 6 | 0.1 | 0.85 | No | Altered | No | |

**ATTIC**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Construction** | **Type** | **Roof Rise (x in 12)** | **Roof Reflectance** | **Roof Emittance** | **Radiant Barrier** | **Cool Roof** | **Status** | **Verified Existing Condition** |
| Attic alt | Roof alt | Ventilated | 7 | 0.1 | 0.85 | No | No | Altered | No |
| Attic n | Roof n | Ventilated | 8 | 0.1 | 0.85 | No | No | New | n/a |
| Attic ex | Roof n-2 | Ventilated | 6 | 0.1 | 0.85 | No | No | Existing | No |
| Attic n-2 | Roof n-2 | Ventilated | 8 | 0.1 | 0.85 | No | No | New | n/a |

**FENESTRATION / GLAZING**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Type** | **Surface** | **Orientation** | **Azimuth** | **Width (ft)** | **Height (ft)** | **Mult.** | **Area (ft²)** | **U-factor** | **U-factor Source** | **SHGC** | **SHGC Source** | **Exterior Shading** | **Status** | **Verified Existing Condition** |
| W04-Wind-n | Window | Alt Wall F | Front | 30 | 2.7 | 5.9 | 1 | 15.93 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| W04-Wind-n-2 | Window | Alt Wall F | Front | 30 | 2.7 | 5.9 | 1 | 15.93 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| W04-Wind-n-3 | Window | Alt Wall F | Front | 30 | 2.7 | 5.9 | 1 | 15.93 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| W04-Wind-n-4 | Window | Alt Wall F | Front | 30 | 2.7 | 5.9 | 1 | 15.93 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| D10-GlDoor-n | Window | Alt Wall F | Front | 30 | 5 | 6.7 | 1 | 33.5 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| W02-Wind-n | Window | Alt Wall R | Right | 300 | 2 | 3.8 | 1 | 7.6 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| W03-Wind-n | Window | Alt Wall R | Right | 300 | 2 | 5 | 1 | 10 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |





**FENESTRATION / GLAZING**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Type** | **Surface** | **Orientation** | **Azimuth** | **Width (ft)** | **Height (ft)** | **Mult.** | **Area (ft²)** | **U-factor** | **U-factor Source** | **SHGC** | **SHGC Source** | **Exterior Shading** | **Status** | **Verified Existing Condition** |
| W03-Wind-n-2 | Window | Alt Wall R | Right | 300 | 2 | 5 | 1 | 10 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| W05-Wind-n | Window | Add Wall L | Left | 120 | 6 | 4 | 1 | 24 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| D12-GlDoor-n | Window | Add Wall B | Back | 210 | 8 | 6.7 | 1 | 53.6 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| D13-GlDoor-n | Window | Add Wall B | Back | 210 | 9 | 6.7 | 1 | 60.3 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| W02-Wind-n-2 | Window | Add Wall R | Right | 300 | 2 | 3.8 | 1 | 7.6 | 0.58 | NFRC | 0.67 | NFRC | Bug Screen | New | n/a |
| Skylights-n | Skylight | Cathedral-alt-F | Front | 30 | | | 1 | 2.4 | 0.58 | NFRC | 0.67 | NFRC | None | New | n/a |
| Skylights-n-2 | Skylight | Cathedral-alt-F | Front | 30 | | | 1 | 2.4 | 0.58 | NFRC | 0.67 | NFRC | None | New | n/a |

**OPAQUE DOORS**

| 01 | 02 | 03 | 04 | 05 | 06 |
|---|---|---|---|---|---|
| **Name** | **Side of Building** | **Area (ft²)** | **U-factor** | **Status** | **Verified Existing Condition** |
| Entry-alt | Interior WallToGar-alt | 17 | 0.5 | Altered | No |
| Entry-n | Interior WallToGar-n | 17 | 0.5 | New | n/a |
| GarDoor | Exterior GWall F | 128 | 1 | Altered | No |

**SLAB FLOORS**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Zone** | **Area (ft²)** | **Perimeter (ft)** | **Edge Insul. R-value and Depth** | **Edge Insul. R-value and Depth** | **Carpeted Fraction** | **Heated** | **Status** | **Verified Existing Condition** |
| Slab On Grade n | Addition | 259 | 12 | none | 0 | 80% | No | New | n/a |
| Slab on Grade | Garage | 453 | 54 | none | 0 | 0% | No | Existing | No |





**OPAQUE SURFACE CONSTRUCTIONS**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
|---|---|---|---|---|---|---|---|
| **Construction Name** | **Surface Type** | **Construction Type** | **Framing** | **Total Cavity R-value** | **Interior / Exterior Continuous R-value** | **U-factor** | **Assembly Layers** |
| Wall Gar | Exterior Walls | Wood Framed Wall | 2x4 @ 16 in. O. C. | R-0 | None / None | 0.387 | Inside Finish: Gypsum Board<br>Cavity / Frame: no insul. / 2x4 |
| Wall new 2x6 | Exterior Walls | Wood Framed Wall | 2x6 @ 16 in. O. C. | R-23 | None / None | 0.062 | Inside Finish: Gypsum Board<br>Cavity / Frame: R-23 / 2x6<br>Sheathing / Insulation: Wood<br>Siding/sheathing/decking<br>Exterior Finish: All Other Siding |
| Wall alt | Exterior Walls | Wood Framed Wall | 2x6 @ 16 in. O. C. | R-23 | None / None | 0.062 | Inside Finish: Gypsum Board<br>Cavity / Frame: R-23 / 2x6<br>Sheathing / Insulation: Wood<br>Siding/sheathing/decking<br>Exterior Finish: All Other Siding |
| Ceiling cath alt | Cathedral Ceilings | Wood Framed Ceiling | 2x12 @ 16 in. O. C. | R-38 | None / None | 0.03 | Roofing: Light Roof (Asphalt Shingle)<br>Roof Deck: Wood<br>Siding/sheathing/decking<br>Cavity / Frame: R-38 / 2x12<br>Inside Finish: Gypsum Board |
| Wall Int ex | Interior Walls | Wood Framed Wall | 2x4 @ 16 in. O. C. | R-0 | None / None | 0.277 | Inside Finish: Gypsum Board<br>Cavity / Frame: no insul. / 2x4<br>Other Side Finish: Gypsum Board |
| Wall Int new | Interior Walls | Wood Framed Wall | 2x4 @ 16 in. O. C. | R-13 | None / None | 0.092 | Inside Finish: Gypsum Board<br>Cavity / Frame: R-13 / 2x4<br>Other Side Finish: Gypsum Board |
| Wall Int alt | Interior Walls | Wood Framed Wall | 2x4 @ 16 in. O. C. | R-13 | None / None | 0.092 | Inside Finish: Gypsum Board<br>Cavity / Frame: R-13 / 2x4<br>Other Side Finish: Gypsum Board |



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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
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Date: Nov. 10, 2021
Scale:

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**OPAQUE SURFACE CONSTRUCTIONS**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
|---|---|---|---|---|---|---|---|
| Construction Name | Surface Type | Construction Type | Framing | Total Cavity R-value | Interior / Exterior Continuous R-value | U-factor | Assembly Layers |
| Roof n-2 | Attic Roofs | Wood Framed Ceiling | 2x4 Top Chord of Roof Truss @ 24 in. O. C. | R-15 | None / None | 0.066 | Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Top Chrd Under Roof Joists: R-2.0 insul. |
| Roof alt | Attic Roofs | Wood Framed Ceiling | 2x12 @ 16 in. O. C. | R-38 | None / None | 0.031 | Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-38 / 2x12 |
| Roof n | Attic Roofs | Wood Framed Ceiling | 2x12 @ 16 in. O. C. | R-38 | None / None | 0.031 | Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-38 / 2x12 |
| Floor crawl new | Floors Over Crawlspace | Wood Framed Floor | 2x12 @ 16 in. O. C. | R-34 | None / None | 0.03 | Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-34 / 2x12 |
| Floor crawl alt | Floors Over Crawlspace | Wood Framed Floor | 2x12 @ 16 in. O. C. | R-34 | None / None | 0.03 | Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-34 / 2x12 |
| Ceiling attic new-2 | Ceilings (below attic) | Wood Framed Ceiling | 2x4 Bottom Chord of Truss @ 24 in. O. C. | R-22 | None / None | 0.043 | Over Ceiling Joists: R-12.9 insul. Cavity / Frame: R-9.1 / 2x4 Btm Chrd Inside Finish: Gypsum Board |
| Ceiling attic new | Ceilings (below attic) | Wood Framed Ceiling | 2x4 @ 16 in. O. C. | R-22 | None / None | 0.043 | Over Ceiling Joists: R-12.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board |



**CERTIFICATE OF COMPLIANCE** CF1R-PRF-01E
**Project Name:** 39459 Blue Fin Residence **Calculation Date/Time:** 2021-11-10T11:47:56-08:00 **(Page 7 of 10)**
**Calculation Description:** Title 24 Analysis **Input File Name:** 39459_Blue_Fin_addition_v3_r1.ribd19

**OPAQUE SURFACE CONSTRUCTIONS**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
|---|---|---|---|---|---|---|---|
| Construction Name | Surface Type | Construction Type | Framing | Total Cavity R-value | Interior / Exterior Continuous R-value | U-factor | Assembly Layers |
| Roof n-2 | Attic Roofs | Wood Framed Ceiling | 2x4 Top Chord of Roof Truss @ 24 in. O. C. | R-15 | None / None | 0.066 | Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Top Chrd Under Roof Joists: R-2.0 insul. |
| Roof alt | Attic Roofs | Wood Framed Ceiling | 2x12 @ 16 in. O. C. | R-38 | None / None | 0.031 | Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-38 / 2x12 |
| Roof n | Attic Roofs | Wood Framed Ceiling | 2x12 @ 16 in. O. C. | R-38 | None / None | 0.031 | Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-38 / 2x12 |
| Floor crawl new | Floors Over Crawlspace | Wood Framed Floor | 2x12 @ 16 in. O. C. | R-34 | None / None | 0.03 | Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-34 / 2x12 |
| Floor crawl alt | Floors Over Crawlspace | Wood Framed Floor | 2x12 @ 16 in. O. C. | R-34 | None / None | 0.03 | Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-34 / 2x12 |
| Ceiling attic new-2 | Ceilings (below attic) | Wood Framed Ceiling | 2x4 Bottom Chord of Truss @ 24 in. O. C. | R-22 | None / None | 0.043 | Over Ceiling Joists: R-12.9 insul. Cavity / Frame: R-9.1 / 2x4 Btm Chrd Inside Finish: Gypsum Board |
| Ceiling attic new | Ceilings (below attic) | Wood Framed Ceiling | 2x4 @ 16 in. O. C. | R-22 | None / None | 0.043 | Over Ceiling Joists: R-12.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board |

Registration Number: 221-P010193968B-000-000-0000000-0000 Registration Date/Time: 2021-11-11 08:11:55 HERS Provider: CalCERTS inc.
CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Version: 2019.1.300 Schema Version: rev 20200901 Report Generated: 2021-11-10 11:48:26

**CERTIFICATE OF COMPLIANCE** CF1R-PRF-01E
**Project Name:** 39459 Blue Fin Residence **Calculation Date/Time:** 2021-11-10T11:47:56-08:00 **(Page 9 of 10)**
**Calculation Description:** Title 24 Analysis **Input File Name:** 39459_Blue_Fin_addition_v3_r1.ribd19

**WATER HEATING - HERS VERIFICATION**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
|---|---|---|---|---|---|---|---|
| Name | Pipe Insulation | Parallel Piping | Compact Distribution | Compact Distribution Type | Recirculation Control | Central DHW Distribution | Shower Drain Water Heat Recovery |
| DHW alt - 1/1 | Not Required | Not Required | Not Required | None | Not Required | Not Required | Not Required |

**SPACE CONDITIONING SYSTEMS**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| Name | System Type | Heating Unit Name | Cooling Unit Name | Fan Name | Distribution Name | Required Thermostat Type | Status | Verified Existing Condition | Heating Equipment Count | Cooling Equipment Count |
| HVAC new | Heat pump heating cooling | Heat Pump System 1 | Heat Pump System 1 | n/a | n/a | Setback | New | No | 1 | 1 |

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| HVAC - HEAT PUMPS | | | | | | | | | | |
| Name | System Type | Number of Units | Heating | | Cooling | | Zonally Controlled | Compressor Type | HERS Verification |
| | | | HSPF/COP | Cap 47 | Cap 17 | SEER | EER/CEER | | | |
| Heat Pump System 1 | Multi-split HP-ductless | 1 | 10.5 | 66000 | 41500 | 17.4 | 13 | Not Zonal | Single Speed | Heat Pump System 1-hers-htpump |

**HVAC HEAT PUMPS - HERS VERIFICATION**

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|---|---|---|---|---|---|---|---|---|
| Name | Verified Airflow | Airflow Target | Verified EER | Verified SEER | Verified Refrigerant Charge | Verified HSPF | Verified Heating Cap 47 | Verified Heating Cap 17 |
| Heat Pump System 1-hers-htpump | Not Required | 0 | Not Required | Not Required | No | No | No | No |

**HERS RATER VERIFICATION OF EXISTING CONDITIONS**

Registration Number: 221-P010193968B-000-000-0000000-0000 Registration Date/Time: 2021-11-11 08:11:55 HERS Provider: CalCERTS inc.
CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Version: 2019.1.300 Schema Version: rev 20200901 Report Generated: 2021-11-10 11:48:26

**CERTIFICATE OF COMPLIANCE** CF1R-PRF-01E
**Project Name:** 39459 Blue Fin Residence **Calculation Date/Time:** 2021-11-10T11:47:56-08:00 **(Page 10 of 10)**
**Calculation Description:** Title 24 Analysis **Input File Name:** 39459_Blue_Fin_addition_v3_r1.ribd19

**DOCUMENTATION AUTHOR'S DECLARATION STATEMENT**

1. I certify that this Certificate of Compliance documentation is accurate and complete.

| Documentation Author Name: | Documentation Author Signature: |
|---|---|
| Igor Pichko | Igor Pichko |
| Company: Energy Consult LLC | Signature Date: 2021-11-10 15:01:34 |
| Address: 1252 w 22nd st #2 | CEA/ HERS Certification Identification (If applicable): R19-14-30005 |
| City/State/Zip: San Pedro, CA 90731 | Phone: 424-247-7658 |

**RESPONSIBLE PERSON'S DECLARATION STATEMENT**

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

| Responsible Designer Name: | Responsible Designer Signature: |
|---|---|
| Darren Asad | Darren Asad |
| Company: Pixel Arch LTD | Date Signed: 2021-11-11 08:11:55 |
| Address: 4525 Carpinteria Ave #636 | License: na |
| City/State/Zip: Carpinteria, CA 93014 | Phone: 909-939-2585 |

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

Easy to Verify at CalCERTS.com

Registration Number: 221-P010193968B-000-000-0000000-0000 Registration Date/Time: 2021-11-11 08:11:55 HERS Provider: CalCERTS inc.
CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Version: 2019.1.300 Schema Version: rev 20200901 Report Generated: 2021-11-10 11:48:26

PixelArch ltd.
US Office:
24001 Calle De La Magdalena, unit 3896
Laguna Hills, CA 92653
Tel: (415) 316 7162 info@pixelarchltd.com
www.pixelarchltd.com

Project Name and Address:

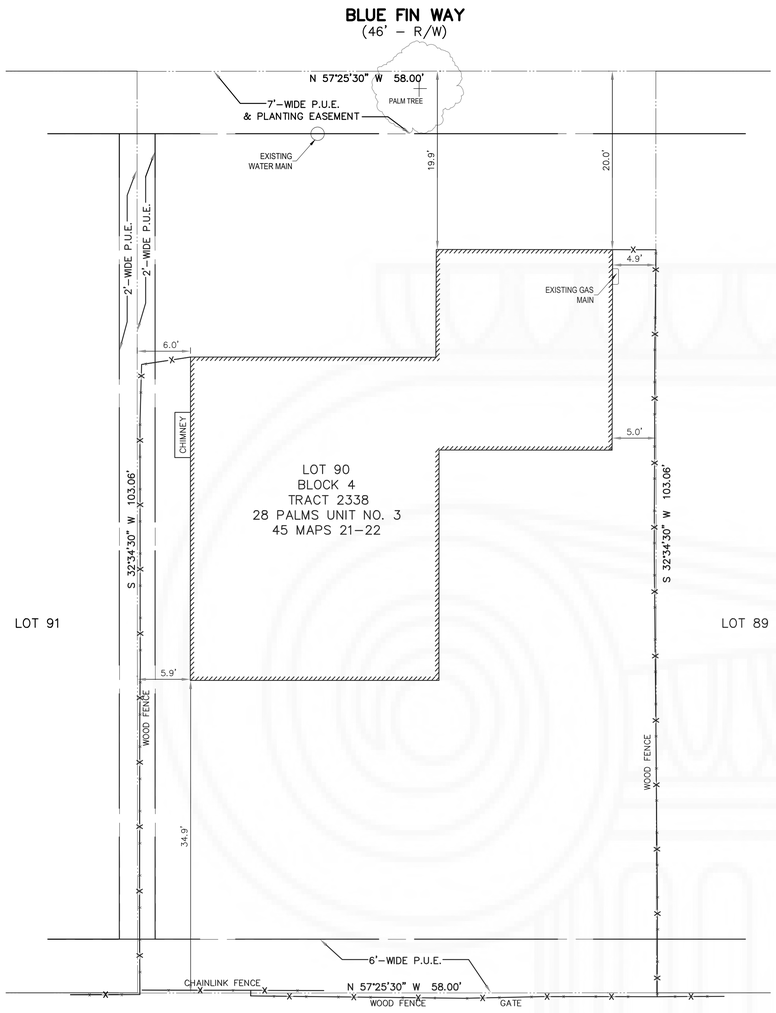
Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021
Scale:

DRAWING TITLE:
TITLE-24 CERTIFICATE OF COMPLIANCE
MAIN ADDITION

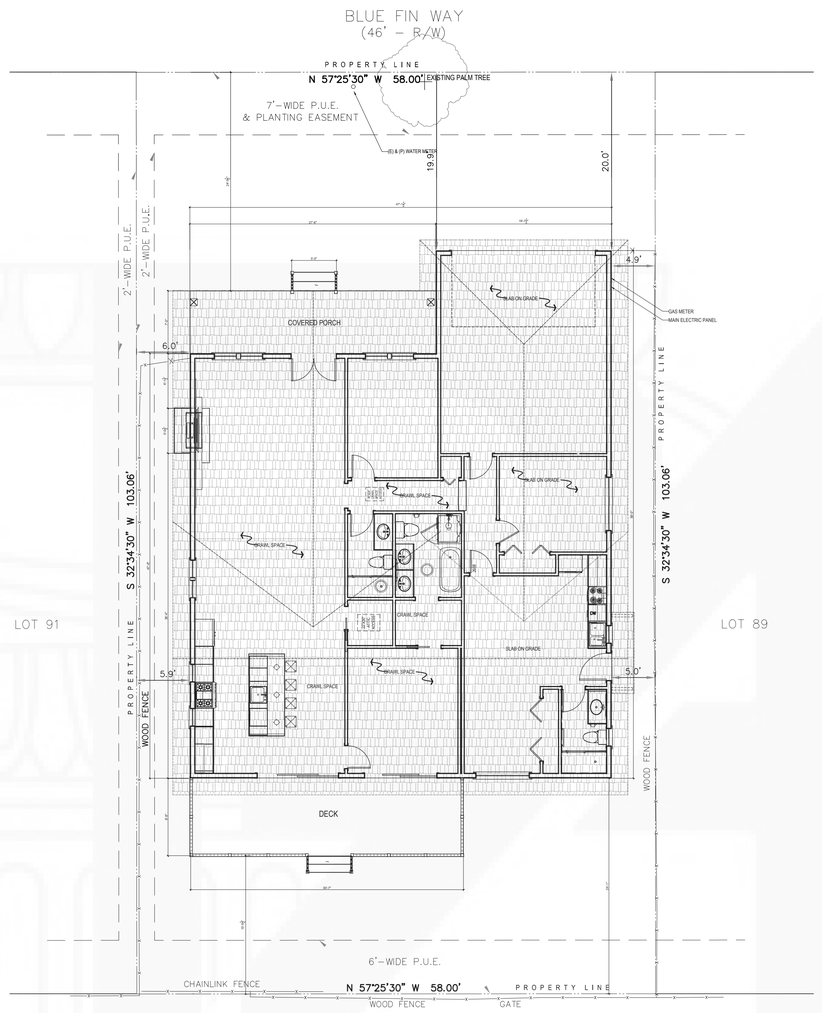
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A-7




1 EXISTING SITE PLAN

Scale: 1/8" = 1' - 00"




2 PROPOSED SITE PLAN

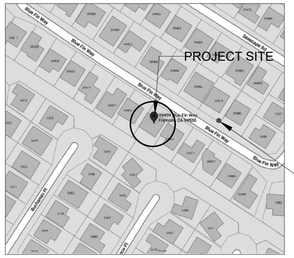
Scale: 1/8" = 1' - 00"

GRAPHIC SCALE

( IN FEET )
1 inch = 0 ft.




AERIAL PHOTO




VICINITY MAP

SCOPE OF WORK:

MAIN HOUSE COMPLETE REMODEL OF SINGLE STORY 2-CAR GARAGE HOME. REMODEL INCLUDES INCREASING SQUARE FOOTAGE OF THE MAIN HOUSE AND NEW ATTACHED 1 BED/1 BATH ADU.

PROPERTY ADDRESS:

39459 BLUE FIN WAY FREMONT, CA 94538

LEGAL DESCRIPTION:

LOT 90, BLOCK 4, TRACT NO. 2338, 28 PALMS UNIT NO. 3 45 MAPS 21-22

ZONING CLASSIFICATION:

(TITLE 20 ZONING ) : R-1-8 MEDIUM DENSITY RESIDENTIAL ZONE

APN: 531-20-78

OCCUPANCY GROUP:

R-1-6

CONSTRUCTION TYPE: TYPE V-B

REQUIRED SETBACKS/HEIGHT LIMITS:

MAIN STRUCTURE:

MIN. FRONT YARD: 25'

MIN. SIDE YARD: 5'

MIN. REAR YARD: 10'

MAX. BUILDING HEIGHT: 35'

LOT SIZE: 5,977 SF = 0.137 ACRES

FLOOR AREA RATIO:

2012/5977 X100 = %33.6

ADDITION: 1008 SF

LOT COVERAGE:

2925.9/5977 X 100 = %42.2

| BUILDING AREA CALCULATIONS (EXISTING AND PROPOSED) | | | | | | |
|---|---|---|---|---|---|---|
| | CONDITIONED AREA | GARAGE | ADU | DECK | FRONT PORCH | TOTAL |
| EXISTING | MAIN FLOOR 1008 SF | 452.8 SF | - | - | - | 1460.8 SF |
| PROPOSED | MAIN FLOOR 1613.3 SF | 452.8 SF | 398.7 SF | 268.7 SF | 192.4 SF | 2925.9 SF |

BUILDING CODE REQUIREMENTS

THE GENERAL CONTRACTOR SHALL FULLY COMPLY WITH THE FOLLOWING INTERNATIONAL CODES, 2019 CALIFORNIA BUILDING STANDARDS CODE (CAL. CODE REGS., TITLE 24 )
COMPLIANCE WITH CITY OF FREMONT MUNICIPAL CODES.
CALGREEN CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11 OF TITLE 24
CBC CALIFORNIA BUILDING CODE (PART 2 OF TITLE 24)
CCR CALIFORNIA CODE OF REGULATIONS
CEBC CALIFORNIA EXISTING BUILDING CODE (PART 10 OF TITLE 24)
CEC CALIFORNIA ELECTRICAL CODE (PART 3 OF TITLE 24)
CEC CALIFORNIA ENERGY CODE (PART 6 OF TITLE 24)
CEC CALIFORNIA ENERGY COMMISSION
CMC CALIFORNIA MECHANICAL CODE (PART 4 OF TITLE 24)
CPC CALIFORNIA PLUMBING CODE (PART 5 OF TITLE 24)
CRSC CALIFORNIA REFERENCED STANDARDS CODE (PART 12 OF TITLE 24)
DPH IDENTIFIES CODE PROVISIONS BY THE DEPARTMENT OF PUBLIC HEALTH
IBC INTERNATIONAL BUILDING CODE
IFC INTERNATIONAL FIRE CODE
IEBC INTERNATIONAL EXISTING BUILDING CODE
IRC INTERNATIONAL RESIDENTIAL CODE
NEC NATIONAL ELECTRICAL CODE
NFPA NATIONAL FIRE PROTECTION ASSOCIATION

PROJECT TEAM


Owner: Mrs. SADAF AHMAD
39459 Blue Fin Way Fremont, Ca 94538
Tel: (857) 277- 8912

Energy Consult LLC
(424) 247-7658
www.title24ez.com

Architect: PixelArch, LTD., Architecture and Civil, Structural & Mechanical Engineering
24001 Calle De La Magdalena, unit 3896
Laguna Hills, CA 92653
Tel: 415 316 7162
info@pixelarchltd.com

PE on board: Barrett Croock PE
barrettcrook@kittyhawkengineering.com


NOT FOR CONSTRUCTION


PixelArch ltd.
US Office:
24001 Calle De La Magdalena, unit 3896
Laguna Hills, CA 92653
Tel: (415) 316 7162 info@pixelarchltd.com
www.pixelarchltd.com


Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021

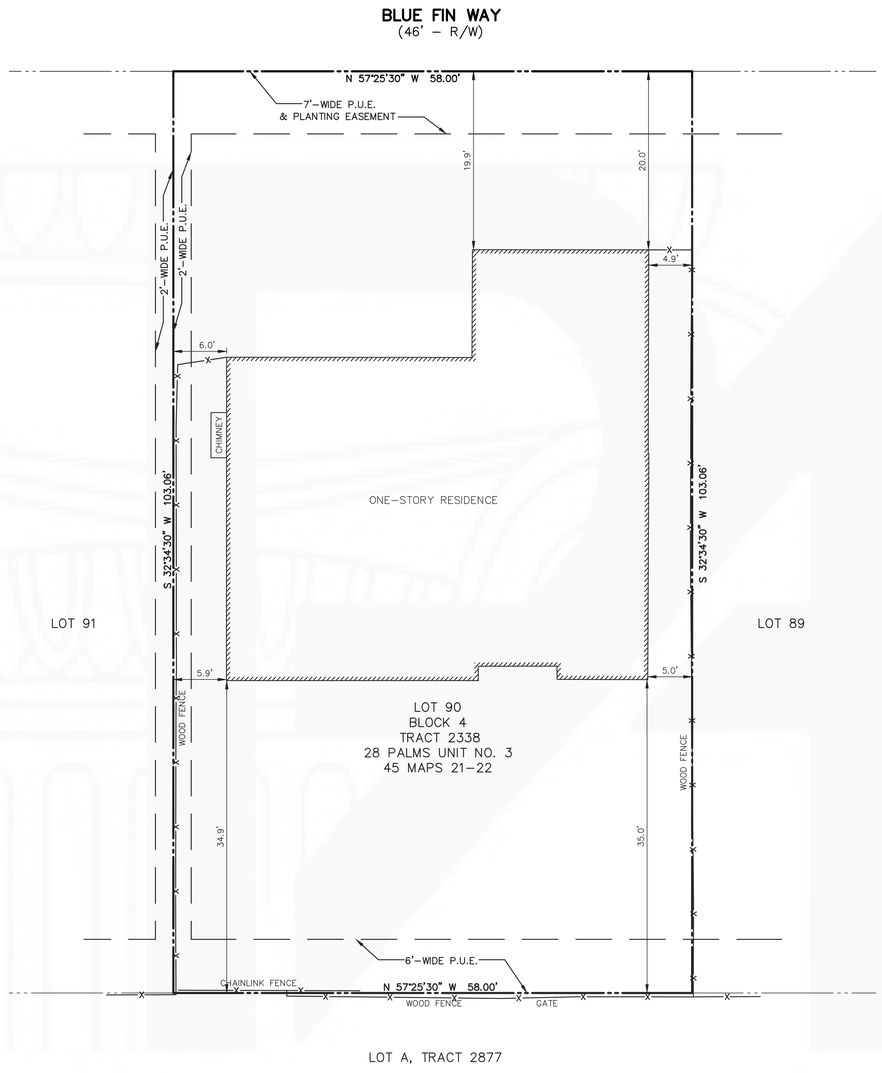
Scale: 1/8" = 1' - 00"

DRAWING TITLE:

EXISTING/PROPOSED SITE PLAN


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A-8




## LEGEND

| | |
|---|---|
| ——·——·—— | PROPERTY LINE |
| —X———X— | FENCE |
| P.U.E. | PUBLIC UTILITY EASEMENT |

## NOTE:

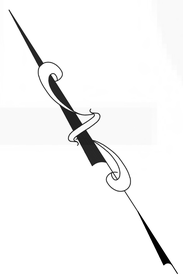
FOUNDATION NOT VISIBLE. ALL BUILDING TIE DIMENSIONS ARE MEASURED FROM FACE OF EXISTING FINISH MATERIAL PERPENDICULAR TO PROPERTY LINE.

## EASEMENT NOTE:

EASEMENTS SHOWN ARE PER TRACT 2338 (45 MAPS 21). OTHER EASEMENTS, IF ANY, ARE NOT INDICATED HEREON.

## LOT AREA:

= 5,977 SQ. FT. ±
= 0.137 ACRES ±



GRAPHIC SCALE

8 0 4 8 16 32

( IN FEET )
1 inch = 8 ft.

| REV. | DESCRIPTION | BY: | DATE: |
|---|---|---|---|
| | | | |

LICENSED LAND SURVEYOR
DANIEL G. MacLEOD
No. 5304
STATE OF CALIFORNIA

MacLEOD AND ASSOCIATES
CIVIL ENGINEERING • LAND SURVEYING
965 CENTER STREET•SAN CARLOS•CA 94070•(650) 593–8580

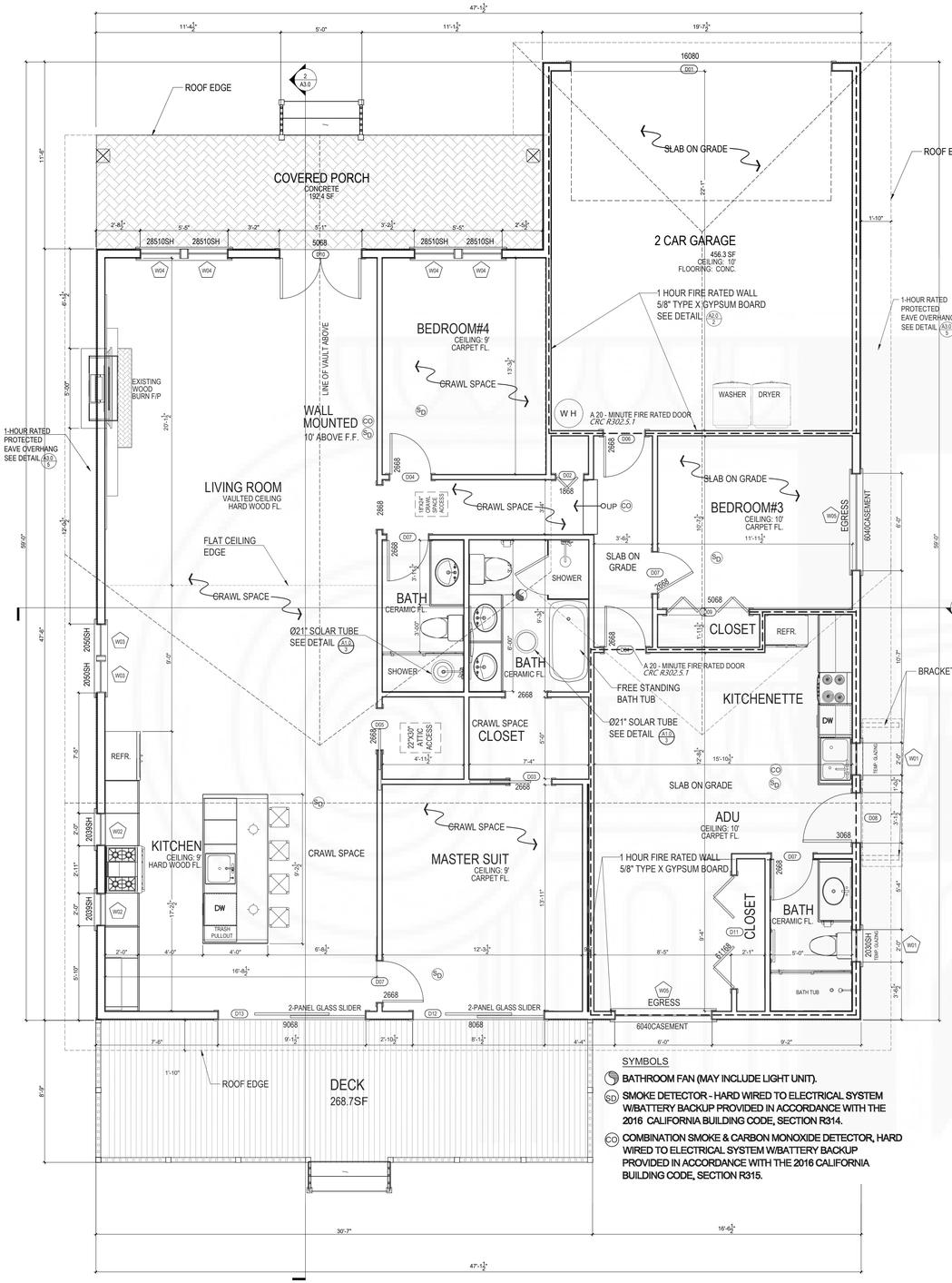
PREPARED FOR:
KAMAL UDDIN

**HOUSE AND FENCE LOCATION PLAN**
39459 BLUE FIN WAY
A.P.N. 531–20–78
LOT 90, BLOCK 4, TRACT 2338, 45 MAPS 21–22
FREMONT ALAMEDA COUNTY CALIFORNIA

| | |
|---|---|
| DRAWN BY: | DPM |
| DESIGNED BY: | --- |
| CHECKED BY: | DGM |
| SCALE: | 1"=8' |

A-9

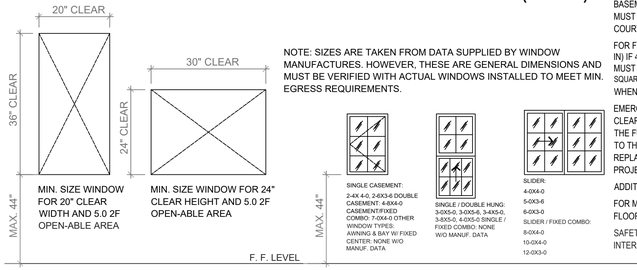
NOT FOR CONSTRUCTION




1 PROPOSED FLOOR PLAN

Scale: 1/4" = 1' - 00"

# EMERGENCY ESCAPE / RESCUE OPENING (R310)




NOTE: SIZES ARE TAKEN FROM DATA SUPPLIED BY WINDOW MANUFACTURES. HOWEVER, THESE ARE GENERAL DIMENSIONS AND MUST BE VERIFIED WITH ACTUAL WINDOWS INSTALLED TO MEET MIN. EGRESS REQUIREMENTS.

## SECTION 1026 OF THE 2016 INTERNATIONAL BUILDING CODE /SECTION 310 OF THE 2016 INTERNATIONAL RESIDENTIAL CODE

BASEMENTS IN A DWELLING UNIT AND EVERY SLEEPING ROOM BELOW THE FOURTH STORY (INCLUDES ROOMS WHICH COULD BE USED FOR SLEEPING SUCH AS DENS, SEWING ROOMS, STUDY, ETC.) MUST HAVE A LEAST ONE OPERABLE WINDOW OR DOOR APPROVED FOR EMERGENCY ESCAPE OR RESCUE WHICH SHALL OPEN DIRECTLY INTO A PUBLIC STREET, PUBLIC ALLEY, YARD, OR EXIT COURT. THE UNITS MUST BE OPERABLE FROM THE INSIDE TO PROVIDE A FULL CLEAR OPENING WITHOUT THE USE OF SEPARATE TOOLS.

FOR FULL EGRESS, ESCAPE OR RESCUE WINDOWS ARE REQUIRED TO HAVE A MINIMUM NET CLEAR OPEN-ABLE AREA OF 5.7 SQ. FT. (820.8 SQ IN). EXCEPTION: MAY BE REDUCED TO 5.0 SF (720 SQ IN) IF 44" OR LESS FROM EXTERIOR GROUND LEVEL TO SILL. THE MINIMUM NET CLEAR OPEN-ABLE HEIGHT DIMENSION MUST BE 24 INCHES. THE MINIMUM NET CLEAR OPEN-ABLE WIDTH DIMENSION MUST BE 20 INCHES. THEY MUST ALSO HAVE A FINISHED SILL HEIGHT (CLEAR OPENING) OF NOT MORE THAN 44 INCHES ABOVE THE FLOOR. IN ORDER TO MEET THE REQUIRED NET-CLEAR OPEN AREA SQUARE-FOOT OPENING, EITHER THE WIDTH OR HEIGHT OR BOTH MUST EXCEED THE MINIMUM DIMENSIONS THEREOF.

WHEN REPLACING EXISTING NONCONFORMING WINDOWS REQUIRED FOR EMERGENCY ESCAPE AND RESCUE THE REPLACEMENT WINDOWS MUST MEET THE FOLLOWING:

EMERGENCY ESCAPE AND RESCUE REPLACEMENT WINDOW OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 4 SQ. FT.; MINIMUM NET CLEAR OPENING HEIGHT OF 22 INCHES; MINIMUM NET CLEAR OPENING WIDTH OF 20 INCHES. MINIMUM SILL HEIGHT OF NOT MORE THAN 48 INCHES ABOVE THE FLOOR OR THE INSTALLATION OF ONE OR MORE PERMANENTLY AFFIXED STEPS EXTENDING THE FULL WIDTH OF THE WINDOW OPENING, CONSTRUCTED TO THE CURRENT ADOPTED IRC RISE AND RUN DIMENSIONAL REQUIREMENTS, SO THAT THE TOP STEP IS NO GREATER THAN 44 INCHES TO THE TOP OF THE SILL WHERE THE EXISTING ROUGH OPENING DOES NOT ALLOW FOR REPLACEMENT WINDOW DIMENSIONAL REQUIREMENTS THE ROUGH OPENING SHALL BE ENLARGED AND THE REPLACEMENT WINDOW SHALL MEET THE FULL EMERGENCY ESCAPE AND RESCUE OPENINGS PER IRC SECTION R310.1 THROUGH R310.5 OR IBC SECTION 1026 AS APPLICABLE FOR SCOPE OF PROJECT.

ADDITIONAL GLAZING REQUIREMENTS:

FOR MINIMUM LIGHT, ALL SLEEPING ROOMS AND OTHER HABITABLE ROOMS REQUIRE GLAZING EQUAL TO AT LEAST 8% OF THE FLOOR AREA OF THE ROOM; MINIMUM VENTILATION OF 4% OF THE FLOOR AREA. SEE THE INTERNATIONAL BUILDING OR RESIDENTIAL CODES FOR EXCEPTIONS AND A COMPLETE LIST OF LIGHT AND VENTILATION REQUIREMENTS.

SAFETY GLAZING IS REQUIRED IN DOORS, STORM DOORS, RAILINGS, WITHIN 24 INCHES OF A DOOR, OR WHEN PANES ARE OVER 9 SQUARE FEET AND WITHIN 18 INCHES OF THE FLOOR. SEE THE INTERNATIONAL BUILDING OR RESIDENTIAL CODES FOR EXCEPTIONS AND A COMPLETE LIST OF SAFETY GLAZING REQUIREMENTS.

## BUILDING CODE REQUIREMENT

ANY ACCESS DOOR TO THE CRAWL SPACE MUST BE AT LEAST 18X24 INCHES (2015 INTERNATIONAL CONFORM TO SPECIFICATIONS RESIDENTIAL CODE (IRC) - SECTION R408.4).

ANY DRAIN LOCATED IN THE CRAWL SPACE MUST BE ALLOWED TO RUN OFF AND TERMINATE OUTDOORS OR NEED TO MEET SPECIFICATIONS TO AN INTERIOR CRAWL SPACE DRAIN OR SUMP PUMP. CRAWL SPACE DRAINS MAY NOT RUN OFF TO GUTTERS OR FOUNDATION PERIMETER DRAINS, AND DRYER VENTS MUST BE TERMINATED OUTDOORS (2015 IRC – SECTIONS R405 AND P2719).

(R408.1), 2009 IRC- OPENINGS FOR UNDER-FLOOR VENTILATION:

THE MINIMUM NET AREA OF VENTILATION OPENINGS SHALL NOT BE LESS THAN 1 SQUARE FOOT (0.0929 M2) FOR EACH 150 SQUARE FEET (14 M2) OF UNDER-FLOOR SPACE AREA.

1350/150= 9 SF

(8"X16") VENT DIMENSION=.88 SF

9/.88= 10.2

10 VENTS NEEDED

GARAGE EXTERIOR WALLS TO BE INSULATED WITH R-23 ROCKWOOL BATT INSULATION AND INTERIOR FINISHED WITH 5/8" DRYWALL.

VENTILATION NOTES:

ALL COMBUSTION APPLIANCES WILL BE VENTED DIRECTLY TO THE EXTERIOR. FURNACE FIREBOX AND TANKLESS WATER HEATER SHALL HAVE OUTSIDE COMBUSTION AIR SUPPLY.

ATTIC SHALL HAVE VENTILATION EQUAL TO 1 SQ. FOOT PER 150 SQ. FEET OF ATTIC SPACE. VENTILATION SHALL BE PROTECTED FROM SNOW AND RAIN AND SHALL BE COVERED WITH GALVANIZED WIRE SCREEN. OPENINGS SHALL BE LOCATED TO PROVIDE CROSS VENTILATION.

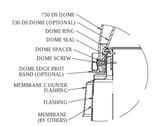
EXHAUST ALL VENTS AND FANS DIRECTLY TO OUTSIDE VIA METAL DUCTS, PROVIDE 90 CFM (MIN) FANS TO PROVIDE 5 AIR CHANGES PER HOUR IN BATHS CONTAINING TUB AND / OR SHOWER AND IN LAUNDRY ROOMS.

GARAGES SHALL BE VENTED WITH 60 SQUARE INCHES LOCATED 6" ABOVE THE FLOOR SURFACE.

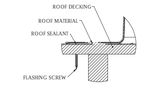
UNDER FLOOR SPACES SHALL HAVE VENTILATION EQUAL TO ONE SQ. FOOT PER 150 SQ. FEET OF FLOOR SPACE. VENTS SHALL BE CAST INTO THE CONCRETE STEM WALLS AND COVERED WITH GALVANIZED WIRE SCREEN. VENTS SHALL BE LOCATED TO PROVIDE CROSS VENTILATION.

**DOOR AND WINDOW NOTES:**

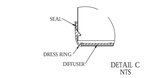
EVERY BEDROOM SHALL BE PROVIDED WITH AN EGRESS WINDOW WITH FINISH SILL HEIGHT NOT GREATER THAN 44" ABOVE THE FINISH FLOOR HEIGHT AND SHALL HAVE A MINIMUM OPENABLE AREA OF 5.7 SQ. FT. EGRESS WINDOWS SHALL NOT HAVE AN OPENABLE AREA LESS THAN 20" WIDE OR 24" HIGH.
ALL WALK , THRU DOORS SHALL BE SOLID CORE.
INTERIOR DOORS SHALL BE PAINTED. ENTRY DOOR TO BE DEFINED BY HOME OWNER PRIOR ORDERING.
DOORS BETWEEN GARAGE AND LIVING AREA SHALL BE 1-3/4" TIGHT FITTING SOLID CORE DOORS WITH A RATING OF 60 MINUTES. DOOR SHALL BE SELF CLOSING.
EXTERIOR EXIT DOORS WILL BE 36" MIN. NET CLEAR DOORWAY SHALL BE 32" MIN. DOOR SHALL BE OPENABLE FROM INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. GLAZING IN DOORS SHALL BE DUAL PANE SAFETY GLASS WITH MIN. U , VALUE OF 0.60
GARAGE DOORS TO BE SECTIONAL, OVERHEAD DOORS
DESIGN U-FACTOR = 0.35
DESIGN SHGC = 0.40
U-VALUE AND SOLAR HEAT GAIN COEFFICIENT (SHGC) MINIMUMS PER CLIMATE ZONE 3A




DETAIL A
NTS

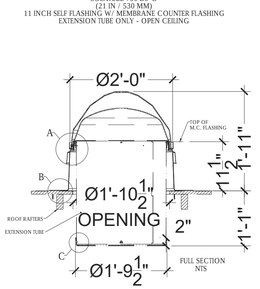



DETAIL B
NTS

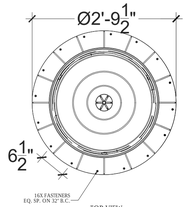



DETAIL C
NTS

SOLATUBE 750 DS-O
(21 IN / 530 MM)
11 INCH SELF FLASHING W/ MEMBRANE COUNTER FLASHING
EXTENSION TUBE ONLY - OPEN CEILING




FULL SECTION
NTS

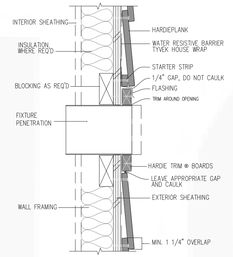



TOP VIEW
NTS

NOTES:
1. STRUCTURAL ELEMENTS (PLYWOOD, RAFTERS, DRYWALL ETC.) BY OTHERS & SHOWN FOR REFERENCE ONLY.
2. ALL TUBE JOINTS & SEAMS TAPED WITH 2" FOIL TAPE (NOT SHOWN).
3. DIMENSIONS IN BRACKETS ARE METRIC UNLESS OTHERWISE SPECIFIED.
4. 6" MIN CLEARANCE SHOULD BE MAINTAINED FROM ALL SOLATUBE COMPONENTS AND OTHER FLEXIJUI COMPONENTS.

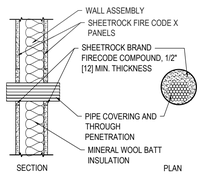
SOLATUBE
750 DS (21") SELF FLASHING 11" MCF, OPEN CEILING

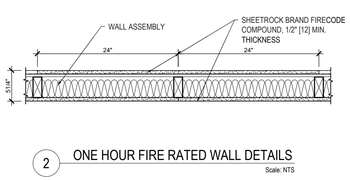
3 SOLATUBE DETAILS
Scale: NTS




3 FIXTURE PENETRATION
NTS






2 ONE HOUR FIRE RATED WALL DETAILS
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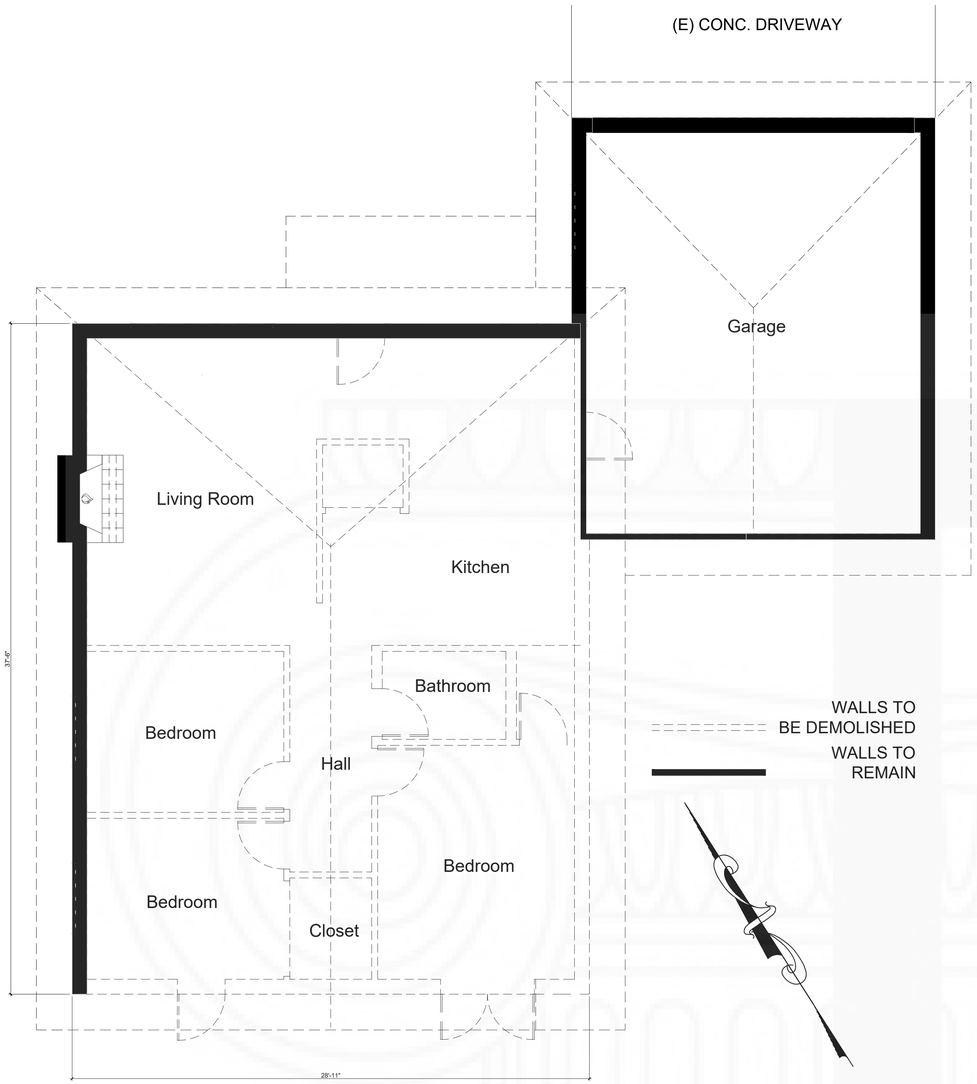
Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021
Scale: 1/4" = 1' - 00"

DRAWING TITLE:
PROPOSED FLOOR PLAN

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1 PROPOSED DEMO. PLAN

Scale: 1/4" = 1' - 00"

## GENERAL DEMOLITION NOTES

1 - ALL DASHED WALLS, DOORS, AND WINDOWS ARE TO BE REMOVED.
2 - CONTRACTOR TO INSTALL TEMPORARY SHORING AS REQ'D. TO SUPPORT STRUCTURE UNTIL NEW PERMANENT SUPPORT IS IN PLACE.
3 - REMOVE EXISTING ROOF FRAMING AS INDICATED BY DASHED AREAS ON PLAN.
4 - REMOVE EXISTING SIDING MATERIAL AS REQ'D. AND PREPARE FOR NEW PER PLAN.
5- GARAGE ROOF FRAME REMAIN AS IS, ONLY ROOF SHINGLES WILL CHANGE TO MATCH THE EXISTING.

