NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE

CITY OF MANHATTAN BEACH
COMMUNITY DEVELOPMENT DEPARTMENT

BEST MANAGEMENT PRACTICES FOR ALL FOR CONSTRUCTION ACTIVITIES*

Project Address:_____**Case No.**_____

The Following are Minimum Water Quality Protection Requirements for All Development Construction Projects:

- Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheet flow , swales, area drains, natural drainage courses or wind.
- Stockpiles of earth and other construction related materials must be protected from being transported from the site by the forces of wind or water.
- Fuels, oils, solvents and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil and surface waters. All approved storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.
- Non-stormwater runoff from equipment and vehicle washing and any other activity shall be contained at the project site.
- Excess or waste concrete may not be washed into the public way or any other drainage system. Provisions shall be made to retain concrete wastes on site until they can be disposed of as solid waste.
- Trash and construction related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
- Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.
- Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.
- Other: .....

As the project owner or authorized agent of the owner, I have read and understand the requirements listed above, necessary to control storm water pollution from sediments, erosion, and construction mater ials , and I certify that I will comply with these requirements.

Print Name _____
(Owner or authorized agent of the owner)

Signature _____ Date _ _ _ _ _ _ _ _
(Owner or authorized agent of the owner)

*The above Best Management Practices are detailed in the California Storm Water Best Management Practice s Hand book, January 2003.
www.cabmp hand books.com

ANAMART CORP.

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CAD SPECIALIST
INTL. ASSC. AIA
RESIDENTIAL &
COMMERCIAL DESIGN
RENDER - 3D DESIGN

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830 FEATHER AVENUE. LA PUENTE, CA 91746
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VICINITY MAP

N

PROJECT DIRECTORY

Owner:

Design Consultant:
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Structural Consultant:
Design: Anibal Abolsky.
Supervised by: Civil
Eng. Manuel A. Espino
12109 Woodruff Ave.
Downey, CA 90241
(323) 379-6216
(562) 622-6927

CODE SUMMARY

PROPERTY INFORMATION:

SITE ADDRESS: [illegible]

PROPERTY TYPE: RESIDENTIAL

STORIES: 02 STORY

ZONING DISTRICT: RM

AREA DISTRICT: III

OCCUPANCIES: R3 SINGLE FAMILY DWELLING

CONSTRUCTION TYPE: VB

MAXIMUM HEIGHT: PER CALC. 128.75' MAX.

97.74 + 98.70 + 100.27 + 98.29 = 395.00 4 PC AVERAGE

395.00 / 4 = 98.75 (AVERAGE) + 30 (HEIGHT) = 128.75 MAX. HEIGHT

LEGAL DESCRIPTION:

LOT / PARCEL AREA 1,345.00 SQ. FT.

ASSESSOR'S PARCEL NUMBER: 4178-008-001

LEGAL DESCRIPTION: NORTH MANHATTAN BEACH SUB NO 2 NW 45 FT OF LOT 1

PROJECT DATA

	EXISTING	BFA	
EXISTING FIRST FLOOR	760.12 SQ. FT.		
EXISTING SECOND FLOOR	434.96 SQ. FT.	1,224.28 SQ. FT.	
NEW AREA (SECOND FLOOR)	29.20 SQ. FT.		
EXISTING ONE CAR GARAGE	205.73 SQ. FT.		
NEW OPEN DECK (SECOND FLOOR)	243.10 SQ. FT.		
TOTAL AREA:			

APPLICABLE CODES:

CONSTRUCTION SHALL COMPLY WITH TITLE 24, CALIFORNIA CODE REGULATIONS, INCLUDING THE FOLLOWING:

2020 LOS ANGELES RESIDENTIAL CODE
2020 LOS ANGELES BUILDING CODE
2020 LOS ANGELES FIRE CODE
2020 LOS ANGELES ELECTRICAL CODE
2020 LOS ANGELES MECHANICAL CODE
2020 LOS ANGELES PLUMBING CODE
2019 CALIFORNIA ENERGY STDS. TITLE 24

SHEET INDEX

T1. TITLE SHEET
1.1 EXISTING GRADING
A01 PLOT & ROOF PLAN
A02 EXISTING & PROPOSED FLOOR PLANS
A03 EXISTING & PROPOSED ELEVATIONS & DETAILS
A04 EXISTING & PROPOSED ELEVATIONS
A05 SECTIONS & DETAILS
A06 EXISTING AND DEMO FLOOR PLANS
A07 ELECTRICAL FLOOR PLANS AND DETAILS
A08 WHOLE BUILDING VENTILATIONS / CALC.
A09 GREEN BUILDING REQUIREMENTS
T01 TITLE 24 REPORT
T02 TITLE 24 REPORT
S-1 FOUNDATION PLAN AND GENERAL NOTES
S-2 FLOOR & ROOF FRAMING PLAN
S-3 STRUCTURAL DETAILS

SCOPE WORK

CONVERT 2ND STORY SOLAR ROOM INTO NEW BEDROOM ADDITION (29.20 SQ. FT.)
CONVERT INTO POWDER EXISTING BATHROOM AT SECOND FLOOR,
WITH NEW OPEN DECK, FIRST FLOOR REMODEL AND REMOVE WALL
TO ENLARGED EXISTING KITCHEN.
FIRST AND SECOND FLOOR UPDATE EXISTING WALL (AT 3'-0" OF PROP. LINE)
TO COMPLY WITH 1HR. FIRE RATED WALL.
UPDATE RETROFITTING EXISTING WINDOWS.
UPDATE EXISTING WALL AND ROOF INSULATION
UPDATE EXISTING ROOF TO COMPLY WITH NEW INSULATION AND CODES

ABBREVIATION LIST

A:
& AND
A.B. ANCHOR BOLT
A.C. ASPHALT CONCRETE
A/C AIR CONDITIONING
ACOUST, ACOUSTICAL
ADJ. ADJUSTABLE
A. F. F. ABOVE FINISH FLOOR
ALUM. ALUMINUM
APPROX, APPROXIMATE
ARCH. ARCHITEC(URAL)

B;
BD. BOARD
BLDG. BUILDING
BLK. BLOCK
BLKG. BLOCKING
BM. BEAM
B.M. BENCH MARK
BTTM. BOTTOM
B.U.R. BUILT UP ROOFING

C;
C.I. CAST IRON
C.J. CONSTRUCTION JOINT
CLF. CHAIN LINK FENCE
CLG. CEILING
CLR. CLEAR
CLKG. CAULKING
CNTR. COUNTER
C.O. CLEAN OUT
COL. COLUMN
CONC. CONCRETE
COND. CONDITION
CONST. CONSTRUCTION
CONT. CONTINUOUS
C.O.T.G. CLEAN OUT TO GRADE
CTSK. COUNTERSUNK

D:
DBL. DOUBLE
D.F. DRINKING FOUNTAIN
DEPT. DEPARTMENT
DTL. DETAIL
D.I. DROP INLET
DIAG. DIAGONAL
DIM. DIMENSION
DN. DOWN
DR. DOOR
D.S. DOWN SPOUT
D.S.P. DRY STANDPIPE
DWG. DRAWING

E
E EAST
(E) EXISTING
EA. EACH
E.F. EXHAUST FAN
E.J. EXPANSION JOINT
ELEC. ELECTRICAL
ELEV. ELEVATION
EQ. EQUAL
EQUIP. EQUIPMENT
E.W. EACH WAY
EXP. EXPANSION
EXT. EXTERIOR

F.A. FIRE ALARM
F.D. FLOOR DRAIN
FDN. FOUNDATION
F.F. FINISH FACE
F.E. FIRE EXTINGUISHER
F.H.W.S. FLAT HEAD WOOD SCREW
FIN, FINISH
F.L. FLOW LINE
FLR. FLOOR
FLS'G FLASHING
FLUOR. FLUORESCENT
F.O.C. FACE OF CONCRETE
F.O.F. FACE OF FINISH
F.O.M. FACE OF MASONRY
ROW. FACE OF WALL
F.P. FIREPROOF
F.R.P. FIBERGLASS REINFORCED PANEL
EOS FACE OF STUD
F.S.D. FIRE SMOKE DAMPER
FT. FOOT OR FEET
FTG. FOOTING
F.V. FIELD VERIFY