## GENERAL RENOVATION NOTES

1- CONTRACTORS TO VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING AND CONSTRUCTION.
2- ALL NEW INTERIOR WALLS TO BE 2x4 STUDS (3 1/2") fa 16" O.C. W/ In" GYP. BRD. - USE MOISTURE RESISTANT GYP. BRD. e PLUMBING FIXTURES.
3- ALL AREAS DISTURBED BY CONSTRUCTION WHICH ARE TO REMAIN UNTOUCHED ARE TO BE RETURNED TO ORIGINAL CONDITION.
4- STRUCTURAL HEADERS & BEAMS (2) 2x10's (MIN) & POSTS 2-STUD (MIN) S.Y.P. #2 (UNLESS NOTED OTHERWISE)

## DEMOLITION NOTES

1. DEMOLITION DRAWINGS ARE SCHEMATIC. REMOVE ALL WORK AS INDICATED AND AS REQUIRED TO COMPLETE NEW CONSTRUCTION AS INDICATED.
2. NOTES AND SYMBOLS ARE TO APPLY AT ALL AREAS OF SIMILAR GRAPHIC REPRESENTATION. SUCH INDICATIONS MAY BE LIMITED TO PROMOTE CLARITY OR AVOID REDUNDANCY. NO LIMITATION OF APPLICATION SHALL BE CONSTRUED WITHOUT SPECIFIC NOTATION.
3. NOTIFY LOCAL AGENCY HAVING JURISDICTION PRIOR TO STARTING DEMOLITION WORK. COMPLY WITH ALL AGENCY REQUIREMENTS.
4. OWNER WILL REMOVE FURNITURE, STORED MATERIALS AND MOVABLE EQUIPMENT IN THE AREA OF WORK PRIOR TO START OF DEMOLITION.
5. VERIFY EXISTING CONDITIONS AND INVERT ELEVATIONS OF UNDERGROUND UTILITIES PRIOR TO DEMOLITION. NOTIFY DESIGNER OF DISCREPANCIES AND REQUEST DIRECTION.
6. DRAWINGS ARE PREPARED FROM INFORMATION MADE AVAILABLE BY THE OWNER AND ARE NOT A GUARANTEE OF EXISTING OR CONCEALED CONDITIONS.
7. PROVIDE ALL SHORING, BRACING AND SUPPORTS REQUIRED TO PREVENT SETTLEMENT OR DISPLACEMENT.
8. DISCONNECT ALL AFFECTED UTILITIES PRIOR TO STARTING DEMOLITION WORK.
9. NEATLY CUT AND REMOVE SURFACES AND FINISHES AS REQUIRED OR TO A NATURAL POINT OF DIVISION TO ENABLE INSTALLATION OF UTILITIES OR OTHER CONCEALED WORK, WHETHER SPECIFICALLY SHOWN OR INFERRED FOR SUPPORT OR RENOVATION.
10. PROTECT EXISTING WORK DESIGNATED TO REMAIN FROM DAMAGE DUE TO DEMOLITION AND RECONSTRUCTION WORK.
11. REPAIR AND REPLACE ALL EXISTING SURFACES AND FINISHES TO MATCH EXISTING UNDISTURBED WORK.
12. CAP ALL ABANDONED UTILITIES BEHIND FACE OF NEW FINISHES, INCLUDING FINISH GRADE OR PAVING, RECORD ALL LOCATIONS ON RECORD DOCUMENTS.
13. SEE SITE PLAN(S) FOR DEMOLITION OF SITE FEATURES NOT OTHERWISE INDICATED, INCLUDING PAVING, UNDERGROUND UTILITIES AND SERVICES.
14. SEE STRUCTUAL DRAWINGS FOR DEMOLITION OF SHEAR WALLS, INTERIOR PARTITIONS, AND TRENCHES FOR INSTALLATION OF UNDERGROUND UTILITIES.
15. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR DEMOLITION OF ITEMS NOT OTHERWISE INDICATED, INCLUDING UNDERGROUND OR CONCEALED UTILITIES AND SERVICES.
16. ALL DEMOLISHED MATERIALS ARE THE PROPERTY OF THE CONTRACTOR, EXCEPT FOR SUCH ITEMS AS THE OWNER WISHES TO CLAIM. STOCKPILE THESE ITEMS ON THE SITE AS DIRECTED BY THE OWNER.
17. REMOVE DEMOLISHED MATERIALS FROM SITE AND DISPOSE OF IN A LEGAL MANNER AT A LOCAL RECYCLING FACILITY.
18. REMOVE ALL EXISTING NAILS, TACKS, STAPLES, HANGER WIRES, SIGNAL WIRES, CABLES AND SIMILAR ITEMS FROM SURFACES TO REMAIN. PREPARE ALL REMAINING SURFACES /SUBSTRATE TO RECEIVE INDICATED FINISHES.
19. REMOVE AND STORE DESIGNATED EQUIPMENT / MATERIALS FOR RE-INSTALLATION AS INDICATED.
20. SELECTIVE DEMOLITON INDICATED IN THESE CONTRACT DOCUMENTS EXCLUDES REMOVAL OF HAZARDOUS MATERIALS AND TOXIC SUBSTANCES.
21. PRIOR TO START OF WORK, REFER TO HAZARDOUS MATERIALS SURVEY OR ABATEMENT DOCUMENTATION PROVIDED BY OWNER. HAZARDOUS MATERIALS MAY BE PRESENT ON THE SITE OR IN EXISTING CONSTRUCTION. THESE CONTRACT DOCUMENTS DO NOT CONTAIN MEASURES OR PRECAUTIONS FOR HAZARDOUS MATERIALS ABATEMENT.
22. IF HAZARDOUS MATERIALS ARE DISCOVERED OR SUSPECTED DURING DEMOLITION OPERATIONS, STOP WORK AND NOTIFY OWNER'S REPRESENTATIVE FOR INSTRUCTIONS IMMEDIATELY. TAKE MEASURES TO PROTECT WORKERS AND PUBLIC. DIRECT ALL QUESTIONS ABOUT HAZARDOUS MATERIALS TO THE OWNER'S REPRESENTATIVE.
23. COORDINATE DEMOLITION WITH WORK OF HAZARDOUS MATERIAL ABATEMENT WORK AS DIRECTED BY OWNER.

DEMOLITION DEBRIS &WASTE SOURCE VOLUME CALCULATIONS

ABBREVIATIONS AND CONVERSION FACTORS

ABBREVIATIONS

| | |
|---|---|
| C&D | CONSTRUCTION AND DEMOLITION |
| CY | CUBIC YARDS |
| CF | CUBIC FEET |
| EA | EACH |
| FT | FEET |
| FT2 | SQUARE FEET |
| FT3 | CUBIC FEET |
| SA | SURFACE AREA |
| SY | SQUARE YARDS |
| V | VOLUME |

CONVERSION FACTORS

1 FT2 = 1/9 SY
1 FT3 = 1/27 CY
1 TON OF C&D DEBRIS = 2 CY (PER FEMA DEBRIS ESTIMATING FIELD GUIDE)
1 CY WASTE SOURCE MATERIAL = 1.76 TONS

EMPIRICAL EQUATIONS

GENERAL BUILDING DEBRIS ESTIMATION FORMULA (PER FEMA, DEBRIS ESTIMATING FIELD GUIDE, FEMA PUBLICATION NO. 329, SEPTEMBER 2010).

$$\frac{\text{LENGTH X WIDTH X HEIGHT X 0.33}}{27} = \text{CY}$$

DIMENSIONS:

LENGTH = 37.5 FT
WIDTH = 29 FT
HEIGHT = 16 FT

GENERAL BUILDING C & D DEBRIS VOLUME = $\frac{37.5 \text{ X } 29\text{X}16\text{X } 0.33}{27} = 13.29$ CY

Demolition percentage is more than 50%, therefore AFS (Automatic Fire Sprinklers) system will be required and shall be installed.

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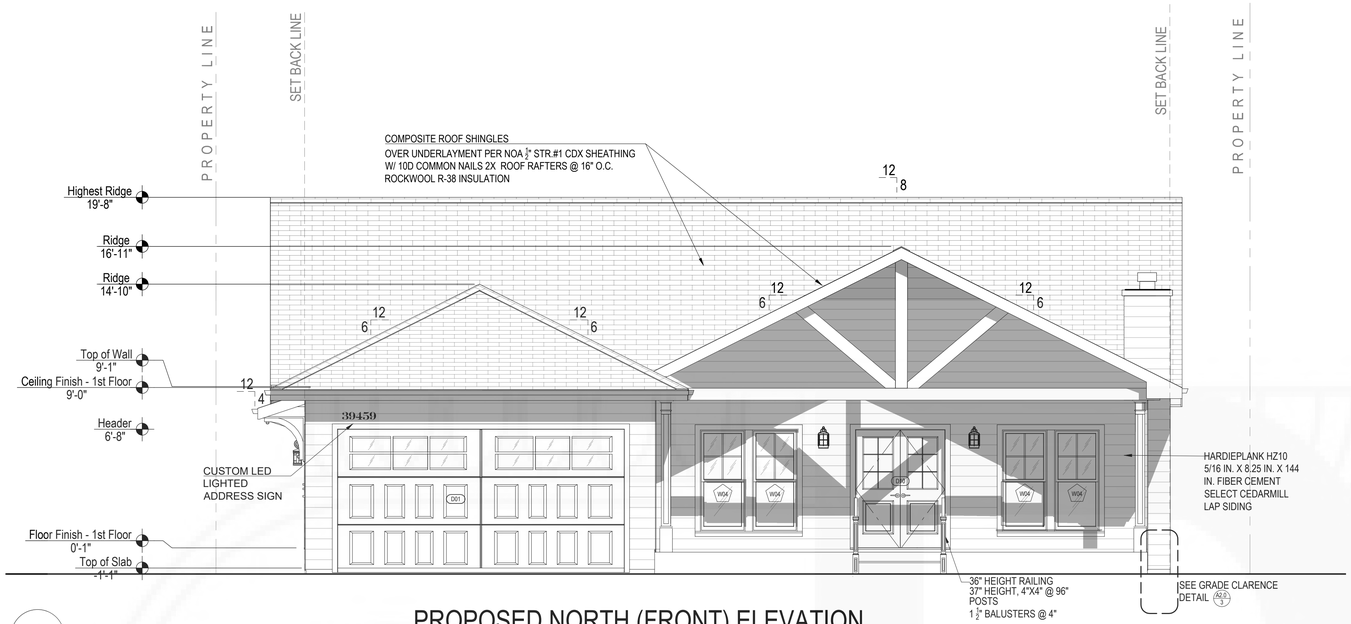
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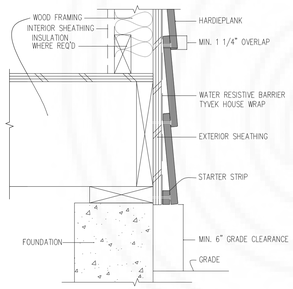
A-11

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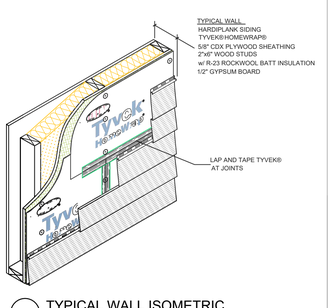

1 PROPOSED NORTH (FRONT) ELEVATION

Scale: 1/4" = 1' - 00"



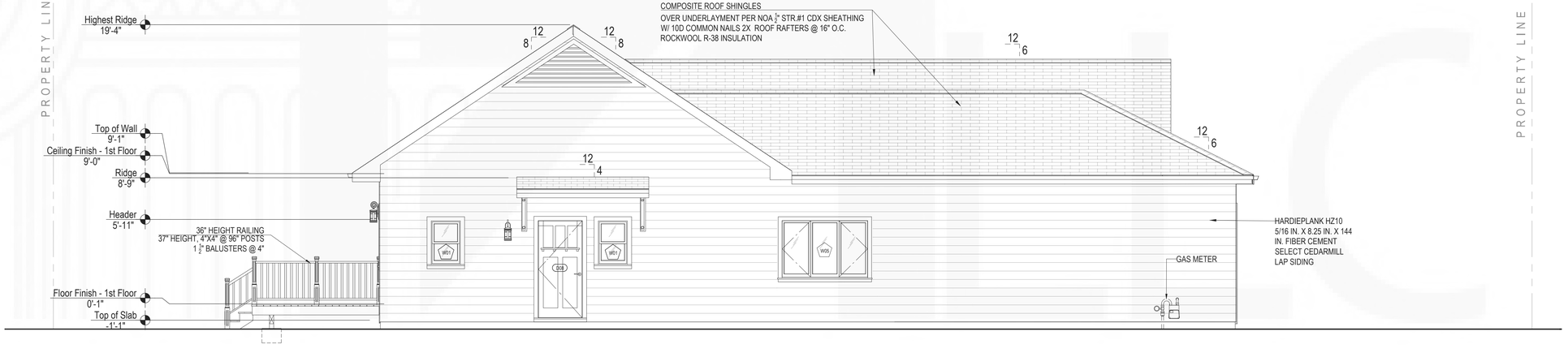

3 GRADE CLEARANCE

NTS




TYPICAL WALL ISOMETRIC

RESIDENTIAL WOOD FRAME STRUCTURE w/ VINYL SIDING (COOLING CLIMATE)




2 PROPOSED EAST ELEVATION

Scale: 1/4" = 1' - 00"

## EXTERIOR ELEVATION NOTES

1. NOTES AND SYMBOLS ARE TO APPLY AT ALL AREAS OF SIMILAR GRAPHIC REPRESENTATION. SUCH INDICATIONS MAY BE LIMITED TO PROMOTE CLARITY OR AVOID REDUNDANCY.
2. SLOPE FINISH GRADE 2% MINIMUM AWAY FROM BUILDING FOR 5'-0" MINIMUM, DIRECT DRAINAGE AWAY FROM BUILDING WALLS TO ELIMINATE PONDING.
3. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR GRILLES, REGISTERS, HORNS, SPEAKERS, PANELS, PULL STATIONS AND OTHER FEATURES NOT OTHERWISE SHOWN
4. FLASH AND SEAL ALL PENETRATIONS THROUGH EXTERIOR ROOFS AND WALLS, AND FLOORS WEATHER TIGHT AND WATERPROOF. PACK ALL PENETRATIONS THROUGH THE BUILDING INSULATION ENVELOPE WITH INSULATION.
5. FLASH ALL WINDOWS, DOORS, LOUVERS, ACCESS PANELS AND SIMILAR WALL OPENINGS PER DETAILS.
6. FIREBLOCKING, CBC 717.2.: PROVIDE MATERIALS COMPLYING WITH CBC 717.2.1 AT CONCEALED SPACES, FURRED SPACES, CEILING/FLOOR LEVELS AND 10'-0" INTERVALS ALONG LENGTH OF WALL, SOFFITS, DROP CEILINGS, AND COVE CEILINGS, CONCEALED PLACES BETWEEN STAIR STRINGERS & BETWEEN STUDS IN LINE WITH STAIR RUN, AND ALL LOCATIONS LISTED IN CBC 717.2.2 THROUGH 717.2.7.
7. FLOOR/CEILING DRAFTSTOPPING, CBC 717.3: PROVIDE MATERIALS COMPLYING WITH CBC 717.3.1. AT FLOOR/CEILING ASSEMBLIES AS REQUIRED BY CBC 717.3.2 THROUGH 717.3.3. -GROUP R-1, R-2, R-3, R-4

EXCEPTION: DRAFTSTOPPING NOT REQUIRED IN BUILDINGS SPRINKLERED PER CBC 903.3.1.1.

EXCEPTION: DRAFTSTOPPING NOT REQUIRED IN BUILDINGS SPRINKLERED PER CBC 903.3.2.1 WHEN SPRINKLERS ARE INSTALLED IN THE COMBUSTIBLE CONCEALED SPACES

8. ATTIC DRAFTSTOPPING, CBC 717.4: PROVIDE MATERIALS COMPLYING WITH CBC 717.3.1. IN ATTICS AND CONCEALED ROOF SPACES AS REQUIRED BY CBC 717.4.2 THROUGH 717.4.3. PROVIDE SELF-CLOSING DOORS WITH AUTOMATIC LATCHES CONSTRUCTED AS REQUIRED FOR DRAFTSTOPPING PARTITIONS.
9. REFER TO REFLECTED CEILING PLAN FOR LOCATION OF CLERESTORY WINDOWS, TYPICAL.
10. ELEVATIONS SHOWN ARE MEASURED FROM FINISHED FLOOR DATUM FOR THIS BUILDING.
11. NEW WORK PROVIDE BLOCKING, BACKING, FRAMING, SHEATHING, UTILITIES OR OTHER CONCEALED WORK, WHETHER SPECIFICALLY SHOWN OR INFERRED. REFER TO STRUCTURAL DRAWINGS FOR CONCEALED WORK NOT SHOWN ON ARCHITECTURAL DRAWINGS.
12. REMODEL/ADDITION WORK NEATLY CUT AND REMOVE SURFACES AND FINISHES AS REQUIRED OR TO A NATURAL POINT OF DIVISION TO ENABLE INSTALLATION OF BLOCKING, BACKING, FRAMING, SHEATHING, UTILITIES OR OTHER CONCEALED WORK, WHETHER SPECIFICALLY SHOWN OR INFERRED FOR SUPPORT OR RENOVATION. REFER TO STRUCTURAL DRAWINGS FOR CONCEALED WORK NOT SHOWN ON ARCHITECTURAL DRAWINGS.
13. REPAIR AND REPLACE ALL EXISTING SURFACES AND FINISHES TO MATCH EXISTING UNDISTURBED WORK.
14. ALL NEW ADDITION WORK FINISHES AND COLORS FOR SIDING, TRIM, WINDOWS, ROOFING, ETC. ARE TO MATCH EXISTING FINISHES AND COLORS.

## NOTES

1. ATTICS; ACCESS PER CRC R807, DRAFTSTOPS PER CRC R302.10 & R502.12 AND VENTILATION PER R806 & R408.1.
2. WHERE EMERGENCY ESCAPE AND RESCUE OPENINGS ARE PROVIDED, THEY SHALL HAVE THE BOTTOM OF THE CLEAR OPENING NOT GREATER THAN 44" MEASURED FROM THE FLOOR.
3. PER CRC 310.1.
4. GLAZING IN ENCLOSURES FOR OR WALLS FACING HOT TUBS, WHIRLPOOLS, SAUNAS, STEAM ROOMS, BATHTUBS AND SHOWERS WHERE THE BOTTOM EXPOSED EDGE IS LESS THAN 60" MEASURED VERTICALLY ABOVE A STANDING OR WALKING SURFACE. PER CRC R308, R303.1 7 R301.2.1.2.
5. FACTORY-BUILT FIREPLACES AND CHIMNEYS PER CRC R1004, R1005, R1006, A.Q.M.D. RULE 445, AND CAL-GREEN SECTION 4.503.1.
6. COMBUSTION AIR TO FORCED AIR UNIT PER CMC CHAPTER 7.
7. COMBUSTION AIR TO WATER HEATER PER CPC SECTION 507.0.
8. ENVIRONMENTAL AIR DUCTS PER CMC SECTION 504.
9. MECHANICAL EQUIPMENT LOCATION AND PROTECTION AGAINST DAMAGE PER CMC 307.
10. PER THE BUILD IT GREEN PROGRAM'S "GREENPOINT RATING CHECKLIST" SECTION P(D)2, MOISTURE MATERIALS SHALL BE USED IN WET AREAS (i.e. KITCHEN, BATHROOM, UTILITY ROOMS, ETC.)EXTERIOR DOOR LANDING SHALL BE A MAX. OF 7-¾" BELOW DOOR THRESHOLD PER CRC R311.3.2.
11. GRADE NEEDS TO FALL 6" WITHIN THE FIRST 10'
12. CONCRETE SLAB THICKNESS FOR PORCH AND PATIO SLAB SHALL BE 3 ½" MIN. REQUIRED PER R506.1


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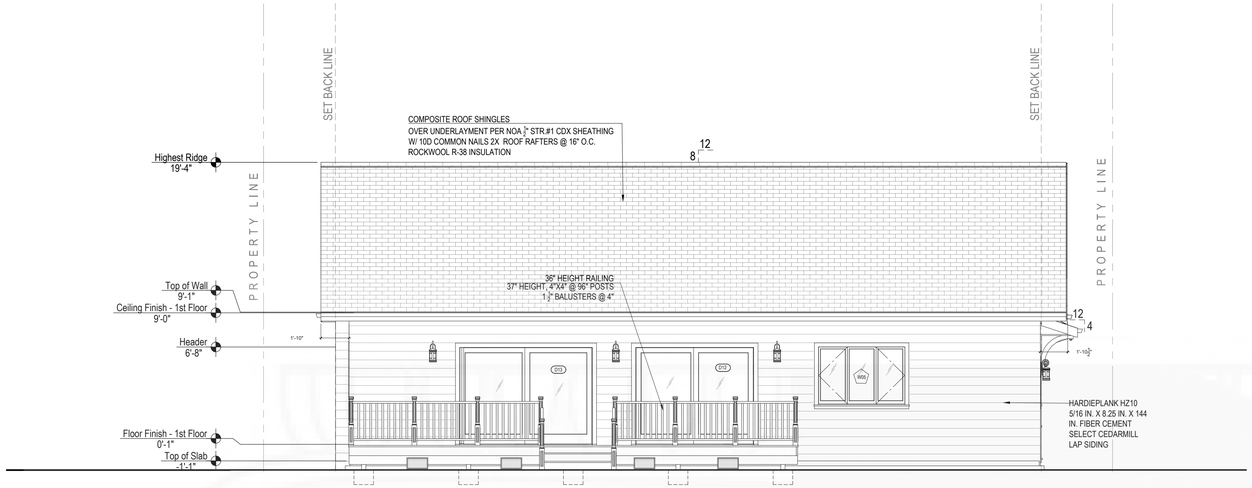
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DRAWING TITLE:
PROPOSED NORTH & EAST ELEVATIONS

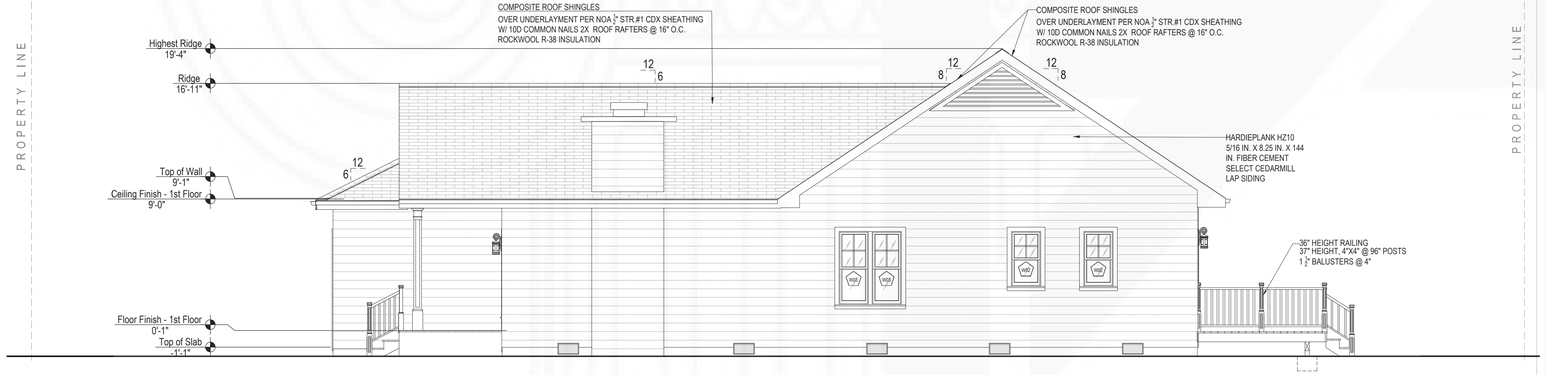

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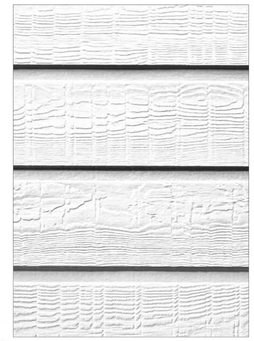

1 PROPOSED SOUTH ELEVATION

Scale: 1/4" = 1' - 00"




2 PROPOSED WEST ELEVATION

Scale: 1/4" = 1' - 00"



HARDIEPLANK HZ10 5/16 IN. X 8.25 IN. X 144 IN. FIBER CEMENT SELECT CEDARMILL LAP SIDING

NOTE: ROOF SHALL BE A FIRE-RETARDANT. ROOF COVERING THAT IS AT LEAST CLASS A.

*Section 705A of the 2019California Building Code_*



COMPOSITE ROOF SHINGLES, COLOR BY OWNER

All alteration, repair, replacement or reroofing shall conform to the applicable provisions of the 2019 California Building Code Section "1604 General Design Requirements" and any other applicable engineering requirements, including Chapter , "15Roof Assemblies and Rooftop Structures" of this code.
707A 3.1.2.Exterior wall covering. All exterior faces of the exterior walls shall be of an assembly qualified for exterior face of recognized one-hour fire resistive assemblies. All exterior wall coverings shall meet a Class I flame spread requirement and be installed over materials approved for one-hour fire-resistive construction.
707A 11.Utilities. Utilities, pipes, furnaces, water heaters or other mechanical devices located in an exposed under-floor area of a building or structure shall be enclosed with material as required for exterior, one-hour, fire-resistive construction. Adequate covered access opening for servicing such utilities shall be provided as required by appropriate codes

FINISH NOTES:

RENDERINGS ARE NOT TO SCALE; ALL RENDERINGS ARE FOR ARTISTIC DEPICTION ONLY. PLAN UPDATES MAY NOT BE REFLECTED IN RENDERINGS. RENDERINGS SHALL NOT BE USED FOR CONSTRUCTION.

BASE BOARDS SHALL BE 6" IN ALL ROOMS, UNO.
FINAL FINISHES SHALL BE CONFIRMED WITH THE HOME OWNER PRIOR TO APPLICATION.

EXTERIOR FINISH NOTES:

EXTERIOR FINISH TO BE FIBER CEMENT SIDING OVER 5/8 CDX PLYWOOD. WINDOW & DOOR TRIM CEDAR. MATERIAL AND COLOR BY OWNER.
ROOFING TO BE COMPOSITE ROOF SHINGLES, COLOR BY OWNER
ROOFING OVER 30# FELT, 5/8 CDX PLYWOOD.
DECKING TO BE TREX OR WOOD. FINAL MATERIAL AND COLOR BY OWNER.
CHIMNEYS ARE DECORATIVE AND PROVIDE FOR VENTING OF GAS FIREPLACES ONLY.
DOWNSPOUTS TO BE COLLECTED AND ROOF RUN OFF TO BE DIRECTED AWAY FROM STRUCTURE PER THE SITE PLAN.
FINISH GRADE SHALL SLOPE AWAY FROM STRUCTURE MIN. 1/2" PER FOOT OF RUN FOR 4' MIN.
BASALT RETAINING WALLS TO MATCH EXISTING RETAINING WALL.



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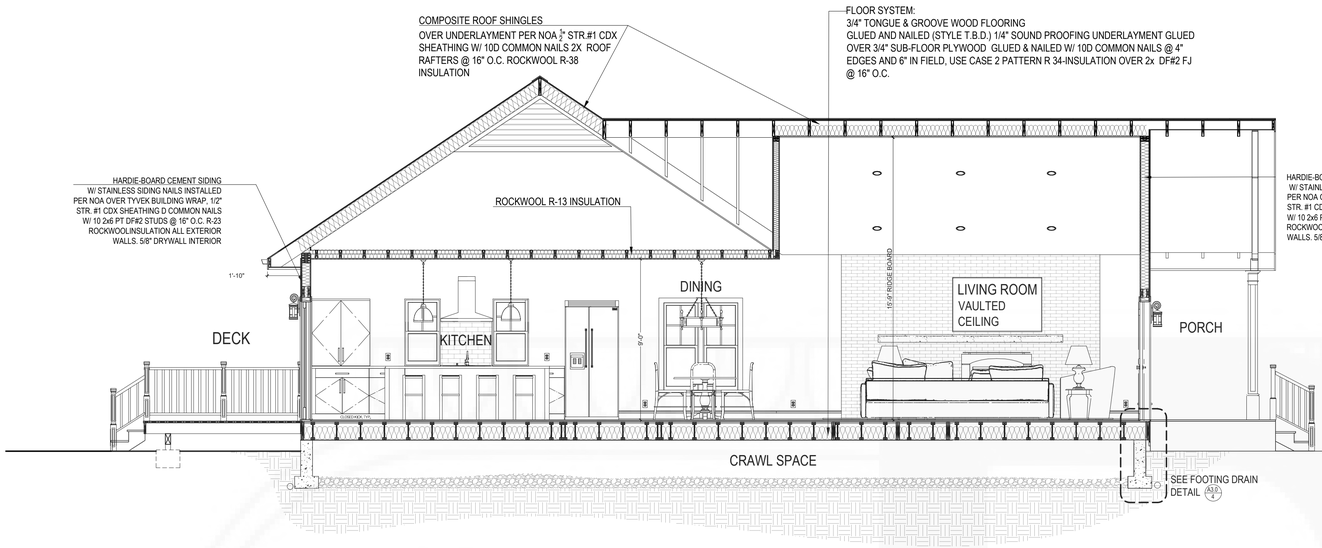
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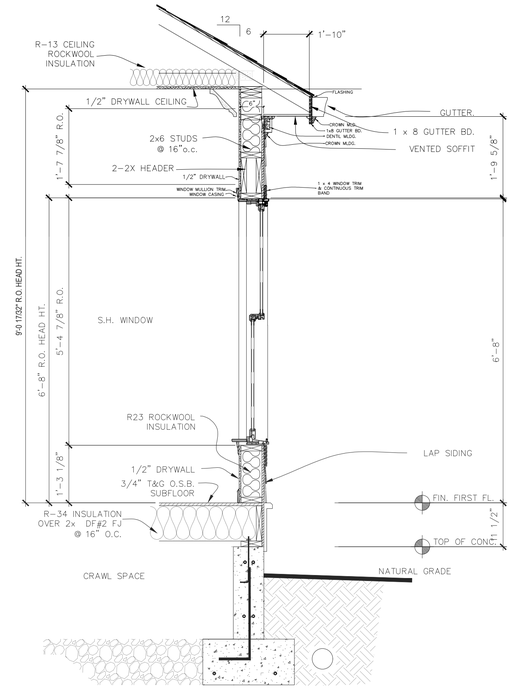
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## 1 PROPOSED LONGITUDINAL SECTION

Scale: 1/4" = 1' - 00"




FIRE-RESISTANCE RATED CONSTRUCTION:

1. IN COMBUSTIBLE CONSTRUCTION, FIRE BLOCKING SHALL BE PROVIDED TO CUT OFF ALL CONCEALED DRAFT OPENINGS [BOTH VERTICAL AND HORIZONTAL] AND TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES, AND BETWEEN A TOP STORY AND THE ROOF SPACE, *R302.11*.
2. IN COMBUSTIBLE CONSTRUCTION WHERE THERE IS USABLE SPACE BOTH ABOVE AND BELOW THE CONCEALED SPACE OF A FLOOR/CEILING ASSEMBLY. DRAFT STOPS SHALL BE INSTALLED SO THAT THE AREA OF THE CONCEALED SPACE DOSE NOT EXCEED 1,000 SQUARE FEET. DRAFT STOPPING SHALL DIVIDE THE CONCEALED SPACE INTO APPROXIMATELY EQUAL AREAS. *R302.12*.

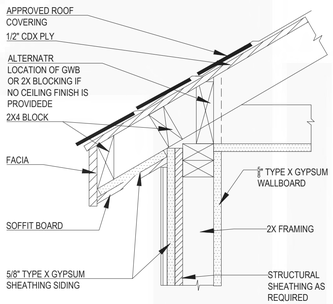
## 3 TYPICAL EXTERIOR WALL DETAILS

Scale: 1/4" = 1' - 00"



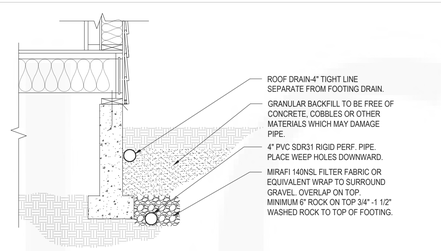

## 2 PROPOSED CROSS SECTION

Scale: 1/4" = 1' - 00"




## 5 1-HOUR RATED WALL & PROTECTED EAVE OVERHANG

Scale: 1/2" = 1' - 00"




NOTES:

1. FOOTING DRAIN MUST TIE INTO SITE STORM SYSTEM BY GRAVITY FLOW.
2. ROOF DRAIN SHALL RUN INDEPENDENT OF FOOTING DRAIN UNTIL POINT OF CONNECTION TO CITY STORM WATER FACILITY OR ON SITE DETENTION FACILITY.
3. FOOTING DRAIN MUST PROVIDE AT LEAST 6" OF CLEARANCE BETWEEN CRAWLSPACE FINISHED GRADE OR BOTTOM OF SLAB-ON-GRADE, AND TOP OF FOOTING DRAIN.

## 4 FOOTING DRAIN

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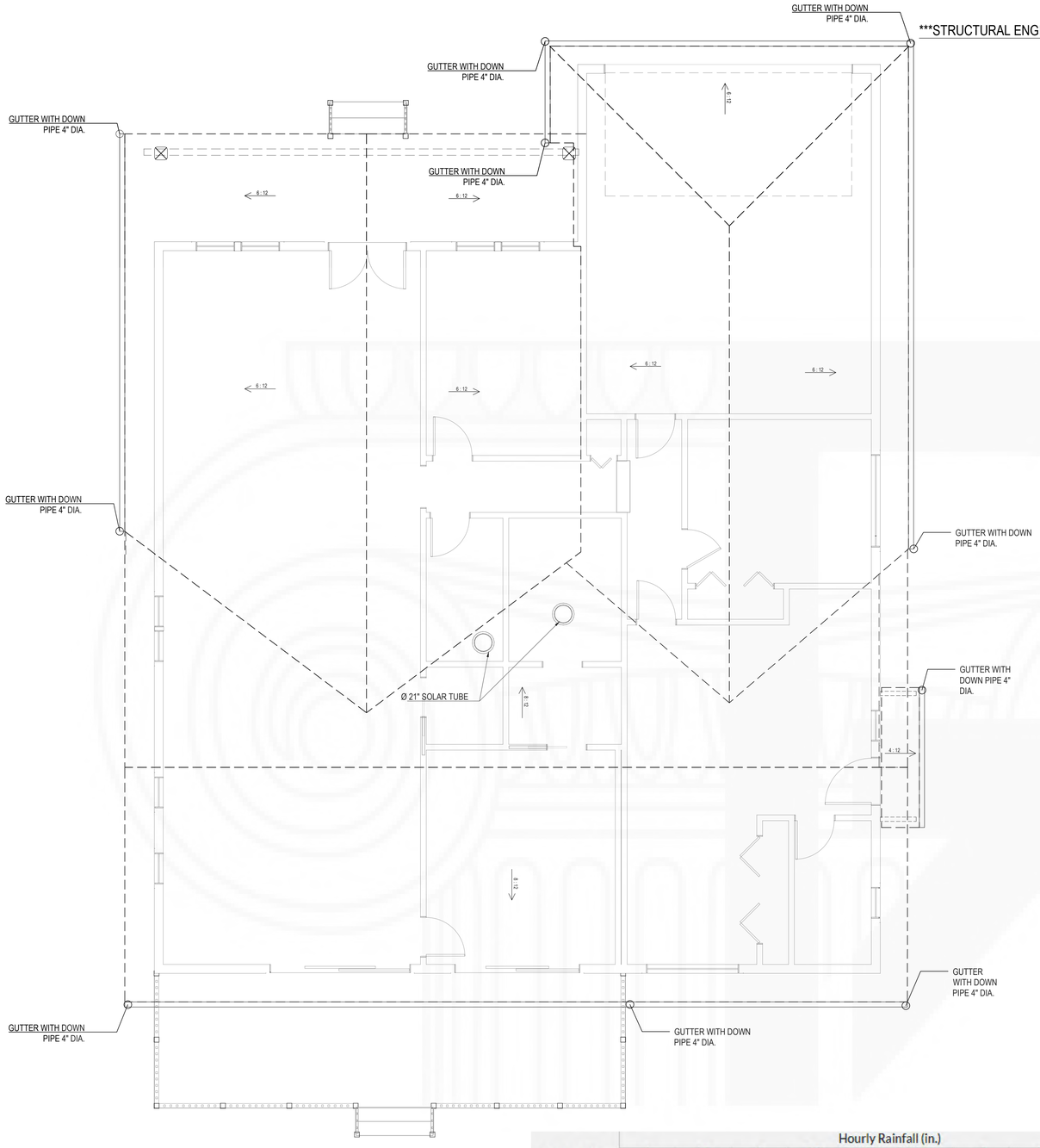
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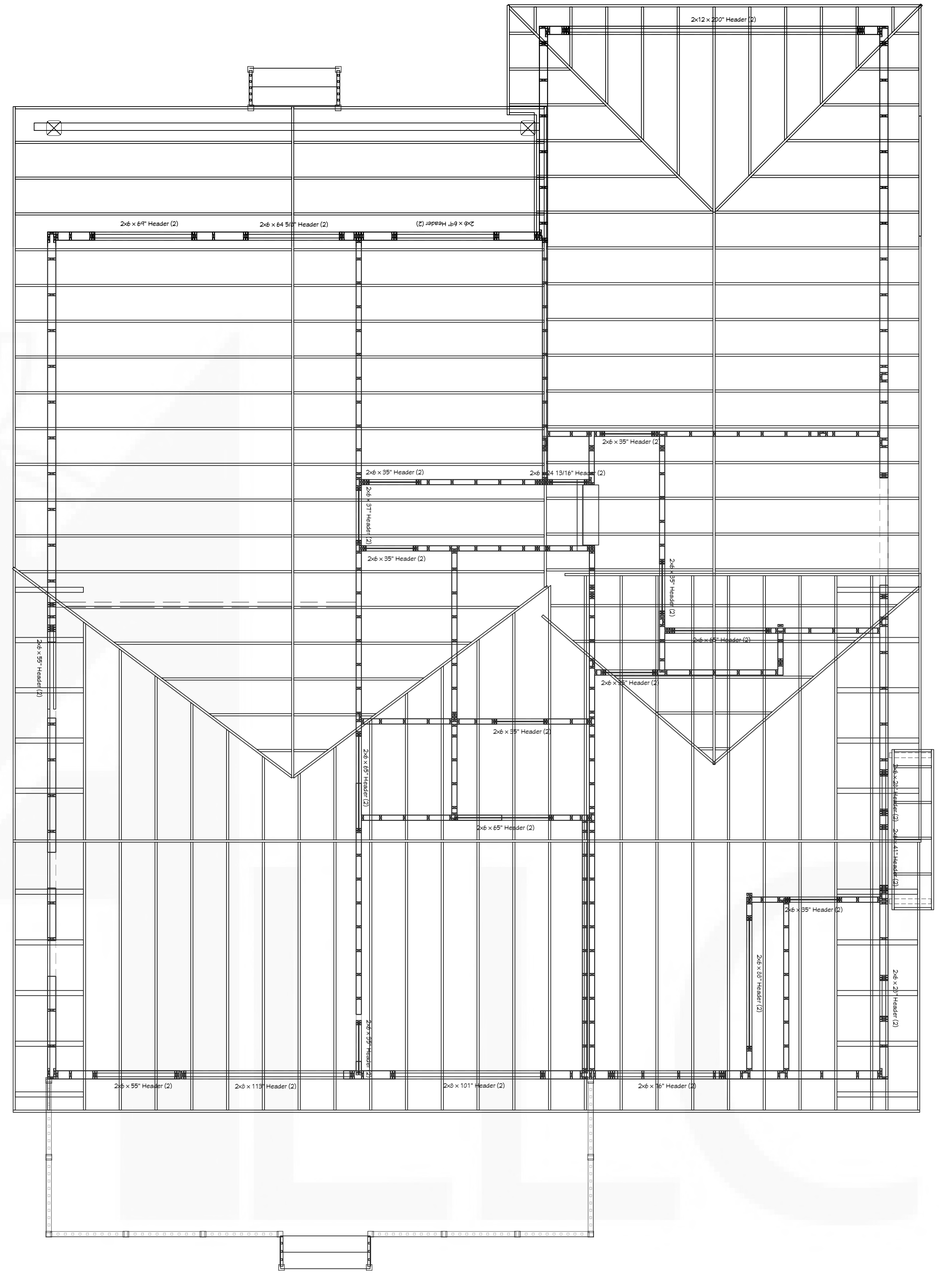

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***STRUCTURAL ENGINEERING DRAWINGS SUPERSEDE ARCHITECTURAL RELATED

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TOTAL ROOF AREA(MAIN ROOF)= 2997.5 SQ.FT RAINFALL RATE = 2.5
PIPE SIZE REQUIRED : 2"
SQ. FT. COVERED PER DRAIN= 1150.
THREE DRAIN IS REQUIRED FOR MAIN ROOF
TOTAL ROOF AREA(MAIN ROOF)= 2997.5 SQ.FT THREE DRAIN IS ENOUGH FOR PROPOSED ROOF.

****FOR IMPROVEMENT OF DRAINAGE, THE SIZE OF PIPE UPGRADED TO 4" AND THE NUMBER OF DRAIN PIPE DETERMINED REGARDING THE SHAPE OF THE ROOF.

| Leader / Pipe Size (in.) | Hourly Rainfall (in.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1.5 | 2 | 2.5 | 3 | 4 | 5 | 6 | 7 | 8 |
| | Total Sq. Ft. Covered Per Drain | | | | | | | | | |
| 2 | 2,880 | 1,920 | 1,440 | 1,150 | 960 | 720 | 575 | 480 | 410 | 360 |
| 3 | 8,800 | 5,860 | 4,400 | 3,520 | 2,930 | 2,200 | 1,760 | 1,470 | 1,260 | 1,100 |
| 4 | 18,400 | 12,700 | 9,200 | 7,360 | 6,130 | 4,600 | 3,680 | 3,070 | 2,630 | 2,300 |
| 5 | 34,600 | 23,050 | 17,300 | 13,840 | 11,530 | 8,650 | 6,920 | 5,765 | 4,945 | 4,325 |
| 6 | 54,000 | 36,000 | 27,000 | 21,600 | 18,000 | 13,500 | 10,800 | 9,000 | 7,715 | 6,750 |
| 8 | 116,000 | 77,400 | 58,000 | 46,400 | 38,660 | 29,000 | 23,200 | 19,315 | 16,570 | 14,500 |

1

## PROPOSED ROOF PLAN

Scale: 1/4" = 1' - 00"

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Project Name and Address:

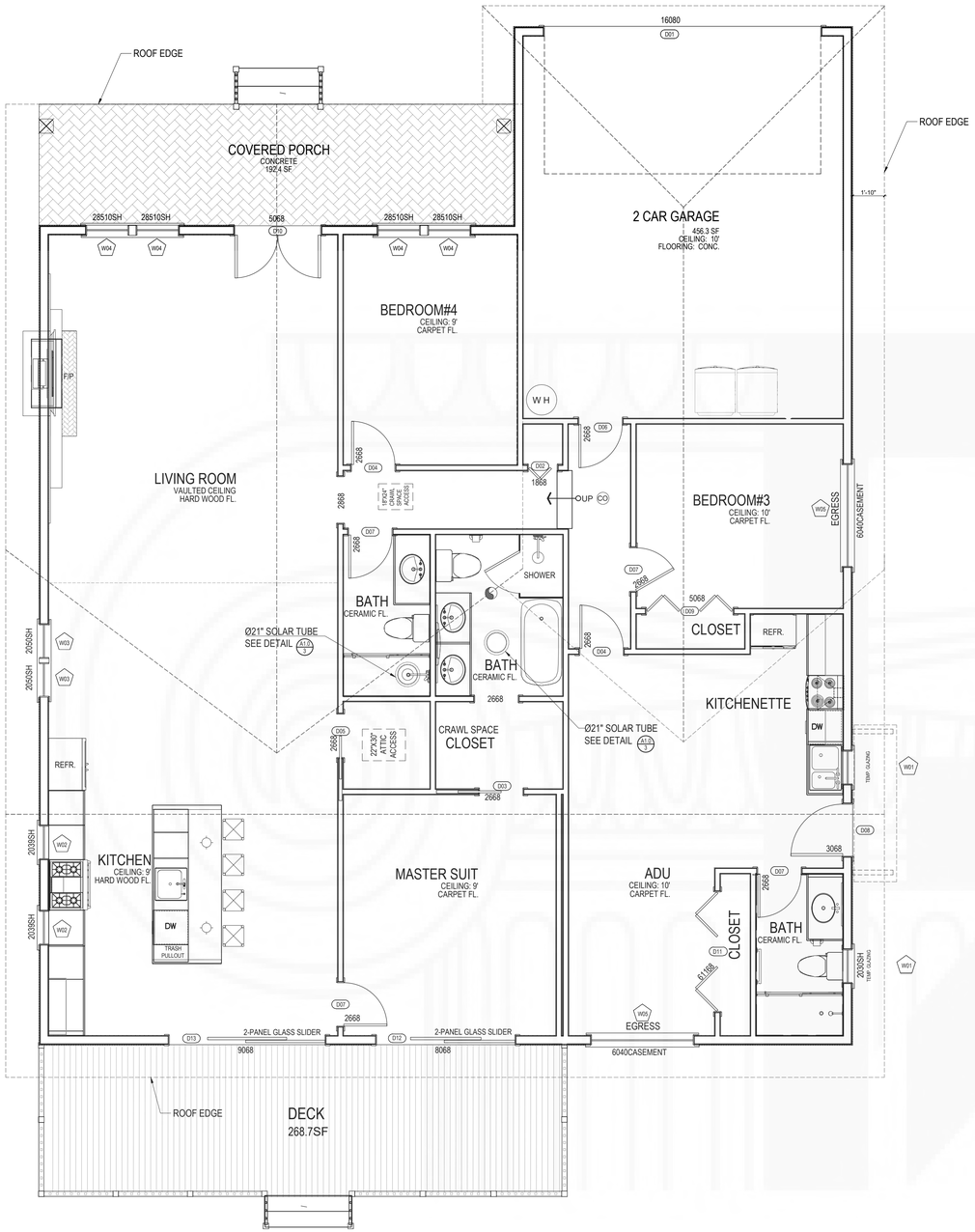
Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021
Scale: 1/4" = 1' - 00"

DRAWING TITLE:
PROPOSED ROOF PLAN

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A-15

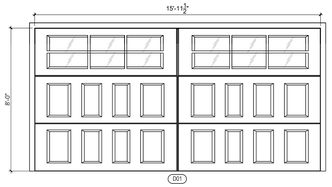


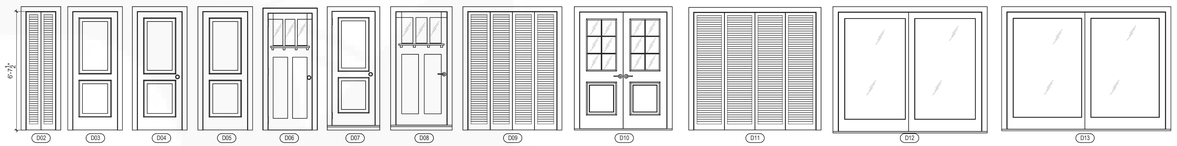

## DOOR SCHEDULE

| NUMBER | LABEL | QTY | SIZE | WIDTH | HEIGHT | R/O | DESCRIPTION | HEADER | THICKNESS | SHGC | U-FACTOR | THICKNESS | FIRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D01 | 16080 | 1 | 16080 | 192 " | 96 " | 194"X99" | GARAGE-GARAGE DOOR CHD05 | 2X12X200" (2) | 1 3/4" | 0.3 | 0.3 | 1 3/8" | |
| D02 | 1868 | 1 | 1868 R | 19 13/16 " | 80 " | 21 13/16"X82 1/2" | 2 DR. BIFOLD-LOUVERED | 2X6X24 13/16" (2) | 1 3/8" | 0.3 | 0.3 | 1 3/8" | |
| D03 | 2668 | 1 | 2668 L | 30 " | 80 " | 62"X82 1/2" | POCKET-DOOR P04 | 2X6X65" (2) | 1 3/8" | 0.3 | 0.3 | 1 3/8" | |
| D04 | 2668 | 2 | 2668 L IN | 30 " | 80 " | 32"X82 1/2" | HINGED-DOOR P04 | 2X6X35" (2) | 1 3/8" | 0.3 | 0.3 | 1 3/8" | |
| D05 | 2668 | 1 | 2668 R | 30 " | 80 " | 62"X82 1/2" | POCKET-DOOR P04 | 2X6X65" (2) | 1 3/8" | 0.3 | 0.3 | 1 3/8" | |
| D06 | 2668 | 1 | 2668 R EX | 30 " | 80 " | 32"X83" | EXT. HINGED-DOOR E21 | 2X6X35" (2) | 1 3/8" | 0.3 | 0.3 | 1 3/8" | |
| D07 | 2668 | 4 | 2668 R IN | 30 " | 80 " | 32"X82 1/2" | HINGED-DOOR P04 | 2X6X35" (2) | 1 3/8" | 0.3 | 0.3 | 1 3/8" | |
| D08 | 3068 | 1 | 3068 L EX | 36 " | 80 " | 38"X83" | EXT. HINGED-DOOR E21 | 2X6X41" (2) | 1 3/4" | 0.3 | 0.3 | 1 3/4" | |
| D09 | 5068 | 1 | 5068 L/R | 60 " | 80 " | 62"X82 1/2" | 4 DR. BIFOLD-LOUVERED | 2X6X65" (2) | 1 3/8" | 0.3 | 0.3 | 1 3/8" | |
| D10 | 5068 | 1 | 5068 L/R EX | 59 5/8 " | 80 " | 61 5/8"X83" | EXT. DOUBLE HINGED-DOOR E02 | 2X6X64 5/8" (2) | 1 3/4" | 0.3 | 0.3 | 1 3/4" | |
| D11 | 61168 | 1 | 61168 L/R | 83 " | 80 " | 85"X82 1/2" | 4 DR. BIFOLD-LOUVERED | 2X6X88" (2) | 1 3/8" | 0.3 | 0.3 | 1 3/8" | |
| D12 | 8068 | 1 | 8068 R EX | 96 " | 80 " | 98"X83" | EXT. SLIDER-GLASS PANEL | 2X8X101" (2) | 1 3/4" | 0.3 | 0.3 | 1 3/4" | |
| D13 | 9068 | 1 | 9068 R EX | 108 " | 80 " | 110"X83" | EXT. SLIDER-GLASS PANEL | 2X8X113" (2) | 1 3/4" | 0.3 | 0.3 | 1 3/4" | |

## WINDOW SCHEDULE

| NUMBER | LABEL | QTY | SIZE | WIDTH | HEIGHT | R/O | EGRESS | DESCRIPTION | HEADER | SHGC | TEMPERED | U-FACTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W01 | 2030SH | 2 | 2030SH | 24 " | 36 " | 25"X37" | | SINGLE HUNG | 2X6X28" (2) | 0.3 | | 0.3 |
| W02 | 2038SH | 2 | 2038SH | 24 " | 44 " | 25"X45" | | SINGLE HUNG | 2X6X28" (2) | 0.3 | | 0.3 |
| W03 | 2050SH | 2 | 2050SH | 24 " | 60 " | 25"X61" | | SINGLE HUNG | 2X6X28" (2) | 0.3 | | 0.3 |
| W04 | 28510SH | 4 | 28510SH | 32 " | 70 " | 33"X71" | ● | SINGLE HUNG | 2X6X36" (2) | 0.3 | | 0.3 |
| W05 | 6040SH | 2 | 6040 | 72 " | 48 " | 73"X49" | ● | Vinyl casement with screen white | 2X6X76" (2) | 0.3 | | 0.3 |



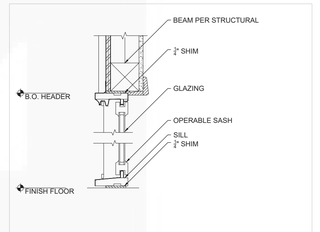





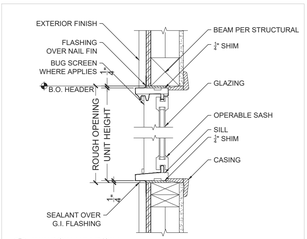


## ENERGY NOTES

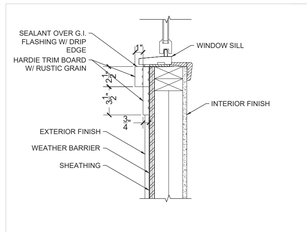
1. ALL OPENABLE WINDOWS AND SLIDING DOORS SHALL LIMIT AIR LEAKAGE AND BE CERTIFIED AND LABELED TO COMPLY WITH ANSI STANDARD AIS 4.2-1972.
2. FIXED WINDOWS SHALL BE SEALED TO LIMIT AIR INFILTRATION.
3. ALL EXTERIOR DOORS AND WINDOWS ARE TO BE WEATHERSTRIPPED.
4. SITE BUILT DOORS MOUNTED ON THE INSIDE OR THE OUTSIDE OF EXTERIOR WALLS SHALL HAVE A MIN. 1"LAP AT JAMPS.
5. OPEN EXTERIOR JOINTS AROUND WINDOW AND DOOR FRAMES BETWEEN WALLS, FOUNDATIONS, ROOFS, PANELS, AND AT PENETRATION OF UTILITIES THRU THE ENVALOPE, SHALL BE SEALED, CAULKED, OR WEATHERSTRIPPED TO LIMIT AIR LEAKAGE.
6. PROVIDE A "CERTIFICATE OF COMPLIANCE" SIGNED BY THE OWNER, G.C., ARCHITECT, OR ENGINEER TO THE BLDG. DEPARTMENT STATING THAT THE WORK HAS BEEN PERFORMED AND MATERIALS INSTALLED ACCORDING TO THE PLANS AND SPECIFICATIONS AFFECTING NON-RESIDENTIAL ENERGY.
7. INSULATION SHALL BE INSTALLED TO MEET FLAME SPREAD AND SMOKE DENSITY REQUIREMENTS OF 5311 AND TITLE 24.



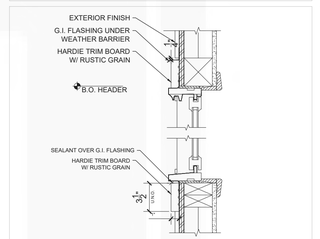

1 SLIDING GLASS DOOR HEAD/SILL
NTS



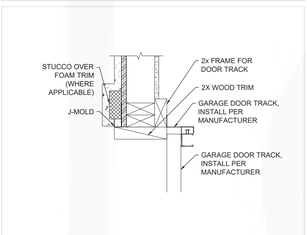

2 WINDOW HEAD/SILL
NTS



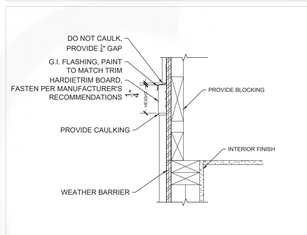

3 HARDIE SILL
NTS



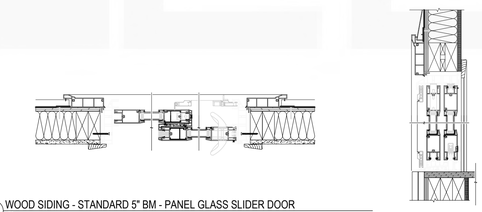

4 HARDIE TRIM
NTS



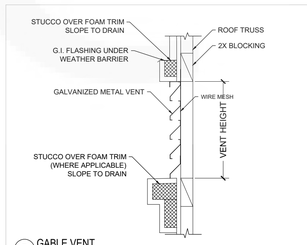

5 GARAGE DOOR JAMB
NTS




6 HARDIETRIM BOARD
NTS



8 WOOD SIDING - STANDARD 5" BM - PANEL GLASS SLIDER DOOR
NTS




7 GABLE VENT
NTS

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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021

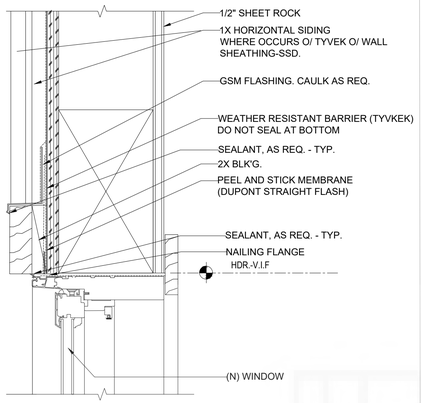
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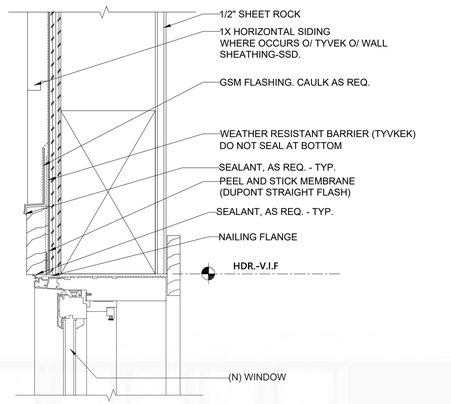
DOOR & WINDOW SCHEDULE

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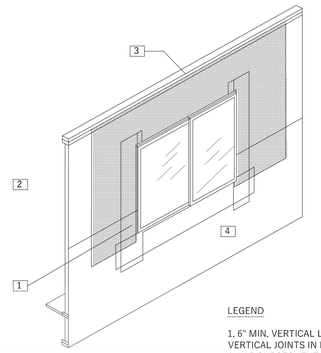
A-16




WINDOW HEAD @ WD. BOARD & BATTEN SIDING 12



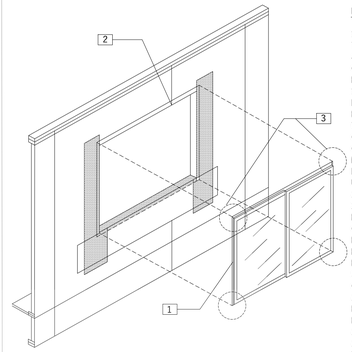

WINDOW HEAD @ HORIZONTAL SIDING 9




LEGEND

1. 6" MIN. VERTICAL LAP FOR ALL HORIZONTAL & VERTICAL JOINTS IN BUILDING PAPER.
2. LAP SUBSEQUENT COURSES OVER "MOISTOP".
3. CARRY PAPER TO UPPER EDGE OF TOP PLATE.
4. HOLD PAPER BACK 1" FROM WINDOW.

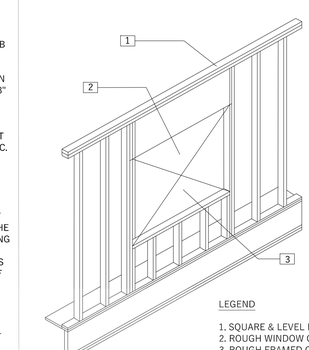
BUILDING PAPER-SECOND COURSE 7




LEGEND

1. SHIM & ADJUST WINDOW TO ACHIEVE SQUARE PLUMB & LEVEL CONDITION. USE CORROSION RESISTANT FASTENERS. FASTEN WITHIN 10" AND NO CLOSER THAN 3" IN EACH DIRECTION FROM EVERY CORNER. SECURE WINDOW AROUND FRAME OPENING WITH EQUIVALENT OF 64 FASTENERS AT 16" O.C. MAX. REFER TO MFG.'S INSTRUCTIONS REGARDING UPPER NAIL FIN ATTACHMENT.
2. TO SEAL THE WINDOW FRAME TO OPENING, APPLY CONTINUES SEALANT TO THE BACKSIDE OF THE MOUNTING FLANGE NEAR THE OUTER EDGE OR APPLY CONTINUES SEALANT TO PERIMETER OF OPENING AT A POINT TO ASSURE CONTACT WITH BACKSIDE OF MOUNTING FLANGE.
AFTER INSTALLATION, SEAL ALL CORNERS OF MECHANICALLY JOINT FRAMES TO SEAL FRAME SEAM JUNCTURE.

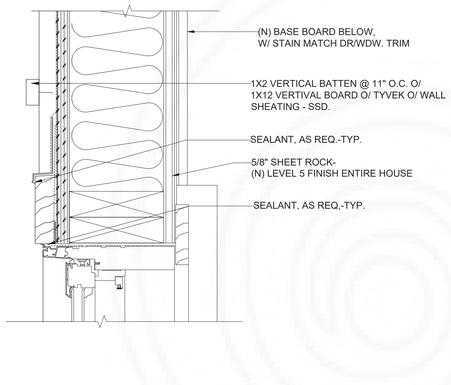
WINDOW INSTALLATION 4



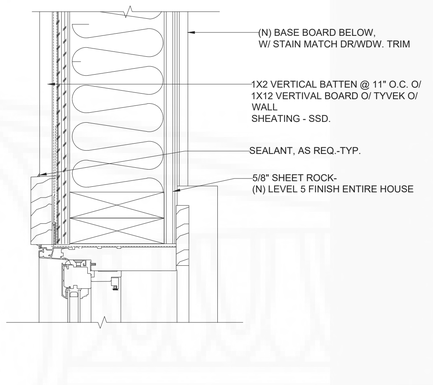

LEGEND

1. SQUARE & LEVEL FRAMING.
2. ROUGH WINDOW OPENING.
3. ROUGH FRAMED OPENING SUFFICIENTLY IN WIDTH & HEIGHT THAN THE ACTUAL FRAME DIMENSIONS OF THE WINDOW. TO ASSURE ADEQUATE CLEARANCE CONSULT THE WINDOW MANUFACTURED'S LITERATURE FOR THE RECOMMENDED ROUGH OPENING DIMENSIONS.

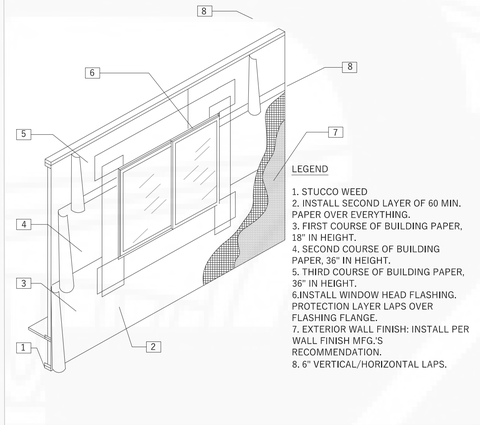
ROUGH WINDOW OPENING 1




WINDOW JAMB @ WD. BOARD & BATTEN SIDING 13



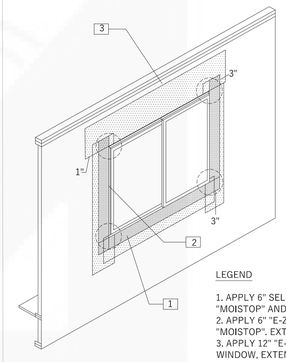

WINDOW JAMB@HORIZONTAL SIDING 10




LEGEND

1. STUCCO WEED
2. INSTALL SECOND LAYER OF 60 MIN. PAPER OVER EVERYTHING.
3. FIRST COURSE OF BUILDING PAPER, 18" IN HEIGHT.
4. SECOND COURSE OF BUILDING PAPER, 36" IN HEIGHT.
5. THIRD COURSE OF BUILDING PAPER, 36" IN HEIGHT.
6.INSTALL WINDOW HEAD FLASHING. PROTECTION LAYER LAPS OVER FLASHING FLANGE.
7. EXTERIOR WALL FINISH: INSTALL PER WALL FINISH MFG.'S RECOMMENDATION.
8. 6" VERTICAL/HORIZONTAL LAPS.

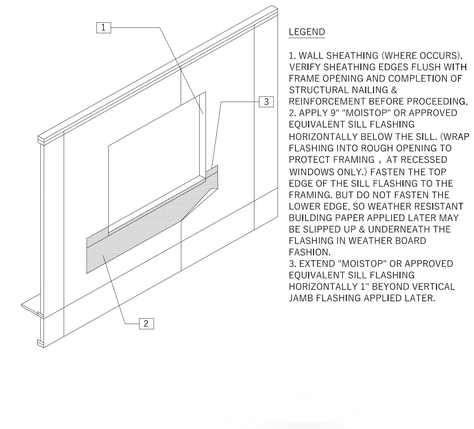
TRIM-FLASHING-PROTECTION COURSE 8




LEGEND

1. APPLY 6" SELF-ADHERING "E-Z SEAL" MEMBRANE OVER "MOISTOP" AND 3" BEYOND WINDOW FLANGE.
2. APPLY 6" "E-Z SEAL" MEMBRANE AT JAMBS OVER "MOISTOP". EXTEND 3" BEYOND WINDOW FLANGE.
3. APPLY 12" "E-Z SEAL" MEMBRANE AT HEADER OF WINDOW, EXTEND 1" BEYOND "MOISTOP".
4. APPLY FIRM PRESSURE TO SELF-ADHERING MEMBRANE TO ASSURE ADHERENCE TO WINDOW FINS.
5. CECH ALL CORNERS FOR PROPER SEAL OF SELF-ADHERING MEMBRANE.

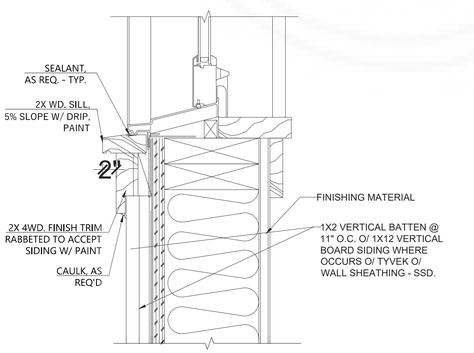
SELF-ADHESIVE MEMBRANE 5



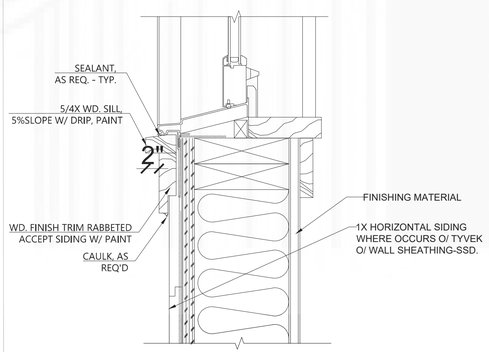

LEGEND

1. WALL SHEATHING (WHERE OCCURS). VERIFY SHEATHING EDGES FLUSH WITH FRAME OPENING AND COMPLETION OF STRUCTURAL NAILING & REINFORCEMENT BEFORE PROCEEDING.
2. APPLY 9" "MOISTOP" OR APPROVED EQUIVALENT SILL FLASHING HORIZONTALLY BELOW THE SILL. (WRAP FLASHING INTO ROUGH OPENING TO PROTECT FRAMING , AT RECESSED WINDOWS ONLY.) FASTEN THE TOP EDGE OF THE SILL FLASHING TO THE FRAMING. BUT DO NOT FASTEN THE LOWER EDGE, SO WEATHER RESISTANT BUILDING PAPER APPLIED LATER MAY BE SLIPPED UP & UNDERNEATH THE FLASHING IN WEATHER BOARD FASHION.
3. EXTEND "MOISTOP" OR APPROVED EQUIVALENT SILL FLASHING HORIZONTALLY 1" BEYOND VERTICAL JAMB FLASHING APPLIED LATER.

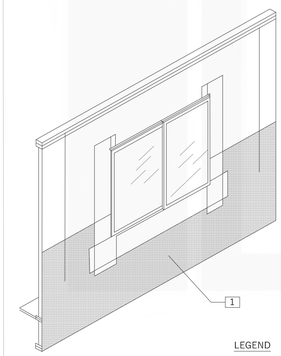
SILL FLASHING 2




WINDOW SILL @ WD. BOARD & BATTEN SIDING 14



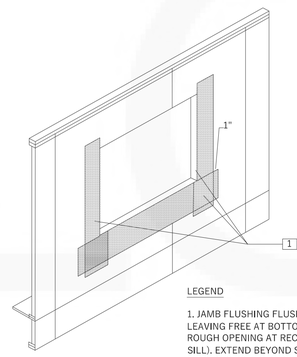

WINDOW SILL @ HORIZONTALN SIDING 11




LEGEND

1. INSERT FIRST COURSE 60 MIN. PAPER UNDER "MOISTOP" AND STAPLE "MOISTOP".

BUILDING PAPER- FIRST COURSE 6




LEGEND

1. JAMB FLUSHING FLUSH AT BOTH SIDES OF OPENING LEAVING FREE AT BOTTOM. (WRAP JAMB FLASHING INTO ROUGH OPENING AT RECESSED WINDOWS ONLY. SIMILAR AT SILL). EXTEND BEYOND SILL FLASHING ABOVE WHERE HEAD FLASHING WILL INTERSECT. LAP JAMB FLASHING OVER TOP SILL FLASHING. LEAVE PAPER FLASHING UNATTACHED FROM SILL DOWN.

JAMB FLASHING 3

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Project Name and Address:

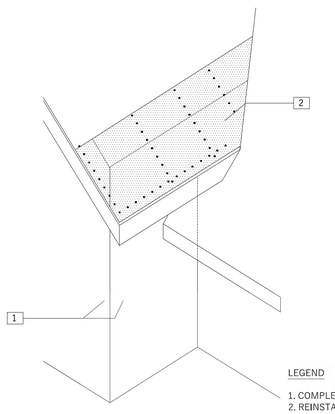
Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021
Scale:

DRAWING TITLE:
BUILDING PAPER/HOUSE WRAP DETAILS AROUND WINDOWS

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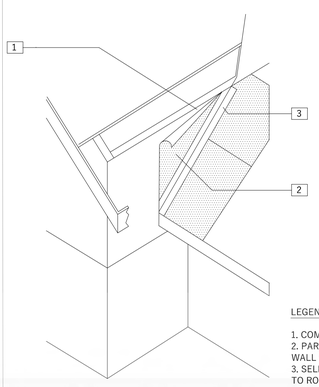
A-17




LEGEND

1. COMPLETE INSTALL OF STUCCO.
2. REINSTALL PLY AFTER STUCCO IS INSTALLED.

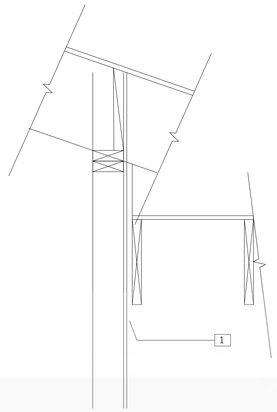
## FINAL ROOF SHEATHING 7




LEGEND

1. COMPLETE PAPERING OF WALL.
2. PARTIAL INSTALL 30# ROOF FELT 18" UP WALL AND 24" ON ROOF TOP.
3. SELF-ADHERING MEMBRANE 3" ON WALL TO ROOF.

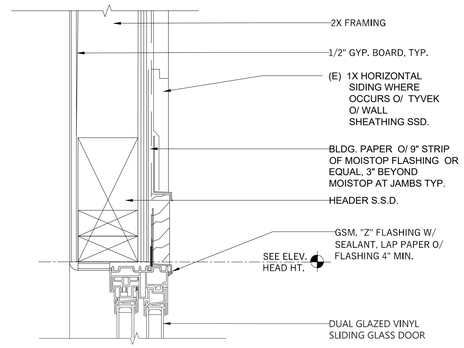
## BUILDING PAPER TO WALL 4



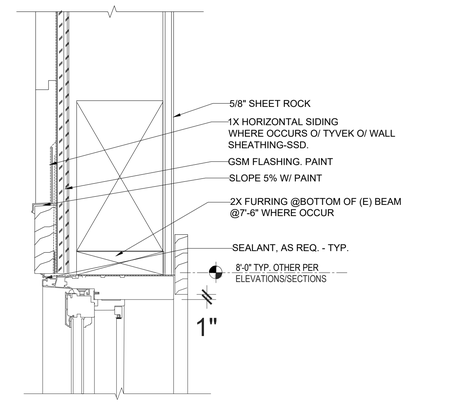

LEGEND

1. 1/2" CLEARANCE BETWEEN WALL AND ROOF SHEATHING.

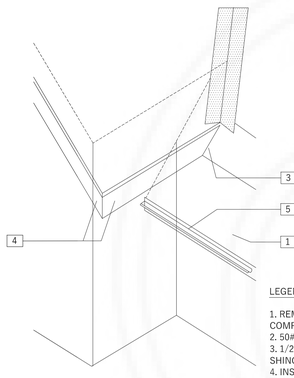
## ROOF TO WALL 1




## SLIDING GLASS DOOR HEAD/JAMB 18



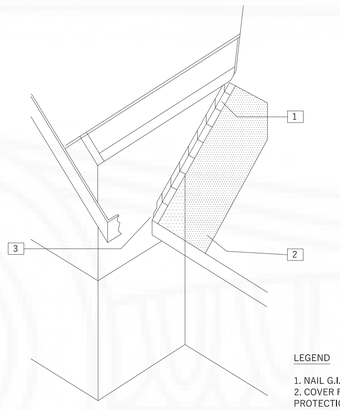

## TYP. DOOR HEAD @ HORIZONTAL WD. SIDING 15




LEGEND

1. REMOVE PROTECTION BOARD & COMPLETE ROOFING FELT.
2. 50# FELT OVER WOVEN 30# VALLEY.
3. 1/2" CLEARANCE BETWEEN ROOF SHINGLES AND FASCIA.
4. INSTALL FINISH FASCIAS.
5. INSTALL GUTTERS.

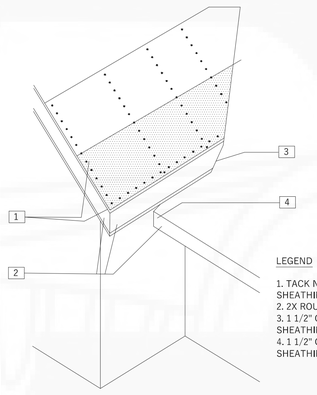
## FINISH APPLICATION 8




LEGEND

1. NAIL G.I. FLASHING TO WALL.
2. COVER ROOF FELT WITH PROTECTION BOARD.
3. DIVERTER STEP FLASHING.

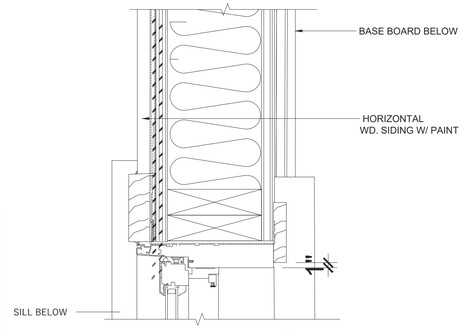
## STEP FLASHING 5



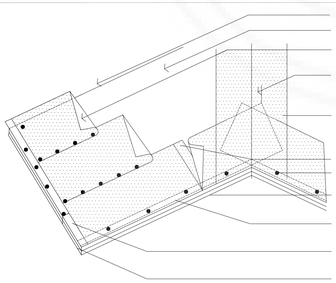

LEGEND

1. TACK NAIL LOWER EPIC OF ROOF SHEATHING.
2. 2X ROUGH FASCIA.
3. 1 1/2" CLEARANCE BETWEEN FASCIA AND SHEATHING.
4. 1 1/2" CLEARANCE BETWEEN WALL SHEATHING & ROOF RAFTER.

## ROUGH FRAMING 2



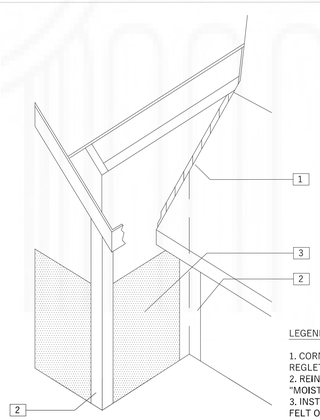

## TYP. DOOR JAMB @ HORIZONTAL WD. SIDING 16




APPLICATION NOTES FOR LOW SLOPE, 2:12 TO LESS THAN 4:12 :

1. START W/ 1-19" WIDE SHEET OF FELT ALONG EAVE W/ ⅜" OVERHANG.
2. TROWEL A CONTINUOUS LAYER OF ROOFING CEM. (@ A RATE OF 2 GAL. PER 100 SQ. FT ) ON TO THE FELT.
3. PRESS 1-36" WIDE SHEET OF FELT FIRMLY ONTO THE CEM., & NAIL DOWN W/ GALV. ROOFING NAILS @ 12" O.C. ALONG A LINE 18" ABOUT THE BTM. EDGE OF THE FELT.
4. APPLY ROOFING CEM. TO THE UPPER 19" OF THE EXPOSED FELT.
5. COVER THE CEMENTED PORTION W/ THE NEXT SHEET OF FELT & NAILS.
6. REPEAT PROCESS UNTIL 24" INSIDE THE INTERIOR WALL LINE.
7. COVER THE REMAINING ROOF W/ DBL. LAYERS OF FELT, W/O CEM., UP TO THE RIDGE.

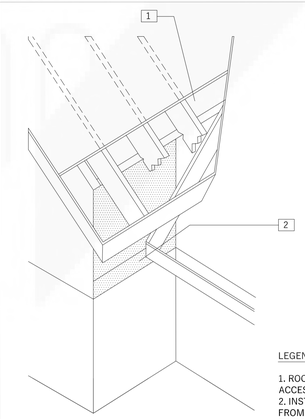
## FELT UNDERLAYMENT 9




LEGEND

1. CORNER FLASH FLASHING WITH G.I. REGLET.
2. REINFORCE CORNERS WITH 12" "MOISTOP".
3. INSTALL SECOND COURSE OF 60 MINUTE FELT OVER REGLET AND STUCCO WEEP SCREED.

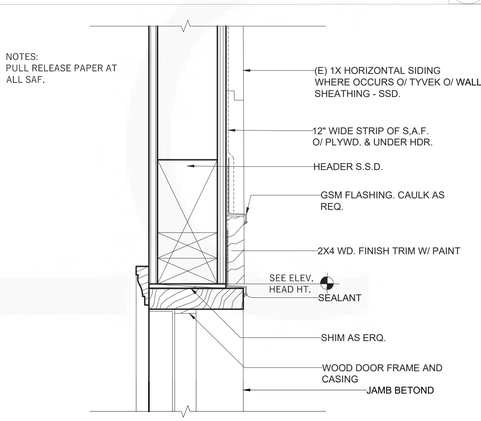
## CORNER FLASHING 6




LEGEND

1. ROOF PLY TEMPORARILY MOVED FOR ACCESS.
2. INSTALL CONTINUOUS PIECE OF FELT FROM CORNER TO CORNER EXTENDING UP TO TOP PLATE.

## FELT APPLICATION 3




## DOOR HEAD/JAMB 17

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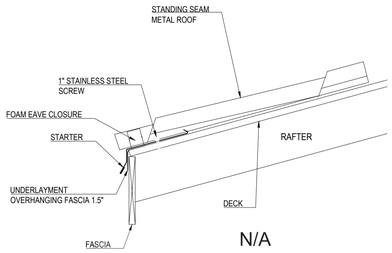
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BUILDING PAPER/HOUSE WRAP DETAILS AROUND WALL TO ROOF TRANSITION

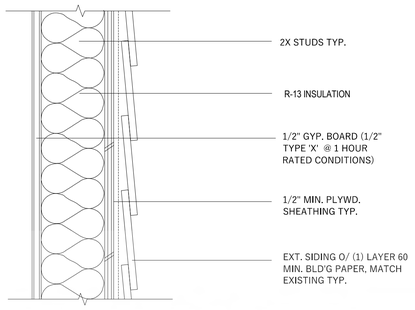
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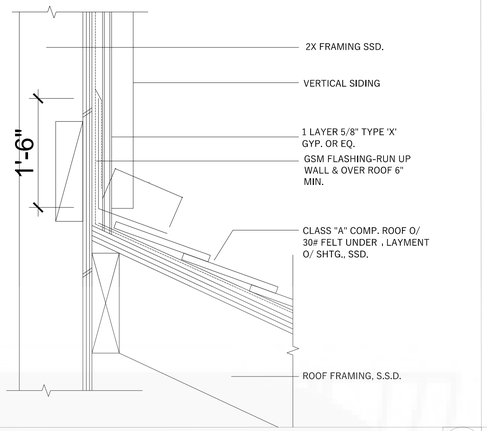



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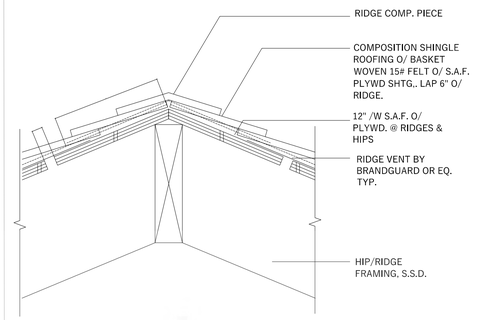
22 RIDGE CAP DETAIL



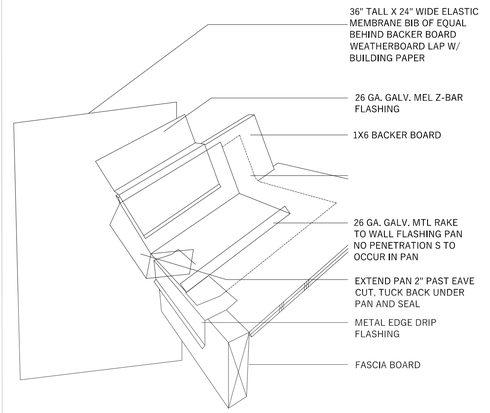

19 HORIZONTAL LAP SIDING



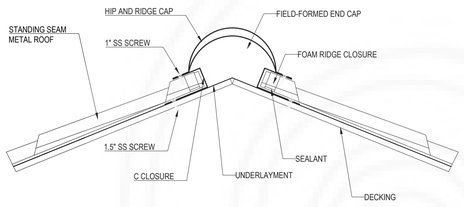

16 ROOF TO WALL PERP.




13 RIDGE



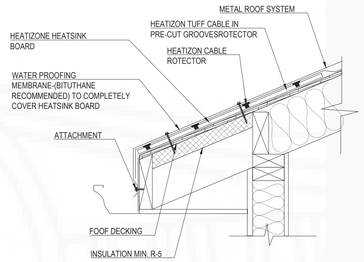

10 RAKE TO WALL DIVERTER




N/A

23 RIDGE CAP DETAIL

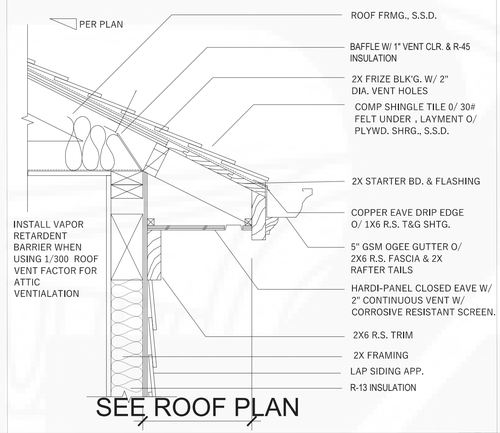
WARNING:
DO NOT CUT OR DAMAGE HEATIZON "TUFF CABLE" OR IT'S INSULATOR IN ANY WAY.




N/A

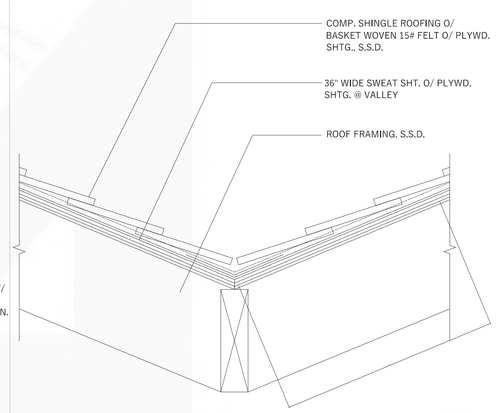
NOTE:
ALL ATTACHMENTS FOR ROOFING SYSTEM OR OTHER COMPONENTS SHOULD BE MADE PRIOR TO INSTALLATION OF WATER-PROOFING COVERING.

20 EAVE DETAIL-TUFF CABLE IN HEATSINK UNDER METAL ROOF

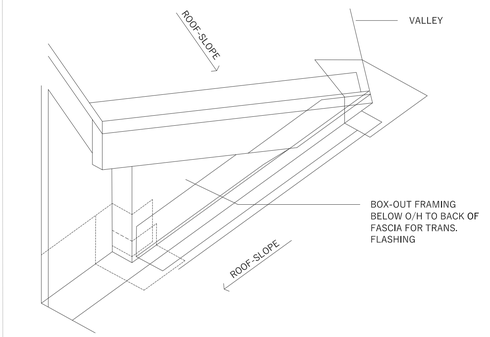



SEE ROOF PLAN

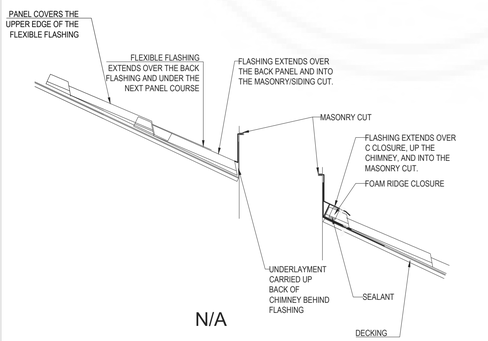
17 EAVE




14 VALLEY

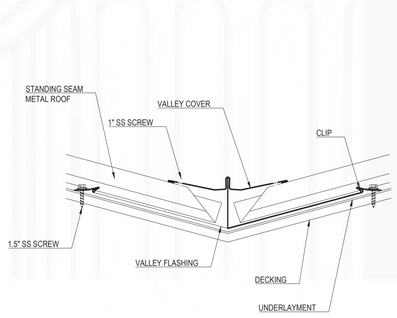



11 RAKE TO EAVE TRANSITION



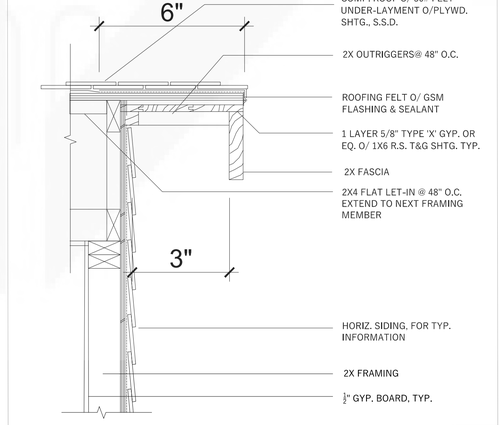

N/A

24 METAL ROOF CHIMNEY FLASHING DETAILS

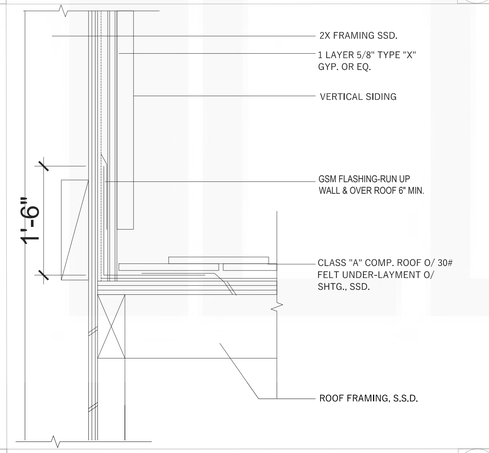



N/A

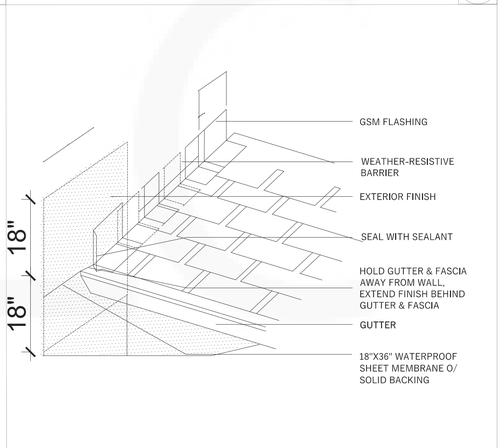
21 METAL ROOF VALLEY DETAIL




18 RAKE




15 ROOF TO WALL PARALLEL




12 ISOMETRIC EAVE PERP. TO WALL @ COMP.

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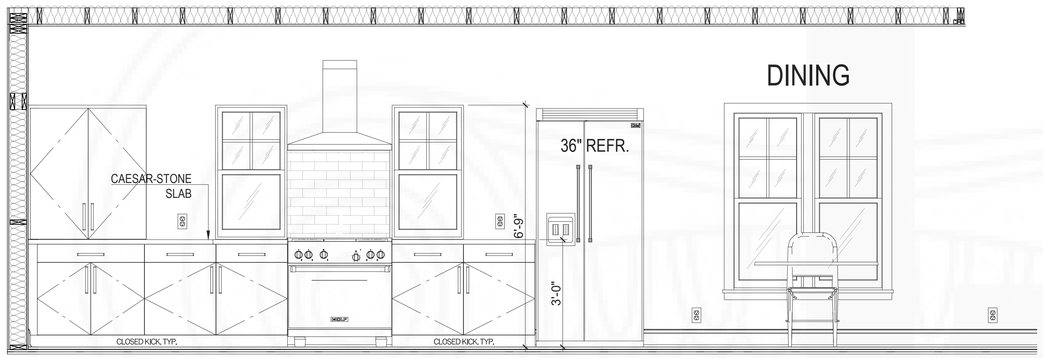
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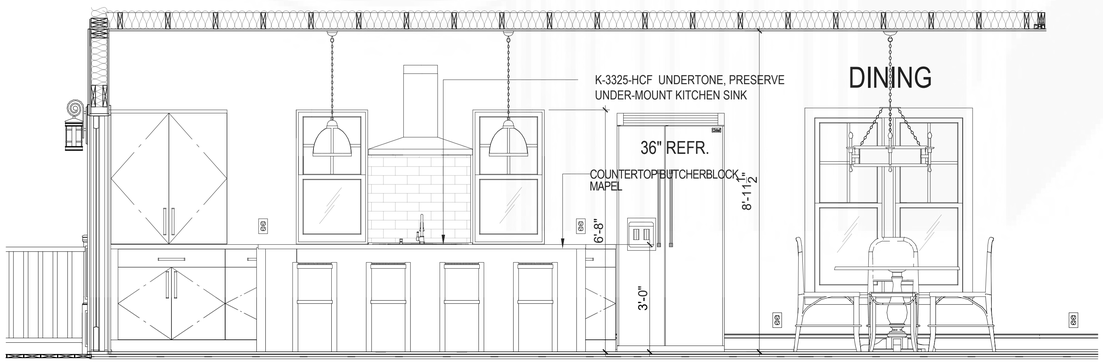
5 PROPOSED KITCHEN INT. PERSPECTIVE VIEW

NTS



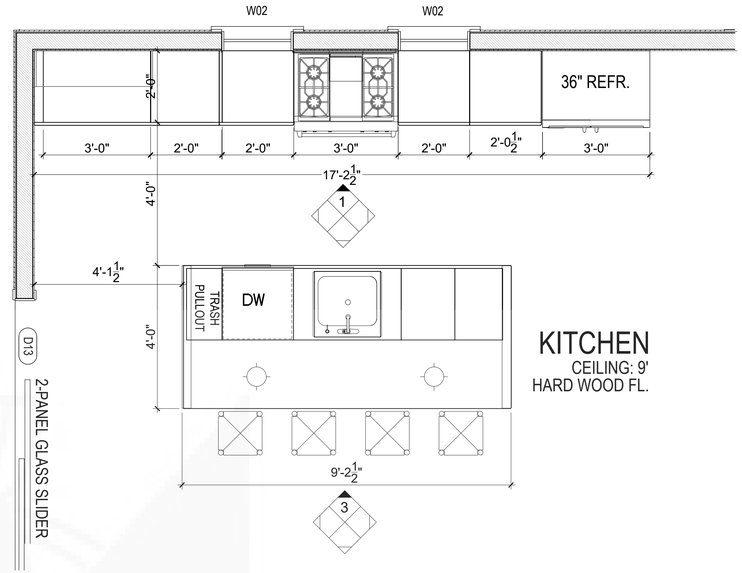

1 PROPOSED KITCHEN INT. ELEVATION

Scale: 1/2" = 1' - 00"




3 PROPOSED KITCHEN INT. ELEVATION

Scale: 1/2" = 1' - 00"




4 PROPOSED ENLARGED KITCHEN FLOOR PLAN

Scale: 1/2" = 1' - 00"

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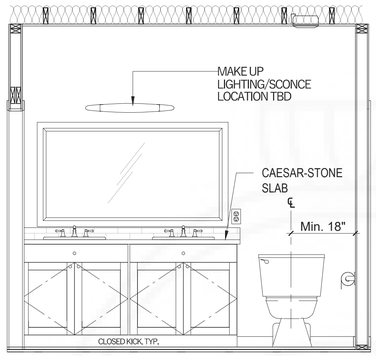
Scale: 1/2" = 1' - 00"

DRAWING TITLE:

PROPOSED KITCHEN INT. ELEVATION

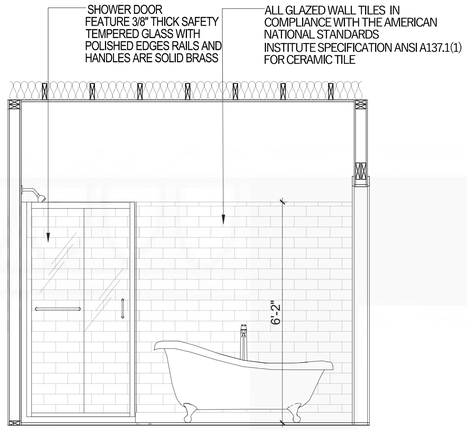
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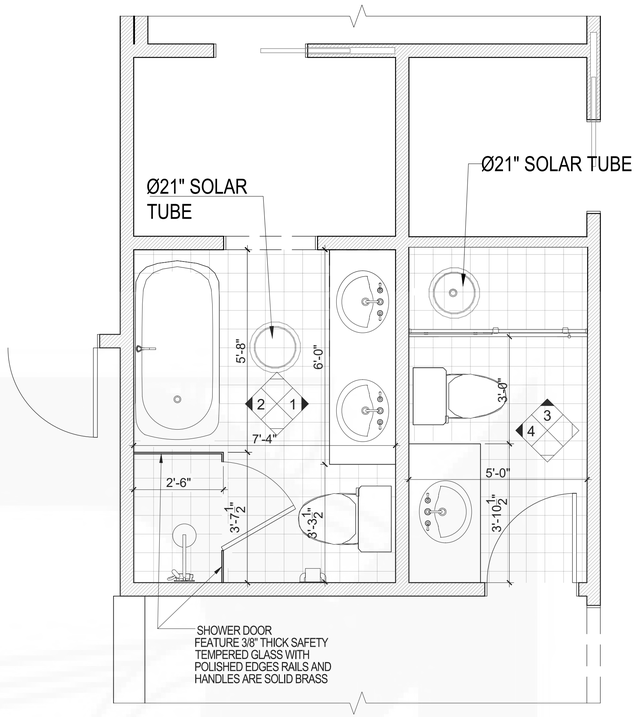

1 M. BATHROOM INT. ELEVATION

SCALE: 1/2" = 1'-00"




2 M. BATHROOM INT. ELEVATION

SCALE: 1/2" = 1'-00"



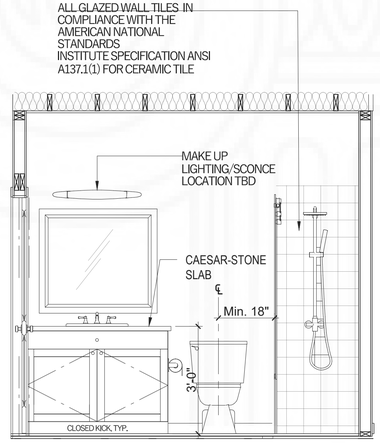

5 ENLARGED BATHROOMS FLOOR PLAN

SCALE: 1/2" = 1'-00"



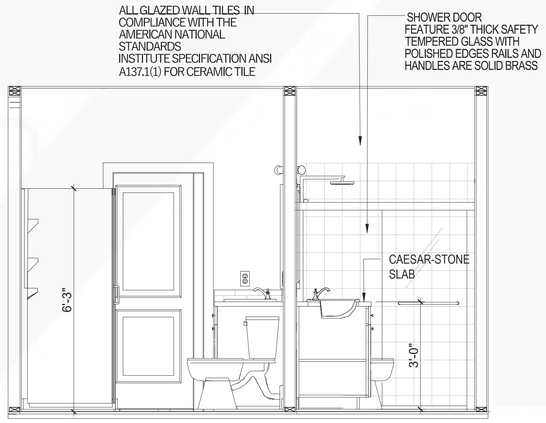
6 BATHROOM ISO. VIEW

NTS



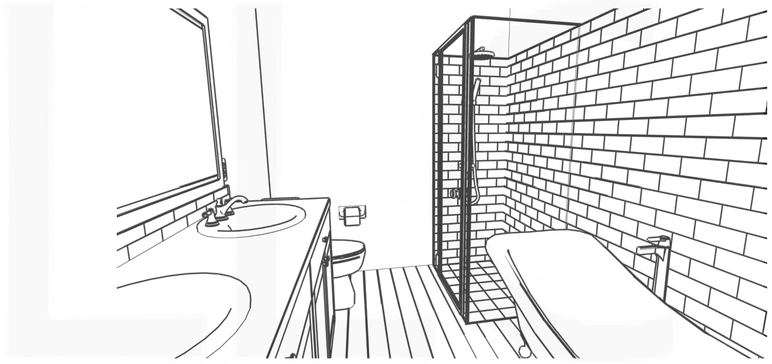

4 M. BATHROOM INT. ELEVATION

SCALE: 1/2" = 1'-00"




3 M. BATHROOM INT. ELEVATION

SCALE: 1/2" = 1'-00"



6 M. BATHROOM ISO. VIEW

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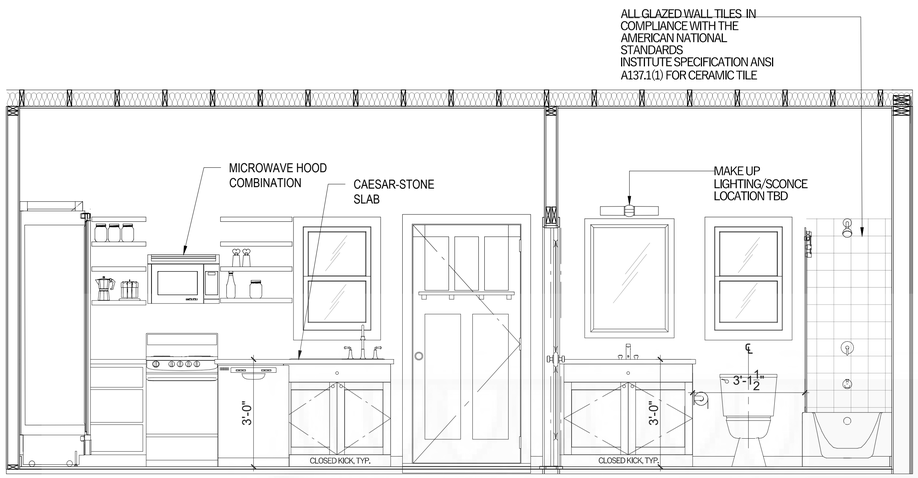
Date: Nov. 10, 2021

Scale: 1/2" = 1' - 00"

DRAWING TITLE:
PROPOSED BATHROOMS INT. ELEVATION

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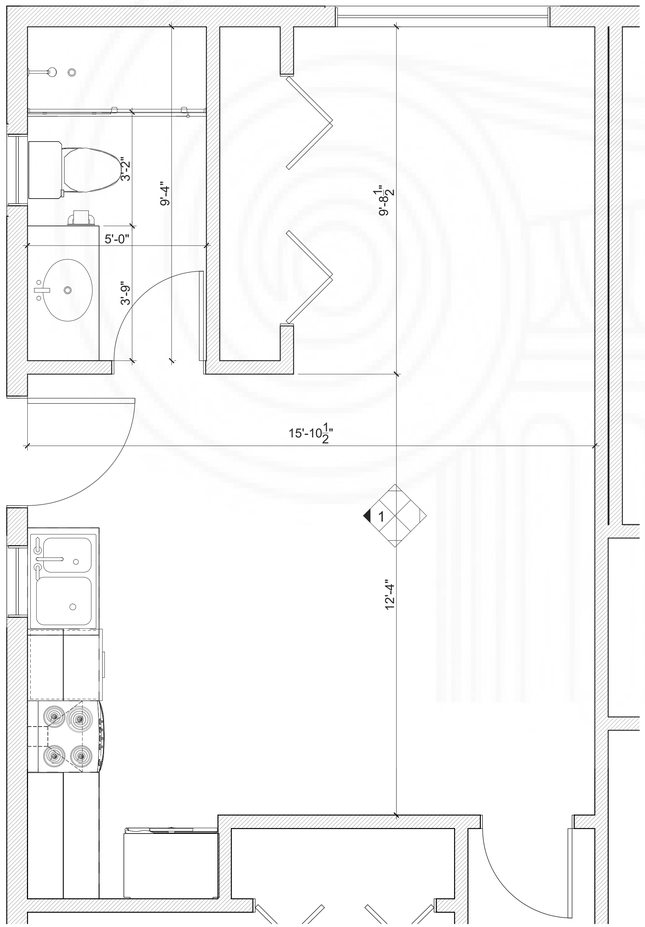

1 ADU KITCHEN AND BATH INTE. ELEVATION

SCALE: 1/2" = 1'-00"



2 ADU KITCHENETTE INTE. ISO. VIEW

SCALE: 1/2" = 1'-00"




3 ADU KITCHENETTE AND BATH ENLARGED FLOOR PLAN

SCALE: 1/2" = 1'-00"

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DRAWING TITLE:
ADU INTERIOR ELEVATION

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Date: Nov. 10, 2021

Scale:

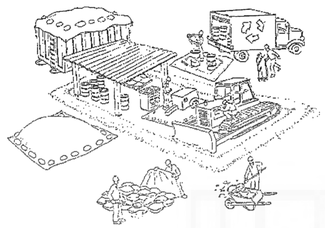
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RENDERS

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A-23

# Clean Bay Blue Print



## Make sure your crews and subs do the job right!

Runoff from streets and other paved areas is a major source of pollution and damage to creeks and the San Francisco Bay. Construction activities can directly affect the health of creeks and the Bay unless contractors and crews plan ahead to keep dirt, debris, and other construction waste away from storm drains and local creeks. Following these guidelines and the project specifications will ensure your compliance with **City of Fremont** requirements.