G
GA. GAUGE
GALV. GALVANIZED
G.C. GENERAL CONTRACTOR
G.I. GALVANIZED IRON
GLU-LAM GLUE LAMINATE
GND. GROUND
GYP. BD. GYPSUM WALLBOARD

H
H.B. HOSE BIB
H.C. HOLLOW CORE
HDWD. HARDWOOD
HDBD. HARDBOARD
HDWE. HARDWARE
H.M. HOLLOW METAL
HORIZ. HORIZONTAL
HR. HOUR
HT. HEIGHT

I - J - K - L
I.D. INSIDE DIAMETER
I.E. INVERT ELEVATION
ISA INTERNATIONAL SYMBOL OF ACCESSIBILITY
INSUL. INSULATION
LAV. LAVATORY
LT. LIGHT

M
MAX. MAXIMUM
MECH. MECHANICAL
MEMB. MEMBRANE
MFR. MANUFACTURER
M.H. MANHOLE
MIN. MINIMUM
M.I. MALLEABLE IRON
MISC. MISCELLANEOUS
M.O. MASONRY OPENING
MTL. METAL

N.
(N) NEW
N.I.C. NOT IN CONTRACT
NOM. NOMINAL
N.T.S. NOT TO SCALE

O
O.C. ON CENTER
O.D. OUTSIDE DIAMETER
O.H. OVERHEAD OR
OPNG. OPENING
OPP. OPPOSITE
O/ OVER

P
RL. PROPERTY LINE
P.LAM. PLASTIC LAMINATE
PLYWD. PLYWOOD
P.M. PRESSED METAL
P.M.F. PRESSED METAL FRAME
PNL. PANEL
P.O.C. POINT OF CONNECTION
PR. PAIR
PROP. PROPERTY
P.S.F. POUNDS PER SOUARE FOOT
P.S.I. POUNDS PER SOUARE INCH
P.T. PRESSURE TREATED

Q-R
Q.T. QUARRY TILE
RAD. RADIUS
R.D. ROOF DRAIN
R.E. RIM ELEVATION
REBAR REINFORCING BAR
REF. REFERENCE
REQ'D. REQUIRED
RM. ROOM
R.O. ROUGH OPENING
RWD. REDWOOD
R.W.L. RAIN WATER LEADER

S
S. SOUTH
S.D. STORM DRAIN
S.C. SOLID CORE
SCHED. SCHEDULE
SECT. SECTION
SHT. SHEET
SHTG. SHEATHING
SIM. SIMILAR
S.M. SHEET METAL
S.M.S. SHEET METAL SCREW
SPEC'S SPECIFICATIONS
SQ. SQUARE
S.STL. STAINLESS STEEL
STD, STANDARD
STL. STEEL
STRUCT. STRUCTURAL
S,T,S,M,S. SELF TAPPING SHEET METAL SCREW
S.S. SANITARY SEWER
SUSP. SUSPENDED
SYM. SYMMETRICAL

T.
T.C. TOP OF CURB
T&G TONGUE & GROOVE
TEL. TELEPHONE
TEMP. TEMPERATURE
T.O.C. TOP OF CONCRETE
T.O.F. TOP OF FRAMING
T.O.S. TOP OE STEEL
T.O.W. TOP OF WALL
T.P. TOP OF PAVING
TS STRUCTURAL TUBE
TYP. TYPICAL

U
U.N.O. UNLESS NOTED OTHERWISE
UNF. UNFINISHED

V
V.C.T. VINYL COMPOSITION TILE
VERT. VERTICAL

W
W. WEST
W/ WITH
WD. WOOD
W.H. WATER HEATER
W.M. WATERPROOF MEMBRANE
W/O WITHOUT
W.R. WATER RESISTANT
WT. WEIGHT
W.W.F. WELDED WIRE FABRIC

SIMBOLS LEGEND

CONCRETE
CONCRETE BLOCK
A.C. PAVING
CERAMIC TILE OR BRICK
SAND MORTAR OR PLASTER
AGGREGATE
EARTH
METAL
PLYWOOD
GYPSUM BOARD
WOOD FRAMING (CONT. MEMBER)
WOOD FRAMING (BLOCKING)
WOOD MEMBER (FINISHED)
INSULATION
ROOM NUMBER
WINDOW TYPE
DOOR NUMBER
GRID LINE / NUMBER
GRID CENTER LINE / NUMBER

SECTION NUMBER
SHEET WHERE SECTION IS DRAWN
DETAIL NUMBER
SHEET WHERE SECTION IS DRAWN
LOCATION NUMBER
SHEET WHERE ENLARGED PLAN IS DRAWN
ELEVATION NUMBER
SHEET WHERE ELEVATION IS DRAWN
EQUIPMENT NUMBER
PARTITION TYPE
KEYNOTE
REVISION NUMBER
MATCH LINE
DATUM, WORK OR CONTROL NUMBER
ANGLE
DIAMETER OR ROUND
PERPENDICULAR
POUND OR NUMBER
CENTERLINE
PLATE OR PROPERTY LINE

ENGINEER: Manuel A. Espino
CIVIL ENGINEER RCE 55526
12109 Woodruff Ave. * Downey, CA 90241
(323) 379-6216 (562) 622-6927

REGISTERED PROFESSIONAL ENGINEER MANUEL A. ESPINO No. C055526 EXP. 12-31-24 CIVIL STATE OF CALIFORNIA

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION		
NO.	DATE:	DESCRIPTION:

SHEET TITLE:

COVER SHEET

PROJECT NO:

06162023

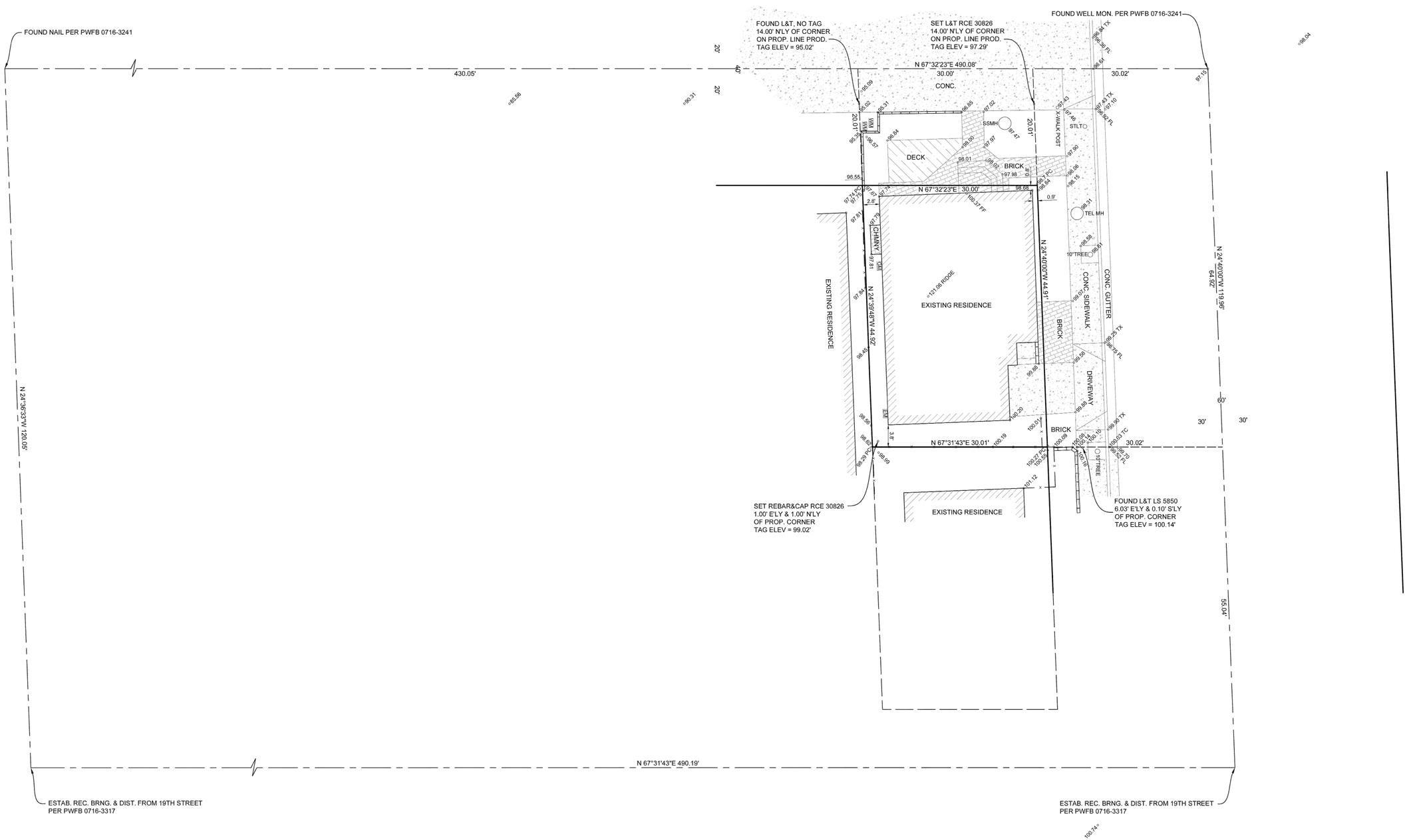
DATE

06/16/2023

SHEET NO:

T.1

01-02



SCALE 1" = 8'

NOTE:
A TITLE POLICY WAS NOT PROVIDED TO DENN ENGINEERS AT THE TIME OF THIS SURVEY. THEREFORE, DENN ENGINEERS DOES NOT GUARANTEE THE LEGAL DESCRIPTION OF THIS PROPERTY SURVEYED NOR DOES IT REFLECT OR DELINEATE ANY EASEMENTS THAT MAY BE ON SAID PROPERTY.

DENN ENGINEERS
3914 DEL AMO BLVD, SUITE 921
TORRANCE, CA 90503 (310) 542-9433

SURVEY AND TOPOGRAPHY

FOR

JOB ADDRESS

LEGAL DESCRIPTION

PORTION OF LOT 1, BLK 5
SUB NO 2 OF NORTH MANHATTAN BEACH
M.B. 2-1
APN 4178-008-001

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF PROFESSIONAL LAND SURVEYORS' ACT

REGISTERED PROFESSIONAL ENGINEER
GARY J. ROEHL
R.C.E. 30826
CIVIL
STATE OF CALIFORNIA

GARY J. ROEHL R.C.E. 30826

DRAWN BY KW CHECK BY TS

DRAWN ON MAY 8, 2020

REVISIONS
REVISIONS

LEGEND

EXISTING BUILDING
BRICK
CONCRETE
WOOD DECK
+106.76 EXISTING ELEVATION
100 EXISTING CONTOUR
BLOCK WALL
X EXISTING FENCE

BCR	BEGINNING OF CURB RETURN
C/L	CENTERLINE
C.L.F.	CHAIN-LINK
E'LY	EASTERLY
EM	ELECTRIC METER
FD	FOUND
FE	FENCE
FF	FINISH FLOOR
FH	FIRE HYDRANT
FL	FLOW LINE
GFF	GARAGE FINISH FLOOR
GM	GAS METER
GW	GUY WIRE
L&T	LEAD AND TAG
MH	MANHOLE
N'LY	NORTHERLY
PC	PROPERTY CORNER / PROP. CORNER
PL, P/L	PROPERTY LINE / PROP. LINE
PP	POWER POLE
PPT	PARAPET
S&W	SPIKE AND WASHER
S'LY	SOUTHERLY
SPK	SPIKE
SSCO	SANITARY SEWER CLEAN OUT
SSMH	SANITARY SEWER MANHOLE
STK	STAKE / STAKE & TAG
STLT	STREET LIGHT
TC	TOP OF CURB
TW	TOP OF WALL / T.O.W.
TX	TOP OF DRIVEWAY APRON
W'LY	WESTERLY
WM	WATER METER

NOTE: ALL SETBACK DIMENSIONS SHOWN ARE MEASURED TO EXTERIOR SURFACE OF BUILDINGS UNLESS OTHERWISE NOTED.

BOUNDARY MONUMENTS ARE NOT NECESSARILY SET ON PROPERTY CORNERS. PLEASE REFER TO THE NOTATION ON THE PLANS FOR OFFSET DISTANCES. IF THERE ARE ANY QUESTIONS, PLEASE DO NOT HESITATE TO CONTACT DENN ENGINEERS FOR CLARIFICATION AT : (310) 542-9433, M-F 8:00 AM TO 5:00 PM.

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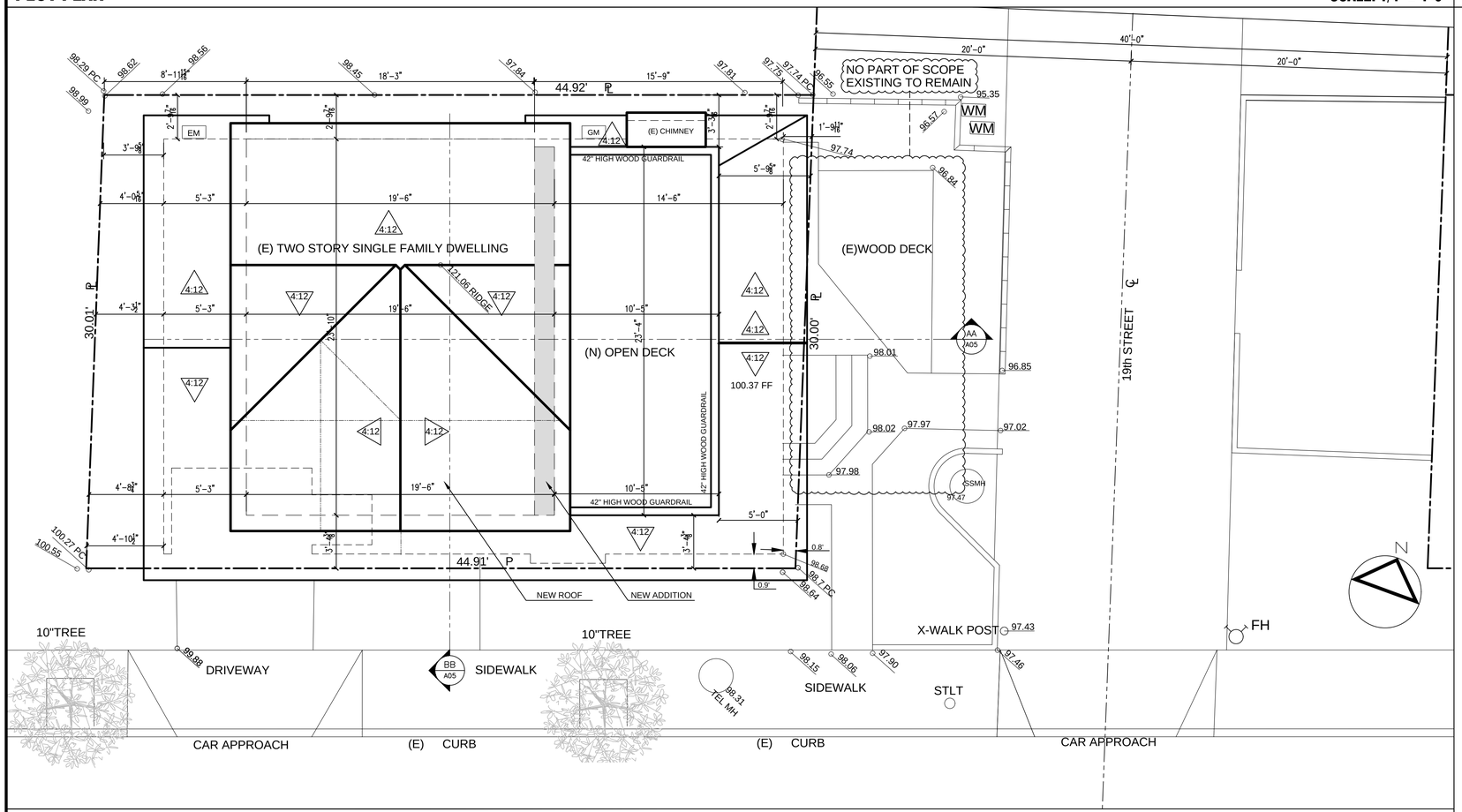
SHEET 1 OF 1