## Materials storage & spill cleanup

### Non-hazardous materials management

- Sand, dirt, and similar materials must be stored at least 10 feet (3 meters) from catch basins. All construction material must be covered with a tarp and contained with a perimeter control during wet weather or when rain is forecasted or when not actively being used within 14 days.
- Use (but don't overuse) reclaimed water for dust control as needed.
- Sweep or vacuum streets and other paved areas daily. Do not wash down streets or work areas with water!
- Recycle all asphalt, concrete, and aggregate base material from demolition activities. Comply with **City of Fremont** Ordinances for recycling construction materials, wood, gyp board, pipe, etc.
- Check dumpsters regularly for leaks and to make sure they are not overfilled. Repair or replace leaking dumpsters promptly.
- Cover all dumpsters with a tarp at the end of every work day or during wet weather.

### Hazardous materials management

- Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state, and federal regulations.
- Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecasted.
- Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecasted within 24 hours.
- Be sure to arrange for appropriate disposal of all hazardous wastes.

### Spill prevention and control

- Keep a stockpile of spill cleanup materials (rags, absorbents, etc. ) available at the construction site at all times.
- When spills or leaks occur, contain them immediately and be particularly careful to prevent leaks and spills from reaching the gutter, street, or storm drain. Never wash spilled material into a gutter, street, storm drain, or creek!
- Dispose of all containment and cleanup materials properly.
- Report any hazardous materials spills immediately! Dial 911

### Construction Entrances and Perimeter

- Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking.

## Vehicle and equipment maintenance & cleaning



- Inspect vehicles and equipment for leaks frequently. Use drip pans to catch leaks until repairs are made; repair leaks promptly.
- Fuel and maintain vehicles on site only in a bermed area or over a drip pan that is big enough to prevent runoff.
- If you must clean vehicles or equipment on site, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or creeks.
- Do not clean vehicles or equipment on-site using soaps, solvents, degreasers, steam cleaning equipment, etc.

## Earthwork & contaminated soils



- Keep excavated soil on the site where it will not collect in the street.
- Transfer to dump trucks should take place on the site, not in the street.
- Use fiber rolls, silt fences, or other control measures to minimize the flow of silt off the site.
- Earth moving activities are only allowed during dry weather by permit and as approved by the City Inspector in the Field.
- Mature vegetation is the best form of erosion control. Minimize disturbance to existing vegetation whenever possible.
- If you disturb a slope during construction, prevent erosion by securing the soil with erosion control fabric, or seed with fast-growing grasses as soon as possible. Place fiber rolls down-slope until soil is secure.
- If you suspect contamination (from site history, discoloration, odor, texture, abandoned underground tanks or pipes, or buried debris), call the Engineer for help in determining what should be done, and manage disposal of cntaminated soil according to their instructions.

## Dewatering operations

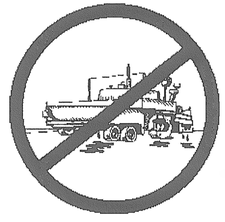


- Effectively manage all run-on, all runoff within the site, and all runoff that discharges from the site. Run-on from off site shall be directed away from all disturbed areas or shall collectively be in compliance.
- Reuse water for dust control, irrigation, or another on-site purpose to the greatest extent possible.
- Be sure to notify and obtain approval from the Engineer before discharging water to a street, gutter, or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- In areas of known contamination, testing is required prior to reuse or discharge of groundwater. Consult with the Engineer to determine what testing is required and how to interpret results. Contaminated groundwater must be treated or hauled off-site for proper disposal.

## Saw cutting

- Always completely cover or barricade storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or sand/gravel bags to keep slurry out of the storm drain system.
- Shovel, absorb, or vacuum saw-cut slurry and pick up all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- If saw cut slurry enters a catch basin, clean it up immediately.

## Paving/asphalt work



- Always cover storm drain inlets and manholes when paving or applying seal coat, tack coat, slurry seal, or fog seal.
- Protect gutters, ditches, and drainage courses with sand/gravel bags, or earthen berms.
- Do not sweep or wash down excess sand from sand sealing into gutters, storm drains, or creeks. Collect sand and return it to the stockpile, or dispose of it as trash.
- Do not use water to wash down fresh asphalt concrete pavement.

## Concrete, grout, and mortar storage & waste disposal

- Store concrete, grout, and mortar under cover, on pallets, and away from drainage areas. These materials must never reach a storm drain.
- Wash out concrete equipment/trucks off-site or into contained washout areas that will not allow discharge of wash water onto the underlying soil or onto the surrounding areas.



- Collect the wash water from washing exposed aggregate concrete and remove it for appropriate disposal off site.

## Painting



- Never rinse paint brushes or materials in a gutter or street!
- Paint out excess water-based paint before rinsing brushes, rollers, or containers in a sink.
- Paint out excess oil-based paint before cleaning brushes in thinner.
- Filter paint thinners and solvents for reuse whenever possible. Dispose of oil-based paint sludge and unusable thinner as hazardous waste.

## Landscape Materials

- Contain, cover, and store on pallets all stockpiled landscape materials (mulch, compost, fertilizers, etc.) during wet weather or when rain is forecasted or when not actively being used within 14 days.
- Discontinue the application of any erodible landscape material within 2 days of forecasted rain and during wet weather.

**Storm drain polluters may be liable for fines of $10,000 or more per day!**

For references and more detailed information:
www.cleanwaterprogram.org
www.cabmphandbooks.com

REVISIONS

| NO. | DESCRIPTION | BY | DATE | APP'VD |
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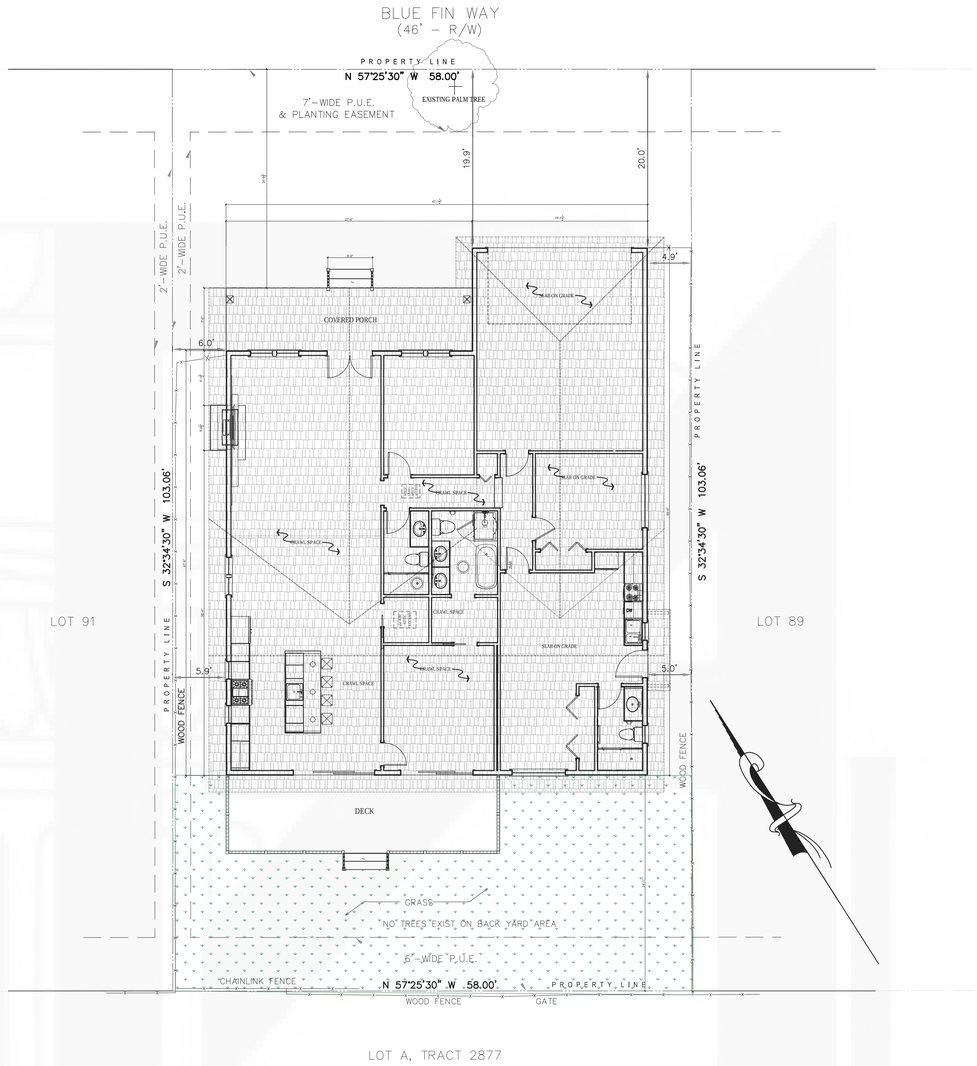
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CLEAN BAY BLUE PRINT

WORK ORDER NO.

A-24

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1 PROPOSED LANDSCAPE PLAN

SCALE: 1/8" = 1'-00"

PixelArch ltd.
US Office:
24001 Calle De La Magdalena, unit 3896
Laguna Hills, CA 92653
Tel: (415) 316 7162 info@pixelarchltd.com
www.pixelarchltd.com

Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: Nov. 10, 2021

Scale: 1/8" = 1' - 00"

DRAWING TITLE:
PROPOSED LANDSCAPE PLAN

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A-25

# GENERAL NOTES

# SHEAR WALL SCHEDULE

DESIGN DATA:
APPLICABLE DESIGN LOADS: PER ASCI/SEI 7-16
FLOOR LIVE LOAD: 40 PSF — FLOOR DEAD LOAD: 15PSF
ROOF LIVE LOAD: 20 PSF — ROOF DEAD LOAD: 15PSF
BASIC WIND SPEED: 95 MPH — EXPOSURE: D
STRUCTURAL CATEGORY: II — SEISMIC DESIGN CATEGORY = D
ALL PRESSURES SHOWN ARE BASED ON ASD DESIGN.

## SHEAR WALL SCHEDULE 2019 C.B.C.

| S.W. TYPE | SHEAR PANEL DESCRIPTION | ALLOWABLE SHEAR (PLF) | SILL BOLT'G @ FOUNDATION | TOP PL. TO BLK'G. | SILL NAILING UPPER STORIES |
|---|---|---|---|---|---|
| 1 | 7/8" STUCCO OVER PAPER BACKED LATH W/ 16 GA STAPLES AT 6" O.C. AT TOP & BOTTOM PLATES, EDGE OF SHEAR WALL AND ON FIELD (CBC TABLE 2306.4.5) SEE NOTE 3 BELOW. | 180<br>*180 | 5/8" @ 48" O.C.<br>5/8" @ 24" O.C. | A35 @ 16"<br>A35 @ 16" | 16d @ 8" O.C.<br>16d @ 4" O.C. |
| 2 | 15/32" APA RATED PLYWOOD SHT'G. STRUCT I WITH 8d COMMON NAILS @ 6" O.C. AT EDGES & 12" O.C. FIELD (TABLE 2306.4.1 CBC) SEE NOTES 1,2,8,9, AND 10 BELOW. | 280<br>*560 | 5/8" @ 32" O.C.<br>5/8" @ 16" O.C. | A35 @ 16"<br>A35 @ 8" | 16d @ 6" O.C.<br>16d @ 3" O.C. |
| 3 | 15/32" APA RATED PLYWOOD SHT'G. STRUCT I WITH 8d COMMON NAILES @ 4" O.C. AT EDGES & 12" O.C. FIELD (TABLE 2306.4.1. CBC) SEE NOTES 1,2,4,5,8,9, AND 10 BELOW. | 430<br>*860 | 5/8" @ 24" O.C.<br>5/8" @ 14" O.C. | A35 @ 8"<br>LTP4 @ 6" | 16d @ 4" O.C.<br>16d @ 2" O.C. |
| 4 | 15/32" APA RATED PLYWOOD SHT'G STRUCT I WITH 8d COMMON NAILS @ 3" O.C. AT EDGES & 12" O.C. FIELD (TABLE 2306.4.1. CBC) SEE NOTES 1,2,4,5,8,9, AND 10 BELOW. | 550<br>*1100 | 5/8" @ 20" O.C.<br>3/4" @ 16" O.C. | A35 @ 8"<br>LTP4 @ 6" | 16d @ 3" O.C.<br>1/4"Ø X 3-1/2" LAG SC. @ 2" O.C. |
| 5 | 15/32" APA RATED PLYWOOD SHT'G. STRUCT I WITH 8d COMMON NAILS @ 2" O.C. AT EDGES & 12" O.C. FIELD (TABLE 2306.4.1. CBC) SEE NOTES 1,2,4,5,8,9, AND 10 BELOW. | 730<br>*1460 | 5/8" @ 16" O.C.<br>3/4" @ 16" O.C. | A35 @ 8"<br>LTP4 @ 6" | 16d @ 2-1/2" O.C.<br>1/4" Ø X 3-1/2" LAG SC. @ 2" O.C. |
| 6 | 15/32" APA RATED STRUCT. I SHT'G. WITH 10d COMMON NAILS @ 2" O.C. AT EDGES & 12" O.C. FIELD OVER 3 X STUDS (TABLE 2306.4.1 CBC) SEE NOTES 1,4,5,8,9, AND 10 BELOW. | 870<br>*1740 | 3/4" @ 16" O.C.<br>3/4" @ 8" O.C. | A35 @ 6"<br>LTP4 @ 4-1/2" | #12 X 3-1/2" WD. SC. @ 2" O.C.<br>1/4" Ø X 3-1/2" LAG SC. @ 1-1/2" O.C. |

NOTES:

1. ALL EDGES OF PLYWOOD SHEAR WALLS MUST BE BLOCKED WITH 2X SOLID BLOCKING.
2. DESIGNATES SILL BOLTING OR NAILING WHERE SHEAR WALL PANELS ARE TO BE APPLIED TO BOTH SIDES OF WALL.
3. PAPER BACKED SELF-FURRING EXPANDED METAL OR WOVEN WIRE LATH AND PORTLAND CEMENT PLASTER.
4. FRAMING AT ADJOINING PANEL EDGES SHALL BE 3-INCH NOMINAL OR WIDER AND NAILS SHALL BE STAGGERED. (USE 3X SILL PLATE @ FOUND., FOR SHEAR LOADS LESS THAN 350 PLF 2X SILL PLATE MAY BE USED.)
5. WHERE PANELS ARE APPLIED ON BOTH FACES OF A WALL AND NAILS SPACING IS LESS THAN 6" O.C. ON EITHER SIDE. PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS OR FRAMING SHALL BE 3" NOMINAL OR THICKER & NAILS ON EACH SIDE SHALL BE STAGGERED. (USE 3 X SILL PLATE @ FOUND.)
6. ALL CONTINUOUS EXTERIOR AND INTERIOR SHEAR/BEARING WALL FOOTINGS TO HAVE 5/8"Ø A.B.'S @ 48" O.C. WITH 3" X 3" X 1/4" PLATE WASHERS U.N.O. MINIMUM OF TWO BOLTS PER EACH PIECE OF SILL PLATE AT 4" TO 12" CLEARANCE TO THE END AND 7" MINIMUM EMBEDMENT.(FOR TWO POUR SYSTEM,BOLTS SHALL BE EMBEDDED 4 INCH MIN. INTO FIRST POUR.)

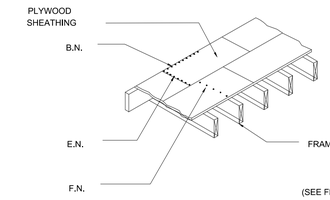
(SEE NOTE 12 FOR A.B. LENGTH.)

7. ALL INTERIOR NON-BEARING FTGS TO HAVE 3/16" Ø SHOT PINS AT 32" O.C., I.E., HILTI SHOT PINS (ICC ESR-1663).
8. USE APA RATED PLYWOOD SHEATHING. OR O.S.B. PANEL. ALL PLYWOOD SHALL BE DOUGLAS FIR. 4-PLY MIN. OTHER SPECIES MAY REQUIRE CHANGES.
9. USE 3 X 3 X 1/4 PLATE WASHERS WITH 5/8"Ø A.B. AT ALL SHEAR WALLS. USE 3 X 3 X 5/16 PLATE WASHERS WITH 1/4"Ø A.B. AT ALL SHEAR WALLS.
10. AT EXISTING FOOTINGS, USE THREADED RODS W/ SIMPSON "SET-XP" EPOXY 7" MIN. EMB. W/MIN. EDGE DIST. OF 1-7/8" (ICC ESR-2508) (SPECIAL INSPECTION REQ'D.)
11. ALL ANCHOR BOLTS SHALL CONFORM TO ASTM A-307 U.N.O.

12. ANCHOR BOLT SPEC.:

| | BOLT LENGTH | |
|---|---|---|
| | SINGLE POUR | DOUBLE POUR |
| 2X SILL | 12" | 16" |
| 3X SILL | 14" | 18" |

# PLYWOOD DIAPHRAGM




NAILING: (EXCEPT WHERE NOTED OTHERWISE)

| | ROOF NAIL'G | FLOOR NAIL'G |
|---|---|---|
| B.N. = BOUNDARY NAILING | 8d @ 6" O.C. | 10d @ 6" O.C. |
| E.N. = EDGE NAILING | 8d @ 6" O.C. | 10d @ 6" O.C. |
| F.N. = FIELD NAILING | 8d @ 12" O.C. | 10d @ 10" O.C. |

NOTES:

1. NAILS SHALL BE GALV. COMMON(HOT-DIPPED OR TUMBLED), PLACED NOT LESS THAN 3/8" FROM PANEL EDGES AND SHALL BE FIRMLY DRIVEN.
2. NO UNBLOCKED PIECE LESS THAN 12" SHALL BE USED.
3. WOOD STRUCTURAL PANELS SHALL COMPLY WITH 2019 CBC STANDARD AND SHALL BE APA RATED EXPOSURE I.
4. WOOD STRUCTURAL PANELS, WHEN USED, SHALL COMPLY WITH THE REQUIREMENTS FOR THEIR TYPE IN DOC PS1-95 OR PS2-92.
5. ALL PANELS SHALL BE IDENTIFIED BY TRADE MARK OF AN APPROVED TESTING & GRADING AGENCIES, APA, TECO OR PITTSBURG.

# NAILING SCHEDULE

CONNECTION.(TABLE 2304.9.1)

| | | |
|---|---|---|
| 1. | JOISTS TO SILL OR GURDER, TOE NAIL | 3 - 8d |
| 2. | BRIDGING TO JOISTS, TOE NAIL EA. END | 2 - 8d |
| 3. | 1X6 SUBFLR. OR LESS TO EA. JST., FACE NAIL | 2 - 8d |
| 4. | WIDER THAN 1X6 SUBFLR. TO EA. JST., FACE NAIL | 3 - 8d |
| 5. | 2" SUBFLR. TO JST. OR GURDER, BUND & FACE NAIL | 2 - 16d |
| 6. | SILL PLATE TO JST. OR BLKG., FACE NAIL | 16d @ 16" O.C. |
| 7. | TOP PLATE TO STUD, END NAIL | 2 - 16 d |
| 8. | RAFT, BLKG TO TOP PLATE, FACE OR TOE NAIL | 16d @ 8" O.C. |
| 9. | STUD TO SILL PLATE, TOE NAIL | 4 - 8d |
| 10. | DOUBLE STUDS, FACE NAIL | 16d @ 24" O.C. |
| 11. | DOUBLE TOP PLATES, FACE NAIL | 16d @ 16" O.C. |
| 12. | TOP PLATES LAPS & INTERSECTIONS, FACE NAIL | 2 - 16d |
| 13. | CONTINUOUS HEADER, TWO PIECES | 16d @ 16" O.C. ALONG EA. SIDE |
| 14. | CEILING JOISTS TO PLATE, TOE NAIL | 3 - 8d |
| 15. | CONTINUOUS HEADER TO STUD, TOE NAIL | 4 - 8d |
| 16. | CEILING JOISTS, LAPS O/ PARTITIONS, FACE NAIL | 3 - 16d |
| 17. | CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL | 3 - 16d |
| 18. | RAFTER TO TOP PLATE, TOE NAIL | 3 - 8d |
| 19. | 1" BRACE TO EA. STUD & PLATE, FACE NAIL | 2 - 8d |
| 20. | 1X8 SHT'G. OR LESS TO EA. BEARING WALL FACE NAIL | 2 - 8d |
| 21. | WIDER THAN 1X8 SHT'G. TO EA. BEARING WALL FACE NAIL | 3 - 8d |
| 22. | BUILT-UP CORNER STUDS | 16d @ 24" O.C. |
| 23. | BUILT-UP GRADERS & BEAMS | 20d @ 32" O.C. @ TOP & BOT. & STAGG. 2 - 20d @ END & @ EA. SPLICE |
| 24. | 2" PLANKS | 2 - 16d @ EA. BRG. |
| 25. | PARTICLE BD. - WALL SHTG. (TO FRMG.) | 8d |
| 26. | PLYWOOD.- | |
| | SUBFLR. RF. & WALL SHTG. (TO FRMG.): | |
| | 1/2" & LESS | 8d |
| | 5/8" - 3/4" | 8d |
| | 7/8" - 1" | 8d |
| | 1 1/8" - 1 1/4" | 10d |
| | COMBINATION SUBFLR. / UNDERLAYMENT (TO FRMG.): | |
| | 3/4" & LESS | 8d |
| | 7/8" - 1" | 8d |
| | 1 1/8" - 1 1/4" | 10d |
| | FIBERBD. SHTG.: | |
| | 1/2" | NO. 11 GA. 6d. NO. 16 GA. |
| | 25/32" | NO. 11 GA. 6d. NO. 18 GA. |

NOTE:

1. ALL NAILS SHALL BE COMMON WIRE NAILS. WHERE DRIVING OF NAILS CAUSES SPLITTING HOLES FOR THE NAILS SHALL BE SUB DRILLED.
2. FASTENERS IN PRESERVATIVE-TREATED WOOD SHALL BE OF HOT-DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER.(CBC 2304.9.5)

GENERAL NOTES:

1. CONTRACTOR TO ASSUME FULL RESPONSIBILITY FOR ABIDING TO ALL APPLICABLE CALIFORNIA BUILDING CODES, LOCAL CITY ORDINANCES, ZONING REQUIREMENTS, AND LICENSING/PERMIT REQUIREMENTS. CONTRACTOR IS FULLY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES INCLUDING WITHOUT LIMITATION TO DEMOLITION, EXCAVATION AND ERECTION PROCEDURES.
2. THE CONTRACTOR SHALL EXAMINE THE CONSTRICTION DOCUMENTS AND NOTIFY THE PROJECT ENGINEER & ARCHITECT OF ANY DISCREPANCIES, ERRORS, OR OMISSIONS SHE/HE MAY FIND BEFORE PROCEEDING WITH THE WORK.
3. NOTIFIY THE PROJECT ENGINEER OF ANY DESIGN CHANGES PROPOSED BY OWNER OR THE CONTRACTOR DURING THE COURSE OF CONSTRUCTION. SUCH CHANGES AFFECTING ROOM ADDITION DESIGN MAY ALSO AFFECT STRUCTURAL DESIGN.
4. ANY SUBCONTRACTOR WHICH AGREES TO CONSTRUCT THE PROJECT PURSUANT TO THESE PLANS FULLY ASSUMES THE RISK OF ALL ERRORS AND OMISSIONS WHICH SHOULD HAVE BEEN DETECTED BY A CAREFUL REVIEW BY A KNOWLEDGEABLE LICENSED CONTRACTOR, THAT WHICH FOR ANY REASON WERE NOT RESOLVED DURING THE BIDDING OR NEGOTIATION PROCESS. FURTHER, THE CONTRACTOR SHALL CAREFULLY REVIEW THESE PLANS AS THE WORK PROGRESSES IN ORDER TO IDENTIFY ANY SIGNIFICANT ERRORS AND OMISSIONS AND TO ASCERTAIN ALL NECESSARY INFORMATION BEFORE PROCEEDING WITH THE AFFECTED WORK, AND ASSUMES THE RISK OF ANY AND ALL LOSS, INCLUDING DELAY, WHICH MAY BE CAUSED OR CONTRIBUTED TO BY THE FAILURE TO ASCERTAIN CORRECT OR NECESSARY INFORMATION IN A TIMELY MANNER.
5. ALL TRADES SHALL, AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR WORK, AND AT THE COMPLETION OF THE WORK SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE JOBSITE AND ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS, AND SHALL LEAVE THE JOB BROOM CLEAN, INCLUDING REMOVING ALL LABELS, STICKERS, PAINT SMEARS, ETC... FROM LIGHTING FIXTURES, PLUMBING FIXTURES, GLASS SURFACES, FINISH HARDWARE, CABINETS, COUNTER TOPS, ETC.
6. EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE NOTED OR SHOWN ON THE PLANS, WORKMANSHIP & MATERIALS SHALL CONFORM, TO THE LATEST EDITION OF THE C.B.C. OR LOCAL CODE.
7. THE PLANS SHALL BE REVIEWED FOR DIMENSIONAL & EXISTING SITE CONFORMANCE WITH THE PLANS BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE ARCHITECT & ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES.
8. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS IN THE FIELD; AND ALL QUESTIONS AS TO DIMENSIONS AND FIELD CONDITIONS SHALL BE RESOLVED BEFORE THE AFFECTED WORK PROCEEDS. NO DIMENSIONS SHALL BE OBTAINED BY SCALING THESE PLANS.
9. CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR DIMENSIONS AND CONDITIONS OF THE JOB.
10. THE PRECISE DIMENSIONS AND LOCATIONS OF ALL DOOR, WINDOW AND ROOF OPENINGS SHALL BE DETERMINED FROM DRAWINGS BY MANUFACTURER, WALL OPENING REQUIRED BY MECHANICAL OR ELECTRICAL SHALL BE VERIFIED FROM SHOP DRAWINGS, EQUIPMENT DATA SHEETS, ETC. AS REQUIRED.
11. ITEMS IDENTIFIED BY TRADE NAMES MAY BE SUBSTITUTED BY APPROVED EQUALS.
12. NOTES & DETAILS ON DRAWINGS SHALL PRECEDE THESE GENERAL NOTES.
13. PROVIDE ANY SHORING & OR BRACING PRIOR TO REMOVING EXISTING WALLS, BEAMS, OR SUPPORTS FOR CONSTRUCTION. REMOVE SHORING ONLY WHEN NEW SUPPORTS ARE IN PLACE AND SECURED.
14. PROVIDE RED HEADS INTO EXISTING CONCRETE AT ALL SHEAR WALLS PER MFG. SPECIFICATIONS. SEE SHEAR WALL SCHEDULE FOR SIZE AND SPACING.
15. PROVIDE SIMPSON ST-6224 BETWEEN NEW WALLS AND EXISTING WALLS AT THE DOUBLE TOP PLATE.
16. THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON DRAWINGS AND PROTECT THEM FROM DAMAGE
17. DO NOT CUT POST TENSION SLABS. CONTRACTOR TO DETERMINE EXISTING CONDITIONS PRIOR TO START OF CONSTRUCTION.
18. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS FOR FOOTING, BEAMS AND JOISTS, SIZES, LOCATIONS, ETC., AND SHALL NOTIFY THE ARCHITECT & ENGINEER OF ANY DISCREPANCIES.
19. DOWEL NEW INTO EXISTING SLABS W/ #4 REBAR @ 24" O.C. AND FOOTINGS W/ DOWELS TO MATCH NEW REINF. SIZE/ LOCATION.

ENGINEERING NOTES

1. CONCRETE SLABS ON GRADE HAVE NOT BEEN DESIGNED BY THE STRUCTURAL ENGINEER.
2. THE VIBRATIONAL EFFECTS OF MECHANICAL EQUIPMENT HAVE NOT BEEN CONSIDERED BY THE STRUCTURAL ENGINEER.
3. THE DESIGN, ADEQUACY AND SAFETY OF ERECTION, BRACING SHORING, TEMPORARY SUPPORTS ETC., IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR, AND HAS NOT BEEN CONSIDERED BY THE STRUCTURAL ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING THE ENTIRE COURSE OF CONSTRUCTION. THE ENGINEER SHALL NOT BE HELD RESPONSIBLE FOR FIELD INSPECTION/OBSERVATION OF THE ABOVE ITEMS.
4. ALLOWABLE SOILS PRESSURE TO BE A MINIMUM OF 1500 PSF UNLESS A SOILS REPORT IS PROVIDED. SOILS IN THE BUILDING AREA & 5 FEET BEYOND SHALL BE COMPACTED TO A MINIMUM OF 90% RELATIVE COMPACTION PER 2019-C.B.C.

REFER TO SOIL REPORT BY: _____

JOB NUMBER: _____ DATED: _____

STRUCTURAL SYMBOLS

△ INDICATES SHEAR WALL SEE FOUNDATION, FRAMING PLAN AND SHEAR WALL SCHEDULE FOR TYPE, SILL BOLTING, SHTG., ETC. NOTE: FOR SILL BOLTING AT EXISTING FOOTINGS, USE 5/8" Ø THREADED RODS W/ SIMPSON "SET-XP" EPOXY 7" MIN. EMB. PER ICC ESR-2508 THE SAME SIZE & SPACING AS CALLED FOR ON PLANS

⊠ INDICATES POST (BELOW BEAM)

MIN. POST SIZE/TYPE AS FOLLOWS U.N.O.:

| BEAM SIZE | POST SIZE |
|---|---|
| 4 X 12 & SMALLER | 2-2X4 W/16d NAILS @ 12" O.C. |
| 4 X 14 & LARGER | 4X4 |
| 6 X 10 & SMALLER | 4X6 |
| 6 X 12 & LARGER | 6X6 SEE HOLDDOWN DETAILS AND TYPICAL WALL |

FRAMING FOR FURTHER POST SIZE REQUIREMENTS. POSTS ARE TO CONTINUE DOWN TO FOUNDATION.

FOUNDATION NOTES

GENERAL

1. SOIL BENEATH FOOTINGS AND SLABS SHALL BE COMPACTED PER 2019 C.B.C. (90%) RELATIVE COMPACTION MINIMUM.
2. CONTINUOUS FOOTINGS AND GRADE BEAMS SHALL BE EXCAVATED TO THE DEPTH SHOWN ON THE DRAWINGS BELOW UNDISTURBED SOIL OR COMPACTED EARTH. PROVIDE 1-#4 HORIZONTAL BARS ON TOP AND BOTTOM U.N.O. ON FOUND. PLAN.
3. ALLOWABLE SOIL BEARING PRESSURE IS ASSUMED TO BE 1500. PSF IF NO SOILS REPORT IS PROVIDED.
4. SLAB ON GRADE: 4 INCH. NET CONCRETE SLAB WITH #3 BARS @ 18" O.C. EACH @ CENTER OF SLAB OVER 2 INCH. OF SAND OVER 6 MIL. VISQUEEN OVER 2" SAND BED OVER COMPACTED SOIL. U.N.O.
5. NO TRENCHES OR EXCAVATIONS FIVE FEET IN DEPTH OR GREATER INTO WHICH A PERSON SHALL BE REQUIRED TO DESCEND SHALL BE MADE WITHOUT PROPER PERMIT.
6. THE MINIMUM BOLTING FOR SILL PLATES TO FOUNDATION SHALL BE AS FOLLOWS: 5/8" DIAMETER ANCHOR BOLTS WITH 7" MIN EMBEDMENT IN CONCRETE WITH SPACING NO GREATER THAN 4 FEET O.C. NOR FURTHER THAN 12" FROM CORNERS (MIN 2 BOLTS PER PIECE). SEE THE FOUNDATION PLAN & SHEAR WALL SCHEDULE FOR FURTHER BOLTING REQUIREMENTS.( FOR TWO POUR SYSTEMS,BOLTS SHALL BE EMBEDDED 4 INCH MIN. INTO FIRST POUR.)
7. PIPES OR DUCTS THAT EXCEED ONE THIRD THE SLAB OR CONC. WALL THICKNESS SHALL NOT BE PLACED IN STRUCTURAL CONC, UNLESS SPECIFICALLY DETAILED. SEE MECHANICAL AND/OR ELECTRICAL DRAWINGS FOR LOCATION OF SLEEVES, ACCESSORIES, ETC.
8. PIPES MAY PASS THRU STRUCTURAL CONC. IN SLEEVES, BUT SHALL NOT BE EMBEDDED THEREIN.
9. PROVIDE 3/4" CAMBERS AT ALL EXPOSED CORNERS.
10. SEE ARCHITECTURAL PLANS FOR MOLDS, GROOVES, ORNAMENTS, CLIPS OR GROUNDS REQUIRED TO BE CAST IN CONCRETE, AND FOR LOCATION OF FLOOR FINISHES AND SLAB DEPRESSIONS.
11. LOCATION OF POUR JOINTS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.

CONCRETE

1. UNLESS OTHERWISE NOTED ON PLANS, CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI IN 28 DAYS.
2. FINE & COURSE AGGREGATE SHALL CONFORM TO A.S.T.M. C-33, USE 3000 P.S.I. CONC. @ GRADE BEAMS. CEMENT SHALL CONFORM TO A.S.T.M. C-150 (STANDARD BRAND PORTLAND CEMENT) TYPE II (USE TYPE V CEMENT IF NOTED IN SOILS REPORT)
3. CONCRETE SHALL BE MACHINE-MIXED USING A MAXIMUM OF "7" GALLONS OF WATER PER SACK OF CEMENT. READY MIX CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C-94 MIXED AT A RATE OF 5 SACKS OF CEMENT PER CUBIC YARD. MAXIMUM SLUMP SHALL BE 4 INCH AS MEASURED BY THE ASTM "STANDARD METHOD OF TESTING FOR SLUMP OF PORTLAND CEMENT CONCRETE.
4. DRY PACK SHALL CONSIST OF 1 PART CEMENT, 4 PARTS SAND, BASED ON DRY LOOSE VOLUMES AND NOT LESS THAN 1/4 PART, NOR MORE THAN 1/2 PART, LINE PUTTY OR DRY HYDRATED LIME. DRY PACK SHALL OBTAIN A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS.
5. ADDING CALCIUM CHLORIDE TO CONCRETE OR GROUT IS NOT PERMITTED.
6. CONC. SHALL BE KEPT MOIST FOR 10 DAYS FOR PROPER CURING.

REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS (ACI 4.3)

| SULFATE EXPOSURE | CEMENT TYPE | WATER-CEMENT RATIO | COMPRESSIVE STRENGTH |
|---|---|---|---|
| NEGLIGIBLE | NOT REGULATED | - | 2500 psi |
| MODERATE | I, II | 0.50 | 4000 psi |
| SEVERE | V | 0.45 | 4500 psi |
| VERY SEVERE | V | 0.45 | 4500 psi |

CONCRETE BLOCK MASONRY

1. CONCRETE BLOCK SHALL CONFORM TO A.S.T.M. C-90 MED. WT. GRADE N UNITS, WITH MIN. COMP. STRENGTH OF 1500 PSI. ALL CMU BLOCKS SHALL BE LAID UP IN RUNNING OR COMMON BOND CONFIGURATION.
2. MORTAR SHALL CONFORM TO ASTM C-270, TYPE S, WITH MINIMUM COMPRESSIVE STRENGTH OF 2000. PSI AT 28 DAYS.

MIX: 1 PART PORTLAND CEMENT. 1/2 PART LIME PUTTY. 4 PARTS SAND. } BY VOLUME

3. GROUT SHALL CONFORM TO ASTM C-476, WITH MINIMUM COMPRESIVE STRENGTH OF 2000. PSI AT 28 DAYS.

MIX: 1 PART PORTLAND CEMENT. 3 PARTS SAND 2 PARTS PEA GRAVEL } BY VOLUME

WATER SUFFICIENT TO ALLOW GROUT TO FLOW INTO ALL JOINTS.

4. CELLS SHALL BE IN VERTICAL ALIGNMENT TO PROVIDE A MIN. UNOBSTRUCTED CORE OF 3" X 3". DOWELS FROM FOOTINGS SHALL BE SET TO ALIGN WITH CORE REINFORCING.
5. ALL CELLS BELOW FINISHED GRADE AND ALL CELLS WITH REINFORCING, ANCHORS OR INSERTS SHALL BE FILLED SOLID WITH GROUT.
6. CONCRETE SURFACES SHALL BE CLEANED OF ALL LAITANCE PRIOR TO SETTING OF BLOCKS.
7. PROVIDE VERTICAL CONSTRUCTION JOINTS AT 40 FT. O.C.
8. MINIMUM LAP FOR ALL STEEL IS 40 BAR DIAMETER, OR 24 INCHES, WHICHEVER IS GREATER.
9. IF WORK IS STOPPED FOR ONE HOUR OR LONGER, PROVIDE HORIZONTAL CONSTRUCTION JOINTS BY STOPPING GROUT 1-1/2 INCH BELOW THE TOP OF THE BLOCK.

REINFORCED MASONRY (CMU)

1. ALL MASONRY SHALL BE REINFORCED CONCRETE MASONRY UNIT IN ACCORDANCE WITH THE LATEST EDDITION OF ACI 530/ASCE 5/TMS 402.
2. INSTALL ALL BLOCKS IN RUNNING BOND.
3. MINIMUM MASONRY BLOCK (ASTM C90) STRENGTH SHALL (F'M) BE 2000 PSI.
4. TYPE "S" MORTAR (ASTM C270) SHALL BE USED USING 3/8" FULL BEDDING REINFORCED W/ 9 GAGE GALVANIZED LADDER WIRE EVERY 2ND ROW.
5. FILLED CELLS SHALL BE REINFORCED WITH #5 REBAR @ 24" O.C. (UNLESS OTHERWISE IS SPECIFIED ON THE PLANS).
6. GROUT SHALL BE PEA ROCK PUMP MIX (ASTM C476) WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI (28 DAY) (ASTM C1019). TARGETED SLUMP SHALL BE 8"-11".
7. EACH GROUTED CELL SHALL HAVE CLEANOUT OPENINGS AT THE BOTTOM. THERE SHALL BE NO LOOSE MORTAR OR OTHER DEBRIS IN THE BOTTOM OF THE CELL. USE BLAST PRESSURE WASHING FOR SURFACE PREPARATION.

REINFORCING STEEL

1. REINFORCING STEEL, #3 AND #4 GRADE 40, #5 AND LARGER GRADE 60 PER A.S.T.M. A615.
2. LOW HYDROGEN WELDING RODS SHALL BE USED FOR ALL WELDING OF REINFORCING BARS.
3. BARS NOTED AS "CONT" TYPICAL WALL REINFORCING AND VERTICAL COLUMN REINFORCING SHALL HAVE A MINIMUM SPLICE OF 50 BAR DIAMETERS LAP IN MASONRY OR 40 BAR DIAMETERS MINIMUM IN CONCRETE.
4. REINFORCING SHALL BE SPLICED ONLY AS SHOWN OR NOTED. OTHER SPLICES SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.
5. SPLICES IN ADJACENT HORIZONTAL WALL REINFORCING BARS SHALL BE STAGGERED 4 FEET UNLESS OTHERWISE NOTED.
6. PROVIDE DOWELS IN FOOTINGS AND/OR GRADE BEAMS THE SAME SIZE AND NUMBER AS VERTICAL WALL OR COLUMN REINFORCING. DOWELS SHALL HAVE A MINIMUM PROJECTION EQUAL TO STANDARD LAP SPLICE UNLESS OTHERWISE NOTED.
7. ALL REINFORCING, ANCHOR BOLTS, AND OTHER INSERTS SHALL BE SECURED IN PLACE PRIOR TO PLACEMENT OF CONCRETE OR GROUTING OF MASONRY.
8. PROVIDE THE FOLLOWING MINIMUM PROTECTIVE COVERING OF CONCRETE:

| | |
|---|---|
| BELOW GRADE (UNFORMED) | 3" CLEAR |
| BELOW GRADE (FORMED) | 2" CLEAR |
| WALLS | 1" CLEAR |
| COLUMNS | 1.5" CLEAR |
| BEAMS AND GIRDERS | 1.5" CLEAR |
| STRUCTURAL SLAB (ABOVE GRADE) | 3/4" CLEAR |

9. #5 OR LARGER REINFORCING BARS SHALL NOT BE RE-BENT WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.

GRADING NOTES

1. A GRADING PERMIT SHALL BE OBTAINED PRIOR TO ANY GRADING.
2. ALL FILL ONE FOOT & GREATER SHALL BE CERTIFIED AND TESTED AS TO RELATIVE COMPACTION PER U.B.C.
3. ALL FILL SHALL BE COMPACTED IN ACCORDANCE WITH ASTM D-1557, TO MAXIMUM OF 90% DENSITY.
4. ALL UTILITY TRENCH BACKFILLS SHALL BE IN ACCORDANCE WITH THE SOILS ENGINEER'S RECOMMENDATIONS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO ASTM A36,(Fy=36.KSI) FOR PLATES AND TO ASTM A992,(Fy=50.KSI) FOR W-SHAPE STEEL SECTIONS.
2. CORTEN STEEL SHALL CONFORM TO ASTM A588, Fy=50. KSI.
3. STAINLESS STEEL SHALL CONFORM TO ASTM A276 TYPE 304-HOT ROLLED, Fy=18. KSI.
4. FABRICATION, ERECTION & PAINTING SHALL COMPLY WITH THE AISC SPECS. CHAPTER M, (THIRTEENTH EDITION).
5. ALL BOLTS FOR STEEL MEMBERS SHALL CONFORM TO ASTM A325 OR A490, UNLESS OTHERWISE NOTED.
6. HIGH TENSILE BOLTS WHERE INDICATED ON THE PLANS OR DETAILS SHALL BE THE FRICTION TYPE AND THERE SHALL BE NO PAINT, OIL, LAQUER, OR GALVANIZING BETWEEN THE CONTACT SURFACES. HIGH TENSILE BOLTS SHALL CONFORM TO ASTM A325 OR A490.
7. HIGH STRENGTH BOLTS SHALL HAVE LOAD INDICATOR WASHERS TO SERVE AS A DIRECT TENSION INDICATOR.INSTALLATION FOR HIGH STRENGTH BOLTS SHALL REQUIRE INSPECTION BY A DEPUTY INSPECTOR.
8. ANCHOR RODS SHALL BE ASTM F-1554 GRD. 55 KSI U.N.O. ALL ANCHOR RODS SHALL BE. HEADED RODS.ANCHOR ROD WASHER SHALL BE ASTM A436. NUTS SHALL BE ASTM A563.
9. PIPE COLUMNS SHALL CONFORM TO ASTM A-53 GRADE B.
10. STEEL TUBE SHAPED MEMBERS SHALL CONFORM TO ASTM A-501 OR OR A-500 GRADE B.
11. WHERE FINISH IS ATTACHED TO STRUCTURAL STEEL, PROVIDE HOLES FOR 1/2" WELDED STUDS AT 4 FEET O.C. FOR THE ATTACHMENT OF NAILERS. SEE ARCHITECTURAL DRAWINGS FOR FINISHES.
12. OPEN WEB JOISTS SHALL COMPLY WITH THE STANDARDS OR "THE STEEL JOIST INSTITUTE",
13. STEEL STUDS, JOIST, TRACKS & BRIDGING:
ASTM A-570 GRADE "E" Fy = 50 KSI 12, 14 & 16 GA.
ASTM A-570 GRADE "C" Fy = 33 KSI 18 & 20 GA.
14. SPECIAL INSPECTION OF HIGH-STRENGTH A325 AND A490 BOLTS SHALL BE IN ACCORDANCE WITH APPROVED NATIONALLY RECOGNIZED STANDARDS AND REQUIREMENT OF SECTION 1701.
15. SHOP DRAWINGS SHALL BE PROVIDED TO ENGINEER OR ARCHITECT OF RECORD FOR REVIEW PRIOR TO FABRICATION.

STRUCT. STEEL WELDING

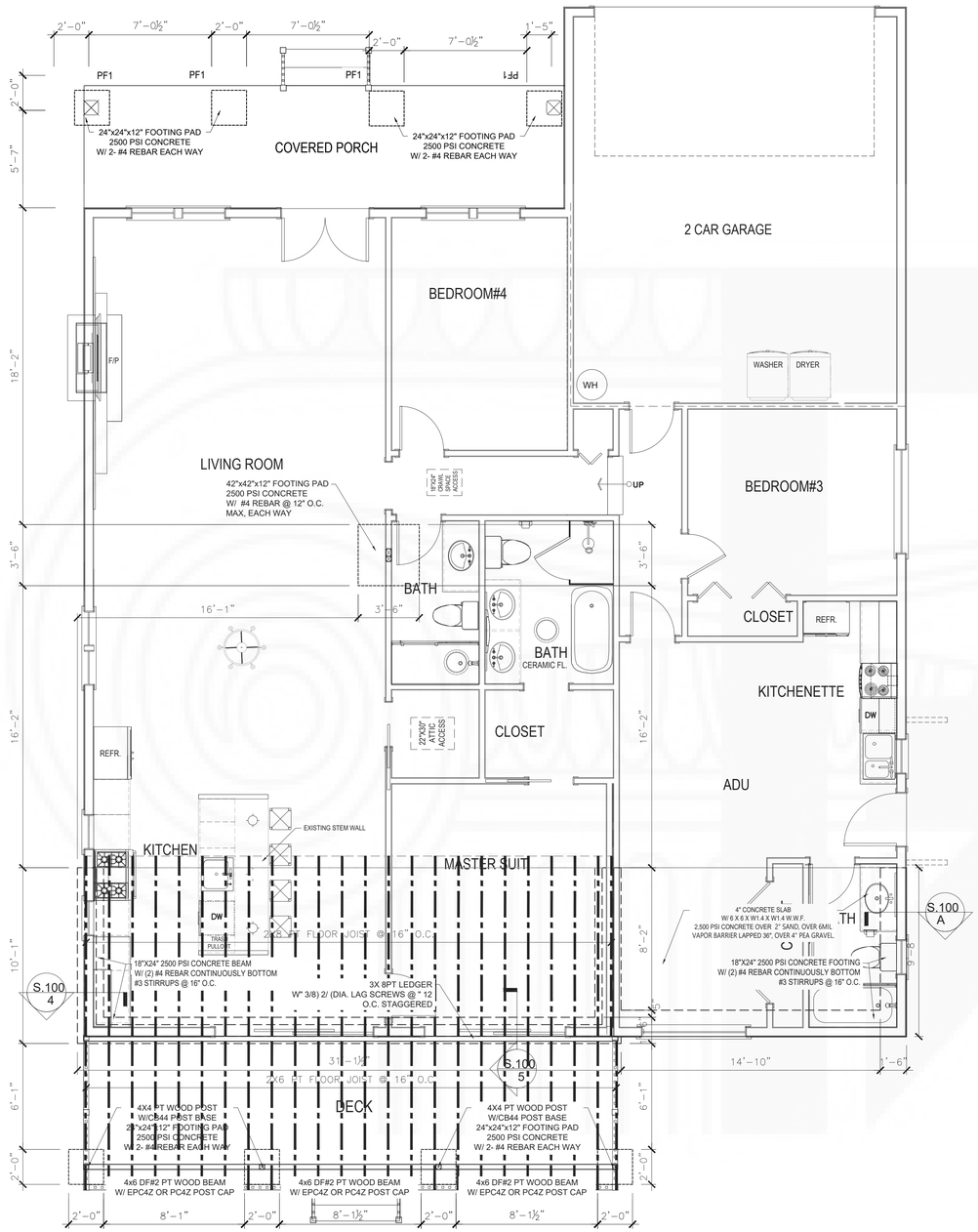
1. WELDING SHALL BE DONE BY THE ELECTRIC SHIELDED ARC PROCESS W/E70-XX ELECTRODES AND SHALL COMPLY WITH A.W.S. SPECIFICATIONS FOR WELDING AND FABRICATION.
2. WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS WHO ARE APPROVED BY THE LOCAL AUTHORITY USING ARC PROCESS WITH E70XX ELECTRODES.
3. ALL FIELD WELDS SHALL HAVE CONTINUOUS INSPECTION PER CBC (1701) UNLESS OTHERWISE NOTED.
4. ALL BUTT WELDS SHALL BE FULL PENETRATION U.N.O.
5. A CERTIFICATE OF FABRICATION FROM THE SHOP PERFORMING WELDING OR A REPORT FROM THE SPECIAL INSPECTOR MUST BE FURNISHED TO THE JOB INSPECTOR PRIOR TO FRAMING APPROVAL.
6. WELDED, FULLY RESTRAINED CONNECTION BETWEEN MEMBERS OF ORDINARY MOMENT FRAMES OR SPECIAL MOMENT-RESISTING FRAMES SHALL HAVE SPECIAL CONTINUOUS INSPECTION AND CONNECTION TESTED BY NONDESTRUCTIVE METHODS PER SECTION 1703.
7. FIELD WELDING OF REINFOCING STEEL SHALL BE DONE BY WELDERS SPECIFICALLY CERTIFIED FOR REINFORCING STEEL WELDING BEFORE WELDING,THE "CARBON EQUIVALENT" (CE) OF STEEL SHALL BE DETERMINED. IF THE (CE) OF STEEL IS MORE THAN 0.75% , THEY SHALL NOT BE WELDED.

FRAMING NOTES

1. FRAMING SHALL COMPLY WITH CHAPTER 23 OF THE 2019 CBC

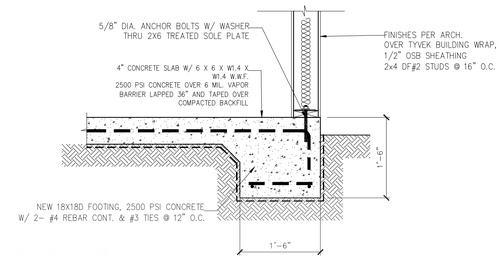
FRAMING-GENERAL

1. USE SIMP



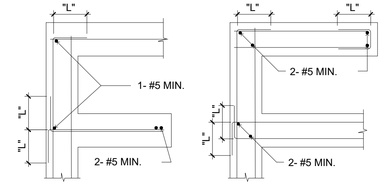

1 FOUNDATION PLAN

Scale: 1/4"= 1'- 00"




2 SECTION A-A

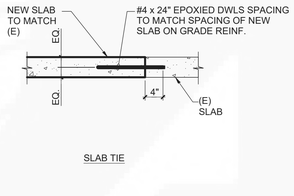
SCALE: 3/4"=1'-0"



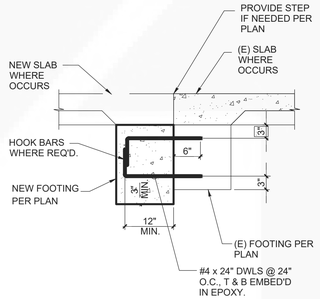

NOTE: "L" = 40 X BAR DIAMETER IN CONC, U.N.O.RETE
"L" = 50 X BAR DIAMETER IN MASONRY, U.N.O.

3 TYPICAL WALL & FTG. REINFORCEMENT

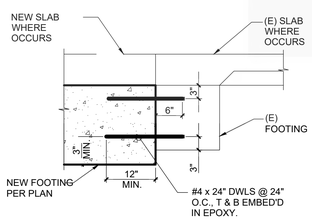
SCALE: NTS




SLAB TIE



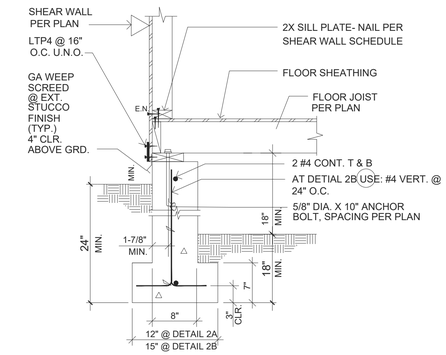

PERPENDICULAR FOOTING TIE




PARALLEL FOOTING TIE

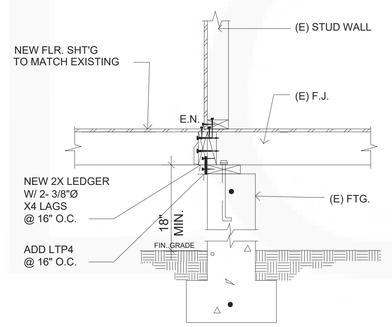
4 EXTERIOR FOOTING

SCALE: NTS




5 EXTERIOR FOOTING

SCALE: NTS




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**Mrs. Sadaf Ahmad**
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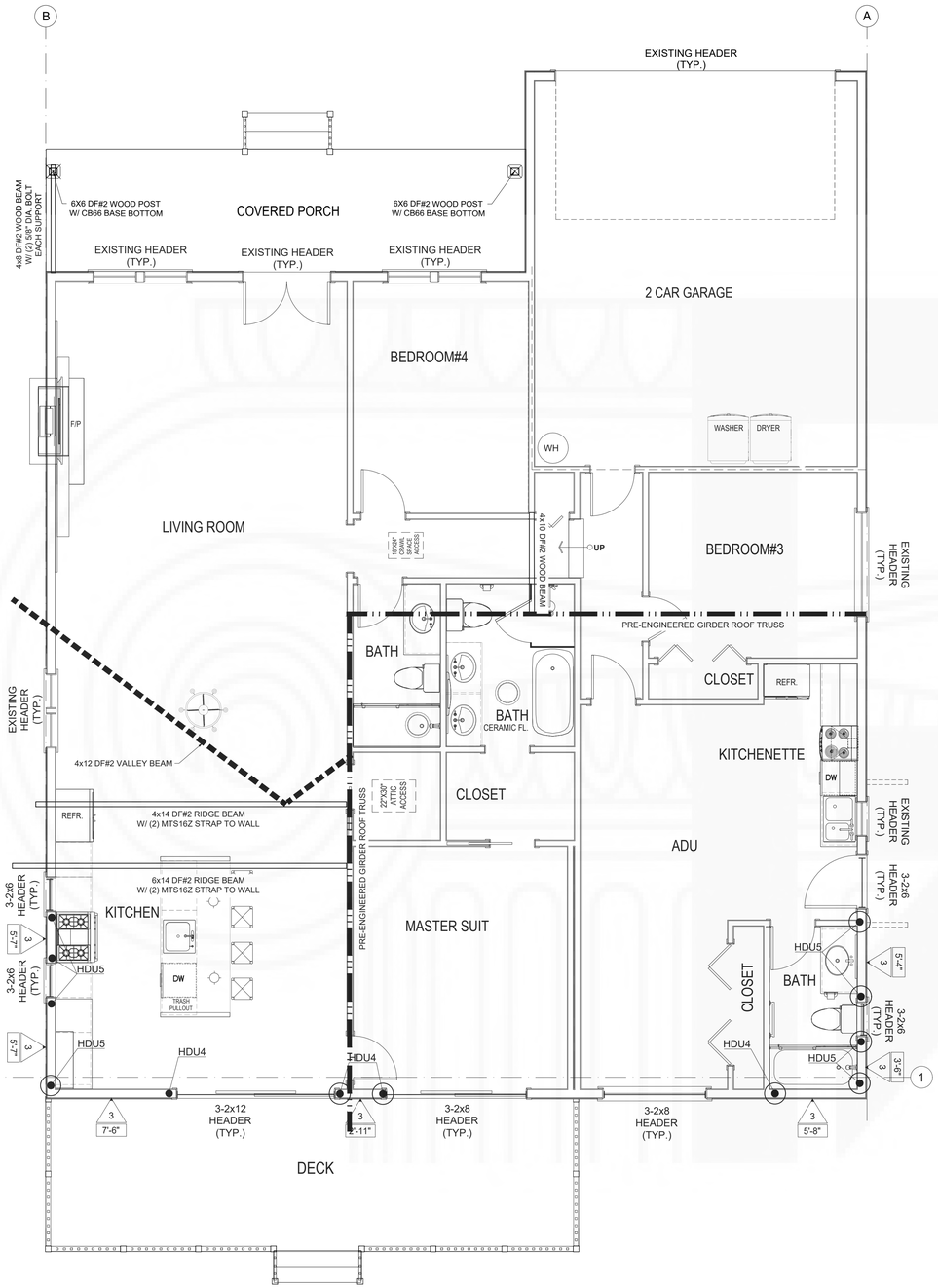
Date: June 3, 2021

Scale: 1/4" = 1' - 00"

DRAWING TITLE:
**FOUNDATION PLAN & DETAILS**

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S-2




1 SHEAR-WALLS PLAN

Scale: 1/4"= 1'- 00"

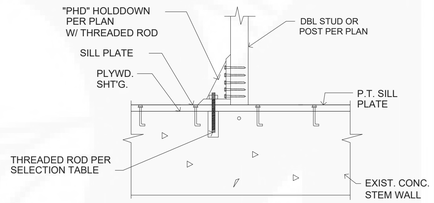
NOTES:

NOTES:
1. "MINIMUM MEMBER THICKNESS @ PANEL SEAM" REFERS TO FRAMING MEMBERS, INCLUDING PLATE AND BLOCKING, WHICH RECEIVE EDGE NAILING FROM ADJACENT PANELS.
2. 3x PLATES: USE 3x PLATES 5/8" DIAMETER ANCHOR BOLTS & 3"x3"x0.229" PLATE WASHERS AT ALL SHEAR WALL LOCATIONS.
3. LTP4 FRAMING CLIPS: LTP4 CLIPS MAY BE USED IN PLACE OF A35 CLIPS SHOWN IN SCHEDULE WERE LOCATION OF RIM OR BLOCKS ABOVE DOUBLE TOP PLATE ALLOWS. USE ONE LTP4 FOR EACH A35 CLIP.
4.- SHEAR WALLS SHALL NOT BE OFFSET MORE THAN 4'-0" FROM EACH OTHER.
5.- SHEAR PANELS TYPES SHALL NOT BE COMBINED IN THE SAME LINE OF RESISTANCE.
6.- WALL STUDS SHALL BE 2X MIN @16" OC.
7.- 10d NAILS SHALL BE PLACED NOT LESS THAN 3/8" FROM PANEL EDGES.
8.- SPLICE TOP PLATES WITH ST6236, U.N.O.
9.- 3"X3"X1/4" PLATE WASHERS, IN LIEU OF CUT WASHERS, SHALL BE PROVIDED FOR ALL PLYWOOD SHEAR WALL SILL PLATE ANCHOR BOLTS AND HOLD DOWNS.
10.- BOLT HOLES THROUGH ANY HOLD DOWN POST SHALL BE OVERSIZED BY 1/16" AND SHALL BE VERIFIED BY INSPECTOR.
11.- MUDSILL TO BE SILL GRADE REDWOOD OR SHALL BE PROTECTED WITH SODIUM BORATE. IF ANY OTHER PRESERVATIVE IS USED, PROTECT ALL FASTENERS IN THESE MATERIALS WITH 1.85 oz. OF ZINC GALVANIZED PER ASTM A653.
12.- 8d = .131" DIA. X 2.5" COMMON NAIL
13.- 10d = .148" DIA X 3" COMMON NAIL

SHEAR WALL SYMBOL

SHEAR WALL LENGTH → 5'-7"

→ 1

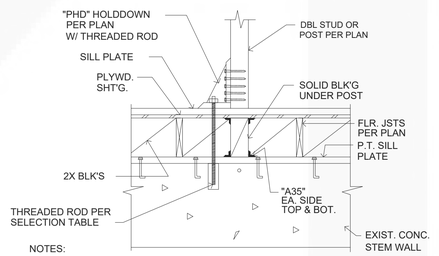



NOTES:
1. CONT. INSPECTION REQ'D.
2. DRILL HOLES PER MANUF. SPECS.
3. A307 THREADED RODS W/ SIMPSON SET XP ICC ESR-2508
4. ALL BOLTS SHALL BE HOT-DIPPED ZINC COATED , GALVANIZED,STAINLESS STEEL

| ROD DIA. | EMBED DEPTH | EDGE DIST. | LOAD CAP. |
|---|---|---|---|
| 5/8" Ø | 10 | 1-3/4" | - |
| 7/8" Ø | 15 | 1-3/4" | 1600 |

3 TYP. HOLD DOWN INSTALATION DETAILS

SCALE: NTS

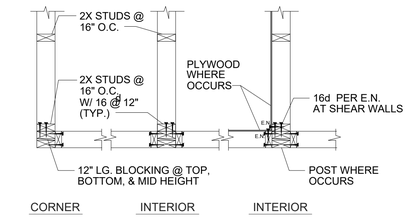



NOTES:
CONT. INSPECTION REQ'D.
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| ROD DIA. | EMBED DEPTH | EDGE DIST. | LOAD CAP. |
|---|---|---|---|
| 5/8" Ø | 10 | 1-3/4" | - |
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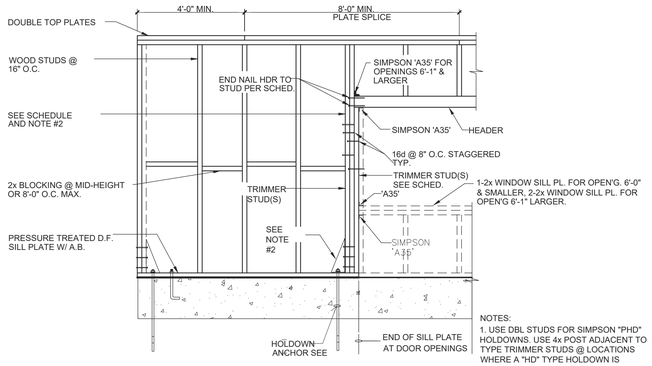
6 SHEAR TRANSFER

SCALE: NTS




2 TYPICAL STUD WALL INTERSECTION

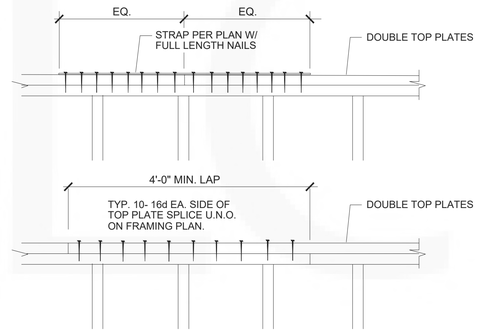
SCALE: 1"=1'-0"




NOTES:
1. USE DBL STUDS FOR SIMPSON "PHD" HOLDOWNS. USE 4x POST ADJACENT TO TYPE TRIMMER STUDS @ LOCATIONS WHERE A "HD" TYPE HOLDOWN IS SPECIFIED. EDGE NAIL SHEATHING TO POST, KING AND TRIMMER STUDS.

4 WALL FRAMING DETAIL

SCALE: NTS




5 TOP PLATE SPLICE DETAIL

SCALE: NTS

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Addition & ADU for
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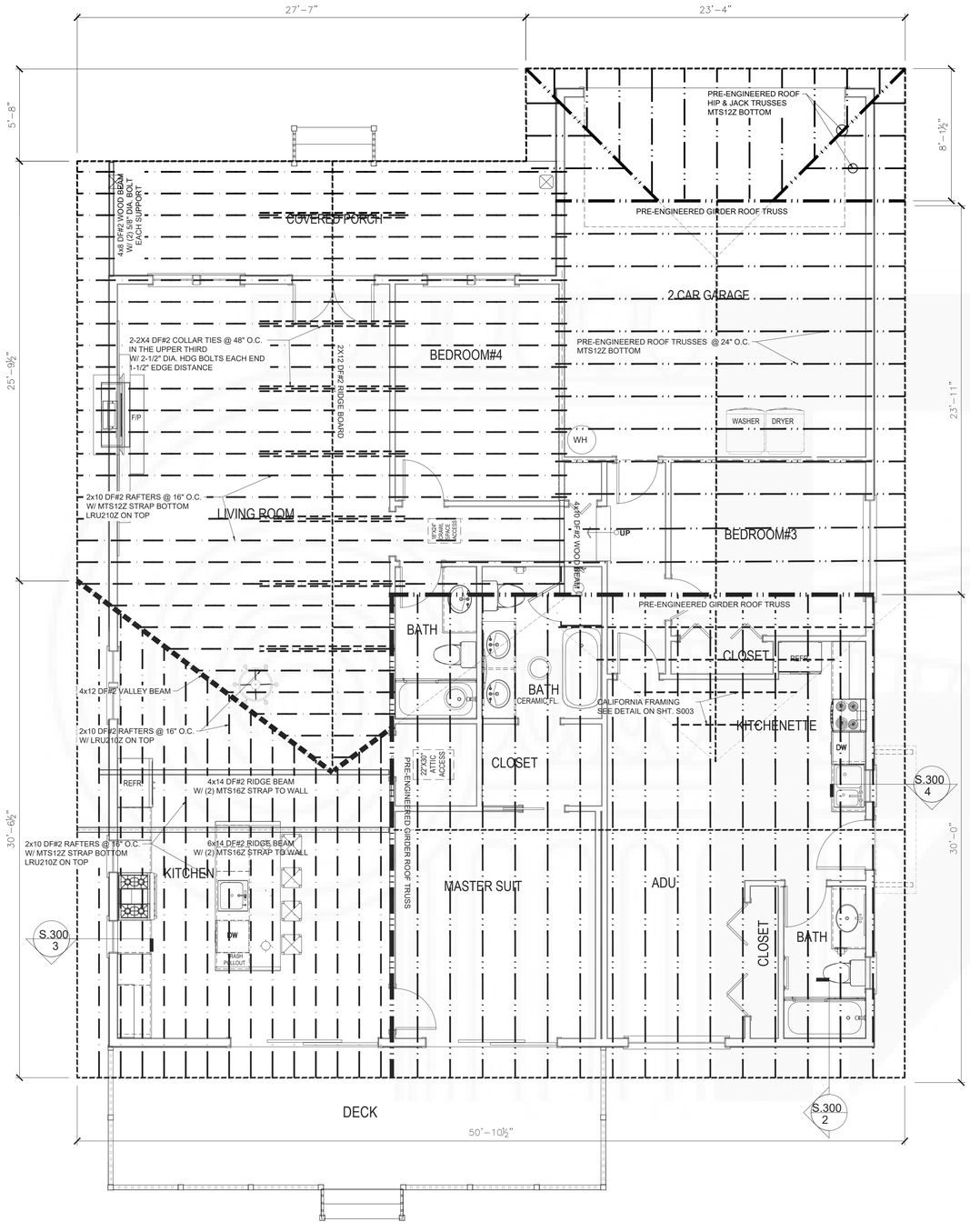
Date: June 3, 2021

Scale: 1/4" = 1' - 00"

DRAWING TITLE:
**SHEAR-WALLS PLAN**

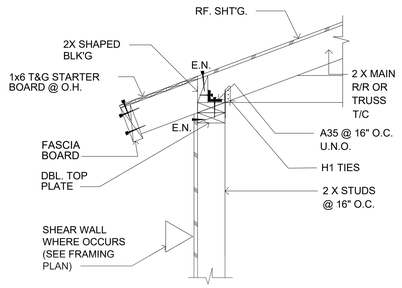
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S-3



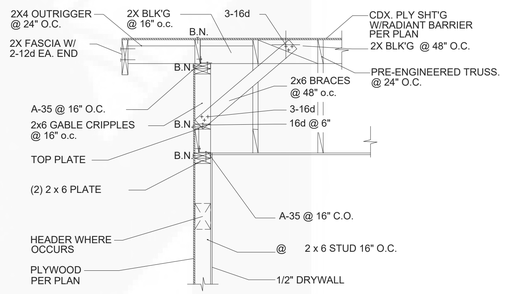

1 ROOF FRAMING PLAN

Scale: 1/4"= 1'- 00"



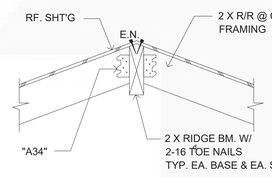

2 SHEAR TRANSFER SECTION B

SCALE: 1"=1'-0"



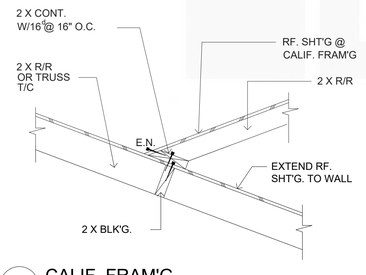

4 SHEAR TRANSFER SECTION C

SCALE: 1"=1'-0"



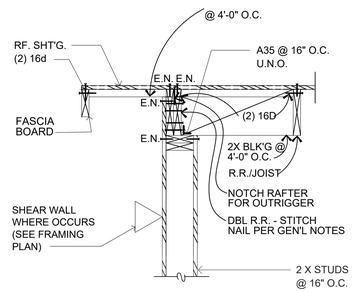

6 CALIF. FRAM'G

SCALE: 1"=1'-0"




7 CALIF. FRAM'G

SCALE: 1"=1'-0"

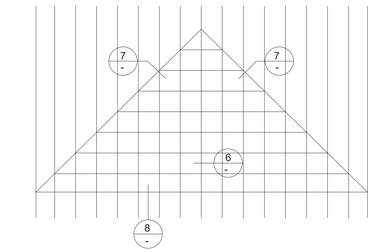


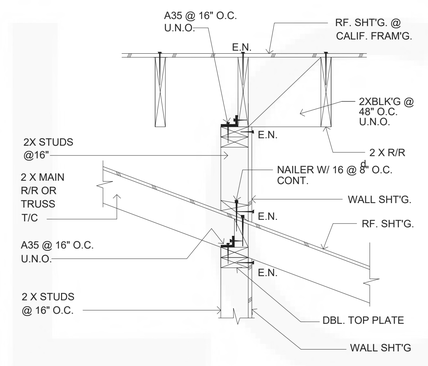

3 ROOF FRAMING @ RAKE WALL

SCALE: 1"=1'-0"

8 CALIF. FRAM'G VIEW

SCALE: 1"=1'-0"




8 CALIF. FRAM'G VIEW

SCALE: 1"=1'-0"

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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: June 3, 2021

Scale: 1/4" = 1' - 00"

DRAWING TITLE:
**ROOF FRAMING PLAN**

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S-4

## MECHANICAL SPECIFICATIONS

PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM.

DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

PROVIDE OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS FOR ALL MECHANICAL EQUIPMENT INSTALLED.

COORDINATION: COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOF WARRANTY.

DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.

SHEET METAL DUCTWORK: PROVIDE SHEET METAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS, FOR 1" W.G. PRESSURE CLASS, SEAL CLASS "A". SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G90 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90º ELBOWS.

TRAPEZE DUCT HANGERS: PROVIDE MINIMUM 1" X 2" X 1" X 18 GAUGE CHANNELS WITH MINIMUM 1" X 18 GAUGE STRAPS TO STRUCTURAL SUPPORT.

ROUND SHEET METAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1.

FIBER GLASS DUCT BOARD IS AN ACCEPTABLE ALTERNATIVE IF APPROVED BY OWNER AND THE LOCAL BUILDING CODE OFFICIAL. PRODUCT AND INSTALLATION MUST MEET NAIMA STANDARDS AND OTHER APPLICABLE CODES AND REGULATIONS.

EXPOSED DUCTWORK: EXPOSED DUCTWORK SHALL BE CLEANED OF DEBRIS AND OIL, THEN WIPED DOWN WITH VINEGAR OR OTHER SURFACE PREPARING CHEMICAL TO PREPARE DUCT FOR PAINT.

DUCT SEALANT: PROVIDE POLYMERIC RUBBER TYPE SEALANT FOR USE ON BOTH INTERIOR LOCATED DUCTWORK AND DUCTWORK EXPOSED TO OUTDOOR CONDITIONS. SEALER SHALL HAVE HIGH BONDING STRENGTH FOR SURE, FIRST TIME SEALING OF JOINTS IN LOW, MEDIUM, AND HIGH PRESSURE DUCT SYSTEMS. SEALER SHALL BE HIGH IN SOLID CONTENT. PROVIDE A TWO PART TAPE SEALING SYSTEM, CONSISTING OF WOVEN FIBER TAPE IMPREGNATED WITH A GYPSUM MINERAL COMPOUND, AND A MODIFIED ACRYLIC/SILICONE ACTIVATOR THAT REACTS EXOTHERMICALLY WITH THE TAPE. TWO PART TAPE SEALING SYSTEM MUST BE RATED FOR BOTH INDOOR AND OUTDOOR APPLICATION. TAPE SHALL NOT CONTAIN ASBESTOS.

DUCT INSULATION: MATERIAL FOR SUPPLY AND RETURN AIR DUCT ABOVE CEILING INSIDE THE BUILDING SHALL HAVE THE EQUIVALENT THERMAL RESISTANCE OF MINIMUM R-6. THE REQUIRED R VALUES ARE FOR INSTALLED INSULATION WITH 25% COMPRESSION AT THE CORNERS. PROVIDE PINS AND WASHERS IN ACCORDANCE WITH SMACNA REQUIREMENTS AND AS REQUIRED TO PREVENT INSULATION FROM SAGGING. PROVIDE ADEQUATE INSULATION AT THE SUPPLY AIR DIFFUSERS TO PREVENT CONDENSATION.

FLEXIBLE DUCT : UL #181 LISTED, CLASS 1, AND CONTAIN A 0.1 PERM RATED POLYETHYLENE INNER LINER, WITH R-8 FIBERGLASS INSULATION. FLEXIBLE DUCTS SHALL BE SECURED TO RIGID SHEET METAL COLLARS AND AIR DIFFUSERS WITH NYLON TIES OR STAINLESS STEEL WORM GEAR STRAPS. SEAL ALL CONNECTIONS AND JOINTS AIRTIGHT. SUPPORT FLEXIBLE DUCTS FROM THE BUILDINGS STRUCTURE WITH MINIMUM 1" WIDE, 18 GAUGE, GALVANIZED STEEL STRAP AT MAXIMUM 4'-0" CENTERS. PROVIDE 4" WIDE SHEET METAL SADDLES AT EACH SUPPORT EACH STRAP. SAG OF FLEXIBLE DUCT BETWEEN HANGERS SHALL NOT EXCEED 1/2" PER FOOT OF SUPPORT SPACING. RADIUS FOR TURNS OF FLEXIBLE DUCTS SHALL BE A MINIMUM OF ONE DUCT DIAMETER. FLEXIBLE DUCT RUNS SHALL NOT EXCEED 10'-0" IN LENGTH AND SHALL BE THE SAME SIZE AS THE DIFFUSER NECK CONNECTION.

ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEET METAL BRACKET BEYOND DUCT COVERING. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM ½" HEXAGONAL AXLE, BOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE.

FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS.

DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEET METAL AS DUCT IN WHICH IT IS INSTALLED. PROVIDE FLUSH FRAMES FOR UN-INSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS.

HVAC CONTROL SYSTEM: PROVIDE ALL THE NECESSARY CONTROLS AND CONTROL WIRING IN CONDUIT COMPATIBLE TO SYSTEMS SHOWN ON EQUIPMENT SCHEDULE M2.0.

PROGRAMMABLE THERMOSTAT FOR EACH SYSTEM SHALL ENABLE THE SUPPLY FAN AND CYCLE THE COOLING AND HEATING STAGES TO MAINTAIN SPACE SET-POINT. SUPPLY FAN RUNS CONTINUOUSLY DURING THE OCCUPIED MODE.

EACH THERMOSTAT SHALL HAVE A DEAD BAND OF AT LEAST 5 DEGREES (ADJ) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING IS SHUT OFF,

EACH THERMOSTAT SHALL HAVE SETBACK AND SET-UP CAPABILITY DURING THE UNOCCUPIED MODE. FOR SETBACK, THE HEATING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE DOWN TO 55 DEGREES. FOR SET-UP, THE COOLING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE UP TO 85 DEGREES OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

EACH SYSTEM SHALL BE PROVIDED WITH A MOTORIZED OUTSIDE AIR DAMPER THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEM OR SPACES SERVED ARE NOT IN USE. VENTILATION OUTSIDE AIR DAMPERS SHALL BE CAPABLE OF AUTOMATICALLY CLOSING DURING PREOCCUPANCY BUILDING WARM-UP, COOL DOWN, AND SETBACK, EXCEPT WHEN VENTILATION REDUCES ENERGY COSTS (e.g., NIGHT PURGE) OR WHEN VENTILATION MUST BE SUPPLIED TO MEET CODE REQUIREMENTS.

COMMISSIONING/VERIFICATION: HVAC CONTROL SYSTEM SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION, AND THAT THE SYSTEM MEETS THE DESIGN REQUIREMENTS.

TEST AND BALANCE: CONTRACT DIRECTLY A THIRD PARTY TO PROVIDE TEST AND BALANCE OF THE HVAC SYSTEM. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SCHEDULING. TEST AND ADJUST ALL MECHANICAL SYSTEM AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH NEBB PROCEDURAL STANDARDS-1999 OR AABC 2002, AND ASHRAE STANDARD 111. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. SUBMIT COMPLETED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCING CONTRACTOR SHALL BE INDEPENDENT AND CERTIFIED WITH NEBB OR AABC. BALANCE ALL SYSTEMS WITHIN 5% OF AIR FLOW INDICATED ON DRAWINGS, AND REPORT ALL DISCREPANCIES TO THE HVAC CONTRACTOR FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER.

COMPLETION REQUIREMENTS: THE CONTRACTOR SHALL PROVIDE, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS AND AN OPERATING AND MAINTENANCE MANUAL TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE OWNER.

THE RECORD DRAWING SHALL BE OF THE ACTUAL INSTALLATION AND INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES.

THE OPERATING AND MAINTENANCE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY-ACCEPTED STANDARDS AND SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING; (A) SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE; (B) OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED; (C) NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY; (D) HVAC CONTROLS SYSTEMS MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SYSTEM SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SET-PIONTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS; (E) A COMPLETE NARRATIVE OF HOW EACH SYSTEM EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SET-POINTS.

## HVAC GENERAL NOTES

1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.

2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.

3. DRAWINGS FOR HVAC WORK ARE DIAGRAMATIC SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. PROVIDE ALL DUCTWORK, MATERIALS, CONNECTIONS, ACCESSORIES, FITTINGS, OFFSETS, TRANSITIONS, DAMPERS AS REQUIRED FOR A COMPLETE WORKABLE SYSTEM.

4. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED LISTING. ALL EQUIPMENT, PIPING AND SUPPORTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE "GUIDLINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL EQUIPMENT SHALL BE ANCHORED TO RESIST THE LATERAL FORCE REQUIREMENTS OF CHAPTER 16 OF THE 2012 INTERNATIONAL BUILDING CODE.

5. COORDINATE THE INSTALLATION OF THE HVAC SYSTEM WITH ALL OTHER TRADES PRIOR TO FABRICATION OR INSTALLATION. COORDINATE THE LOCATIONS OF PENETRATIONS AND FINAL LOCATION OF ALL EQUIPMENT WITH THE GENERAL CONTRACTOR. PROVIDE EQUIPMENT WEIGHTS, EQUIPMENT DIMENSIONS, PLATFORM SIZES & LOCATIONS, CURB SIZES & LOCATIONS, CONCRETE PAD SIZES AND LOCATIONS AST REQUIRED. COORDINATE LOCATIONS OF GAS & CONDENSATE LINES WITH PLUMBING CONTRACTOR. COORDINTAE LOCATIONS OF POWER, DISCONNECTS, AND CONTROL CONDUIT WITH THE ELECTICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.

6. DETAILS FOR EQUIPMENT PADS, PLATFORMS, AND FLASHINGS SHALL BE AS INDICATED BY THE ARCHITECTURAL/STRUCTURAL/CIVIL DRAWINGS, UNLESS NOTED OTHERWISE.

7. ALL EQUIPMENT, DUCTS, PIPING, SUPPORTS, AND OTHER DEVICES OUTSIDE OF THE BUILDING OR EXPOSED TO WEATHER, SHALL BE COMPLETELY WEATHER-PROOFED.

8. OUTSIDE AIR INTAKES SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. BELOW ANY VENT OR EXHAUST DISCHARGE.

9. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. DUCTWORK SHALL BE CONSTRUCTED, ERECTED, INSULATED AND TESTED IN ACCORDANCE CHAPTER 6 OF THE 2012 INTERNATIONAL MECHANICAL CODE.

10. ALL EXHAUST FANS SHALL BE EQUIPED WITH A BACK DRAFT DAMPER.

11. DUCT AND AIR TRANSFER PENETRATIONS THRU BUILDING ASSEMBLIES REQUIRING PROTECTION SHALL BE PROTECTED WITH FIRE DAMPERS, SMOKE DAMPERS, COMBINATION SMOKE/FIRE DAMPERS AND CEILING RADIATION DAMPERS IN ACCORDANCE WITH SECTION 607 OF THE INTERNATIONAL MECHANICAL CODE. DUCTS NOT REQUIRING DAMPERS SHALL COMPLY WITH SECTION 714 & 717 OF THE 2019 CALIFORNIA BUILDING CODE.

12. INSTALL SMOKED DETECTORS AND PROVIDE FOR SMOKE DETECTION AND AUTOMATIC SHUT-OFF OF ALL AIR HANDLING EQUIPMENT IN ACCORDANCE WITH SECTION 606 OF THE 2019 CALIFORNIA MECHANICAL CODE.

13. UNLESS NOTED OTHERWISE, ALL LINE VOLTAGE WIRING, CONDUIT, FINAL CONNECTIONS, DISCONNECTS, STARTERS, AND OVER CURRENT PROTECTION DEVICES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THESE MECHANICAL DRAWINGS AND/OR ELECTRICAL DRAWINGS AND/OR ELECTRICAL SECTION OF THE SPECIFICATIONS.

14. INSTALL ALL LOW VOLTAGE HVAC CONTROL WIRE AND DEVICES PER PLAN. ALL WIRE SHALL BE IN CONDUIT PROVIDED AND INSTALLED BY THE ELECTICAL CONTRACTOR UNLESS NOTEDED OTHERWISE.

15. PROVIDE OWNER WITH THREE COPIES OF A CERTIFIED AIR BALANCE REPORT PREPARED IN BY A THIRD PARTY CERTIFIED BY THE AABC OR NEBB. TEST, ADJUST AND BALANCE THE HVAC SYSTEM IN ACCORDANCE WITH AABC OR NEBB PROCEDURES. PROVIDE START-UP/TEST REPORTS FOR ALL AIR HANDLING EQUIPMENT, FANS, AND REFRIGERATION EQUIPMENT. TEST AND VERIFY PROPER OPERATION OF ALL MAKE-UP AIR/EXHAUST AIR INTERLOCK SYSTEMS AND THIER SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.

16. PROVIDE OWNER WITH THREE SETS OF AS-BUILT PLANS AND OPERATIONS AND MAINTENANCE MANUALS. CLEARLY IDENTIFY ALL EQUIPMENT WITH PERMANENT PLASTIC OR METAL LABELS/TAGS (PEN MARKING NOT ACCEPTABLE).

17. PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.

18. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.

19.0

a) DUCTS FOR DEMAND CONTROLLED VENTILATION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE FAN MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE PROVISIONS ASHRAE 62.2, TABLE 5.3, OR THE AIRFLOW SHALL BE MEASURED AS REQUIRED BY AND IN COMPLIANCE WITH ASHRAE 62.2, 5.4.

b) DUCTS FOR KITCHEN COOKTOPS OR RANGES SHALL BE SHOWN OF METAL WITH A SMOOTH INTERIOR. [CMC 504.3].

1) IDENTIFY THE DETAILED REQUIREMENTS OF CMC DRYER DUCTS. SPECIFY--

a) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE INSTALLED IN ACCORDANCE WITH CMC 504.0.

b) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE RIGID METALLIC DUCTS WITH A MINIMUM MILL THICKNESS OF 16 (0.016-INCH), SHALL HAVE A MINIMUM 4-INCH DIAMETER AND A SMOOTH INTERIOR. THE COMBINED HORIZONTAL AND VERTICAL LENGTH OF THE DUCTS OF THE DUCTS SHALL BE 14-FEET, WHICH SHALL BE REDUCED BY 2-FEET FOR EVERY 90-DEGREE ELBOW IN EXCESS OF TWO ELBOWS.

c) LISTED CLOTHES DRYER TRANSITION DUCTS NOT MORE THAN 6-FEET IN LENGTH SHALL BE PERMITTED TO CONNECT THE DRYER TO THE EXHAUST DUCTS AS LONG AS THEY ARE NOT CONCEALED WITHIN CONSTRUCTION, AND THEY ARE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

## LEGEND

| | | |
|---|---|---|
| AxB | | DUCT WORK (WIDTHxDEPTH) |
| AxB | | LINED DUCT WORK (WIDTHxDEPTH DIMENSIONS ARE FOR I.D.) |
| | | SUPPLY DUCT, SECTION |
| | | RETURN DUCT, SECTION |
| | | EXHAUST DUCT, SECTION |
| R OR D | | RISE OR DROP IN DIRECTION OF AIR FLOW |
| | FLEX. CONN. | FLEXIBLE CONNECTION |
| | | DUCT TRANSITION, ROUND AND RECTANGULAR |
| | | SPLITTER DAMPER |
| AxBx | | EXTRACTOR AT BRANCH DUCT |
| | | TURNING VANES |
| | | FLEXIBLE DUCT |
| | | SINGLE LINE DUCT WORK |
| | AVD | AUTOMATIC VOLUME DAMPER |
| | MVD | MANUAL VOLUME DAMPER |
| | BDD | BACKDRAFT DAMPER |
| | MD | MODULATING DAMPER |
| | AFD | AUTOMATIC FIRE DAMPER |
| | AD | ACCESS DOOR |
| | SD | SUPPLY DIFFUSER |
| | RR | RETURN REGISTER |
| | ER | EXHAUST REGISTER |
| | SWR | SIDE WALL SUPPLY REGISTER |
| | SWE | SIDE WALL RETURN OR EXHAUST |
| | LD | LINEAR DIFFUSER |
| D.L. | DL | DOOR LOUVER |
| U.C. | UC | UNDER CUT DOOR |
| | VAV | VARIABLE AIR VOLUME |
| T | | THERMOSTAT |
| S | | DUCT SMOKE DECTECTOR |
| | | |

## SPECIAL NOTICE TO CONTRACTORS

1. ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESNENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.

2. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.

3. ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

4. NO WORK SHALL BE DONE ON ANY PART OF THE BUILDING BEYOND THE POINT INDICATED IN EACH SUCCESSIVE INSPECTION WITHOUT FIRST OBTAINING THE WRITTEN APPROVAL OF THE CODE OFFICIAL. NO CONSTRUCTION SHALL BE CONCEALED WITHOUT BEING INSPECTED AND APPROVED.

### CITY CODES

2019 California Building Code
2019 California Residential Code
2019 California Fire Code
2019 California Electrical Code
2019 California Mechanical Code
2019 California Plumbing Code
2019 California Green Building Standards Code
2019 California Historical Building Code
2019 California Referenced Standards Code
2019 California Administrative Code
2019 California Energy Code
ACI 318-14 (Structural Concrete)
TMS 402/602-16 (Structural Masonry)
ASCE 7-16 (Design Loads for Structures)

MECHANICAL SPECS
SCALE :NTS

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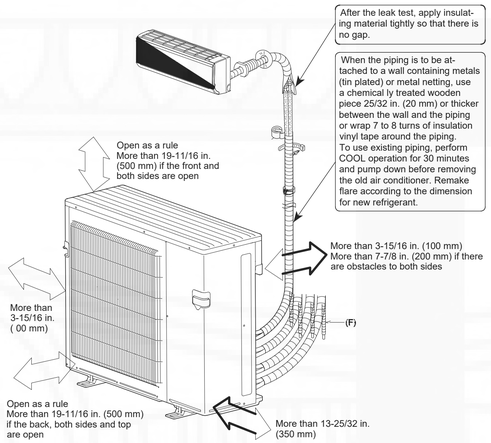
Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: June 3, 2021
Scale: 1/4" = 1' - 00"

DRAWING TITLE:
MECHANICAL SPECS

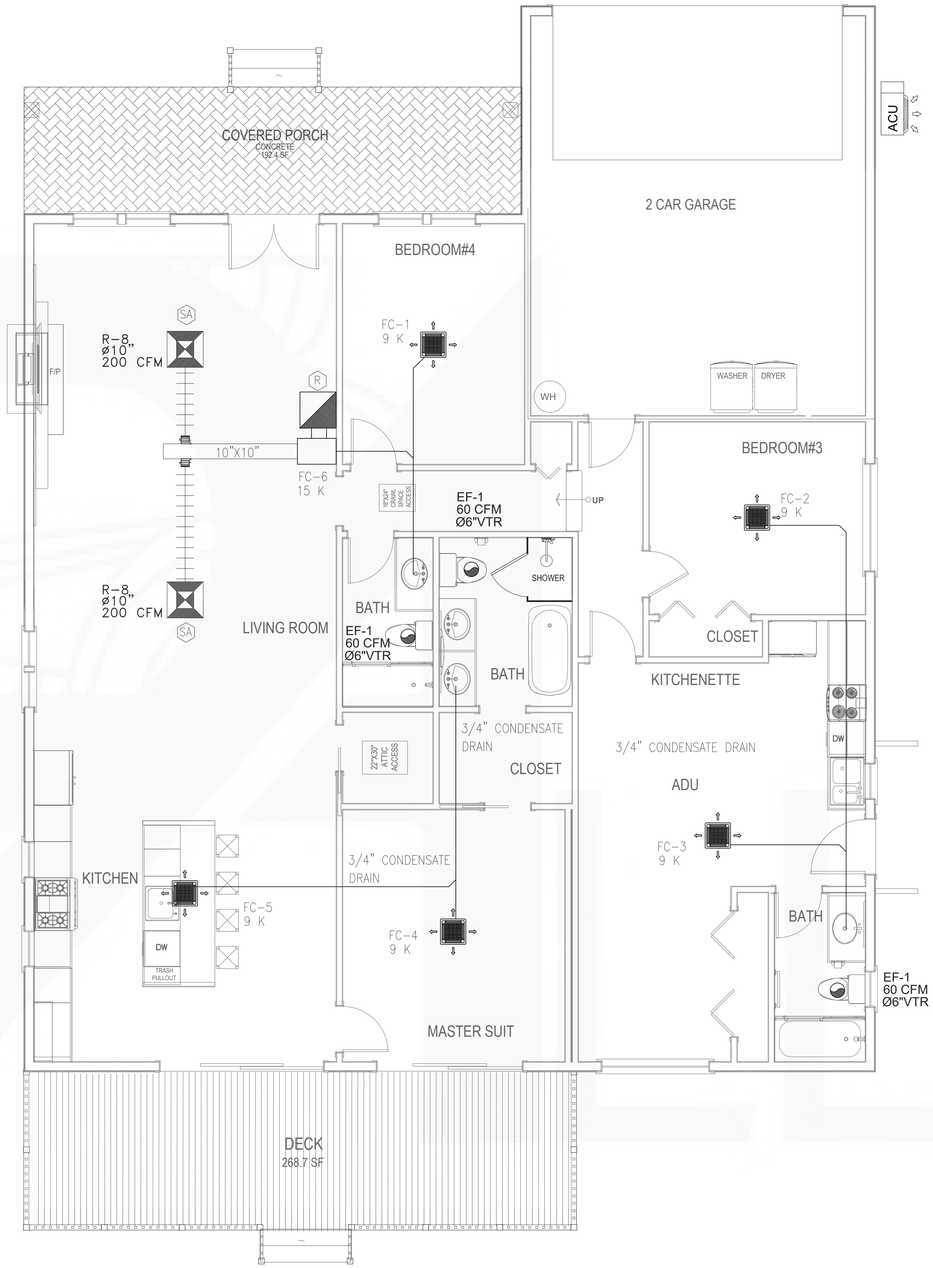
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M-1




BASIC MECHANICAL REQUIREMENTS:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE FOLLOWING:
   - A. LATEST EDITION AND AMENDMENTS OF THE APPLICABLE STATE AND LOCAL CODES.
   - B. LATEST (OR APPLICABLE) EDITION OF INTERNATIONAL MECHANICAL CODE.
   - C. LATEST (OR APPLICABLE) EDITION OF NFPA CODE 90A.
2. FURNISH AND INSTALL ALL LABOR, MATERIAL, AND EQUIPMENT AND SERVICES NECESSARY FOR COMPLETE AND SAFE INSTALLATION OF THE MECHANICAL SYSTEM INDICATED ON THE DRAWINGS AND NOTED IN THE SPECIFICATIONS HEREINAFTER. MECHANICAL DRAWINGS ARE CONSIDERED DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND SYSTEMS. REFER TO ARCHITECTURAL DRAWINGS TO VERIFY LOCATION OF DEVICES, EQUIPMENT, ETC. CHECK DRAWINGS OF OTHER TRADES TO VERIFY EXACT SPACE CONDITIONS OF DUCTWORK AND EQUIPMENT. MATERIALS SHALL BE NEW, FREE FROM DEFECTS AND LISTED BY ARI OR UL WHERE APPLICABLE. CONTRACTOR SHALL COORDINATE ALL NEW WORK WITH EXISTING CONDITIONS. CONTRACTOR SHALL VISIT SITE AND EXAMINE EXISTING CONDITIONS PRIOR TO BID.
3. SUBMIT SIX (6) COPIES OF SHOP DRAWINGS TO OWNER OR ARCHITECT FOR EACH PIECE OF EQUIPMENT TO INCLUDE RTU'S, ASSOCIATED PIPING, HEATERS, EQUIPMENT, DIFFUSERS, INSULATION, FANS, CONTROLS AND DUCTWORK. OBTAIN APPROVAL BEFORE EQUIPMENT IS ORDERED, BUILT, OR INSTALLED.