JOB NO. 20-156

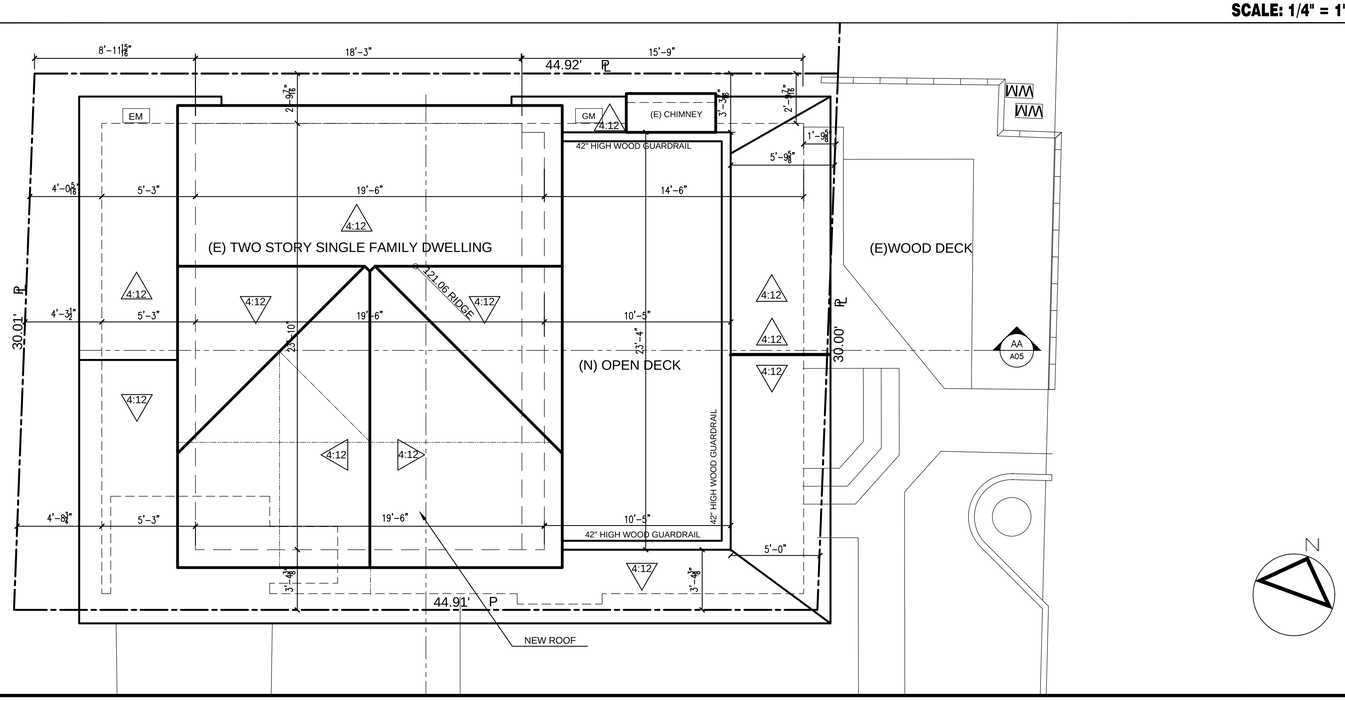
PLOT PLAN

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



ROOF PLAN

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



RESIDENTIAL PLAN GENERAL NOTES

A. -"ALL WORK SHALL COMPLY WITH TITLE 24 AND 2020 CALIFORNIA BUILDING CODE (CBC), CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), CALIFORNIA ELECTRICAL CODE (CEC), CALIFORNIA ENERGY CODE, AND CALIFORNIA GREEN BUILDING CODE.

B. ALL CURRENT CARRYING CONDUCTORS SHALL BE COPPER

C. USE 2x6 MINIMUM STUDS FOR PLUMBING WALL CBC SECTION 2320.11.9,10.

D. PROVIDE MINIMUM 26 GAUGE GALVANIZED WEEP SCREED AT FOUNDATION PLATE LINE. CBC 2506.5. WEEP SCREED IS TO HAVE A 3 1/2" MINIMUM ATTACHMENT FLANGE AND THEAT THE SCREED IS TO EXTEND A MINIMUM OF 1" INCH BELOW THE PLATE/FOUNDATION INTERFACE [CBC 1405.10.1.2]

E. PROVIDE NON-REMOVABLE BACK FLOW PREVENTION DEVICE ON ALL EXTERIOR HOSE BIBS. CPC 603.0 AND 603.1.

F. ROUGH IN PLUMBING FOR HOT & COLD WATER AND WASTER.

G. SMOKE ALARM & MONOXIDE ALARM NOTES:
PROVIDE THE FOLLOWING SMOKE ALARM (R314.4, R314.5, R314.6 CRC)
a. SMOKE ALARMS SHALL BE TESTED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. SMOKE ALARMS THAT NO LONGER FUNCTION SHALL BE REPLACED.
b. SMOKE ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL ALARMS.
c. COMBINATION SMOKE AND CARBON MONOXIDE ALARMS SHALL BE PERMITTED TO BE USED IN LIEU OF SMOKE ALARMS.
d. SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING AND BE EQUIPPED WITH A BATTERY BACKUP.
PROVIDE THE FOLLOWING CARBON MONOXIDE ALARM: (R315.4, R315.5 R315.7)
a. COMBINATION CARBON MONOXIDE AND SMOKE ALARMS SHALL BE PERMITTED TO BE USED IN LIEU OF CARBON MONOXIDE ALARMS.
b. CARBON MONOXIDE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING AND BE EQUIPPED WITH A BATTERY BACKUP.

H. PIPES, DUCTS AND OTHER NON-STRUCTURAL CONSTRUCTION SHALL NOT INTERFERE WITH ACCESSIBILITY TO OR WITHIN UNDER FLOOR AREA.

I. SHOWERS AND WALLS ABOVE BATHTUBS WITH SHOWER HEADS SHALL BE FINISHED WITH A SMOOTH, NONABSORBENT SURFACE TO A HEIGHT NOT LESS THAN 72 INCHES ABOVE THE THE DRAIN INLET [1210.2.3 CBC] (R307.2 CRC).

J. SHOWER AND SHOWER-TUBS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE/THERMOSTATIC MIXING VALVE TYPE THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. [408.3 CPC].

K. "TANKLESS WATER HEATERS SHALL BE NATIONALLY LISTED AND BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS THAT WERE APPROVED AS PART OF THEIR LISTING" "THE GAS PIPING SERVING THIS APPLIANCE MUST BE SIZED IN COMPLANCE WITH THE WATER HEATER'S LISTED INSTALLATION INSTRUCTIONS AND THE 2016 CALIFORNIA PLUMBING CODE.

L. PROVIDE 4"Ø SMOOTH DUCT EXHAUST FOR DRYER. DRYER DUCT SHALL HAVE A BACK DRAFT DAMPER

M. PROVIDE 14" SQ. PLUMBING ACCESS W/ ACCESS COVERT TYPICAL FOR ALL TUB.

N. A MINIMUM OF 2-20 AMP SMALL APPLIANCE BRANCH CIRCUITS SHALL BE PROVIDED FOR ALL RECEPTACLES OUTLETS IN THE KITCHEN, DINING ROOM, PANTRY, OR OTHER SIMILAR AREA [210.11(C)(1) CEC].

O. AT LEAST ONE 20 AMP BRANCH CIRCUIT SHALL BE PROVIDED TO SUPPLY BATHROOM AND LAUNDRY RECEPTACLEOUTLETS. SUCH CIRCUITS SHALL HAVE NO OTHER OUTLETS [210.11 (C)(3); 210.11(C)(2) CEC].