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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: June 3, 2021

Scale: 1/4" = 1' - 00"

DRAWING TITLE:
MECHANICAL PLAN

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# GENERAL NOTES

1. MECHANICAL CONTRACTOR SHALL EXAMINE ALL OTHER SPECIFICATIONS, DRAWINGS AND ALL FEATURES OF BUILDING CONSTRUCTION WHICH MAY AFFECT HIS WORK AND SHALL B GOVERNED BY THESE AND OTHER SPECIFICATIONS, INCLUDIN THE GENERAL CONDITIONS AND PARTICULAR INSTRUCTIONS T ALL BIDDER AND SUPPLIERS .
2. ALL WORK SHALL BE EXECUTED AND INSPECTED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND/OR STATE CODES, LAWS, ORDINANCES, RULES AND REGULATIONS APPLICABLE TO THIS PARTICULAR CLASS OF WORK, AND EACH CONTRACTOR SHALL INCLUDE IN HIS PRICE ALL APPLICABLE SERVICE CHARGES, FEES, PERMITS, TAXES, AND OTHER SIMILAR COSTS IN CONNECTION THEREWITH .
3. PRIOR TO FABRICATION OF DUCTWORK, THE MECHANICAL CONTRACTOR SHALL EXAMINE AND VERIFY ALL CONDITIONS ABOVE AND BELOW THE CEILING WHICH MAY INTERFERE WITH THE DUCT SYSTEM AND NOTIFY THE ARCHITECT OF ANY CONFLICT ENCOUNTERED CONTRACTOR SHALL PROVIDE ALL OFFSETS, ETC WHICH MAY BE REQUIRED, WITHOUT ADDITIONAL COST TO THE OWNER
4. ALL SHEET METAL DUCT CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH "SMACNA" LOW PRESSURE DUCT CONSTRUCTION STANDARD .
5. TURNING VANES SHALL BE INSTALLED IN ALL BENDS IN RECTANGULAR DUCT EXCEEDING 30"
6. ALL DUCTS SHALL BE SUPPORTED WITH 1"WIDE, 16 GAUGE, GALVANIZED STEEL BANDS .
7. ALL RECTANGULAR DUCT SHALL BE INSULATED WITH A MIN OF 1"INTERNAL LINER, 2 LBS DENSITY R-60 ALL ROUND DUCTS AND DIFFUSER TOPS SHALL HAVE A MIN 2" THICK OF FOIL BACKED BLANKET TYPE INSULATION R=4-4 2, WITH ALL JOINTS BUTTED AND TAPED .
8. ALL DUCT DIMENSIONS SHOWN ON PLANS ARE INTERNAL
9. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE LOCATION OF SUPPLY AND RETURN AIR REGISTERS, DUCTS, GRILLES AND DIFFUSERS WITH LIGHTING AND CEILING PATTERNS
10. PROVIDE LATERAL BRACING OF ALL DUCTS AND PIPES AS REQUIRED BY CODE .
11. INSULATE AND SEAL ALL DUCTWORK PER CHAPTER 10 OF THE STATE MECHANICAL CODE (T-24, PART 4)
12. MOUNT ALL THERMOSTATS AT 48" ABOVE FINISHED FLOOR .
13. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES
14. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT AND THE MECHANICAL ENGINEER .
15. DUCT SMOKE DETECTOR SHALL BE INSTALLED BELOW THE ROOF
16. ALL MECHANICAL EQUIPMENT AND SYSTEMS INSTALLED AS PART OF PROJECT SHALL COMPLY WITH ALL REQUIREMENTS OF THE 2013 CALIFORNIA MECHANICAL CODE AND THE 2013 CALIFORNIA BUILDINGCODE AND THE 2013 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS .
17. OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM CLOSER THAN 10 FEET FROM AN APPLIANCE VENT OUTLET, VENT OPENING OF A PLUMBING SYSTEM, OR THE DISCHARGE OUTLET OF EXHAUST FAN, UNLESS THE OUTLET IS 3 FT. ABOVE THE OUTSIDE AIR INLET (CMC.314 3)
18. PROVIDE 120 VOLT ELECTRICAL OUTLETS WITHIN 25 FT OF ALL MECH . EQUIPT (CMC 309)
19. HEATING,VENTILATING,ANDAIR CONDITIONING SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH CMC 317 1.REQUIREMENTS .
    A. AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE
    B. ACCA MANUAL B
    C. ASHRAE 111
    D. NEBB PROCEDURAL STANDARDS FOR TESTING,ADJUSTING ADJUSTING BALANCING OF ENVIRONMENTAL SYSTEMS
    E. SMACNA HVAC TESTING,ADJUSTING,AND BALANCING
20. MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL BE NON COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE DEVELOPED INDEX NOT TO EXCEED 50 WHERE TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ASTM E84 OR UL 723 .

| | OUTDOOR DUCTLESS UNIT SCHEDULE | | | | | | |
|---|---|---|---|---|---|---|---|
| NAME MARK | MANUFACTURER/MODEL | COOLING CAP.(BTU/H) | HEATING CAP.(BTU/H) | SEER | MCA | BREAKER SIZE | VOLT |
| ACU | MITSUBISHI/MXZ-8C60NA | 60,000 | 66,000 | 17.4 | 46 | 50 | 208-230 |

| INDOOR DUCTLESS UNIT SCHEDULE | | |
|---|---|---|
| NAME MARK | MANUFACTURER/MODEL | COOLING CAP.(BTU/H) |
| FC-1 | MITSUBISHI/ SLZ-AK09NA | 9000 |
| FC-2 | MITSUBISHI/ SLZ-AK09NA | 9000 |
| FC-3 | MITSUBISHI/ SLZ-AK09NA | 9000 |
| FC-4 | MITSUBISHI/ SLZ-AK09NA | 9000 |
| FC-5 | MITSUBISHI/ SLZ-AK09NA | 9000 |
| FC-6 | MITSUBISHI/ SEZ-KD15NA | 14100 |

**Exhaust Ultra-Silent Humidity-Sensing Ventilation Fan schedule**

| TAG NUMBER | AREA SERVED | MODEL | TYPE | CFM | RPM | AMPS | WATTS | V/PH |
|---|---|---|---|---|---|---|---|---|
| EF-1 | SEE PLAN | Broan-Nutone QTXE110S | CEILING | 110 | 760.00 | 1.90 | 87.00 | 120.00 |

REMARKS:
1. DISCONNECT SWITCH/STARTER
2. PROVIDE MANUFACTURER VIBRATION ISOLATION KIT
3. BACKDRAFT DAMPER
4. INTERLOCK W/ LIGHTS
5. EQUIVALENT MODEL OR EQUAL

**SUPPLY & RETURN DIFFUSER SCHEDULE**

| SYMBOL | ADAPTOR/ NECK SIZE | FACE SIZE | MAX CFM | MAX TP | MAX NC | THROW |
|---|---|---|---|---|---|---|
| SA | 10" Ø | 24"x24" | 218 | 0.017 | _ | 4-WAY |
| R | 12" Ø | 24"x24" | 471 | 0.038 | 16 | 4-WAY |

1. SA THRU R ARE TITUS MODEL OMNI STEEL DIFFUSERS.
2. LL IS TITUS MODEL LINEAR LOUVER DIFFUSERS.

ALL SUPPLY DIFFUSERS SHALL BE PROVIDED W/2" INSULATION BLANKET ON BACK OF DIFFUSER. ALL DIFFUSERS SHALL HAVE OPPOSED BLADE DAMPERS (OBD).

* RUNOUTS ARE DUCTS SERVING ONLY ONE SUPPLY DIFFUSER.

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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: June 3, 2021
Scale: 1/4" = 1' - 00"

DRAWING TITLE:
MECHANICAL SCHEDULE

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M-3

# M-Series

## SUBMITTAL DATA: MXZ-8C60NA
### 5-TON MULTI-ZONE INVERTER HEAT-PUMP SYSTEM

MITSUBISHI ELECTRIC

Job Name:
System Reference: Date:



Outdoor Unit: MXZ-8C60NA

**FEATURES**
- Variable speed INVERTER-driven compressor
- Branch box for simplified piping and installation flexibility
- Up to 8 indoor units connectable (six [6] if a PLA-EA7 is connected)
- Optional base pan heater
- Quiet outdoor unit operation as low as 56 dB(A)
- Wide operating range
- Compressor thermal protection
- Compressor overcurrent detection
- Fan motor overheating/voltage protection
- Up to 98% of rated heating capacity at 17°F and 84% of rated heating capacity at 5°F (non-ducted, condition dependent)
- Energy Star® certified* (non-ducted)

*ENERGY STAR products are third-party certified by an EPA-recognized Certification Body.


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## SPECIFICATIONS: MXZ-8C60NA

| Model Number | Outdoor Unit / Indoor Unit Type | | MXZ-8C60NA: Non-ducted | Mix | Ducted |
|---|---|---|---|---|---|
| Cooling*1 | Maximum Capacity | Btu/h | 60,000 | 60,000 | 60,000 |
| | Rated Capacity | Btu/h | 60,000 | 60,000 | 60,000 |
| | Minimum Capacity | Btu/h | 30,000 | 30,000 | 30,000 |
| | Maximum Power Input | W | 4,800 | 5,525 | 6,250 |
| | Rated Power Input | W | 4,800 | 5,525 | 6,250 |
| | Power Factor | % | - | - | - |
| Heating at 47° F*2 | Maximum Capacity | Btu/h | 66,000 | 66,000 | 66,000 |
| | Rated Capacity | Btu/h | 66,000 | 66,000 | 66,000 |
| | Minimum Capacity | Btu/h | 31,000 | 31,000 | 31,000 |
| | Maximum Power Input | W | 4,870 | 4,810 | 7,200 |
| | Rated Power Input | W | 4,870 | 4,810 | 4,750 |
| | Power Factor | % | - | - | - |
| Heating at 17° F*3 | Maximum Capacity | Btu/h | 65,000 | 61,500 | 58,000 |
| | Rated Capacity | Btu/h | 41,500 | 41,000 | 40,500 |
| | Maximum Power Input | W | 9,525 | 8,810 | 8,095 |
| | Rated Power Input | W | 4,860 | 4,810 | 4,750 |
| Heating at 5° F*4 | Maximum Capacity | Btu/h | 57,000 | 49,500 | 42,000 |
| | Maximum Power Input | W | 9,300 | 8,200 | 8,050 |
| Connectable Capacity | | Btu/h | 12,000 - 78,000 | 12,000 - 78,000 | 12,000 - 78,000 |
| Efficiency | SEER | | 17.40 | 16.30 | 15.10 |
| | EER *1 | | 12.50 | 11.05 | 9.60 |
| | HSPF (IV) | | 10.50 | 10.25 | 10.00 |
| | COP at 47° F*2 | | 3.40 | 3.40 | 3.40 |
| | COP at 17° F*3 | | 2.50 | 2.50 | 2.50 |
| | ENERGY STAR® Certified | | Yes | | |
| Electrical | Voltage, Phase, Frequency | V AC | 208 / 230V, 1-phase, 60 Hz | 208 / 230V, 1-phase, 60 Hz | 208 / 230V, 1-phase, 60 Hz |
| | Guaranteed Voltage Range | V AC | 187 - 253 | 187 - 253 | 187 - 253 |
| | Voltage: Indoor - Outdoor, S1-S2 | V AC | 208V / 230 | 208V / 230 | 208V / 230 |
| | Voltage: Indoor - Outdoor, S2-S3 | V AC | 24 | 24 | 24 |
| | Voltage: Indoor - Remote Controller | V AC | 12 | 12 | 12 |
| | Recommended Fuse/Breaker Size | A | 50 | 50 | 50 |
| | Recommended Wire Size (Indoor-Outdoor) | AWG | 16 | 16 | 16 |


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## SPECIFICATIONS: MXZ-8C60NA

| Model Number | Outdoor Unit / Indoor Unit Type | | MXZ-8C60NA: Non-ducted | Mix | Ducted |
|---|---|---|---|---|---|
| Outdoor Unit | MCA | A | 46 | 46 | 46 |
| | Fan Motor Full Load Amperage | A | - | - | - |
| | Fan Motor Output | W | 0.2 + 0.2 | 0.2 + 0.2 | 0.2 + 0.2 |
| | Airflow Rate | CFM | 4879 | 4879 | 4879 |
| | Refrigerant Control | | Linear Expansion Valve | Linear Expansion Valve | Linear Expansion Valve |
| | Defrost Method | | Reverse Cycle | Reverse Cycle | Reverse Cycle |
| | Heat Exchanger Type | | Plate Fin Coil | Plate Fin Coil | Plate Fin Coil |
| | Sound Pressure Level, Cooling*1 | dB(A) | 58 | 58 | 58 |
| | Sound Pressure Level, Heating*2 | dB(A) | 59 | 59 | 59 |
| | Compressor Type | | Hermetic | Hermetic | Hermetic |
| | Compressor Model | | AN056FFZMT | AN056FFZMT | AN056FFZMT |
| | Compressor Motor Output | kW | 4.2 | 4.2 | 4.2 |
| | Compressor Rated Load Amps | A | - | - | - |
| | Compressor Locked Rotor Amps | A | - | - | - |
| | Compressor Oil Type // Charge | oz. | FVS05 // 76 | FVS05 // 76 | FVS05 // 76 |
| | External Finish Color | | Munsell 3Y 7.8/ 1.1 | Munsell 3Y 7.8/ 1.1 | Munsell 3Y 7.8/ 1.1 |
| | Base Pan Heater | | Optional (PAC-5J2BBH-E) | Optional (PAC-5J2BBH-E) | Optional (PAC-5J2BBH-E) |
| | Unit Dimensions | W. in. [mm] | 41-11/32 [1,050] | 41-11/32 [1,050] | 41-11/32 [1,050] |
| | | D. in. [mm] | 13+1 [330+25] | 13+1 [330+25] | 13+1 [330+25] |
| | | H. in. [mm] | 52-11/16 [1,338] | 52-11/16 [1,338] | 52-11/16 [1,338] |
| | Package Dimensions | W. in. [mm] | 43-15/16 [1,090] | 43-15/16 [1,090] | 43-15/16 [1,090] |
| | | D. in. [mm] | 17-11/16 [450] | 17-11/16 [450] | 17-11/16 [450] |
| | | H. in. [mm] | 56-1/4 [1,428] | 56-1/4 [1,428] | 56-1/4 [1,428] |
| | Unit Weight | Lbs. [kg] | 308 [140] | 309 [140] | 309 [140] |
| | Package Weight | Lbs. [kg] | 333 [151] | 333 [151] | 333 [151] |
| Outdoor unit operating ambient temperature range | Cooling Intake Air Temp (Maximum / Minimum) | °F | 115 DB / 23 DB | 115 DB / 23 DB | 115 DB / 23 DB |
| | Heating Intake Air Temp (Maximum / Minimum) | °F | 70 DB / -4 DB | 70 DB / -4 DB | 70 DB / -4 DB |
| | Thermal Limit and Re-start Temperatures | °F | n/a | n/a | n/a |


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## SPECIFICATIONS: MXZ-8C60NA

| Model Number | Outdoor Unit / Indoor Unit Type | | MXZ-8C60NA: Non-ducted | Mix | Ducted |
|---|---|---|---|---|---|
| Refrigerant | Type | | R410A | R410A | R410A |
| | Charge | Lbs. Oz. | 11 lbs. 4 oz. | 11 lbs. 4 oz. | 11 lbs. 4 oz. |
| Indoor Unit Connection | Maximum Number of Connected IDU | | 8 (6*1) | 8 (6*1) | 8 (6*1) |
| | Minimum Number of Connected IDU | | 2 | 2 | 2 |
| | Maximum Connected Capacity | Btu/h | 78,000 | 78,000 | 78,000 |
| | Min. Connected Capacity | Btu/h | 12,000 | 12,000 | 12,000 |
| Piping | Gas Pipe Size O.D. (Flared) | In. [mm] | 3/4 [19.05] | 3/4 [19.05] | 3/4 [19.05] |
| | Liquid Pipe Size O.D. (Flared) | In. [mm] | 3/8 [9.52] | 3/8 [9.52] | 3/8 [9.52] |
| | Total Piping Length | Ft. [m] | 492 [150] | 492 [150] | 492 [150] |
| | Maximum Height Difference**, ODU above IDU | Ft. [m] | 164 [50] | 164 [50] | 164 [50] |
| | Maximum Height Difference**, ODU below IDU | Ft. [m] | 131 [40] | 131 [40] | 131 [40] |
| | Maximum Height Difference**, between branch bases | Ft. [m] | 49 [15] | 49 [15] | 49 [15] |
| | Max. Piping Length between ODU and Branch Box | Ft. [m] | 100 [30] | 100 [30] | 100 [30] |
| | Farthest Piping Length from ODU to IDU | Ft. [m] | 262 [80] | 262 [80] | 262 [80] |
| | Farthest Piping Length after Branch Box | Ft. [m] | 82 [25] | 82 [25] | 82 [25] |
| | Total Piping Length between Branch Boxes and IDU | Ft. [m] | 311 [95] | 311 [95] | 311 [95] |
| | Maximum Number of Bends | | 15 | 15 | 15 |
| | | | | | |
| AHRI Rated Conditions (Rated data is measured at a fixed compressor speed) | *1 Cooling (Indoor // Outdoor) | °F | 80 DB, 67 WB // 95 DB, 75 WB | | |
| | *2 Heating at 47°F (Indoor // Outdoor) | °F | 70 DB, 60 WB // 47 DB, 43 WB | | |
| | *3 Heating at 17°F (Indoor // Outdoor) | °F | 70 DB, 60 WB // 17 DB, 15 WB | | |
| Conditions | *4 Heating at 5°F (Indoor // Outdoor) | °F | 70 DB, 60 WB // 5 DB, 5 WB | | |

Notes:
* 6°F DB - 115°F DB when optional wind baffles are installed
** when 1 or more PLA-A-EA7 connected
*** Branch box should be placed within the level between the outdoor unit and indoor units.

For reference to connected capacity charts, please refer MXZ-8C60NA Operational Performance.


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## ACCESSORIES: MXZ-8C60NA

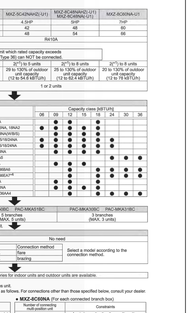
| | |
|---|---|
| Distribution Pipe for Flare Connection (necessary for installing two branch boxes) | ☐ MSDD-50AR-E |
| Distribution Pipe for Brazed Connection (necessary for installing two branch boxes) | ☐ MSDD-50BR-E |
| Joint Pipe - Port Adapter size: 3/8 x 5/8 | ☐ PAC-SG76RJ-E |
| Joint Pipe - Port Adapter size: 1/4 x 3/8 | ☐ PAC-493PI |
| Joint Pipe - Port Adapter size: 3/8 x 1/2 | ☐ MAC-A454JP-E |
| Joint Pipe - Port Adapter size: 3/8 x 1/2 | ☐ MAC-A455JP-E |
| Joint Pipe - Port Adapter size: 1/2 x 5/8 | ☐ MAC-A456JP-E |
| Joint Pipe - Port Adapter size: 5/8 x 3/4 | ☐ ADP-5834 |
| Three-port Branch Box | ☐ PAC-MKA31BC |
| Five-port Branch Box | ☐ PAC-MKA51BC |
| Branch Box Enclosure | ☐ BBE-1 |
| Air Outlet Guide | ☐ MAC-881SG |
| Air Outlet Guide | ☐ PAC-SH96SG-E (two pieces are required) |
| Front Wind Baffle | ☐ WB-PA3 (two pieces are required) |
| Drain Socket | ☐ PAC-SG61DS-E |
| Defrost Heater | ☐ PAC-SJ29BH-E |
| Centralized Drain Pan | ☐ PAC-SH97DP-E |
| Refrigeration Ball Valve-Flare/Schrader/Insulated—1/2 size | ☐ BV1/2FY02 |
| Refrigeration Ball Valve-Flare/Schrader/Insulated—1/4 size | ☐ BV1/4FY02 |
| Refrigeration Ball Valve-Flare/Schrader/Insulated—3/8 size | ☐ BV3/8FY02 |
| Refrigeration Ball Valve-Flare/Schrader/Insulated—5/8 size | ☐ BV5/8FY02 |
| Outdoor Unit 3-1/4 inch Mounting Base (Pair) - Plastic | ☐ DSD-450P |
| Condensing Unit Mounting Pad 16 x 36 x 3 | ☐ ULTRILITE1 |
| Outdoor Unit Stand—12 High | ☐ GSM0512016 |
| Outdoor Unit Stand—18 High | ☐ GSM0518016M |
| Outdoor Unit Stand—24 High | ☐ GSM0524016 |
| Heavy Duty Wall Mounting Bracket for Outdoor Units—Coated Steel | ☐ GSWB5200M-1 |
| Heavy Duty Wall Mounting Bracket for Outdoor Units—316 Series Stainless Steel | ☐ GSWB5S5 |
| Diamondback Linesets* | ☐ MLS1412125-15 |
| | ☐ MLS1412125-30 |
| | ☐ MLS1412125-50 |
| | ☐ MLS1412125-65 |
| | ☐ MLS1412125-100 |
| | ☐ MPLS3858125-10 |
| | ☐ MPLS3858125-15 |
| | ☐ MPLS3858125-30 |
| | ☐ MPLS3858125-50 |
| | ☐ MPLS3858125-65 |
| | ☐ MPLS3858125-100 |

1/4 x 1/2 x 10' / 1/2 Linesets (Twin-Tube Insulation)
1/4 x 1/2 x 30' / 1/2 Linesets (Twin-Tube Insulation)
1/4 x 1/2 x 50' / 1/2 Linesets (Twin-Tube Insulation)
1/4 x 1/2 x 65' / 1/2 Linesets (Twin-Tube Insulation)
1/4 x 1/2 x 100' / 1/2 Linesets (Twin-Tube Insulation)
3/8 x 5/8 x 10' / 1/2 Linesets (Twin-Tube Insulation)
3/8 x 5/8 x 15' / 1/2 Linesets (Twin-Tube Insulation)
3/8 x 5/8 x 30' / 1/2 Linesets (Twin-Tube Insulation)
3/8 x 5/8 x 50' / 1/2 Linesets (Twin-Tube Insulation)
3/8 x 5/8 x 65' / 1/2 Linesets (Twin-Tube Insulation)
3/8 x 5/8 x 100' / 1/2 Linesets (Twin-Tube Insulation)

* Linesets are indoor unit specific and will be listed in the IDU Information - the Joint Pipe adaptors are used in this application


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## MXZ-8C60NA SYSTEM DESIGN




*1 1 for MXZ model. Single unit connection is possible with MXZ-series unit.
*2 When connecting a multi-position unit(s), set additional constraints as follows. For connections other than those specified below, consult your dealer.

**● Models other than MXZ-8C60NA**

| Number of connectable multi-position unit | Constraints |
|---|---|
| 2 | Any indoor units other than multi-position models are not connectable. |
| 1 | None (Only the ordinal constraints apply.) |

**● MXZ-8C60NA** (For each connected branch box)

| Number of connectable multi-position unit | Constraints |
|---|---|
| 2 | Any indoor units other than multi-position models are not connectable. |
| 1 | The total system wide capacity should be 100% or below including the MXZ series unit. Only 7 BLF or 7 PEAD can be included in the connection. |

*3 For MXZ-8C60NA, When connecting the SEZ and PEAD-series units, the total system wide capacity per 1 branch box should be 100% or below including the MXZ series unit. Only 7 BLF or 7 PEAD can be included in the connection.
*4 When the system includes even 1 unit of PLA-A-EA7, the number of the maximum connectable indoor units is decreased as follows:
3 for MXZ-4C36NA2(-U1, 4 for MXZ-5C40NA2(-U1, and 6 for MXZ-8C48NA2(-U1 and MXZ-8C60NA-U1


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## MXZ-8C60NA SYSTEM DESIGN

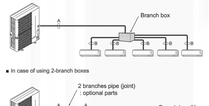
**Piping connection size**

| | A | B |
|---|---|---|
| Liquid | 3/8 inch [9.52 mm] | The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size of branch box with indoor unit. If the piping connection size of branch box does not match the piping connection size of indoor unit, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.) |
| Gas | 5/8 inch [15.88 mm] / 3/4 inch* [19.05 mm] | |

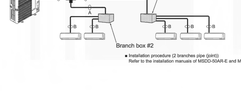
* MXZ-8C60NA only

Flare connection employed. (No brazing!)

■ In case of using 1-branch box
Flare connection employed (No brazing)




■ In case of using 2-branch boxes



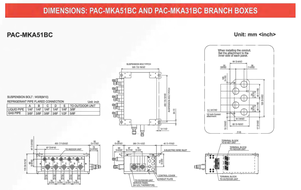

● Installation procedure (2 branches pipe (joint))
Refer to the installation manuals of MSDD-50AR-E and MSDD-50BR-E.


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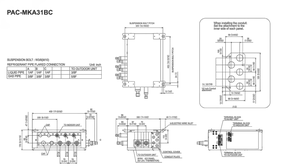
## DIMENSIONS: PAC-MKA51BC AND PAC-MKA31BC BRANCH BOXES

**PAC-MKA51BC**

Unit: mm <inch>



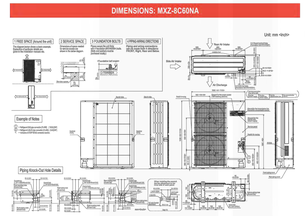
**PAC-MKA31BC**




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## DIMENSIONS: MXZ-8C60NA

Unit: mm <inch>



MITSUBISHI ELECTRIC
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Addition & ADU for
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Date: June 3, 2021
Scale: 1/4" = 1' - 00"

DRAWING TITLE:
MECHANICAL CATALOGUE

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M-4

## GENERAL ELECTRICAL NOTES

| # | DESCRIPTION |
|---|---|
| 1 | GENERAL CONTRACTOR SHALL VERIFY FIELD CONDITIONS BEFORE SUBMITTING BID. |
| 2 | ALL WORK SHALL BE DONE IN ACCORDANCE WITH 2019 NEC, AS AMENDED BY 2019 ELECTRICAL CODE, 2019 ENERGY CODE AND ANY ADDITIONAL STATE OR LOCAL CODES WHICH MAY APPLY. |
| 3 | GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, CERTIFICATES, ETC. REQUIRED. |
| 4 | GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR BOTH ROUGH AND FINAL UNDER-WRITERS OR OTHER APPROVED INSPECTION AGENCY CERTIFICATES "ELECTRICAL INSPECTION". THESE CERTIFICATES SHALL BE PRESENTED WITH REQUEST FOR FINAL PAYMENT. |
| 5 | IT IS THE INTENT OF THESE PLANS TO PROVIDE A COMPLETE OPERATING ELECTRICAL SYSTEM. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL WIRING, EQUIPMENT, MATERIAL ETC. REQUIRED, EXCEPT WHERE SPECIFICALLY NOTED AS BEING FURNISHED BY OTHERS. SHOULD THERE BE ANY QUESTIONS CONCERNING RESPONSIBILITY, THEY SHALL BE ADDRESSED TO ARCHITECT PRIOR TO BID. NO EXTRA CHARGES WILL BE ALLOWED. |
| 6 | ELECTRICAL SERVICE SHALL BE COORDINATED WITH THE EXISTING FIELD CONDITIONS. |
| 7 | CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO ALL CONTROLS, OWNER-SUPPLIED EQUIPMENT, MECHANICAL AND PLUMBING EQUIPMENT AS REQUIRED. |
| 8 | REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATION DETAILS. ALL FIXTURE AND DEVICE LOCATIONS SHOWN ON ARCHITECTURAL DRAWINGS SUPERSEDE THOSE SHOWN ON ELECTRICAL PLANS. |
| 9 | CIRCUIT NUMBER ON THE DRAWINGS ARE FOR IDENTIFICATION ONLY AND DO NOT INDICATE THE POSITION ON THE PANEL BOARD. CONNECT THE CIRCUITS WITH THE LIGHTEST LOADS AND THE RECEPTACLE CIRCUITS NEAR THE TOP OF THE PANEL, AND THE MORE HEAVILY LOADED CIRCUITS NEAR THE BOTTOM. BALANCE ALL CIRCUITS EVENLY BETWEEN PHASE SO THAT FEEDER WIRES CARRY APPROXIMATELY EQUAL CURRENT. ALL PHASES MUST BE BALANCED WITHIN 10% OR LESS. G.C. SHALL REBALANCE IF NECESSARY. |
| 10 | BRANCH CIRCUIT CONDUCTOR INSULATION SHALL BE COLOR CODED AND SHALL BE 600 VOLT, TYPE THHN/THWN. |
| 11 | CABLES IN HIGH TEMPERATURE AREAS SHALL HAVE INSULATION TYPE SUITABLE FOR THE TEMPERATURE. CABLES USED IN SPACES FOR ENVIRONMENTAL AIR SHALL CONFORM WITH APPLICABLE N.E.C. REQUIREMENTS. |
| 12 | ALL WIRING USED IN RETURN OR DISCHARGE AIR PLENUMS SHALL BE PLENUM RATED OR INSTALLED PER METHODS APPROVED BY THE LATEST EDITION OF THE N.E.C. FOR SUCH APPLICATION. |
| 13 | ALL WIRE AND CABLE CONDUCTORS SHALL BE COPPER WITH INSULATION RATED 600V. CONDUCTORS SIZED #10 AWG AND SMALLER SHALL BE SOLID OD STRANDED, AND CONDUCTORS SIZED LARGER THAN #10 AWG SHALL BE STRANDED WIRE. |
| 14 | BRANCH CIRCUITS FOR POWER AND LIGHTING SHALL NOT BE LESS THAN #12 AWG, OR AS NOTED. WIRES ARE TO BE SIZED FOR THE APPROPRIATE VOLTAGE DROPS. SEE WIRE SIZE SCHEDULE ON THIS SHEET. |
| 15 | ALL DATA CABLES SHALL BE CAT6, PLENUM RATED. TO BE PROVIDED BY OWNER SELECTED VENDOR. ELECTRICAL WORK SHALL BE TO PROVIDE OUTLET BOXES AND "RING AND STRING" FOR PULLING OF CABLES IN CONCEALED SPACES. |
| 16 | CONTROL WIRING SHALL NOT BE LESS THAN #14 AWG UNLESS OTHERWISE NOTED. |
| 17 | HOMERUNS SHOWN ARE SCHEMATIC. CONTRACTOR MAY ORIGINATE HOMERUNS FROM DIFFERENT LOCATIONS. ALL WIRE INCLUDING HOMERUNS SHALL BE DELINEATED ON AS-BUILT DRAWINGS. |
| 18 | ALL WIRING INSTALLED UNDER THIS CONTRACT SHALL BE TESTED FOR PROPER CONNECTIONS AND SHORT CIRCUITS PRIOR TO THE TURNING OVER OF WORK AS A COMPLETE UNIT. |
| 19 | PROVIDE ALL ELECTRICAL SYSTEM GROUNDING IN ACCORDANCE WITH N.E.C. REQUIREMENTS EVEN IF IT IS NOT SHOWN ON THE DRAWINGS. INCLUDE ADDITIONAL GROUNDING CONDUCTORS IN ALL RACEWAYS EVEN THOUGH THE DRAWINGS SHOW ONLY CIRCUIT AND/OR NEUTRALS CONDUCTORS. THE PLUMBING AND PIPING SYSTEM SHALL NOT BE USED AS A GROUND. ALL TRANSFORMER NEUTRALS SHALL BE GROUNDED TO BUILDING STEEL IN ACCORDANCE WITH NEC 250-70. |
| 20 | ALL CONDUITS PASSING THROUGH PARTITIONS ARE TO BE APPROPRIATELY SLEEVED AND SEALED. |
| 21 | FURNISH AND INSTALL ALL CONDUIT WITH PULL WIRES AS REQUIRED. ALL OUTLET BOXES SHALL BE STEEL, EXTRA DEEP WITH GROUNDING PIGTAILS. GROUNDING PUSH-CLIPS ARE NOT ACCEPTABLE. |
| 22 | ALL PENETRATIONS SHALL BE INSTALLED AND SEALED PER NATIONAL STATE AND LOCAL CODES |
| 23 | DO NOT MAKE ANY CHANGES OR SUBSTITUTIONS WITHOUT SPECIFIC WRITTEN APPROVAL FROM THE ARCHITECT OR ENGINEER. |
| 24 | GUARANTEE ALL WORK, MATERIAL AND EQUIPMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF APPROVAL AND FINAL ACCEPTANCE. |
| 25 | THIS DESIGN IS BASED ON INITIAL DESIGN DATA. GENERAL CONTRACTOR TO SUPPLY AND INSTALL FEEDERS, FUSES AND CIRCUIT BREAKERS TO MATCH THE NAMEPLATE RATING OF ALL EQUIPMENT. THIS SHALL BE INCLUDED IN THE INITIAL BID PROPOSAL AND NO EXTRAS SHALL BE ENTERTAINED. |
| 26 | LABEL ALL JUNCTION BOXES, OUTLETS, LIGHT SWITCH, ETC. WITH CIRCUIT NUMBER ON INTERIOR ON COVER PLATE. USE SELF-ADHESIVE "DYMO" LABEL 1/8" HIGH LETTERS. |
| 27 | GENERAL CONTRACTOR SHALL PROVIDE SEISMIC RESTRAINTS AND SUPPORTS FOR ALL FLOOR, WALL, AND CEILING MOUNTED ELECTRICAL EQUIPMENT TO RESIST EARTHQUAKE EFFECTS DETERMINED IN ACCORDANCE WITH THE BUILDING CODE. |
| 28 | THE G.C. SHALL PROVIDE ALL EQUIPMENT, MATERIALS AND LABOR TO COMPLETE ALL ELECTRICAL WORK IN A NEAT AND WORKMANLIKE MANNER AND IN ACCORDANCE WITH GOOD COMMERCIAL PRACTICE INCLUDING THE INSTALLATION OF ALL THE EQUIPMENT MATERIALS AND SYSTEMS AND THE FINAL CONNECTIONS TO THE OWNER'S EQUIPMENT AND FIXTURES AS REQUIRED BY THE OWNER. THE G.C. SHALL ALSO FURNISH TEMPORARY WIRING AND LIGHTING TO PROVIDE A MINIMUM OF 25 FC IN WORK AREAS FOR USE OF ALL THE TRADES DURING CONSTRUCTION AND THE INSTALLATION OF THE OWNERS FIXTURES. THE G.C. IS RESPONSIBLE TO REMOVE ALL TEMPORARY WIRING UPON COMPLETION OF CONSTRUCTION OF ALL TRADES. |
| 29 | THIS CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL SUPPLEMENTARY SUPPORT, INCLUDING SUPPORT STEEL AS REQUIRED TO HANG ALL EQUIPMENT AND LIGHTING FROM THE EXISTING STRUCTURE IN ACCORDANCE WITH THE ARCHITECTURAL/STRUCTURAL SUPPORT AND LOADING CRITERIA. |
| 30 | IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PROVIDE FULLY DIMENSIONED COORDINATION DRAWINGS FOR ALL OF HIS RESPECTIVE WORK. THESE DRAWINGS MUST BE FULLY COORDINATED WITH ALL EXISTING CONDITIONS, ALL HVAC, PLUMBING, FIRE PROTECTION, ELECTRICAL, LIGHTING, STRUCTURAL AND ARCHITECTURAL SYSTEMS PRIOR TO PREPARING COMPOSITE MULTI DISCIPLINE COORDINATION DRAWINGS. |
| 31 | ALL DISCONNECTING MEANS AND EQUIPMENT INDICATED ON THE DRAWING SHALL BE IDENTIFIED BY NAMEPLATE IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE 110-22. |
| 32 | ALL WIRING FOR THE EMERGENCY LIGHTING AND EMERGENCY SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 700. |
| 33 | THE WIRING METHODS AND MATERIALS INDICATED IN THE SPECIFICATIONS AND ON THE DRAWINGS SHALL BE INSTALLED AND CONNECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 300. |

## GENERAL ELECTRICAL NOTES

| # | DESCRIPTION |
|---|---|
| 33 | THE WIRING METHODS AND MATERIALS INDICATED IN THE SPECIFICATIONS AND ON THE DRAWINGS SHALL BE INSTALLED AND CONNECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 300. |
| 34 | THE ELECTRICAL SERVICE AND DISTRIBUTION SYSTEM AS INDICATED ON THE RISER DIAGRAM AND MATERIALS INDICATED IN THE SPECIFICATIONS SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 230, SERVICES. |
| 35 | ALL OVER CURRENT PROTECTION SHALL BE IN COMPLIANCE WITH THE NATIONAL ELECTRIC CODE SECTION 240, OVERCURRENT PROTECTION. |
| 36 | ALL GROUNDING REQUIREMENTS OF THE COMPLETE ELECTRICAL DISTRIBUTION SYSTEM AND AS INDICATED IN THE SPECIFICATIONS SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ARTICLE 250, GROUNDING AND BONDING. |
| 37 | PRIOR TO ANY REQUIRED CUTTING AND PATCHING OF CONCRETE FLOOR AND/OR CUTTING OF ROOF.<br>CONTRACTOR SHALL COORDINATE WITH BUILDING ENGINEER. |
| 38 | FOR ALL LIGHTING FIXTURES MOUNTED IN HUNG CEILING THE GENERAL CONTRACTOR SHALL PROVIDE AND INSTALL INDIVIDUAL SUPPORT AT EACH CORNER OF RECESSED LIGHTING TROFFER CONNECTED TO BUILDING STEEL ABOVE ALL CONDUIT AND MC CABLE MOUNTED ABOVE HUNG CEILING SHALL BE INDIVIDUALLY SUPPORTED IN THE SAME FASHION AS PER NEC REQUIREMENTS. |
| 39 | DO NOT SCALE FROM THESE DRAWINGS. |
| 40 | PLANS ARE PREPARED WITH REQUIRED BRANCH CIRCUITS INDICATED BY CIRCUITS NUMBERS. PROVIDE AND INSTALL ALL CONDUITS. CONDUCTORS, BOXES, MISCELLANEOUS FITTINGS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM (HOME RUN SHOWN). BRANCH CIRCUIT INSTALLATION SHALL COMPLY WITH SPECIFICATIONS AND N.E.C. |
| 41 | ELECTRICAL RECEPTACLE, SWITCH AND CONTROL HEIGHTS (CBC-1136A.1:).<br>RECEPTACLE HEIGHTS:<br>ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THAN 48 INCHES (1219MM) MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES (381MM) MEASURED FROM THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING TO THE LEVEL OF FINISHED FLOOR OR WORKING FLATFORM. IF THE REACH IS OVEN AN OBSTRUCTION (FOR EXAMPLE, A KITCHEN BASE CABINET) BETWEEN 20 AND 25 INCHES (508 AND 635MM) IN DEPTH, THE MAXIMUM HEIGHT MEASURED AT THE BOX IS REDUCED TO 44 INCHES (1118MM) FOR FORWARD APPROACH, OR 46 INCHES (1168MM) FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES (610MM) IN DEPTH. OBSTRUCTION SHALL NOT EXCEED MORE THAN 25 INCHES (635MM) FROM THE WALL BENEATH THE RECEPTACLE. |
| 42 | SWITCH AND CONTROL HEIGHTS: (CBC 1136A.2:)<br>CONTROL OR SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES, ALARMS OR COOLING, HEATING AND VENTILATING EQUIPMENT SHALL BE LOCATED NO MORE THAN 48 INCHES (1219MM) MEASURED FROM THE TOP OF THE OUTLET BOX NOR LESS THAN 15 INCHES (381MM) MEASURED FROM THE BOTTOM OF THE OUTLET BOX TO THE LEVEL OF THE FINISHED FLOOR OR WORKING PLATFORM. IF THE REACH IS OVER A PHYSICAL BARRIER OR AN OBSTRUCTION (FOR EXAMPLE, A KITCHEN BASE CABINET) BETWEEN 20 AND 25 INCHES (508 AND 635MM) IN DEPTH, THE MAXIMUM HEIGHT IS REDUCED TO 44 INCHES (1118MM) FOR FORWARD APPROACH, OR 46 INCHES (1168MM) FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES (610MM) IN DEPTH. PHYSICAL BARRIERS OR OBSTRUCTIONS SHALL NOT EXTEND MORE THAN 25 INCHES (635MM) FROM THE WALL BENEATH A CONTROL. |

## LIGHTING FIXTURE SCHEDULE

| Type | Symbol | Type Location Description | Mfc Catalog # | Lamps | Watts | Voltage | Notes |
|---|---|---|---|---|---|---|---|
| L1 | | Ceiling Recessed led (6" round) | "Lithonia Ltg" LDN6 40/05 L06AR LD | LED | 20W | 120/ 277V | New dimmable lighting fixture |
| L 1E | | Ceiling Recessed led | "Lithonia Ltg" LDN6 40/05 L06AR LD | LED | 20W | 120/ 277V | New dimmable EM lighting fixture |
| L2 | | Surface mtd. 1'W X 4'L | GT8 2 32 A12 MVOLT GEB10IS | LED | 32W | 120/ 277V | New dimmable lighting fixture |
| EX | | Wall mounted Emergency EXIT SIGN (Single head) | Similar to "Lithonia lighting" LE S 1 SD | LED | 2W | 120/ 277V | New EM SIGN lighting fixture |
| L3 | | Wall mounted FIXTURE HIGH EFFICIENCY | "Lithonia Ltg" FMABFL 14 20840 F20 | LED | 20W | 120/ 277V | New dimmable lighting fixture |
| L4 | | Wall Mounted Bath Bar High Efficiency | "Lithonia Ltg" FMLFUTL 24 840 BN | LED | 25W | 120/ 277V | New dimmable lighting fixture |
| L5 | | Ceiling Mounted Strip Light High Efficiency | "Lithonia Ltg" CSS L48 4000LM MVOLT 40K 80CRI [CS All options] | LED | 35.3W | 120/ 277V | New dimmable lighting fixture |
| L6 | | Under-Cabinet Strip Light High Efficiency | "Lithonia Ltg" UC8 17 120 SWR | LED | 17W | 120/ 277V | New dimmable lighting fixture |
| L7 | | Outdoor Lighting | "Lithonia Ltg" TWR1 LED ALO 40K MVOLT DDBTXD | LED | 16W | 120/ 277V | New dimmable lighting fixture |
| N | | Exhaust Fan w/ Light | QTXE110C | | 31.4W | | |

## ELECTRICAL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| $ | SINGLE POLE SWITCH AND BOX, WALL MOUNTED +44" AFF. LOWER CASE LETTER INDICATES CIRCUIT CONTROLLED BY SWITCH.WITH OCCUPANCY SENSOR. |
| D | WALL MOUNTED DIMMER SWITCH, 0-10V DIMMING WITH ON-OFF SWITCH. |
| $LV | WALL MOUNTED 3 WAY ON, CENTER OFF LOW VOLTAGE SWITCH FOR LCP CONTROLLER LIGHTS. |
| | RECEPTACLE, DUPLEX 20A, 120V GRD, NEMA 5-20R +18"AFF U.O.N.(WP=WEATHERPROOF, GFCI=GROUND FAULT CIRCUIT INTERRUPTER) |
| D | DEDICATE RECEPTACLE, DUPLEX 20A, 120V GRD, NEMA 5-20R +18"AFF U.O.N. (WP=WEATHERPROOF, GFI=GROUND FAULT CIRCUIT INTERRUPTER) |
| USB | USB RECEPTACLE, DUPLEX 20A, 120V GRD, NEMA 5-20R +42"AFF U.O.N. |
| | RECEPTACLE, SINGLE, 20A, 120V GRD, NEMA 5-20R +18"AFF UON. |
| | RECEPTACLE, DOUBLE DUPLEX (2) 20A, 120V, GRD - NEMA (2) 5-20R +18"AFF U.O.N. |
| | RECEPTACLE DUPLEX 20A, 120V GRD NEMA 5-20R FLOOR MOUNTED. |
| | RECEPTACLE DOUBLE DUPLEX (2) 20A, 120V GRD, NEMA 5-20R UON. FLOOR MOUNTED. |
| | 2 PORT VOICE/ DATA OUTLET, WALL MOUNT +18" AFF PROVIDE RING & STRING TO PULL CABLES THRU HOLLOW WALL. VOICE/ DATA WIRING BY TELECOM SYSTEM INSTALLER. |
| TV | TV OUTLET, WALL MOUNT +60" AFF PROVIDE RING & STRING TO PULL CABLES THRU HOLLOW WALL. |
| | COMBINATION 4-PLEX RECEPTACLE, NEMA 5-20R DOUBLE DUPLEX (1 DUPLEX AUTO CONTROLLED BY OCCUPANCY SENSOR PER T24, (1) DUPLEX UNCONTROLLED), & TYPE 6 VOICE/DATA OUTLET, FLOOR MOUNTED. PROVIDE MIN. 3/4" TEL/DATA CONDUIT WITH PULL WIRES. |
| | 4-PLEX RECEPTACLE, NEMA 5-20R DOUBLE DUPLEX (1 DUPLEX AUTO CONTROLLED BY OCCUPANCY SENSOR PER T24, (1) DUPLEX UNCONTROLLED), +18"AFF, U.O.N. SEE NOTE 2. |
| | DUPLEX RECEPTACLE, NEMA 5-20R OCCUPANCY SENSOR CONTROLLED, +18"AFF. SEE NOTE 2. |
| GFCI | GFCI DUPLEX RECEPTACLE ABOVE COUNTER LEVEL, NEMA 5-20R. |
| GFCI | GFCI DUPLEX RECEPTACLE ABOVE COUNTER LEVEL, VACANCY SENSOR CONTROLLED, NEMA 5-20R. |
| | SPECIAL PURPOSE CONNECTION FOR ELECTRICAL EQUIPMENT. VERIFY CONNECTION TYPE AND WIRING REQUIREMENTS PRIOR TO ROUGH-IN. |
| EP | CLASS 1, DIVISION 1 RATED EXPLOSION-PROOF OUTLET. SEE ADDITIONAL NOTES ON SHEET E3.1. |
| | RECEPTACLE, 120V/240V, 3PH, 4W, GRD, RATING AS INDICATED IN PLANS. |
| | RECEPTACLE 20A, 480V, 3PH, 4W, GRD, NEMA L22-20R, +18"AFF UON. |
| | DUPLEX RECEPTACLE 20A, 120V, GND (5-20R U.O.N), SUSPENDED BY TYPE S.O. CORD WITH GRIPS AT EACH END. |
| | DOUBLE DUPLEX RECEPTACLE 20A, 120V, GND (5-20R U.O.N), SUSPENDED BY TYPE S.O. CORD WITH GRIPS AT EACH END. |
| | TWIST-LOCK RECEPTACLE 20, 250V, SINGLE PHASE (L6-20R U.O.N), SUSPENDED BY TYPE S.O. CORD WITH GRIPS AT EACH END. |
| OS | OCCUPANCY SENSOR LOW VOLTAGE CEILING MOUNTED FOR ROOM CONTROLLER. |
| OS | OCCUPANCY SENSOR LOW VOLTAGE WALL MOUNTED FOR ROOM CONTROLLER. |
| DS | CEILING MOUNTED DAYLIGHT SENSOR. |
| J | JUNCTION BOX CEILING MOUNTED, SIZE TO CODE, TAPE AND TAG WIRES. |
| J | JUNCTION BOX WALL MOUNTED, SIZE TO CODE, TAPE AND TAG WIRES. |
| | ELECTRICAL PANELBOARD, SURFACE OR FLUSH MOUNTED (277/480V). |
| | ELECTRICAL PANELBOARD, SURFACE OR FLUSH MOUNTED (120/208V). |
| | SPECIAL PURPOSE ELECTRICAL PANELBOARD, SURFACE OR FLUSH MOUNTED. |
| | TRANSFORMER - DRY TYPE. |
| | FUSED DISCONNECT SWITCH WITH DUAL ELEMENT FUSES. SWITCH AND FUSES RATING PER NAMEPLATE OF SERVED UNIT. |
| | NON-FUSED DISCONNECT SWITCH, RATING PER NAMEPLATE OF SERVED UNIT. |
| | MAGNETIC MOTOR STARTER, NEMA RATING AS REQUIRED PER SERVED UNIT. |
| P | WALL MOUNTED JUNCTION BOX FOR PRE-WIRED FURNITURE POWER SYSTEM CONNECTION. PROVIDE POWER WHIP WITH TERMINATION PLUG TO MATCH FURNITURE SYSTEM CONNECTOR. LOCATE BOX AS LOW AS POSSIBLE. FIELD COORDINATE FINAL LOCATION. |
| C | COMBINATION TELEPHONE AND DATA OUTLET, WALL MOUNTED AS LOW AS POSSIBLE FOR FLEXIBLE CONNECTION TO FURNITURE SYSTEM. |
| C P | FLOOR MOUNTED FURNITURE FEEDS W/POWER & TELE/DATA PORT CAPACITY FOR ELECTRIFIED DESKS PER CLIENT'S REQUIREMENTS. |
| C P | POWER POLES W/POWER & TELE/DATA PORT CAPACITY FOR ELECTRIFIED DESKS PER CLIENT'S REQUIREMENTS. |
| SD | Smoke Detector |
| C | Carbon Monoxide Detector |
| | LEGEND NOTES:<br>1. MOUNTING HEIGHT INDICATED ARE AFF TO CENTER OF PLATE. INCASE OF CONFLICT, GENERAL NOTES 41 & 42 SHALL PREVAIL.<br>2. NOT ALL SYMBOLS AND ABBREVIATIONS ARE NECESSARILY USED IN THIS PROJECT. |

## WIRE SCHEDULE AND NOTES

| LOAD PER PH (KVA) | WIRE SIZE (AWG) | MAXIMUM LENGTH OF BRANCH CIRCUIT PER UTILIZATION VOLTAGE (120, 1PH, MAX V.D. 3%) | (240, 1PH, MAX V.D. 3%) | (240, 3PH, MAX V.D. 3%) | NOTES AND REMARKS |
|---|---|---|---|---|---|
| < 1.92 | #12 | 56 FT | 85 FT | 98 FT | 5 |
| | #10 | 94 FT | 141 FT | 163 FT | 5 |
| | #8 | 144 FT | 217 FT | 250 FT | 5 |
| | #6 | 230 FT | 345 FT | 398 FT | 5 |
| < 1.44 | #12 | 75 FT | 113 FT | 130 FT | 5 |
| | #10 | 125 FT | 188 FT | 217 FT | 5 |
| | #8 | 192 FT | 289 FT | 334 FT | 5 |
| | #6 | 306 FT | 460 FT | 531 FT | 5 |
| < 1.26 | #12 | 86 FT | 129 FT | 149 FT | |
| | #10 | 143 FT | 215 FT | 248 FT | |
| | #8 | 220 FT | 330 FT | 381 FT | |
| < 1.08 | #12 | 100 FT | 150 FT | 173 FT | |
| | #10 | 167 FT | 250 FT | 289 FT | |
| | #8 | 256 FT | 385 FT | 445 FT | |
| < 0.9 | #12 | 120 FT | 180 FT | 240 FT | |
| | #10 | 200 FT | 300 FT | 347 FT | |
| <0.72 | #12 | 150 FT | 225 FT | 260 FT | |
| | #10 | 250 FT | 376 FT | 434 FT | |

| # | NOTES |
|---|---|
| 1 | CONTRACTOR SHALL REFER TO THIS TABLE PRIOR TO START OF BRANCH CIRCUIT ROUGH-IN. |
| 2 | CONTRACTOR SHALL USE THE APPROPRIATE WIRE SIZE IN CONJUNCTION WITH THE LENGTH OF THE PROPOSED FIELD VERIFIED ROUTING OF BRANCH CIRCUIT WIRING (INCLUDING VERTICAL & LATERAL RUN, ROUTED PARALLEL/PERPENDICULAR TO THE BUILDING STRUCTURE). |
| 3 | SEE PANEL SCHEDULE FOR THE CORRESPONDING KVA LOAD PER PHASE OF A PARTICULAR BRANCH CIRCUIT. |
| 4 | RESISTANCE VALUES USED ARE FOR UNCOATED COPPER WIRES IN STEEL CONDUIT. 75 DEGREE C., OPERATING AT 60HZ. |
| 5 | THE VALUES IN "120V, 1PH" COLUMN IS TO BE USED FOR GENERAL PURPOSE RECEPTACLE LOADS. |

## ABBREVIATIONS AND TAGS

| ABB. | DESCRIPTION | ABB. | DESCRIPTION |
|---|---|---|---|
| EWH | ELECTRIC WATER HEATER | SD | SMOKE DETECTOR |
| (E) | EXISTING TO REMAIN | TEL | TELEPHONE |
| EC | ELECTRICAL CONTRACTOR | TX | TRANSFORMER |
| FA | FIRE ALARM | TV | TELEVISION |
| FMT | FLEXIBLE METALLIC TUBING | UAC | UNDER ANOTHER CONTRACT |
| GC | GENERAL CONTRACTOR | UAS | UNDER ANOTHER SECTION |
| GFI | GROUND FAULT INTERUPTER | UON | UNLESS OTHERWISE NOTED |
| IG | ISOLATED GROUND | V.D. | VOLTAGE DROP |
| LL | LANDLORD | W | WIRE |
| LV | LOW VOLTAGE | WP | WEATHERPROOF |
| AC 1 | MECHANICAL UNIT TAG. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DESCRIPTION. | E-4 4 | DETAIL TAG. REFER TO DETAIL 4 ON SHEET NUMBER E-4. |

## ELECTRICAL DRAWING SCHEDULE

| # | TITLE |
|---|---|
| E1.0 | ELECTRICAL LEGEND, NOTES, SCHEDULES & ABBREVIATIONS |
| E2.0 | ELECTRICAL SPECIFICATIONS |
| E3.0 | ELECTRICAL LIGHTING PLAN |
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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: June 3, 2021

Scale: 1/4" = 1'-00"

DRAWING TITLE:
**ELECTRICAL LEGEND**

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# ELECTRICAL SPECIFICATIONS

## PART 1 — GENERAL

**1.01**

SCOPE OF WORK:
Furnish and Install all materials and equipment and provide all labor, tools, transportation, superintendence and services required and necessary to complete the work shown on the drawings and/or specified herein.
Also include all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete installation including all accessories and appurtenances required for testing the system. It is the intent of the drawings and specifications that all systems be complete, and ready for operation.