O. MAXIMUM FLOW RATE STANDARD SET BY THE CALIFORNIA ENERGY COMMISSION:
WATER CLOSETS: 1.28 GAL/FLUSH KITCHEN FAUCETS: 1.8 GPM @60 PSI
SHOWERHEADS: 1.8 GPM @80 PSI LAVATORY FAUCETS: MAX. 1.2 GPM @60 PSI

P. THE CONSTRUCTION SHALL NOT RESTRICT A FIVE-FOOT CLEAR AND UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLE, PULL-BOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC.) OR TO THE LOCATION OF THE HOOK-UP. THE CONSTRUCTION SHALL NOT BE WITHIN TEN FEET OF ANY POWER LINES-WHETHER OR NOT THE LINES ARE LOCATED ON THE PROPERTY. FAILURE TO COMPLY MAY CAUSE CONSTRUCTION DELAYS AND/OR ADDITIONAL EXPENSES.

Q. PROVIDE ULTRA FLUSH WATER CLOSETS FOR ALL NEW CONSTRUCTION. EXISTING SHOWER HEADS AND TOILETS MUST BE ADAPTED FOR LOW WATER CONSUMPTION.

R. WEATHER STRIP OR SEAL ATTIC ACCESS TO PREVENT DRAFT.

S. ALL LIGHTING FIXTURES IN THE KITCHEN MUST BE HIGH EFFICACY CONTROLLED BY EITHER A DIMMER SWITCH OR VACANCY SENSOR THAT REQUIRES A MANUAL ON ACTIVATION. UNDERCABINETS LIGHTING REQUIRES SEPARATE SWITCH FROM OTHER LIGHTING SYSTEM.

T. ALL FIXTURES SHALL CONTAIN BULBS THAT ARE LABELED AS JAS-2016. SCREW BASE BULBS ARE PERMITTED, EXCEPT IN RECESSED LIGHTING FIXTURES.

U. RECESSED LIGHTING SHALL BE LISTED AS 1C (ZERO CLEARANCE TO INSULATION) AND AT (AIR TIGHT), BE SEALED/CAULKED BETWEEN THE FIXTURE HOUSING AND CEILING, SHALL NOT CONTAIN A SCREW BASE SOCKET, AND CONTAIN BULBS MARKED WIT JA8-2016-E EFFICIENCY LABEL.

V. LIGHTING FIXTURES LOCATED WITHIN 3 FEET HORIZONTALLY AND 8 FEET VERTICALLY OF THE BATHTUB RIM OR SHOWER STALL THRESHOLD SHALL BE LISTED FOR A DAMP LOCATION, OR LISTED FOR WET LOCATIONS WHERE SUBJECT TO SHOWER SPRAY.

W. LIGHTING IN BATHROOM, GARAGES, LAUNDRY AND UTILITY ROOMS, MUST BE JA8 HIGH EFFICACY LIGHTING AND AT LEAST ONE FIXTURE MUST HAVE VACANCY SENSORS. 9SEE 150.0(K) J).

X. OTHER ROOMS MUST HAVE HIGH EFFICACY LIGHTING WITH JA8-2016 BULBS AND HAVE VACANCY SENSORS OR DIMMERS. CLOSETS AND HALLWAYS UNDER 70 SQUARE FEET ARE EXEMPT.

Y. OUTDOOR LIGHTING MUST BE MOUNTED ON THE BUILDING AND BE JA8 HIGH EFFICACY, INCLUDING ON/OFF SWITCH AND HAVE PHOTOCELL AND MOTION SENSOR, OR PHOTO CONTROL AND AUTOMATIC TIME SWITCH OR ASTRONOMICAL TIME CLOCK OR ENERGY MANAGEMENT CONTROL SYSTEM.

a) Every permit issued shall become invalid unless work authorized is commenced within 180 days or if the work authorized is suspended or abandon for a period of 180 days. A successful inspection must be obtained within 180 days. A permit may be extended if a written request stating justification for extension and an extension fee is received prior to expiration of the permit and granted by the Building Official. No more than one (1) extension may be granted. Permits which have become invalid shall pay a reactivation fee of approximately 50% of the original permit fee amount when the permit has been expired for up to six (6) months. When a permit has been expired for a period in excess of one (1) year, the reactivation fee shall be approximately 100% of the original permit fee. (R105.5)

b) Concrete slab and under-floor inspections shall be made after in-slab or under-floor reinforcing steel and building service equipment, conduits, piping or other ancillary building trade products or equipment are installed, but before any concrete is placed or floor sheathing is installed, including the subfloor. (R109.1.1.1)

c) Rough inspection of plumbing, mechanical, gas and electrical systems shall be made prior to covering or concealment, before fixtures or appliances are set or installed, and prior to framing inspection. (R109.1.2)

d) Water piping materials within a building shall be in accordance with Sec. 604.1 of the California Plumbing Code. Pex, CPVC and other plastic water piping systems shall be installed in accordance with the requirements of Sec. 604 of the CPC, Installation Standards of Appendix I of the CPC and manufacturers recommended installation standards. CPVC water piping requires a Certification of Compliance as specified in Sec 604.1.1 of the CPC prior to permit issuance.

MECHANICAL NOTES:

i) Exhaust duct termination is as follows per CMC 502.2:
(1) 10 feet from a forced air inlet, and
(2) 3 feet from openings into the building.

ii) Unless otherwise permitted or required by the dryer manufacturer's installation instructions and approved by the city, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of fourteen feet, including two 90-degree elbows. Two feet shall be deducted for each 90-degree elbow in excess of two. CMC 504.4.2.

ANAMART CORP.

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ENGINEER: Manuel A. Espino
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REGISTERED PROFESSIONAL ENGINEER MANUEL A. ESPINO No. C055526 EXP. 12-31-24 CIVIL STATE OF CALIFORNIA

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION		
NO.	DATE:	DESCRIPTION:

SHEET TITLE:
PLOT PLAN
ROOF PLAN
GENERAL NOTES

PROJECT NO:
06162023

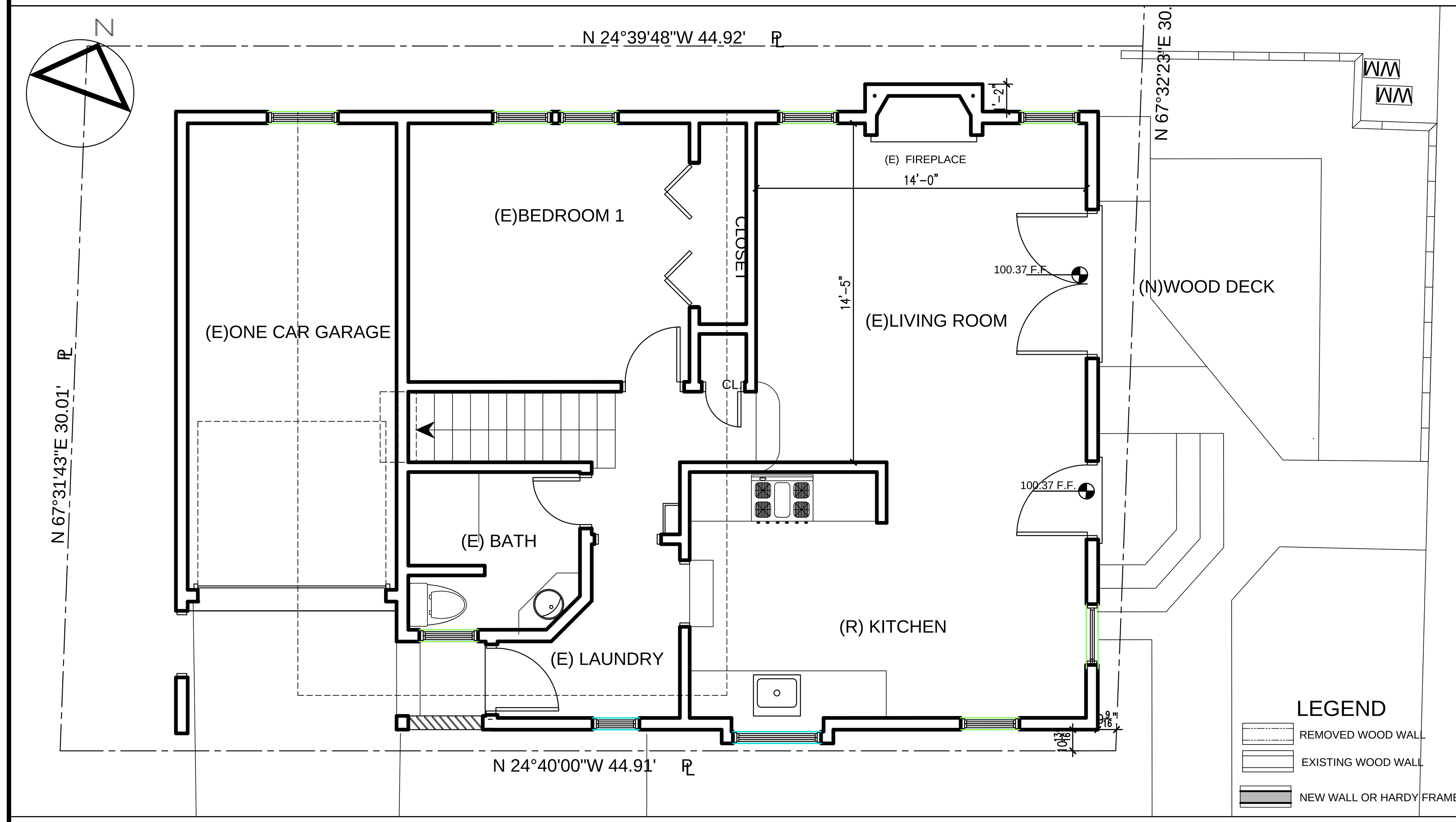
DATE
06/16/2023

SHEET NO:
A01

01-02

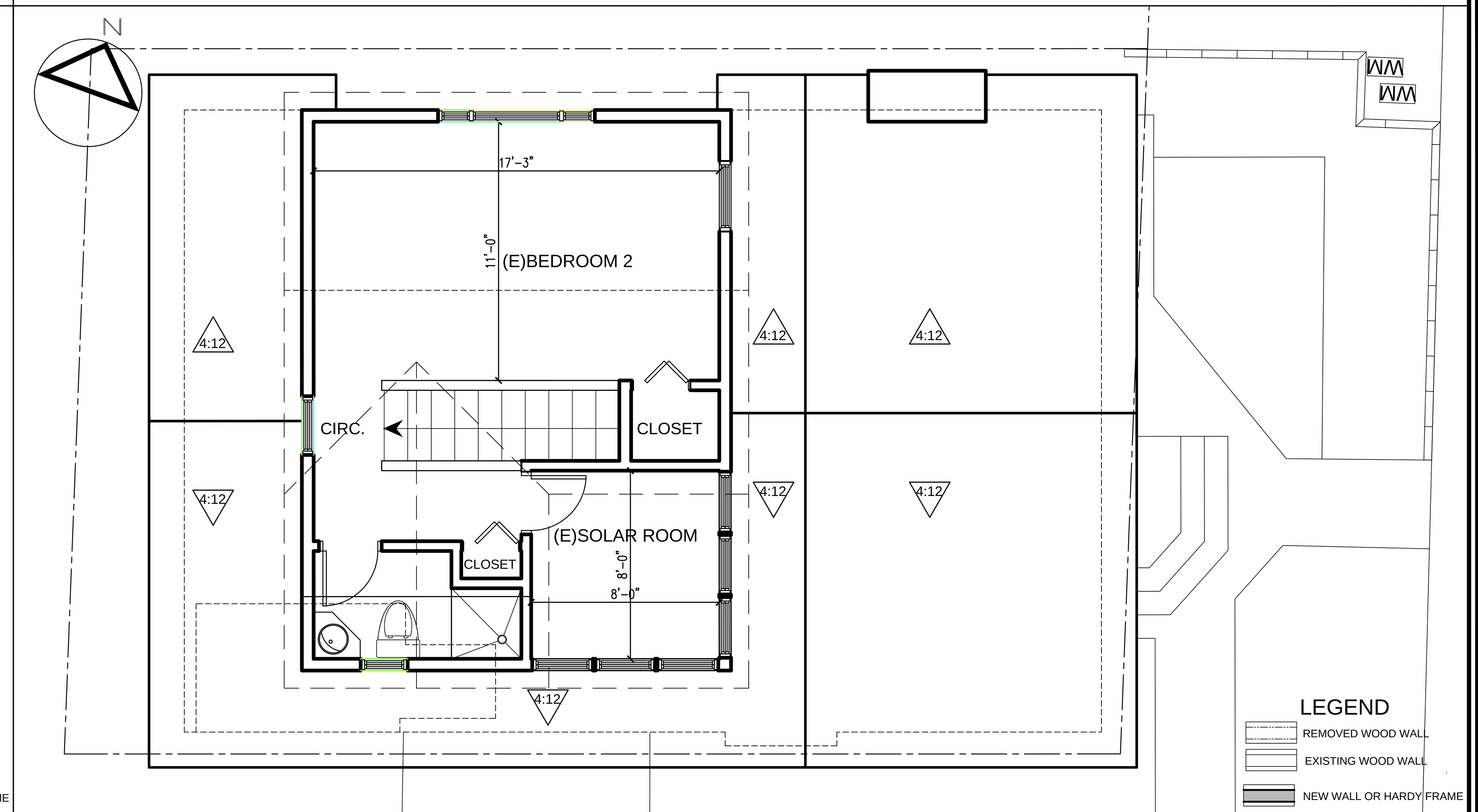
EXISTING FIRST FLOOR PLAN

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



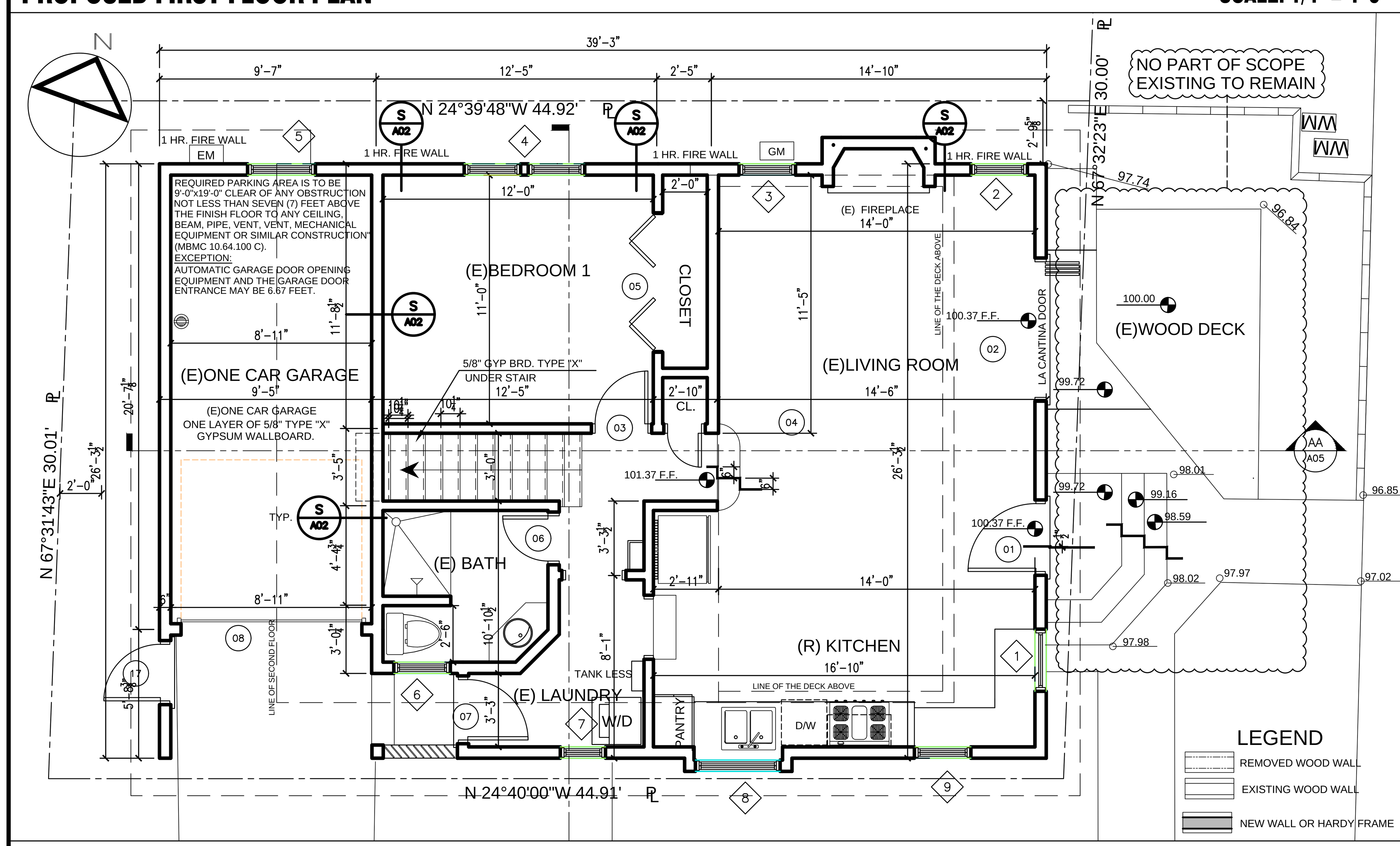
EXISTING SECOND FLOOR PLAN

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



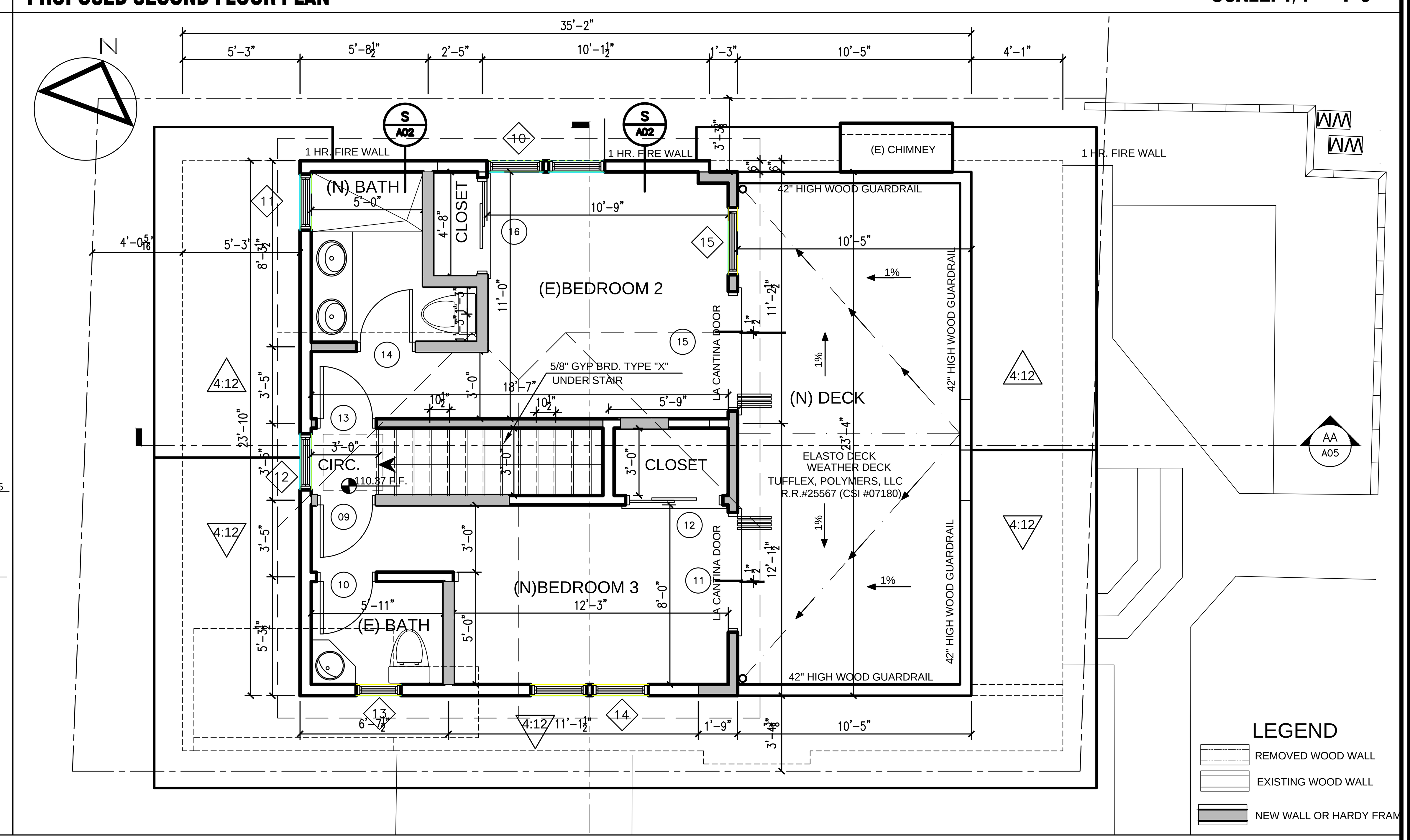
PROPOSED FIRST FLOOR PLAN

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



PROPOSED SECOND FLOOR PLAN

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



DOOR-WINDOWS SCHED./ENERGY NOTES

DOOR SCHEDULE

	MARK	SIZE WD	SIZE HGT	SIZE THK	MATL	GLAZING	FIRE RATING LABEL	U-VALUE	SHGC	NOTES
RESIDENCE	1	3'-0"	6'-8"	1 3/4"	--	DUTCH WITH GLASS	--	0.32	0.25	NEW
	2	6'-0"	6-8"	1 3/4"	--	TEMP.		0.32	0.25	
	3	1'-6"	6'-8"	1 3/8"	--	--	--			EXISTING
	4	2'-8"	6'-8"	1 3/8"	--	--	--			
	5	6'-0"	6'-8"	1 3/4"	BI-FOLD	--	--			
	6	2'-8"	6'-8"	1 3/4"	--	--	--			
	7	2'-8"	6'-8"	1 3/4"		DUTCH/ NO GLAZING	--			NEW
	8	8'-0"	7'-0"	1 1/4"	METAL		--			
	9	2'-8"	6'-8"	1 3/4"	--	--	--			EXISTING
	10	2'-8"	6'-8"	1 1/4"	--	--	--			NEW
	11	5'-0"	6'-8"	1 3/4"	SLD	TEMP.	--			
	12	4'-0"	6'-8"	1 3/4"	SLD		--	0.32	0.25	
	13	2'-8"	6'-8"	1 3/4"	SLD		--	0.32	0.25	
	14	2'-8"	6'-8"	1 3/4"						
	15	5'-0"	6'-8"	1 3/4"	SLD	TEMP.		0.32	0.25	
	16	4'-0"	6'-8"	1 3/4"	SLD					