**1.02**

REGULATORY REQUIREMENTS:
Code compliance is mandatory. Nothing in these Drawings and Specifications work not conforming to these codes. Where work is shown to exceed minimum code requirements, comply with drawings and specifications. All work and materials shall comply with the latest rules, codes and regulations, including, but not limited to the following:

1. Occupational Safety and Health Act Standards (OSHA).
2. NFPA #70: National Electric Code (NEC), California Electrical Code (CEC).
3. NFPA #101: Life Safety Code.
4. State Fire Marshal.
5. Local Utilities Companies.

**1.03**

LICENSE, FEES AND PERMITS:
Electrical contractor shall pay for all licenses, permits and inspection fees required by the authority having jurisdiction and shall arrange for all required inspections.

**1.04**

SAFETY AND INDEMNITY:
The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of work. This requirement will apply continuously and not be limited to normal working hours. No act, service, drawing review or construction review by the Owner, the Engineers or their Consultants, is intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

**1.05**

DRAWINGS AND SPECIFICATIONS:
All drawings and all Divisions of these specifications shall be considered as a whole and work of this Division shown anywhere therein shall be furnished under this Division. Drawings are diagrammatic and indicate the general arrangement of equipment and wiring. Most direct routing of conduits and wiring is not assured. Exact requirements shall be governed by conditions of the job. Consult all other drawings in preparation of the bid.
Extra lengths of wiring or addition of pull or junction boxes, etc., necessitate by such conditions shall be included in the bid.

**1.06**

CONDITIONS AT SITE:
The electrical contractor shall have examined the site and familiarized themselves with all discernible existing conditions. No extra payment will be allowed for work required because of these conditions, whether specifically mentioned or not.

**1.07**

WORKMANSHIP AND CONTRACTOR'S QUALIFICATIONS:
Only quality workmanship will be accepted. Haphazard or poor installation will be cause for rejection of work.

**1.08**

SHOP DRAWINGS AND MATERIALS LISTS:
Submit to Owner in a single package six (6) copies of complete shop drawings and materials list, as noted below, for review within fifteen (15) days after award of contract.
Submittals required as follows:

1. Wiring devices: switches, receptacles, device plates.
2. Enclosures for utility company metering.
3. Main fused disconnect switch.
4. Panelboards.
5. Disconnect switches.
6. Lighting fixtures, lamps and lighting control equipment.

**1.09**

SUBSTITUTIONS:
One or more makes of materials or methods may have been specified to establish the standard of quality, workmanship, finish and design required, but other materials or methods equal in quality, workmanship, finish, design, and guaranteed performance, will be accepted. However, all changes and substitutions shall be requested in letter form and shall be accompanied with a statement of the amount of money to be returned to the contract if the substitution is permitted.
No work involving materials submitted for substitution shall proceed until written acceptance is received from the Owner. The Owner is the sole judge of acceptability of preferred substitutions. If a substitution item is permitted, and any re-design effort is thereby necessitated, the required redesign shall be at the Contractor's expense.

**1.10**

COORDINATION:
Coordinate work with other trades to avoid conflict and to provide correct rough-in and connection for equipment furnished under other trades that require electrical connections. Inform Contractors of other trades of the required access to and clearances around electrical equipment to maintain service ability and code compliance.
Verify equipment dimensions and requirements with provisions specified under this Section. Check actual job conditions before fabricating work. Report necessary changes in time to prevent needless work. Changes or additions, subject to additional compensation, which are made without written authorization and an agreed price, shall be at the Contractor's risk and expense.

**1.11**

CUTTING AND PATCHING:
All cutting and patching required for work of this Division is included herein.
Coordination with General Contractor and other trades is imperative. Contractor shall bear the responsibility for and the added expense of adjusting for improper holes, supports, etc.

**1.12**

ACCEPTANCE DEMONSTRATION:
Upon completion of the work, at a time to be designated by the Owner, the Contractor shall demonstrate for the Owner the operation of the electrical installation, including any and all special items installed by him or installed under his supervision. Properly set automatic time switches to perform switching operations in accordance with schedules provided by the Owner's representative, and demonstrate (using the manufacturer's operating instructions) how to override and/or test time switches programming.

**1.13**

RECORD DRAWINGS, EQUIPMENT DATA:
Maintain one set of clean working drawings at the job site and enter daily such "as-built" information as feeder and service routes, pull box locations and changes in layout or arrangement which occur during construction.
Deliver completed drawings to the Owner.
Deliver to the Owner's representative three copies of data sheets or other current manufacturers' publications for each item of electrical equipment furnished for the project including at least these data:

1. Technical description and replaceable parts list.
2. Physical description and installation instructions.
3. Main fused disconnect switch.
4. Manufacturer's Warranty.

**1.14**

CLEAN-UP:
Rid the premises of scrap materials, trash and debris both during construction and at completion of the project.
Leave the building and surrounding area in a clean and orderly condition.

**1.15**

GUARANTEE:
Guarantee the installation free from defects of workmanship and materials for a period of one year after Date of Certification of final payment and promptly remedy any defects developing during this period, without charge.

**1.16**

TEMPORARY SERVICES:
Provide adequate and safe temporary electrical power and lighting throughout the construction and finishing of the premises. In addition to special or unusual requirements, provide at least these items:

1. Three 20-amp circuits for construction power tools. Provide GFI temporary circuits with coverplates to meet OSHA requirements.
2. Three or more light strings suspended approximately one foot below the height of finish ceiling with lamps spaced not more than twelve feet on centers. Strings shall be run the length of the store space parallel to the demising walls, with one string within eight feet of each wall and one (or more) intermediate string(s) arranged to limit the spacing between rows to sixteen feet or less.
3. Flood lighting and task lighting for painting and other finish work. When permanent electrical service is operable, disconnect and remove from the premises the materials and equipment used for temporary power and lighting, and restore modifications and repair damage caused by the installation, use or removal of temporary service provisions.

## PART 2 — PRODUCTS

**2.01**

MATERIAL APPROVAL:
All materials must be new and bear Underwriter's Laboratories label. Materials that are not covered by UL testing standards shall be tested and approved by an independent testing laboratory or a governmental agency.
Material not in accordance with these specifications may be rejected either before or after installation.

**2.02**

CONDUITS AND OTHER RACEWAYS:
A. Rigid Steel: Hot-dipped galvanized.
B. Intermediate Metal Conduit (IMC): Hot-dipped galvanized.
C. Electrical Metallic Tubing (EMT): Electro-galvanized.
D. Wireway: Code gauge steel, with knockouts and hinged cover, corrosion resistant gray baked enamel finish.
E. Provide fittings and accessories approved for the purpose equal in all respects to the conduit or raceway.
EMT connectors and couplings shall be steel setscrew type indoors and steel compression type in wet locations and outdoors.

**2.03**

WIRES AND CABLES:
A. For power and lighting system 600V or less:
1. Conductor: minimum size #12 AWG.
a. #12 and #10 AWG solid copper.
b. #8 AWG and larger shall be stranded copper.
2. Insulation type:
a. #12 to #1 AWG: THWN for wet or underground and THHN for dry locations.
b. #1/0 through #4/0 AWG: XHHW (55 mils).
c. #250 MCM and larger: XHHW (65 mils).
d. Grounding wire: TW.
B. For signal and communications circuit:
1. Special cables shall be as specified on drawings.
2. Conductors for general use shall be stranded copper conductor, #16 AWG minimum, with THWN insulation for underground or wet locations and THHN insulation for dry locations.
C. Acceptable Products: General Electric, Anaconda, Okonite, Paranite or Triangle products conforming or exceeding applicable IPCEA standards.

**2.04**

OUTLET BOXES, JUNCTION AND PULL BOXES:
A. Outlet boxes: 4" square x 1-1/2" deep (or larger) galvanized sheet steel KO-type with plaster ring and cover for general interior use and cast metal type FS or FD with matching screw covers for exterior and exposed interior locations (gasketed in damp or wet locations).
B. Junction boxes shall be same as outlet boxes up to 42 cu. in. and codegauge steel in larger sizes with surface or flush-type screw-mounted trim covers, both boxes and covers inhibitor-primed and painted inside out.
C. Pull boxes shall be same as junction boxes unless indicated otherwise on the drawings, with covers.
D. Telephone outlet boxes shall be the type and size required by the serving telephone company but not smaller than 4-11/16" square x 2-1/8" deep with single-gang ring and Sierra #S-754N split plate bushing.

**2.05**

WIRING DEVICES AND PLATES:
Wiring devices and plates shall be by Pass and Seymour or approved equal.
1. Standard design:
a. Switch and receptacles devices shall be plastic bodies, color per architect.
b. Wall plates shall be metal type 430, stainless steel, color per architect.
c. Isolated ground receptacles shall be white with orange triangle as required per NEC, manufactured by "Leviton" # 5362-IGW or approved equal.

**2.06**

CONDUIT HANGERS:
For individual conduit runs not directly fastened to the structure, use rod hangers manufactured by Caddy, Unistrut or Powerstrut.
For multiple conduit runs, use Unistrut or Powerstrut trapeze type conduit support designed for maximum deflection not greater than 1/8".

**2.07**

WIRE CONNECTORS:
For wire sizes #8 AWG and smaller: Insulated pressure type (with live spring) rated 105 degrees C, 600V, for building wiring and 1000V in signs or fixtures. Scotchlok or Ideal. For wire size #6 AWG and larger: T & B or equivalent compression type with 3M #33+ or Plymouth "Slipknot Grey" tape insulation.

**2.08**

PANELBOARDS:
A. Construction: Cabinets shall be of code gauge, galvanized steel, surface or flush mounted as indicated. Doors shall be of cold-rolled steel with concealed hinges and flush catch and lock. All panels shall be keyed alike. Panels located adjacent to each other shall have identically sized enclosure and trims.
Minimum panel width shall be 20". Finish exposed part with one coat of primer and one coat of light grey enamel suitable for overpainting in field if desired.
B. Bus Bars: Provide ground block with full complement of terminals in addition to insulated neutral bus.
Future breaker spaces shall have complete provision including busses and connecting hardware.
C. Manufacturers: Panelboards shall be General Electric Type "AQ" or type "AE" or equivalent products of Eaton Cutler-Hammer, Square-D or Siemens-ITE.
D. Circuit Breakers: Shall be quick-make, quick-break, molded case type:
1. 120/240 Volt Panels: Shall be General Electric Type "Q" line, bolt-on type, with minimum symmetrical interrupting capacity as shown.
2. Provide multi-pole units with common trip element.
3. Circuit breakers used on "ON-OFF" control of fluorescent lighting (panelboard switching) shall be Underwriters' Laboratories listed and marked "SWD" to indicate their suitability.
E. Identification: Provide screwed-on (no adhesives) bakelite or photo-etched metallic nameplate identification on outside of each panel showing panel designation, voltage and phase in minimum 1/8" high letters. Each panel shall contain a metal-framed circuit directory inside cover, with plastic protector.
F. Complete shop drawings are required. See Article 1.08.

**2.09**

INDIVIDUALLY MOUNTED MOTOR CONTROLLERS:
A. For Polyphase Motors: Combination motor circuit protector and magnetic starter, with 3-leg overload protection. Provide two interlock contacts of the interchangeable open-close type. Provide hand-off-automatic selector switch, motor running pilot light and reset button in cover. Circuits 300V and over shall be provided with 120V control transformers.
B. Starters for fractional horsepower 120V motors shall be manual type unless shown otherwise, equipped with built-in overload protection.
C. Acceptable manufacturers: General Electric, Siemens, Square D, Eaton, and Allen Bradley.

**2.10**

LIGHTING:
A. Furnish and install all fixtures complete, including lamps and ballast ready for service.
B. Supports: Proper supports and mounting accessories, such as hangers, stems, yokes, plaster frames, etc. shall be provided as required by the type of ceiling installed. Where swivel canopies or ball aligners are specified, they shall couse fixture to hang plump regardless of ceiling slope.
C. Fixture Designation: Fixture types are designated on drawings. Where only one fixture designation is shown, it applies to all fixtures in that room or area. For exact fixture count and location refer to reflected ceiling plan.

**2.11**

MISCELLANEOUS MATERIALS:
A: Safety Switches:
Heavy duty type, 600V, horsepower rated for motors, fused or non-fused as required. Mount in enclosure with NEMA rating as required for the specific application General Electric, Square D or Eaton.

## PART 2 — PRODUCTS

**2.12**

DRY TYPE TRANSFORMERS:
General:
Equipment shall conform to or exceed requirements of NEMA, ANSI Standard C89.2 for Dry Type Transformers for General Applications. Acceptable products are those of General Electric Company's "QL," Line or equivalent Square D, Siemens-ITE, or Eaton.
Electrical Ratings:
1. Secondary windings voltage: 480Y/277V Volts, 3-Phase, WYE Grounded.
Primary windings voltages: 208Y/120V Volts, 3-Phase .
Frequency: 60 Hz.
KVA rating: As shown on drawings.
Taps: Six (6) 2.5% full capacity taps; 2 above and 4 below, rated voltage.
Impedance: For transformers larger than 75 KVA, 4.5% minimum, 5.75% maximum.
2. Winding temperature rise shall be 150 degrees Centigrade in accordance with UL Specification Article 506.
3. Transformer shall be capable of operating at 100% of nameplate rating continuously while in an ambient temperature not exceeding 40 degrees Centigrade.
4. Transformer shall meet the daily overload requirements of ANSI Standard C57.96.
Vibration Isolation, Factory-Installed:
Provide neoprene rubber pads to isolate core and coil assembly from transformer enclosure.
Installation:
1. Anchor transformer securely with minimum 1/2" diameter bolts. Strength of bolts used to secure the transformer shall be sufficient to resist shear and uplift produced by force equal to 1/2 of the equipment mass applied horizontally at center of gravity.
2. Provide 1" thick high resiliency pads to isolate transformer from floor or platform. Korfund "Elasto Rib" or equivalent.
3. Use flexible conduits at least 24" long for electrical connections.
4. Provide grounding of each transformer secondary including all conduits, wires, and connectors in accordance with NEC 250-26 and any local additional regulations.

## PART 3 — EXECUTION

**3.01**

GENERAL:
A: Electric system layouts indicated on the drawings are generally diagrammatic and shall be followed as closely as actual construction and work of other trades will permit. Govern exact routing of cable and wiring and the locations of outlets by the structure and equipment served. Take all dimensions from architectural drawings.
B. Consault all other drawings, verify scales and report any dimensional discrepancies or other conflicts with Owner before submitting bid.
C. All home runs to panelboards are indicated as starting from the outlet nearest the panel and continuing in the general direction of that panel. Continue such circuits to the panel as though the routes were completely indicated. Terminate homeruns of signal, alarm, and communication systems in a similar manner.
D. Avoid cutting and boring holes through structure or structural members wherever possible. Obtain prior approval of Owner and conform to all structural requirements when cutting or boring the structure is necessary and permitted.
E. Furnish and install all necessary hardware, hangers, blocking, brackets, bracing, runners, etc. required for equipment specified under this Section.
F. Provide necessary backing required to insure rigid mounting of outlet boxes.

**3.02**

WIRING METHODS:
A. Install all wiring in raceway or use MC cable. Where approved by all Applicable codes.Conduit shall be rigid steel, IMC or EMT as follows:
1. Above ground: Use rigid steel, IMC or EMT.
a. Wet locations: Rigid steel or IMC only.
b. Locations subject to mechanical injury: Rigid steel or IMC only.
c. Dry locations and not subject to mechanical injury: EMT, IMC or rigid steel conduit.
2. Underground: Use rigid steel.
B. Use flexible conduits in the following applications:
1. Recessed lighting fixtures.
2. Motor connections.
3. At building joints.
At wet locations, flexible conduit shall be liquid tight type.

**3.03**

INSTALLATION OF CONDUITS:
A. General:
1. Run all conduit concealed unless otherwise noted or shown.
2. Run all conduit parallel to or at right angles to center lines of columns and beams.
3. Conduits above ceilings shall not obstruct removal of ceiling tiles, lighting fixtures, air diffusers, etc.
4. Conduits shall not cross any duct shaft or area designated as future duct shaft horizontally. Conduit risers when allowed in duct shaft must be coordinated with Mechanical work to avoid any conflict.
B. Conduit Supports:
1. Support conduits with Underwriter's Laboratories listed steel conduit supports at intervals required by the National Electric Code. Wires or sheet metal strips are not acceptable for conduit support. Use conduit hangers for all conduits not directly fastened to structure and for all multiple conduit runs. Do not attach any conduit to mechanical ducts or pipes.
2. Individual conduits 1/2" and 3/4" size for lighting may be supported from ceiling support wires with Caddy clips only if acceptable to local code. Only one conduit is permitted to be attached to any ceiling support wire. Hang such conduit so as not to affect level of ceiling.
3. Avoid attaching conduit to fan plenums. When it is necessary to support conduit from fan plenum, provide a length of flexible conduit between portion attached fan plenum and portion attached to the building to minimize transmission of vibration to the building structure.

**3.04**

CONNECTIONS TO EQUIPMENT:
A. General:
1. Furnish and install required power supply conduit and wiring to all equipment. See below for other wiring required.
2. Furnish and install a disconnect switch immediately ahead of and adjacent to each magnetic motor starter or appliance unless the motor appliance is located adjacent and within sight of the serving panelboard, circuit breaker or switch. Verify all equipment nameplate current ratings prior to installation.
3. Install all rough-in work for equipment from approved shop drawings to suit the specific requirements of the equipment.
4. Furnish and install manual thermal protection for all motors not integrally equipped with thermal protection.
5. Furnish 120 Volt power to each control panel and time switch requiring a source of power to operate.

**3.05**

WIRE COLOR CODE:
Color coding shall be continuous for wire #12 through #10 AWG. Phase conductors #8 and larger and nconductors of any size in cable assemblies may have colored phasing tape at terminations.
Color code wires as follows:

| Voltage | Phase A | Phase B | Phase C | Neutral | Ground |
|---|---|---|---|---|---|
| 120/208V | Black | Red | Blue | White | Green |
| 277/480V | Brown | Orange | Yellow | Gray | Green |

## PART 3 — EXECUTION

**3.06**

INSTALLATION OF WIRES:
A. Pull no wire into any portion of the conduit system until all construction work which might damage the wire has been completed.
B. Install all wire continuous from outlet to outlet or terminal to terminal. Splices in cables when required shall be made in handholes, pull boxes or junction boxes. Make branch circuit splices in outlet boxes with 8" of correctly color-coded tails left in the box.
C. Splices in wires and cables shall be made utilizing materials and methods described herein before.
D. Make all ground, neutral and line connections to receptacle and wiring device terminals as recommended by manufacture. Provide ground jumper from outlet box to ground terminal of devices when the device is not approved for grounding through the mounting screws.
E. Provide Brady wire markers where number of conductors in a box exceeds four.
F. Megger and record insulation resistance of all 600 Volt insulated conductors size #4/0 and larger using 500 Volt megger for one minute. Make tests with circuits isolated from source and load.

**3.07**

IDENTIFICATION:
A. Provide nameplates for switchgears, panelboards, and all similar devices.
Nameplates shall be screwed (no adhesives) engraved bakelite or photo-etched metallic nameplate identification showing panel designation, voltage and phase in minimum 1/4" high letters.
B. Provide dymo labels on all lighting switches and convenience and special purpose receptacles to show panel and circuit number to which the device is connected.
C. Each panelboard shall contain a metal-framed circuit directory inside cover, with plastic protector.
D. Panelboard Schedule: After completion of work, provide typewritten updated panelboard schedules for all panelboards.

**3.08**

REMODELING WORK:
A. Existing electrical wiring which will not be made obsolete and which will be disturbed due to construction changes required by this contract shall be restored to operating condition. Where construction changes require, outlets and conduit runs shall be relocated.
Extend conduits and pull in new wiring or install junction boxes and splice in new wiring.
B. Outlets from which fixtures, switches, receptacles, and/or other electrical devices are moved and which are not replaced or reused shall be removed, where outlets boxes, etc., are completely removed, the contractor shall cut off conduits and remove wiring.
C. Where conduits extending through floors are to be abandoned, the contractor shall cut and cap or plug conduit, and the conduit shall not protrude above the floor.
D. Where existing conduit is to be abandoned, the conduit shall be removed if it is exposed, in a crawl space or in accessible ceiling.
Where it is impossible to remove the conduit, it shall be cut off and capped or plugged.
E. Remove all existing wiring not reused or required to maintain continuity circuits to remain.
F. The contractor shall be held fully responsible for the proper restoration of all existing surfaces requiring patching, plastering, painting and/or other repairs due to the installation of electrical work under the terms of this specification.
Close all openings, repair all surfaces, etc., as required.
G. Maintain circuit continuity to areas outside of this work. Provide new conduit and conductors as required to maintain continuity and maintain area as existing.

**3.09**

GROUNDING:
A. Electrical service and separately derived alternating current system shall be grounded in accordance with NEC Article 250-3 to 250-26, inclusive.
B. Ground non-current carrying metal parts of electrical equipment enclosures, frames, conductor raceways or cable trays to provide a low impendance path for line-to-ground fault current and to band all non-current carrying metal parts together. Provide ground conductor in each raceway system in addition to conductors shown.
Equipment ground conductor shall be electrically and mechanically continuous from the electrical circuit source to the equipment to be grounded. Size ground conductors per NEC Article 250-95 unless larger conductors are shown on drawings.
C. Grounding conductors shall be identified with green insulation. Where green insulation is not available on larger sizes, black insulation shall be used and suitable identified with green tape at each junction box or device enclosure.

END OF SECTION

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Addition & ADU for
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39459 BLUE FIN WAY FREMONT, CA 94538

Date: June 3, 2021
Scale: 1/4" = 1' - 00"

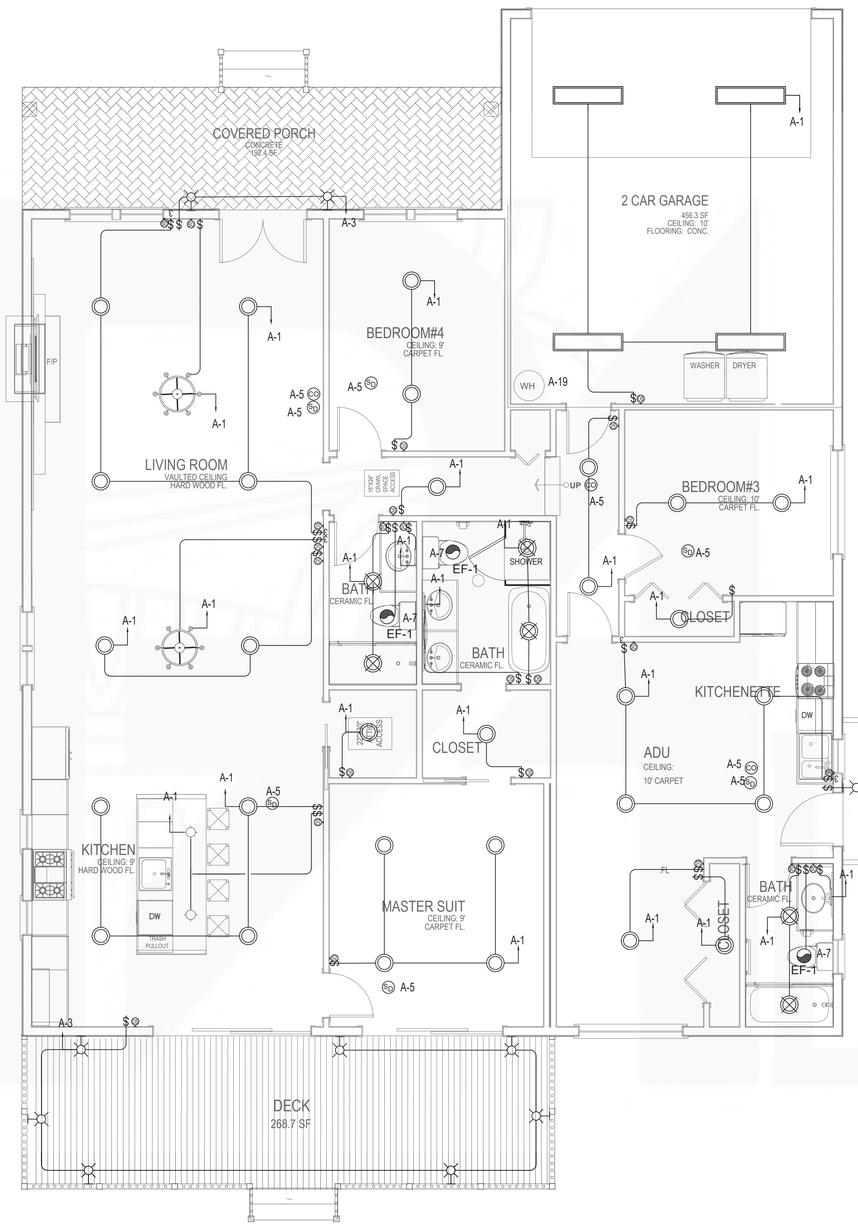
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PLAN DESIGN NOTES
All installed luminaires shall be high-efficacy in accordance with ES TABLE 150.0-A.
In bathrooms, garages, laundry rooms, and utility rooms at least one luminaire shall be controlled by a vacancy sensor.
Dimmers or vacancy sensors shall control all LED style luminaires. Two exceptions: Fixtures installed in hallways or (closets under 70 square feet).
Recessed Can Light High Efficiency fixtures shall be IC listed, air-tight labeled, and not be equipped with a standard medium base screw shell lamp holder. ES 150.0(k)
Light sources that are not marked "JA8-2016-E" shall not be installed in enclosed luminaires. ES 150.0(k)
Outdoor lighting fixtures that are attached to a building are required to be high efficacy, be manually on/off switch controlled and have both motion sensor and photocell control. See ES 150.0(k) 3 for additional control options.

**MANDATORY (CBEES 150.0(k):**
- Provide on utility plans a complete lighting fixture schedule.
- All luminaires shall be high-efficacy in accordance with CBEES Table 150.0-A
- All LED luminaires and lamps shall be marked JA8-2016 and listed in the California Energy Commission database at https://cacertappliances.energy.ca.gov/Pages/ApplianceSearch.aspx
- All recessed downlight and enclosed luminaires shall be marked JA8-2016-E and listed in the California Energy Commission database at https://cacertappliances.energy.ca.gov/Pages/AppliancesSearch.aspx
- Recessed downlight luminaires in ceilings shall not be screw-based.
- Bathrooms, garages, laundry rooms, and utility rooms: At least one luminaire in each space shall be controlled by a vacancy sensor.
- All luminaires requiring JA8-2016 or JA8-2016-E marking shall be controlled by a dimmer or vacancy sensor.
  **Exception**: Closets less than 70 s.f.
  **Exception**: Hallways
- Outdoor lighting permanently mounted to building shall be controlled by one of the following:
  - Photocontrol **and** motion sensor
  - Photocontrol **and** automatic time-switch control
  - Astronomical time clock




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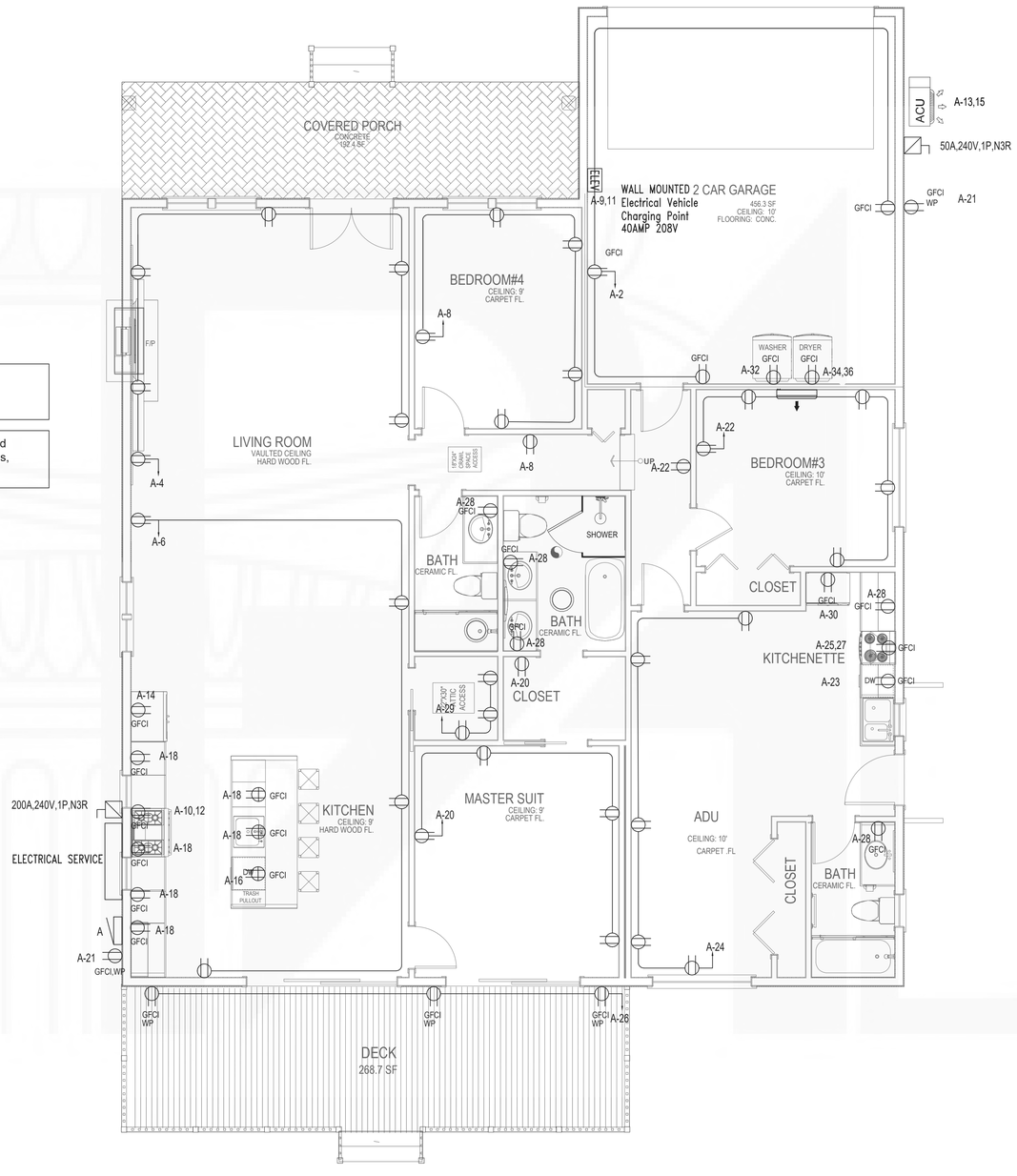
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Provide Tamper Resistant Receptacles for all locations in dwelling as described in CEC 210.52

Arc-Fault Protection for all outlets (not just receptacles) located in rooms described in NEC 210.12(A): Kitchens, Laundry areas, Family, Living, Bedrooms, Dining, Halls, etc.




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Date: June 3, 2021

Scale: 1/4" = 1' - 00"

DRAWING TITLE:

**POWER PLAN**

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| * | LOAD SUMMARY | CL | DF | CONNECTED LOAD A | CONNECTED LOAD B | DEMAND TOTAL |
|---|---|---|---|---|---|---|
| L | Lighting | 1.00 | 1.25 | 0.80 | 0.20 | 1.23 |
| R | Convenience Receipt | 21.37 | | 9.85 | 11.53 | 15.85 |
| H | Heating (space) | 0.00 | 1.25 | | 0.00 | 0.00 |
| C | Cooling | 7.58 | 1.00 | 4.74 | 2.84 | 7.58 |
| A | HVAC | | 1.00 | | | |
| P | Process | | 1.00 | | | |
| O | Other Continuous | | 1.25 | | | |
| K | Kitchen | 6.10 | 0.65 | 2.90 | 3.20 | 3.97 |
| N | Noncontinuous | 3.00 | 1.00 | 1.20 | 1.80 | 3.00 |
| | | | 1.00 | | | |
| | Total | 39.61 | | 19.50 | 20.09 | 32.18 |

| | |
|---|---|
| Total Demand Load (KVA) | 32.18 |
| Total Demand Current (A) | 134.08 |
| Min. Feeder Ampacity (A) | 167.60 |

## PANEL A

| | |
|---|---|
| SYSTEM VOLTAGE | 240/120V, 1Φ, 3W |
| BUS SIZE | 200A-1P CIB BUS PLUG |
| SYSTEM TYPE | NORMAL |
| FEEDER PROT | 200 |
| CONDUCTOR SIZE | 4/0 AWG - #6G CU |
| CONDUCTOR/PHASE | 1 |
| MAINS | 200A MCB |
| SCCR | FULLY RATED |
| MCB RATING | 65% |
| GROUND FAULT | NO |
| CONDUIT LENGTH (FT) | 50 |
| FEEDER V. DROP (%) | 0.556 |
| FAULT CURRENT | |
| KAIC RATING | 22 |
| ENCLOSURE | TYPE 3R |

| | DESCRIPTION | * | CB | KVA | A | B | KVA | CB | DESCRIPTION | * | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | LIGHTING | L | 20A-1P | 0.80 | 1.40 | | 0.54 | 20A-1P | GFCI OUTLET AT GARAGE | R | 2 |
| 3 | LIGHTING | L | 20A-1P | 0.20 | | 1.28 | 1.08 | 20A-1P | OUTLET AT LIVING | R | 4 |
| 5 | EXHAUST FAN | C | 20A-1P* | 0.60 | 1.32 | | 0.72 | 20A-1P | OUTLET AT DINING | R | 6 |
| 7 | SMOKE DETECTOR | N | 20A-1P* | 0.60 | | 1.68 | 1.08 | 20A-1P* | OUTLET AT BEDROOM#4 | H | 8 |
| 9 | EV CHARGER | N | 40A-2P | 1.20 | 3.20 | | 2.00 | 30A-2P | RANGE / OVEN | K | 10 |
| 11 | | N | | 1.20 | | 3.20 | 2.00 | | | K | 12 |
| 13 | ACU | C | 40A-2P* | 2.84 | 3.74 | | 0.90 | 20A-1P | FRIDGE | K | 14 |
| 15 | | C | | 2.84 | | 4.04 | 1.20 | 20A-1P | DISH WASHER | K | 16 |
| 17 | FURNACE | C | 20A-1P | 1.30 | 2.38 | | 1.08 | 20A-1P* | GFCI OUTLET AT KITCHEN | H | 18 |
| 19 | WATER HEATER | H | 20A-1P | 0.60 | | 1.40 | 0.80 | 20A-1P | OUTLET AT MASTER SUIT | R | 20 |
| 21 | GFCI OUTLET | R | 20A-1P | 0.36 | 1.44 | | 1.08 | 20A-1P | OUTLET AT BEDROOM#3 | R | 22 |
| 23 | DISHWASHER | R | 20A-1P* | 1.20 | | 2.10 | 0.90 | 20A-1P | OUTLET AT BALKONY#2 | R | 24 |
| 25 | RANGE/OVEN | R | 30A-2P* | 2.00 | 2.54 | | 0.54 | 20A-1P | GFCI OUTLET AT COVERED DECK | R | 26 |
| 27 | | R | | 2.00 | | 2.90 | 0.90 | 20A-1P | GFCI OUTLET AT BATH ROOM | R | 28 |
| 29 | OUTLET | R | 20A-1P | 0.54 | 1.29 | | 0.75 | 20A-1P | FRIDGE | R | 30 |
| 31 | SPARE | | 20A-1P | | | 1.20 | 1.20 | 20A-1P | WASHING MACHINE | R | 32 |
| 33 | SPARE | | 20A-1P* | | 2.25 | | 2.25 | 40A-2P* | DRYER | R | 34 |
| 35 | SPARE | | 20A-1P* | | | 2.25 | 2.25 | | | H | 36 |
| 37 | SPARE | | 20A-1P | | | | | 20A-1P | SPARE | | 38 |
| 39 | SPARE | | 20A-1P | | | | | 20A-1P | SPARE | | 40 |
| 41 | SPARE | | 20A-1P | | | | | 20A-1P | SPARE | | 42 |
| | | | (KVA) | | | | | | | | |
| | | | Total Connected Load | | 19.50 | 20.09 | | | | | |

## Available Fault Current Calculation

**Utility Fault Current** 42,000 amperes

$I = \frac{\text{kVA x 1000}}{E} = \text{trans. FLA}$

kVA = 28.86
E = 240
trans. FLA = 120

$I_{sca} = \frac{\text{trans. FLA x 100 x PF}}{\text{transformer Z}} =$

PF = 95%
Z = 4.00%

$I_{sca}$ = ampere short-circuit current RMS symmetrical. $I_{sca}$ = 3,164 amperes

**Point to Point Method**

Single Phase 240/120

**'f' factor =** $\frac{2 \times L \times I}{N \times C \times E_{L\text{-}N}}$

Length (distance) FEET L = 50
(ASC) $I_{sca}$ = 42,000
# conductors per phase N = 1
Phase conductor constant C = 15,082 **Phase Conductor** 4/0
Volt Line to Line $E_{L\text{-}L}$ = **240** Volt
f = 1.160
Neutral conductor constant C = 15,082 **Neutral Conductor** 4/0
Volt Line to Neutral $E_{L\text{-}N}$ = **120** Volt
f = 3.481

Multiplier

$M = \frac{1}{1+f}$

Line to Line M = 0.463
Line to Neutral M = 0.223

$I_{sca}$ x M = fault current at terminals of main disconnect L-L = → **19,442 amperes**
$I_{sca}$ x M = fault current at terminals of main disconnect L-N = → **14,060 amperes**

Fault Current from **PANEL A**

Copper in Metal Raceway

Single Phase

**'f' factor =** $\frac{2 \times L \times I}{N \times C \times E_{L\text{-}N}}$

Length (distance) L = 50
(ASC) $I_{sca}$ = 19,442 Phase 14,060 Neutral
# conductors per phase N = 1
Phase conductor constant C = 15,082 **Phase Conductor** 4/0
Volt Line to Line $E_{L\text{-}L}$ = **240** Volt
f = 0.537
Neutral conductor constant C = 15,082 **Neutral Conductor** 4/0
Volt Line to Neutral $E_{L\text{-}N}$ = **120** Volt
f = 0.777

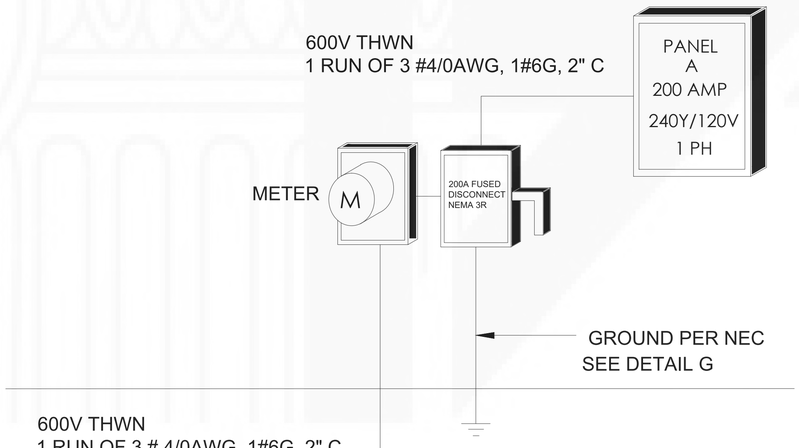
Multiplier

$M = \frac{1}{1+f}$

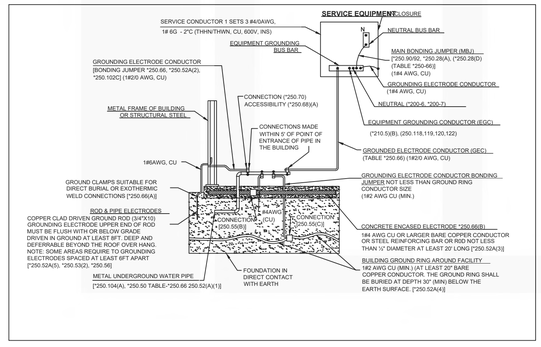
Line to Line M = 0.651
Line to Neutral M = 0.563

**Isca x M = fault current at terminal of the panel L-L** **12,648 amperes**
**Isca x M = fault current at terminal of the panel L-N** **7,913 amperes**

**Calculation does not include motor contribution**




**Mrs. Sada Ahmad**




**DETAIL "G" OF GROUNDING ELECTRODE SYSTEM (*250.50) & GROUNDING ELECTRODES (*250.52) AS SERVICE**

SCALE: NTS


PixelArch ltd.
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www.pixelarchltd.com


Project Name and Address

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: June 3, 2021

Scale: 1/4" = 1' - 00"

DRAWING TITLE:

**PANEL BOARD & SLD**


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E-5

PLUMBING SPECIFICATIONS

THE WORK INCLUDES MODIFICATION TO THE EXISTING PLUMBING SYSTEM AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING PLUMBING SYSTEM. THE WORK ALSO INCLUDES ROUGH-IN AND FINAL CONNECTIONS TO FOOD SERVICE EQUIPMENT AND BEVERAGE DISPENSING EQUIPMENT PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND/OR ORDINANCES AND IS SUBJECT TO INSPECTION.

HOOK-UP CHARGES, PERMITS AND ALL OTHER EXPENSES RELATED TO A COMPLETE AND FUNCTIONING PLUMBING SYSTEM ARE INCLUDED AS A PART OF THIS SECTION.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD ROUGH-IN DRAWINGS FOR PLUMBING FIXTURE INSTALLATION REQUIREMENTS. COMPLY WITH ALL APPLICABLE ADA INSTALLATION REQUIREMENTS.

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

PIPING SYSTEMS – GENERAL: ALL PIPING SHALL BE RUN PARALLEL TO BUILDING LINES AND SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES. INSTALL AS REQUIRED TO MEET ALL CONSTRUCTION CONDITIONS AND TO ALLOW FOR INSTALLATION OF OTHER WORK SUCH AS DUCTS AND ELECTRICAL CONDUIT. AT ALL CONNECTIONS BETWEEN FERROUS PIPING AND NONFERROUS PIPING, PROVIDE AN ISOLATING DIALECTIC UNION. ALL HANGERS SHALL BE COMPATIBLE WITH PIPING MATERIAL TO PREVENT CORROSION.

PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

FIXTURES/EQUIPMENT FURNISHED BY OTHERS: PLUMBING CONTRACTOR SHALL PROVIDE UTILITY CONNECTIONS REQUIRED SUCH AS WATER, GAS, AIR, SUPPLIES, WASTE OUTLET, TRAPS, ETC. AT ALL PLUMBING TYPE FIXTURES OR EQUIPMENT FURNISHED BY OWNER, GENERAL CONTRACTOR, FOOD SERVICE CONTRACTOR, EQUIPMENT SUPPLIER, ETC. INCLUDED ARE STOP VALVES, ESCUTCHEONS, AND CHROME PLATED BRASS TUBING WITH COMPRESSION FITTINGS.

SEWER AND WASTE PIPING: PROVIDE ALL DRAINS AND SEWERS WITHIN THE SPACE WITH CONNECTION TO THE EXISTING DRAINAGE SYSTEMS ON-SITE. SANITARY DRAINAGE PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. SANITARY DRAINAGE PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS MAY BE USED (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES). ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED, 1/4" PER FOOT UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS, OR INDICATED ON THE DRAWINGS.

VENTS: PROVIDE A COMPLETE SYSTEM OF STANDARD WEIGHT CAST IRON NO-HUB VENT RISERS WHERE THE CEILING SPACE IS USED AS A RETURN AIR PLENUM OR USE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES) WHERE THERE IS A DUCTED RETURN AIR SYSTEM. DO NOT USE PVC PIPE IN RETURN AIR PLENUM SPACES. THE VENT SYSTEM SHALL BE CARRIED THROUGH THE ROOF WITH APPROPRIATE FLASHING.

CONDENSATE AND INDIRECT DRAIN PIPING:PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV(SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS.

CLEANOUTS: PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAIN PIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE, CONFORMING TO CODE REQUIREMENTS. PROVIDE SUITABLE WALL OR FLOOR CLEANOUTS WITH ACCESSORIES TO OBSCURE FROM VIEW.

WATER DISTRIBUTION PIPING: LAYOUT WATER PIPING SO THAT THE ENTIRE SYSTEM CAN BE DRAINED. HOT AND COLD WATER PIPING SHALL BE 1/2" MIN. CPVC PIPE WITH SOLVENT FITTING. PROVIDE WATER HAMMER ARRESTERS AT EACH FIXTURE OR GROUP OF FIXTURES AS REQUIRED. INSTALL CHROME PLATED BRASS ESCUTCHEON PLATES AT ALL PENETRATIONS THROUGH FINISHED SURFACES (INCLUDING CABINET INTERIORS).

PIPE INSULATION: INSULATE (AS ALLOWED BY CODE) ALL LISTED SERVICE PIPING AS FOLLOWS. DOMESTIC COLD/HOT WATER, HOT WATER RETURN, STORM WATER PIPING. PROVIDE 1" PREFORMED FIBERGLASS, ASJ/SSL-11, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-547. FOR CONDENSATE PIPING PROVIDE 1/2" THICK INSULATION OF SAME CHARACTERISTICS AS LISTED FOR 1" ABOVE. WHERE PERMITTED BY LOCAL CODES, PROVIDE 1/2" SELF-ADHESIVE UNICELLULAR FOAM PIPE INSULATION WITH PRE-FORMED PVC FITTING COVERS – EQUAL TO SELF-ADHESIVE ARMSTRONG 2000 WITH K FACTOR OF 0.27 AT 75 DEGREES MEAN TEMPERATURE. INSULATE ANY EXPOSED CONDENSATE PIPING WITH WASTE TEMPERATURE BELOW 60 DEGREES F.

SHUTOFF VALVES, WITH UNIONS SHALL BE PROVIDED FOR SERVICE TO EACH PLUMBING FIXTURE, FOOD SERVICE EQUIPMENT ITEM OR OTHER EQUIPMENT ITEM, TO FACILITATE ISOLATION FOR REPAIR OR REPLACEMENT. VALVES SHALL BE EQUAL TO JENKINS #902-T BALL VALVE, CHROME-FINISHED BRONZE, TEFLON SEATS AND PACKING, 400 LB. W.O.G., SOLDER END.

ACCESS PANELS SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS. WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILINGS, ACCESS PANELS ARE NOT REQUIRED.

PIPING SYSTEM- PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPE WITH SOLVENT FITTINGS SHALL BE USED WHERE PEMITTED BY CODE/LOCAL AUTHORITIES.

INSTALLATION: THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE. PROCEED AS RAPIDLY AS CONSTRUCTION WILL PERMIT. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS.

REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS.

TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM. WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED, AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

GENERAL NOTES

1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE PLUMBING INSTALLATION AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.

2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2006 UNIFORM PLUMBING CODE, 2006 INTERNATIONAL BUILDING CODE, 2006 INTERNATIONAL ENERGY CONSERVATION CODE AND ALL OTHER APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.

3. COORDINATE ENTIRE INSTALLATION OF THE PLUMBING SYSTEM WITH THE WORK OF OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS. REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

4. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS.

5 PROVIDE ONE YEAR WARRANTY ON ALL PARTS AND LABOR.

6. THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF ALL DUCT, PIPE, CONDUIT, ETC.

7. ALL CUTTING AND PATCHING OF THE EXISTING STRUCTURE SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.

8. ALL HOT WATER PIPING AND RECIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED TO MEET THE REQUIREMENTS OF THE 2006 INTERNATIONAL ENERGY CONSERVATION CODE

9. CONDENSATE DRAINS SHALL BE PROVIDED FOR EACH AIR CONDITIONING UNIT. HORIZONTAL CONDENSATE DRAINS ABOVE ANY CEILING SHALL BE INSULATED WITH MIN. 3/8" THICK CLOSED CELL INSULATION.

10. PIPING:
   A. WASTE, VENT, AND STORM DRAIN PIPING SHALL BE CO-EXTRUDED PVC SCHEDULE 40) PIPE
   B. WATER PIPE SHALL BE CPVC PIPE
   C. CONDENSATE PIPING SHALL BE CO-EXTRUDED PVC (SCHEDULE 40) PIPE
   D. INSIDE GAS PIPING SHALL BE BLACK IRON SCHEDULE 40 WITH MALLEABLE IRON FITTINGS. OUTSIDE SHALL BE GALVANIZED IRON SCHEDULE 40 WITH GALVANIZED FITTINGS. GAS LINE TO BE PAINTED GRAY IN COLOR. A 24 HOUR METERED GAS TEST SHALL BE REQUIRED.
   E. ALL PIPING NOT ENCLOSED IN CONDITION SPACE OR AT EXTERIOR WALLS SHALL BE INSULATED.
   F. PIPING: PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPING WITH SOLVENT WELD FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES

11. ALL VENTS OR EXHAUSTS SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. ABOVE ANY WINDOW, DOOR, OPENING, OR AIR INTAKE.

12. CLEANOUTS SHALL BE INSTALLED PER THE UNIFORM PLUMBING CODE.

13. PROVIDE WATER TIGHT FLASHINGS WHEREVER PIPES PASS THROUGH EXTERIOR WALLS, ROOFS, OR FLOORS.

14. PROVIDE ISOLATION FOR ALL PIPES THAT COME IN CONTACT WITH THE STRUCTURE.

15. LOCATION OF EXISTING UTILITIES AND POINTS OF CONNECTION ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICES PRIOR TO STARTING WORK OF THIS SECTION. IF INDICATED POINTS OF CONNECTION CANNOT BE MADE TO EXISTING UTILITIES AS FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLING ANY WORK WHICH MAY BE AFFECTED.

16. VALVES SHALL BE NIBCO, JENKINS, HAMMOND, RED & WHITE OR APPROVED EQUAL. SERVICE PRESSURE SHALL BE SUITABLE FOR SERVICE INTENDED. THE MAIN WATER SHUT OF VALVE SHALL BE A FULL PORT BALL TYPE AND APPROVED FOR SERVICE INTENDED.

17. CONTRACTOR SHALL PROVIDE ALL SHUT OFF VALVES AS NECESSARY TO ISOLATE ANY EQUIPMENT, PLUMBING ITEMS, OR FIXTURES, THAT MAY NEED SERVICING OR ARE SUBJECT TO FAILURE WHETHER OR NOT SUCH VALVES ARE SHOWN ON THE DRAWINGS.

18. PROVIDE HANGERS AND SUPPORTS AS REQUIRED. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.

19. CONTRACTOR IS RESPONSIBLE FOR HIS OWN TRENCHING, BACKFILL, AND COMPACTION OF TRENCHES NECESSARY TO COMPLETE HIS SCOPE OF WORK. BACKFILLED TRENCHES SHALL BE RETURNED TO THEIR ORIGINAL GRADE UNLESS NOTED OTHERWISE.

20. CONTRACTOR SHALL AFFIX A MAINTENANCE LABEL TO ALL EQUIPMENT REQUIRING ROUTINE MAINTENANCE AND SHALL PROVIDE MAINTENANCE AND OPERATIONAL MANUALS IN ACCORDANCE WITH THE SPECIFICATIONS.

21. ALL EQUIPMENT THAT REQUIRES KEYS OR SPECIAL TOOLS TO OPERATE SHALL SUPPLY THE OWNER WITH TWO OF ANY SUCH KEYS OR TOOLS FOR EACH PIECE OF EQUIPMENT THAT REQUIRE THE SAME.

25. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE APPROVAL, IN WRITING, OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.

26. ALL PLUMBING, ELECTRICAL, AND GAS LINES SHALL BE CONCEALED WITHIN THE THE BUILDING STRUCTURE TO AS GREAT EXTENT AS POSSIBLE. ALL LINES NOT CONCEALED SHALL BE SECURED 6" OFF THE FLOOR AND 3/4" FROM THE WALLS USING STANDOFF BRACKETS

27. AN APPROVED BACKFLOW PREVENTOR SHALL BE PROPERLY INSTALLED UPSTREAM OF ANY POTENTIAL HAZARD BETWEEN THE POTABLE WATER SUPPLY AND SOURCE OF CONTAMINATION.

28. WATER SUPPLY CARBONATORS SHALL BE PROTECTED BY AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTOR. THE RELIEF VALVE SHALL DRAIN IN-DIRECTLY TO A FLOOR SINK WITH A 1" MIN. AIR GAP.

PLUMBING FIXTURE FLOW RATE

| FIXTURE TYPE | MAXIMUM FLOW RATE |
|---|---|
| Waterclosets | 1.28 gallons flush |
| Showerheads | 2 gpm@ 80psi |
| Lavatory faucets | 1.2gpm@ 60psi[1] |
| Kitchenfaucets | 1.8gpm@ 60psi |

# PIPE MATERIAL SCHEDULE

| SERVICE | | COPPER TYPE "M" | COPPER TYPE "L" | COPPER TYPE "K" | CAST IRON | BLACK STEEL | GALV. STEEL | VTRI. CLAY | ABS | SCH.40 PVC | SCH.40 CPVC | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER PIPING | INSIDE | | X | | | | | | | | | |
| | OUTSIDE | | | | | | | | | X | | |
| SANITARY DRAIN | INSIDE | | | | | | | | | X | | |
| | OUTSIDE | | | | | | | | | X | | |
| SANITARY VENT | INSIDE | | | | | | | | | X | | |
| | OUTSIDE | | | | | | | | | X | | |
| GAS PIPING | INSIDE | | | | | X | | | | | | |
| | OUTSIDE | | | | | | X | | | | | |
| STORM DRAIN | INSIDE | | | | | | | | | X | | |
| | OUTSIDE | | | | | | | | | X | | |
| INDIRECT DRAINAGE | INSIDE | | | | | | | | | X | | |
| | OUTSIDE | | | | | | | | | X | | |
| CONDESATE | INSIDE | | | | | | | | | X | | |
| | OUTSIDE | | | | | | | | | X | | |
| COMPRESSED AIR | INSIDE | | | | | X | | | | | | |
| | OUTSIDE | | | | | | X | | | | | |

NOTES:

PLUMBING LEGEND

| SYMBOL | ABBREV | DESCRIPTION |
|---|---|---|
| | SS or W | NEW SEWER OR WASTE |
| | V | NEW VENT |
| | CW | NEW COLD WATER |
| | HW | NEW HOT WATER |
| | G | NEW GAS |
| | CD | NEW CONDENSATE DRAIN |
| CA | CA | COMPRESSED AIR |
| | FCO | FLOOR CLEANOUT |
| HO | WCO | WALL CLEANOUT |
| | FD | FLOOR DRAIN |
| FS | FS | FLOOR SINK |
| | TP | TRAP PRIMER & TRAP PRIMER PIPING |
| | SOV | SHUT-OFF VALVE |
| | CV | CHECK VALVE |
| | PRV | BACKFLOW PREVENTER W SOV'S |
| T&P | T & P | |
| | DN | PIPE DOWN |
| | UP | PIPE UP |
| | POC | POINT OF CONNECTION |
| 7 | - | PLUMBING NOTE CALL-OUT |
| | ABV | ABOVE |
| | AFF | ABOVE FINISH FLOOR |
| | AP | ACCESS PANEL |
| | BEL | BELOW |
| | BLDG | BUILDING |
| | CLG | CEILING |
| | CONT | CONTINUATION |
| | EL | ELEVATION |
| | FIN | FINISH |
| | FL | FLOOR |
| | GR | GRADE |
| | NTS | NOT TO SCALE |
| | OC | ON CENTER |
| S=.% | S=.% | SLOPE AT A PERCENTAGE |
| | SHT | SHEET |
| | TYP | TYPICAL |
| | VTR | VENT THRU ROOF |

PLUMBING / GENERAL NOTES

BATHTUBS AND WHIRLPOOL BATHTUBS. THE MAX. HOT WATER TEMPERATURE DISCHARGING SHALL BE LIMITED TO 120 DEGREES. CPC 414/2019
BATHTUBS WASTE OPENING IN FLOOR OVER CRAWL SPACES SHALL BE PROTECTED BY A METAL SCREEN NOT EXCEEDING 12" OR SQUARE COVER. CPC 313.12.4 2019
SHOWERS AND TUB-SHOWERS COMBINATIONS IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION OF BOTH THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL BE ADJUSTED TO DELIVER A MAXIMUM MIXED WATER
SETTING OF 120 DEGREES FAHRENHEIT. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THIS PROVISION. 418.0 CPC/2019
VERIFY AND WHERE WATER PRESSURE EXCEEDS 80 PSI AN APPROVED PRESSURE REGULATOR PRECEDED BY AN ADEQUATE STRAINER SHALL BE INSTALLED 608.2 C[C / 2019
1-INSTALL TEMPERATURE AND PRESSURE RELIEF VALVE WITH MINIMUM 34" DRAIN PIPE AND TERMINATE TO THE EXTERIOR OF THE BUILDING OVER WINDOW, DOOR OR VISIBLE LOCATION. DISCHARGE FROM A RELIEF VALVE INTO A WATER HEATER PAN SHALL BE PROHIBITED CPC 608.5, 510.8.
2-PROVIDE (ON THE PLANS) A GAS PIPING DIAGRAM OF THE GAS PIPING SYSTEM THAT INCLUDES ALL PIPE SIZES, PIPE LENGTHS AND BTU RATINGS.
3-SUBMIT GAS LOAD CALCULATIONS IN ACCORDANCE WITH CPC TABLE 12-8 TO VERIFY THE PIPE SIZES ARE ADEQUATE FOR THE MAXIMUM DELIVERY CAPACITY OF CUBIC FEET OF GAS PER HOUR.
4- A WHOLE HOUSE HAS TEST IS REQUIRED UPON COMPLETION OF THE INSTALLATION, ALTERATION, OR REPAIR OF ANY GAS PIPING. THE CITY SHALL BE NOTIFIED WHEN GAS PIPING IS READY FOR INSPECTION.
5- 2 GPM SHOWER FIXTURE, MAX.1.5 GPM BATHROOM FAUCET, MAX. 2 GPM KITCHEN FAUCET, AND MAX 1.28 WATER CLOSET TO CONFORM TO CITY GREEN REQUIREMENTS.

BATHROOMS: PROVIDE AN EXHAUST FAN (AT LEAST 50 CFM) DUCTED TO THE OUTSIDE (MINIMUM 4" DIAMETER FLEX DUCT WITH A MAXIMUM LENGTH OF 70")WITH A MINIMUM VENTILATION RATE OF 100 CFM, IDENTIFY THE REQUIREMENT FOR A BACKDRAFT DAMPER ON THE DUCT, AN ENERGY STAR COMPLIANT EXHAUST FAN THAT IS CONTROLLED BY A HUMIDITY SENSOR THAT IS CAPABLE OF BEING ADJUSTED BETWEEN ≤ 50-PERCENT TO 80-PERCENT HUMIDITY; AND A SEPARATE SWITCH FROM THE LIGHT UNLESS THE FAN IS ALLOWED TO OPERATE WITH THE LIGHT SWITCHED OFF.

6-NOTE THAT ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE ROOF NOR LESS THAN 1' FROM ANY VERTICAL SURFACE. VENTS SHALL TERMINATE NOT LESS THAN 10" FROM OR 3' ABOVE ANY WINDOW, DOOR OPENING AIR INTAKE, OR VENT SHAFT NOR 3' FROM LOT LINE. (2019 CPC 906) IF WATER PRESSURE EXCEEDS 80 PSI, AND EXPANSION TANK AND AN APPROVED PRESSURE REGULATOR SHALL BE INSTALLED. (2019 CPC608.2)
NON-REMOVABLE BACK FLOW PRE-VENTER OR BIBB-TYPE VACUUM BREAKER WILL BE INSTALLED ON ALL EXTERIOR HOSE BIBS. (2019 CPC603.4.7)
HOT WATER RE-CIRCULATING SYSTEM IS INSTALLED, THE ENTIRE LENGTH OF HOT WATER PIPES SHALL BE INSULATED. (2008 CALIFORNIA ENERGY REGULATIONS 150 (J)) HOT WATER PIPE FROM THE WATER HEATER TO THE KITCHEN WILL BE INSULATED. (2008 CALIFORNIA ENERGY REGULATIONS 151(F)8 D)

CITY CODES

2019 California Building Code
2019 California Residential Code
2019 California Fire Code
2019 California Electrical Code
2019 California Mechanical Code
2019 California Plumbing Code
2019 California Green Building Standards Code
2019 California Historical Building Code
2019 California Referenced Standards Code
2019 California Administrative Code
2019 California Energy Code
ACI 318-14 (Structural Concrete)
TMS 402/602-16 (Structural Masonry)
ASCE 7-16 (Design Loads for Structures)

NOTES:

1-Projects which disturb less than one acre of soil shall manage storm water drainage during construction by one of the following: A. Retention basins. B. Where storm water is conveyed to a public drainage system, water shall be filtered by use of a barrier system, wattle or other approved method.
2-Site grading or drainage system will manage all surface water flows to keep water from entering buildings (swales, water collection, French drains, etc.). CGC Section 4.106.3. Exception: Additions not altering the drainage path.
3-When a shower is provided with multiple shower heads, the sum of flow to all the heads shall not exceed 1.8 gpm @ 80 psi, or the shower shall be designed so that only one head is on at a time. CGC Section 4.303.1.3.2.
4-Landscape irrigation water use shall have weather or soil based controllers. CGC Section 4.304.1.
5-The plans that a minimum of 65% of construction waste is to be recycled. CGC Section 4.408.1.
6-The contractor shall submit a Construction Waste Management Plan, per CGC Section 4.408.2.
7-The builder is to provide an operation manual (containing information for maintaining appliances, etc.) for the owner at the time of final inspection. CGC Section 4.410.1.
8-The gas fireplace(s) shall be a direct-vent sealed- combustion type. Woodstove or pellet stoves must be US EPA Phase II rated appliances. CGC Section 4.503.1.

WATER SAVING STANDARDS.

THE WATER SAVING PERFORMANCE STANDARDS FOR A PLUMBING FIXTURE ARE THOSE ESTABLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), CURRENT REVISION, OR THE FOLLOWING STANDARDS, WHICHEVER ARE THE MORE RESTRICTIVE
1.THE MAXIMUM FLOW FROM A SINK OR LAVATORY FAUCET OR A FAUCET AERATOR SHALL NOT EXCEED 0 5 GALLONS OF WATER PER MINUTE AT A PRESSURE OF 60 POUNDS PER SQUARE INCH WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES
2.THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A TOILET SHALL NOT EXCEED AN AVERAGE OF 1 28 GALLONS WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES
3. THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A URINAL AND THE ASSOCIATED FLUSH VALVE, IF ANY, SHALL NOT EXCEED AN AVERAGE OF ONE GALLON WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

SPECIAL NOTICE TO CONTRACTORS

1. ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.
2. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.
3. ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

PLUMBING SPECS
SCALE :NTS

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www.pixelarchltd.com

Project Name and Address:

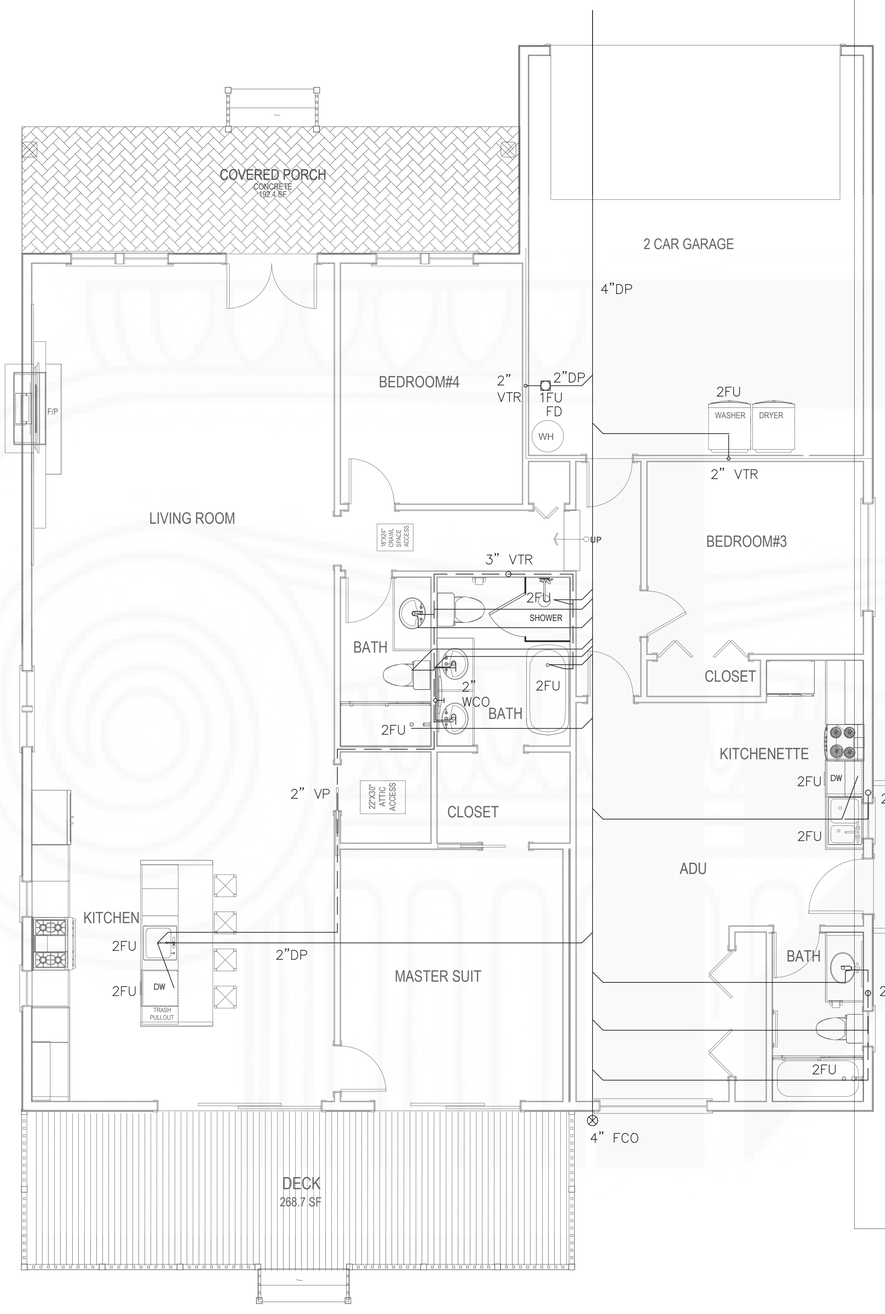
Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

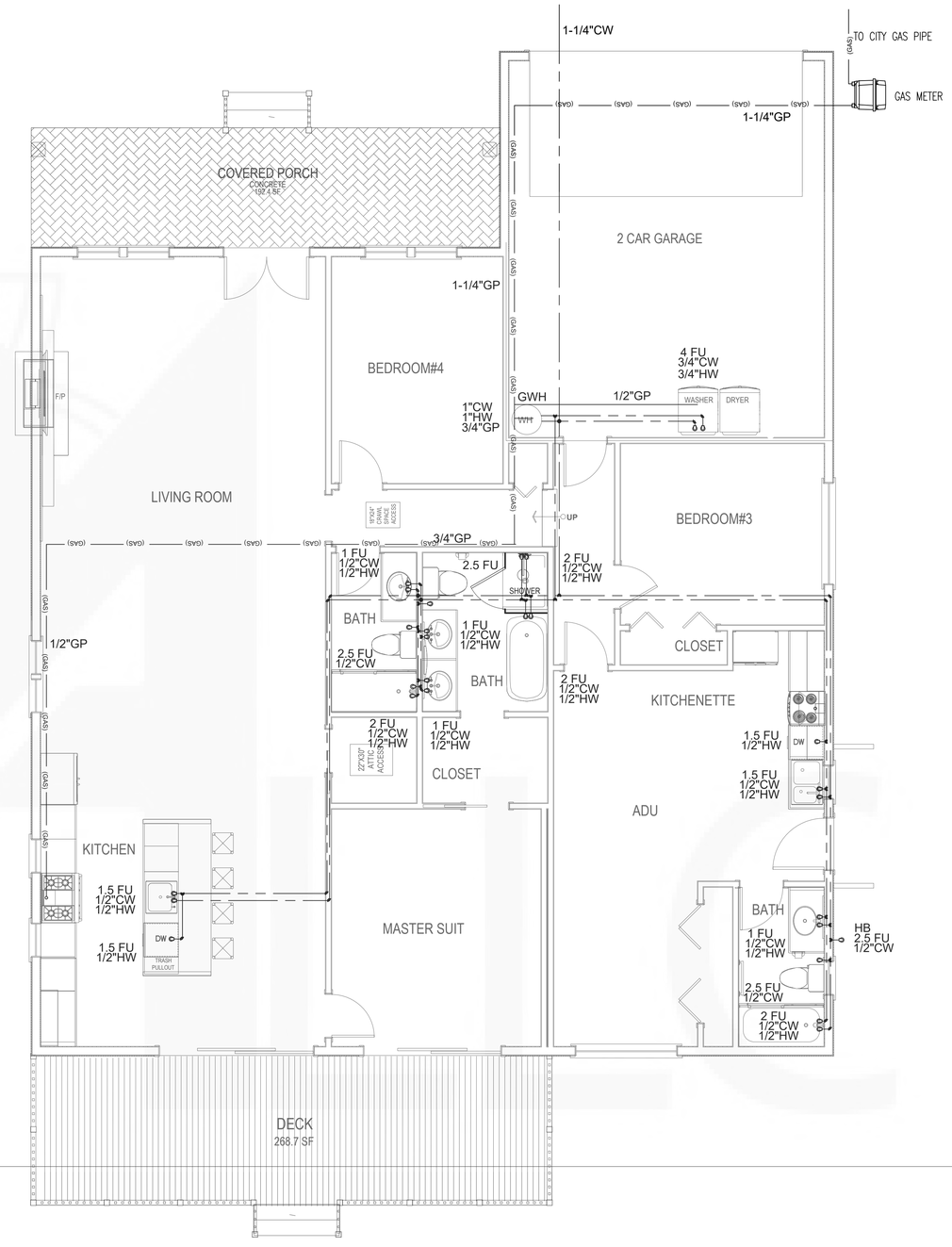
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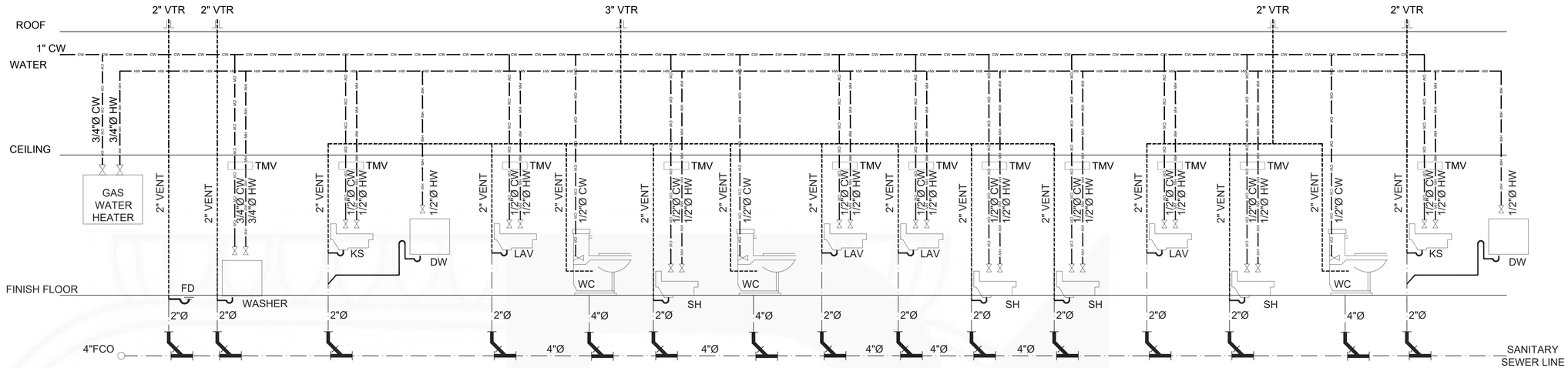
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## PLUMBING RISER DIAGRAM

**Scale** NTS

## WATER CALCULATIONS

AS PER UPC TABLE 610.3
"WATER SUPPLY FIXTURE UNITS (WSFU) AND MINIMUM FIXTURE BRANCH PIPE SIZES"

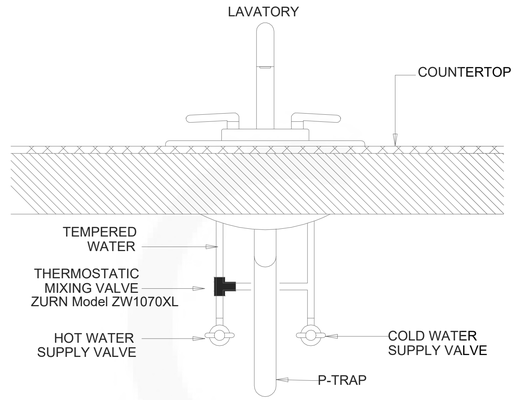
| | | | | | |
|---|---|---|---|---|---|
| 1 | – WASHER | 4 | FU = | 4 |
| 2 | – DISHWASHR (DW) | 1.5 | FU = | 3 |
| 2 | – KITCHEN SINK | 1.5 | FU = | 3 |
| 3 | – WATER CLOSET | 2.5 | FU = | 7.5 |
| 4 | – LAVATORY (LAV) | 1 | FU = | 4 |
| 4 | – SHOWER | 2 | FU = | 8 |
| | TOTAL WSFU: | | | 29.5 FU |

NOTE:
THE FIXTURES BEING SHOWN FOR THIS PERMIT WILL BE CONNECTED TO 1-1/4" METER PIPE SIZES ARE CONSERVATIVELY SIZED USING 8 PSI/100'

WATER PIPING CONSERVATIVELY SIZED AT 8.0 PSI/100'

| PIPE SIZING CHART | | | TANK | | VALVE | |
|---|---|---|---|---|---|---|
| 1/2" | = | 3 GPM = | 3 | FU | - | FU |
| 3/4" | = | 8 GPM = | 10 | FU | - | FU |
| 1" | = | 17 GPM = | 24 | FU | - | FU |
| 1-1/4" | = | 29 GPM = | 51 | FU | 12 | FU |
| 1-1/2" | = | 44 GPM = | 103 | FU | 35 | FU |
| 2" | = | 76 GPM = | 254 | FU | 132 | FU |
| 2-1/2" | = | 115 GPM = | 455 | FU | 329 | FU |
| 3" | = | 165 GPM = | 719 | FU | 666 | FU |
| 3-1/2" | = | 220 GPM = | 1091 | FU | 1091 | FU |
| 4" | = | 290 GPM = | 1668 | FU | 1668 | FU |

NOTE: PIPE SIZING CHART SIZED WITH 2015 UPC FIGURE A 103.1(1) @ 8 0 PSI/100' FOR FRICTION LOSS CHART A 105.1(1)




## TMV INSTALLATION

NOT TO SCALE

A.O. Smith | COMMERCIAL-GRADE
RESIDENTIAL GAS WATER HEATERS

### POLARIS™ HIGH EFFICIENCY
COMMERCIAL-GRADE RESIDENTIAL

The Polaris high efficiency gas water heater is the high performance answer for today's hot water needs. It can provide endless hot water* and can be used for a combination of domestic hot water and space heating.

**CONDENSING DESIGN**
- High efficiency operation with 0.90 Uniform Energy Factor GSP-100 and up to 96% thermal efficiency to save money on operating costs
- Helical internal heat exchanger keeps hot combustion gases in the tank longer to extract more heat into the water

**STAINLESS STEEL CONSTRUCTION**
- Tank and helical heat exchanger are constructed from 444 stainless steel for excellent corrosion resistance without the need for an anode

**WHISPER QUIET OPERATION**
- Ultra quiet blower and burner to minimize noise

**POWER DIRECT VENT DESIGN**
- Direct vent using PVC, CPVC or Polypropylene (solid core only) through a sidewall or roof
- Optional concentric vent kit
- 2" pipe vents up to 52 equivalent feet (100-150k BTU/hr inputs)
- 3" pipe vents up to 130 equivalent feet

**ADVANCED ELECTRONIC CONTROL**
- Large touchscreen display
- Precise temperature control
- Advanced water heater status and diagnostics

**FULLY SERVICEABLE FROM THE FRONT**
- Two front access panels expose all serviceable components. Modular components are all easily removed.

**ULTRA-LOW NOx MODULATING GAS BURNER**
- Enhanced Ultra-low NOx burner complies with SCAQMD Rule 1146.2 and other Air Quality Management Districts with similar requirements for NOx emissions of less than 14 ng/j
- Modulating burner maintains high efficiency operation at lower input rates

**SIDE-MOUNTED HOT AND COLD RECIRCULATING TAPS**
- Polaris can be easily installed with a recirculation system or as part of a combined domestic & space heating system

**AVAILABLE IN NATURAL GAS OR PROPANE**

**CSA CERTIFIED AND ASME RATED T&P RELIEF VALVE**

**STANDARDS AND CERTIFICATIONS**
- Design-certified by CSA International according to ANSI Z21.10.3 – CSA 4.3 Standards
- Meets UBC, CEC, and ICC National Codes
- Meets the thermal efficiency and standby loss requirements of the U. S. Department of Energy and current edition of ASHRAE/IES 90.1

**10-YEAR LIMITED TANK AND 10-YEAR PARTS WARRANTY**
- For complete information, consult written warranty or go to hotwater.com

*When sized appropriately. Model GTP 199 can deliver 6.95 GPM continuous flow, based on 65°F inlet water temperature, 120°F outlet temperature.



MODEL SHOWN GTP-199
SERIES 200/201

AHRI CERTIFIED
www.ahridirectory.org

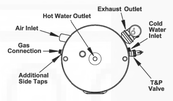
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RESIDENTIAL GAS WATER HEATERS

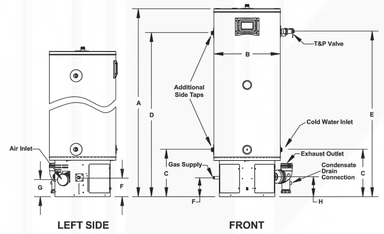
| Model Number | Nominal Capacity | Rated storage Volume | First Hour Rating (Gallons) | UEF | Thermal Efficiency | Recovery @ 90° Rise Gallon Per Hour | BTU Input Per Hour | Dimensions in Inches A | B | Vent Connection | 1" Water Connections C | D | T&P E | Gas Supply* F | Approx. Shipping Weight (lbs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSP-100 | 34 | 33 | 170 | 0.90 | 96% | 129 | 100,000 | 48-1/2 | 22 | 2 or 3 | 15-3/4 | 40-1/2 | 41 | 6-3/8 | 150 |
| GSP-130 | 34 | N/A | N/A | N/A | 96% | 165 | 130,000 | 48-1/2 | 22 | 2 or 3 | 15-3/4 | 40-1/2 | 41 | 6-3/8 | 150 |
| GSP-150 | 34 | N/A | N/A | N/A | 94% | 190 | 150,000 | 48-1/2 | 22 | 2 or 3 | 15-3/4 | 40-1/2 | 41 | 6-3/8 | 150 |
| GTP-130 | 50 | N/A | N/A | N/A | 95% | 165 | 130,000 | 62-3/8 | 22 | 2 or 3 | 15-3/4 | 54-1/2 | 55 | 6-3/8 | 176 |
| GTP-150 | 50 | N/A | N/A | N/A | 95% | 190 | 150,000 | 63-3/4 | 22 | 2 or 3 | 15-3/4 | 55-3/4 | 56-1/4 | 6-3/8 | 180 |
| GTP-175 | 50 | N/A | N/A | N/A | 96% | 222 | 175,000 | 63-3/4 | 22 | 3 | 15-3/4 | 55-3/4 | 56-1/4 | 6-3/8 | 180 |
| GTP-199 | 50 | N/A | N/A | N/A | 96% | 253 | 199,000 | 63-3/4 | 22 | 3 | 15-3/4 | 55-3/4 | 56-1/4 | 6-3/8 | 180 |

Available in Propane (LP) gas. Specify when ordering Propane (LP) gas.
Models certified for sea level to 7,700 ft. elevation.

TOP




**Top Outlet: 1" NPT**
**Side Inlet: 1" NPT**
**Side Taps: 1" NPT**
**Condensate Drain Outlet: 1/2" NPT**




LEFT SIDE FRONT

For Technical Information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.

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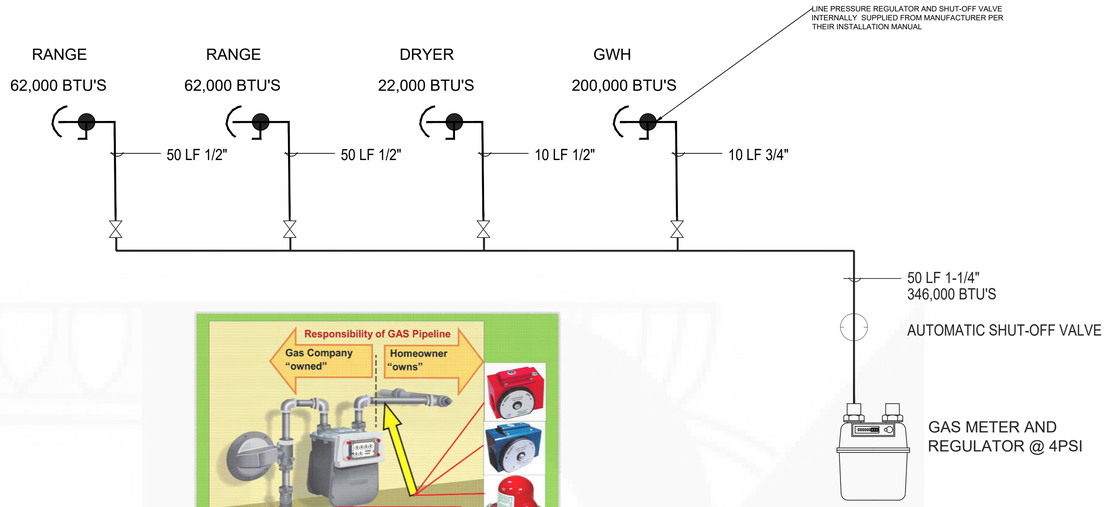
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1215.2 Tables for Sizing Gas Piping Systems

Table 1215.2(1) through Table 1215.2(36) shall be used to size gas piping in conjunction with one of the methods described in Section 1215.1.1 through Section 1215.1. 3.[NFPA 54:6.2]

TABLE 1215.2(1)
SCHEDULE 40 METALLIC PIPE [NFPA 54:TABLE 6.2(b)][1,2]

GAS: NATURAL
INLET PRESSURE: LESS THAN 2 psi
PRESSURE DROP: 0.5 in.w.c.
SPECIFIC GRAVITY: 0.60

PIPE SIZE (inch)

| NOMINAL: | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTUAL ID: | 0.622 | 0.824 | 1.049 | 1.380 | 1.610 | 2.067 | 2.469 | 3.068 | 4.026 | 5.047 | 6.065 | 7.981 | 10.020 | 11.938 |
| LENGTH (feet) | CAPACITY IN CUBIC FEET OF GAS PER HOUR | | | | | | | | | | | | | |
| 10 | 172 | 360 | 678 | 1390 | 2090 | 4020 | 6400 | 11 300 | 23 100 | 41 800 | 67 600 | 139 000 | 252 000 | 399 000 |
| 20 | 118 | 247 | 466 | 957 | 1430 | 2760 | 4400 | 7780 | 15 900 | 28 700 | 46 500 | 95 500 | 173 000 | 275 000 |
| 30 | 95 | 199 | 374 | 768 | 1150 | 2220 | 3530 | 6250 | 12 700 | 23 000 | 37 300 | 76 700 | 139 000 | 220 000 |
| 40 | 81 | 170 | 320 | 657 | 985 | 1900 | 3020 | 5350 | 10 900 | 19 700 | 31 900 | 65 600 | 119 000 | 189 000 |
| 50 | 72 | 151 | 284 | 583 | 873 | 1680 | 2680 | 4740 | 9660 | 17 500 | 28 300 | 58 200 | 106 000 | 167 000 |
| 60 | 65 | 137 | 257 | 528 | 791 | 1520 | 2430 | 4290 | 8760 | 15 800 | 25 600 | 52 700 | 95 700 | 152 000 |
| 70 | 60 | 126 | 237 | 486 | 728 | 1400 | 2230 | 3950 | 8050 | 14 600 | 23 600 | 48 500 | 88 100 | 139 000 |
| 80 | 56 | 117 | 220 | 452 | 677 | 1300 | 2080 | 3670 | 7490 | 13 600 | 22 000 | 45 100 | 81 900 | 130 000 |
| 90 | 52 | 110 | 207 | 424 | 635 | 1220 | 1950 | 3450 | 7030 | 12 700 | 20 600 | 42 300 | 76 900 | 122 000 |
| 100 | 50 | 104 | 195 | 400 | 600 | 1160 | 1840 | 3260 | 6640 | 12 000 | 19 500 | 40 000 | 72 600 | 115 000 |
| 125 | 44 | 92 | 173 | 355 | 532 | 1020 | 1630 | 2890 | 5890 | 10 600 | 17 200 | 35 400 | 64 300 | 102 000 |
| 150 | 40 | 83 | 157 | 322 | 482 | 928 | 1480 | 2610 | 5330 | 9650 | 15 600 | 32 100 | 58 300 | 92 300 |
| 175 | 37 | 77 | 144 | 296 | 443 | 854 | 1360 | 2410 | 4910 | 8880 | 14 400 | 29 500 | 53 600 | 84 900 |
| 200 | 34 | 71 | 134 | 275 | 412 | 794 | 1270 | 2240 | 4560 | 8260 | 13 400 | 27 500 | 49 900 | 79 000 |
| 250 | 30 | 63 | 119 | 244 | 366 | 704 | 1120 | 1980 | 4050 | 7320 | 11 900 | 24 300 | 44200 | 70 000 |
| 300 | 27 | 57 | 108 | 221 | 331 | 638 | 1020 | 1800 | 3670 | 6630 | 10 700 | 22 100 | 40 100 | 63 400 |
| 350 | 25 | 53 | 99 | 203 | 305 | 587 | 935 | 1650 | 3370 | 6100 | 9880 | 20 300 | 36 900 | 58 400 |
| 400 | 23 | 49 | 92 | 189 | 283 | 546 | 870 | 1540 | 3140 | 5680 | 9190 | 18 900 | 34 300 | 54 300 |
| 450 | 22 | 46 | 86 | 177 | 266 | 512 | 816 | 1440 | 2940 | 5330 | 8620 | 17 700 | 32 200 | 50 900 |
| 500 | 21 | 43 | 82 | 168 | 251 | 484 | 771 | 1360 | 2780 | 5030 | 8150 | 16 700 | 30 400 | 48 100 |
| 550 | 20 | 41 | 78 | 159 | 239 | 459 | 732 | 1290 | 2640 | 4780 | 7740 | 15 900 | 28 900 | 45 700 |
| 600 | 19 | 39 | 74 | 152 | 228 | 438 | 699 | 1240 | 2520 | 4560 | 7380 | 15 200 | 27 500 | 43 600 |
| 650 | 18 | 38 | 71 | 145 | 218 | 420 | 669 | 1180 | 2410 | 4360 | 7070 | 14 500 | 26 400 | 41 800 |
| 700 | 17 | 36 | 68 | 140 | 209 | 403 | 643 | 1140 | 2320 | 4190 | 6790 | 14 000 | 25 300 | 40 100 |
| 750 | 17 | 35 | 66 | 135 | 202 | 389 | 619 | 1090 | 2230 | 4040 | 6540 | 13 400 | 24400 | 38 600 |
| 800 | 16 | 34 | 63 | 130 | 195 | 375 | 598 | 1060 | 2160 | 3900 | 6320 | 13 000 | 23 600 | 37 300 |
| 850 | 16 | 33 | 61 | 126 | 189 | 363 | 579 | 1020 | 2090 | 3780 | 6110 | 12 600 | 22 800 | 36 100 |

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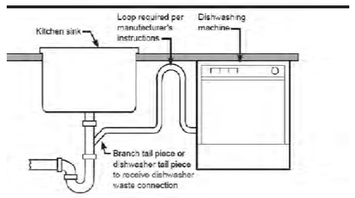
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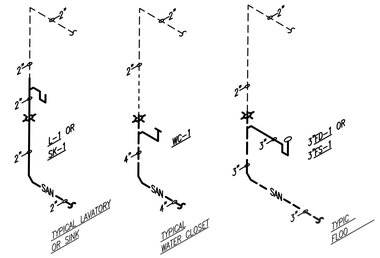
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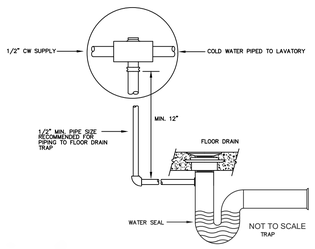
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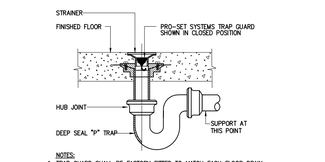

13 DISHWASHER INSTALLATION DETAIL




11 **TYPICAL WASTE AND VENT RISERS**
SCALE: NONE

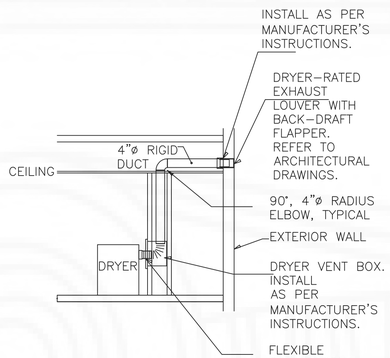



5 TRAP PRIMER




NOTES:
1. TRAP GUARD SHALL BE FACTORY FITTED TO MATCH EACH FLOOR DRAIN (AND FLOOR SINK) BY SIZE, MODEL, AND MANUFACTURER.
2. FLOOR SINK/HUB DRAIN TRAP GUARD INSTALLATION IS SIMILAR.
3. INSTALLATION OF TRAP GUARD TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. INSERT TRAP GUARD ONLY AFTER FINAL RODDING OF DRAINS; INSTALL TRAP GUARD WITH CLEAR SILICONE CAULK FOR GAS TITE SEAL. FOR DRAIN RODDING AFTER INSTALLATION, INSERT SEWER TAPE THROUGH LIGHTLY GREASED 1-1/2" PVC PIPE TO PROTECT TRAP GUARD.

4 **FLOOR DRAIN WITH TRAP SEAL PROTECTION**
SCALE: NONE




NOTES:

1. THE MALE END OF THE OVERLAPPED DUCT JOINTS SHALL EXTEND IN THE DIRECTION OF AIRFLOW.

2. NO SCREWS SHALL BE ALLOWED IN THE DRYER EXHAUST DUCT AND ALL JOINTS SHALL BE SEALED WITH FOIL FACED TAPE.

3. DRYER EXHAUST SYSTEM IS DESIGNED BASED ON A WASHER/DRYER AS MANUFACTURED BY GE MODEL GFDN120ED. CONTRACTOR SHALL USE SHEET METAL ROUND DUCTWORK AND MINIMIZE THE USE OF FLEXIBLE DUCTWORK.

MAXIMUM LENGTH OF 4 INCH DIAMETER RIGID METAL DUCT:

| No. OF ELBOW | FEET |
|---|---|
| 0 | 90 |
| 1 | 60 |
| 2 | 45 |
| 3 | 35 |
| 4 | 25 |

DRYER EXHAUST DETAIL "A"
NOT TO SCALE

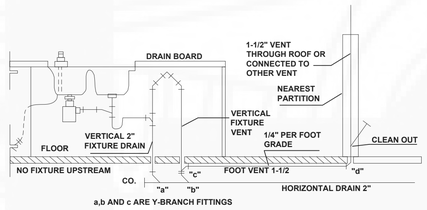
12 DRYER VENT
SCALE: NONE

TRAPS FOR ISLAND SINKS AND SIMILAR EQUIPMENT SHALL BE TOUGHED IN ABOVE THE FLOOR AND MAY BE VENTED BY EXTENDING THE VENT AS HIGH AS POSSIBLE, BUT NOT LESS THAN THE DRAINBOARD EIGHT . THE VENT IS THEN RETURNED DOWNWARD AND CONNECTED TO THE HORIZONTAL SINK DRAIN IMMEDIATELY DOWNSTREAM FROM THE VERTICAL FIXTURE DRAIN.

THE RETURNED VENT SHALL BE CONNECTED TO THE HORIZONTAL DRAIN THROUGH A WYE-BRANCH FITTING AND SHALL IN ADDITION BE PROVIDED WITH A FOOT VENT TAKEN OFF THE VERTICAL FIXTURE VENT BY MEANS OF A WYE-BRANCH FITTING IMMEDIATELY BELOW THE FLOOR . THIS FOOT VENT EXTENDS TO THE NEAREST PARTITION AND THENCE THROUGH THE ROOF TO THE OPEN AIR , OR MAY BE CONNECTED TO OTHER VENTS AT A POINT NOT LESS THAN SIX(6) INCHES ABOVE THE FLOOD LEVEL RIM TO OF THE FIXTURE SERVED.

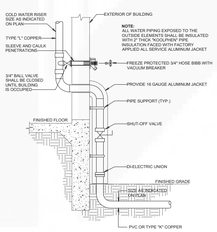
DRAINAGE FITTINGS SHALL BE USED ON ALL PARTS OF THE VENT BELOW THE FLOOR LINE THIS INCLUDES FITTINGS NOTED AS A,B,C AND D . THE FOOT VENT SHALL MAINTAIN A MINIMUM SLOPE OF ONE – QUARTER (1/4) INCH PER FOOT BACK TO DRAIN . THE RETURN BEND USED UNDER THE DRAIN BOARD SHALL BE A ONE PIECE FITTING , OR AN ASSEMBLY OF A 45 DEGREE , A 90 DEGREE AND A 45 DEGREE ELBOW IN THE ORDER NAMED . PIPE SIZING SHALL BE REQUIRED IN THE CODE

SPECIAL VENTING FOR ISLAND FIXTURE IS A METHOD FOR VENTING A FIXTURE IN AN ISOLATED LOCATION WHERE VENT PIPES INSTALLED AS NORMALLY REQUIRED IN UPC WOULD NOT BE PRACTICAL.



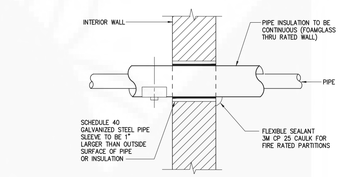

a,b AND c ARE Y-BRANCH FITTINGS

10 ISLAND SINK VENT

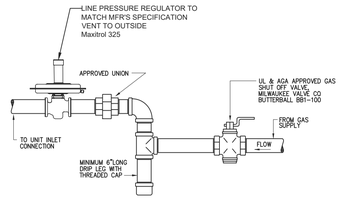



NOTE:
VERIFY REQUIREMENTS FOR METERING AND PIPING WITH WATER COMPANY. INSTALL OTHER UTILITIES A MINIMUM OF 10'-0" FROM WATER LINE. PLUMBING CONTRACTOR SHALL PAY ALL WATER COMPANY FEES FOR INSTALLATION. USE WELDED OR SCREWED PIPE AND FITTINGS PER PLUMBING SPECS. WATER COMPANY SHALL EXCAVATE, BACKFILL AND REPAIR ANY PAVING OR SOD FOR WATER SERVICE LINE INSTALLATION FROM MAIN TO BUILDING.

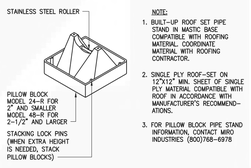
9 WATER ENTRY DETAIL
SCALE: NONE




6 **INTERIOR WALL PENETRATION**
SCALE: NONE

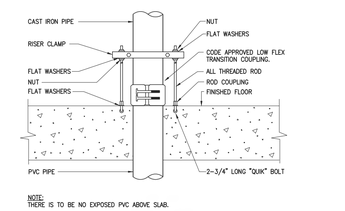



3 **GAS CONNECTION TO EQUIPMENT**
SCALE: NONE




NOTE:
1. BUILT-UP ROOF SET PIPE STAND IN MASTIC BASE COMPATIBLE WITH ROOFING MATERIAL. COORDINATE MATERIAL WITH ROOFING CONTRACTOR.
2. SINGLE PLY ROOF-SET ON 12"X12" MIN. SHEET OF SINGLE PLY MATERIAL COMPATIBLE WITH ROOF IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. FOR PILLOW BLOCK PIPE STAND INFORMATION, CONTACT MIRO INDUSTRIES (800)768-6978

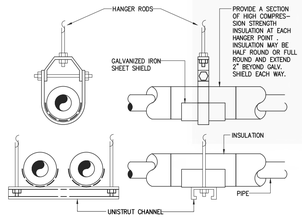
7 **PIPE SUPPORT ON ROOF**
SCALE: NONE



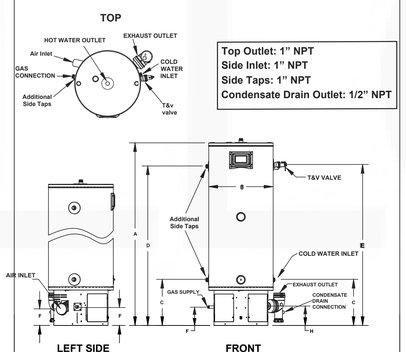

NOTE:
THERE IS TO BE NO EXPOSED PVC ABOVE SLAB.

2 **CAST IRON TO PVC PIPE TRANSITION**
SCALE: NONE

| MINIMUM DIMENSIONS OF GALVANIZED SHEETMETAL PROTECTION SHIELDS AT PIPE HANGERS | | |
|---|---|---|
| NOMINAL SIZE PIPE | SHIELD LENGTH MIN. (IN.) | GAUGE THICKNESS |
| 1/2" & 3/4" | 12 | 18 |
| 1" – 2-1/2" | 12 | 18 |
| 3" – 4" | 12 | 18 |
| 6" | 12 | 16 |




8 **HANGER FOR WATER PIPING**
SCALE: NONE




PLUMBING INSTALLATION DETAILS
SCALE :NTS

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Project Name and Address:

Addition & ADU for
**Mrs. Sadaf Ahmad**
39459 BLUE FIN WAY FREMONT, CA 94538

Date: June 3, 2021

Scale: 1/4" = 1' - 00"

DRAWING TITLE:
PLUMBING DETAILS

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