	17	3'-0"	6'-8"	1 3/4"	--					

WINDOW SCHEDULE

	MARK	SIZE Width	SIZE HEIGHT	GLAZING	MATERIAL	FIRE RATING LABEL	U-VALUE	SHGC	NOTES
RESIDENCE	1	3'-0"	3'-0"	TEMP.			0.30	0.23	NEW
	2	2'-6"	4'-6"		METAL	1HR. FIRED	0.30	0.23	
	3	2'-6"	4'-6"		METAL	1HR. FIRED	0.30	0.23	
	4	5'-4"	3'-0"		METAL	1HR. FIRED	0.30	0.23	
	5	3'-0"	3'-0"		METAL	1HR. FIRED	0.30	0.23	
	6	2'-6"	3'-0"	TEMP.	VINYL		0.30	0.23	
	7	2'-0"	3'-0"	--	VINYL		0.30	0.23	
	8	3'-9"	3'-0"		VINYL		0.30	0.23	
	9	2'-6"	3'-0"	--	VINYL		0.30	0.23	
	10	5'-4"	3'-0"			1HR. FIRED	0.30	0.23	
	11	2'-6"	3'-0"	TEMP.	VINYL		0.30	0.23	
	12	2'-6"	3'-0"		VINYL		0.30	0.23	
	13	2'-0"	3'-0"	TEMP.	VINYL		0.30	0.23	
	14	5'-4"	3'-0"				0.30	0.23	
	15	3'-0"	4'-0"				0.30	0.23	

NEW WINDOWS RETROFITTING EUROPEAN STYLE

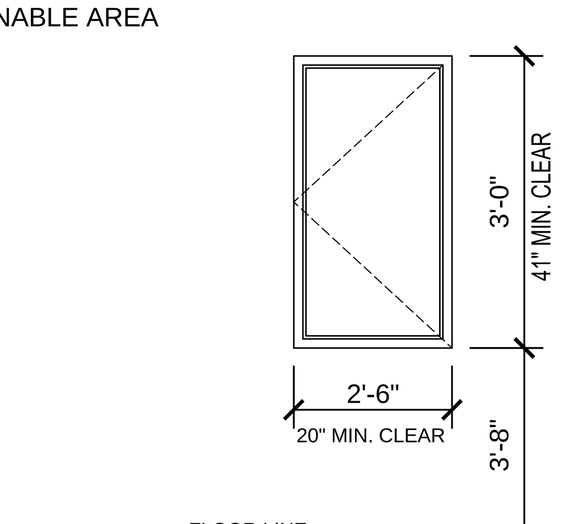
a. Certificates of installation (CF2R-ENV, CF2R-LTG and CF2R-MECH) shall be completed by the applicable contractors installing energy features. When compliance requires HERS field verification and/or testing, all CF2R forms shall be submitted electronically to an approved HERS provider data registry. The CF2R forms shall be posted at the job site in a conspicuous location.

b. Certificate of verification (CF3R) shall be completed, registered, and signed/ certified by the HERS rater. The registered CF3R form shall be made available to the Building Department and builder.

FLUORESCENT LIGHT RATED AT NOT LESS THAN 40 LUMENS PER WATT FOR GENERAL LIGHTING IN KITCHEN AND BATHROOM LIGHTING IN KITCHEN AND IN BATHROOMS WITH TUB OR SHOWER PER TITLE 24 SECTION 150 (K) 1 TO 4 (SEE EXCEPTIONS).
ALTERNATIVE PACKAGE FOR WINDOWS SHALL HAVE MAXIMUM 0.33 SHG [WINDOW SOLAR HEAT GAIN COEFFICIENT] AND 0.38 U-FACTOR [U-VALUE] ALL INCANDESCENT LIGHTING FIXTURES RECESSED INTO CEILINGS SHALL BE APPROVED FOR ZERO CLEARENCE

WINDOWS MIN. OPENING- FOR EXITS AT BEDROOM

5.7 SQ. FT. MIN. (7.50 SQ. FT.)
OPENABLE AREA



1 HOUR FIRE - 50 TO 54 STC SOUND DETAIL S

GA FILE NO.WP 3240 — GENERIC — 1HOUR FIRE — 50 to 54 STC SOUND

GYPSUM WALLBOARD, RESILIENT CHANNELS, MINERAL FIBER INSULATION, WOOD STUDS

RESILIENT CHANNELS 24" O.C. ATTACHED AT RIGHT ANGLES TO ONE SIDE OF 2x4 WOOD STUDS 16" OR 24" O.C. WITH 1 1/4" TYPE S DRYWALL SCREWS. ONE LAYER 5/8" PROPRIETARY TYPE X GYPSUM WALLBOARD OR GYPSUM VENEER BASE APPLIED PARALLEL TO CHANNELS WITH 1" TYPE "S" DRYWALL SCREWS 12" O.C. END JOINTSS BACKBLOCKED WITH RESILIENT CHANNELS. 3" MINERAL FIBER INSULATION, 2.0 OR 2.3 pcf, IN STUD SPACE.

OPPOSITE SIDE: ONE LAYER 5/8" PROPRIETARY TYPE "X" GYPSUM WALLBOARD OR GYPSUM VENEER BASE APPLIED AT RIGHT ANGLES TO STUDS WITH 1 1/4" TYPE W DRYWALL SCREWS 12" O.C.

VERTICAL JOINTS STAGGERED 48" ON OPPOSITE SIDES. SOUND TESTED WITH STUDS 16" O.C. AND OPEN FACE OF MINERAL FIBER INSULATION BLANKETS TOWARD RESILIENT CHANNEL-SIDE OF STUD SPACE. (LOAD-BEARING)

PROPRIETARY GYPSUM BOARD: UNITED STATES GYPSUM COMPANY — 5/8" SHEETROCK BRAND GYPSUM PANELS, FIRECODE C CORE.

THICKNESS: 5 3/8"
APPROX. WEIGHT: 7 psf
FIRE TEST: ULR1319-93, 94, 129; 8-10-66; UL DESIGN U311; ULC DESIGN U311
FIELD SOUND TEST: BBN 760903, 9-17-76

GA FILE NO. 5110 — GENERIC — 1HOUR FIRE — 50 to 54 STC SOUND

WOOD JOISTS, GYPSUM LATH, GYPSUM PLASTER, RESILIENT CHANNELS

1/2" 1:2-1:3 GYPSUM-SAND PLASTER APPLIED OVER 3/8" TYPE X GYPSUM LATH APPLIED AT RIGHT ANGLES TO RESILIENT FURRING CHANNELS 16" O.C. WITH 3/4" TYPE S DRYWALL SCREWS AT EACH FURRING CHANNEL. 3" WIDE WOVEN WIRE STRIPS APPLIED OVER GYPSUM LATH AND PARALLEL TO AND DIRECTLY OVER RESILIENT CHANNELS WITH 7/8" TYPE S DRYWALL SCREWS WITH DIAMOND WASHERS 16" O.C. RESILIENT CHANNELS APPLIED AT RIGHT ANGLES TO 2x10 WOOD JOISTS 16" O.C. WITH 6d COATED NAILS, 1 7/8" LONG, 0.0915" SHANK, 1/4" HEADS. WOOD JOISTS SUPPORTING 1" NOMINAL WOOD SUBFLOOR AND 1" NOMINAL WOOD FINISH FLOOR.

SOUND TESTED WITH 3" GLASS FIBER INSULATION BATTS IN JOIST SPACE, SOUND DEADENING FELT, AND CARPET AND PAD. A FACE LAYER OF 1/2" OR 5/8" TYPE X GYPSUM WALLBOARD REQUIRED TO ACHIEVE 1 HOUR FIRE RESISTANCE RATING WHEN GLASS FIBER INSULATION IS USED.

APPROX. CEILING WEIGHT: 6.25 psf
FIRE TEST: SFT-42, 5-7-66
SOUND TEST: CK 6712-5, 6-9-67 (68 C & P)
IIC & TEST: CK 6712-5, 6-9-67

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No. C055526
EXP. 12-31-24
CIVIL
STATE OF CALIFORNIA

M Espino

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR
REMODEL ON EXISTING
TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION		
NO.	DATE:	DESCRIPTION:

SHEET TITLE:
EXISTING FLOOR PLANS
PROPOSED FLOOR PLAN

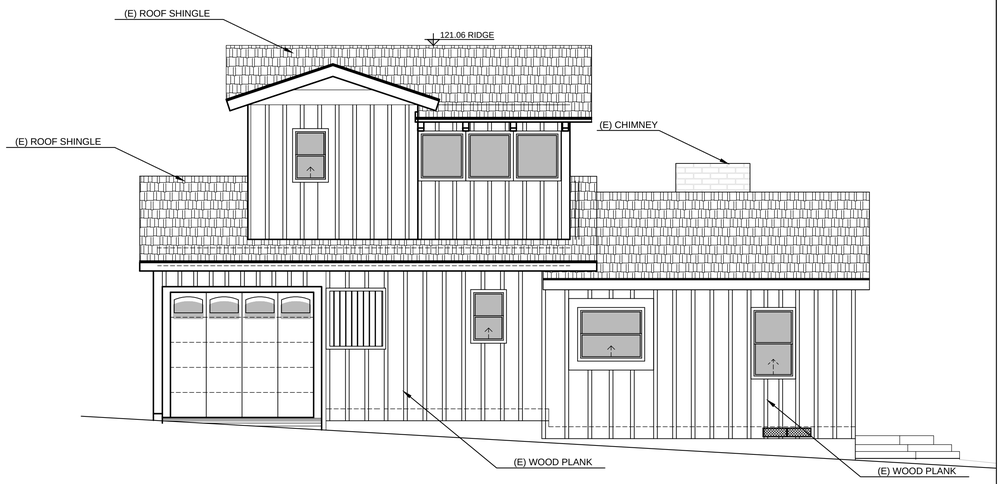
PROJECT NO:
06162023

DATE
06/16/2023

SHEET NO:
A02
01-02

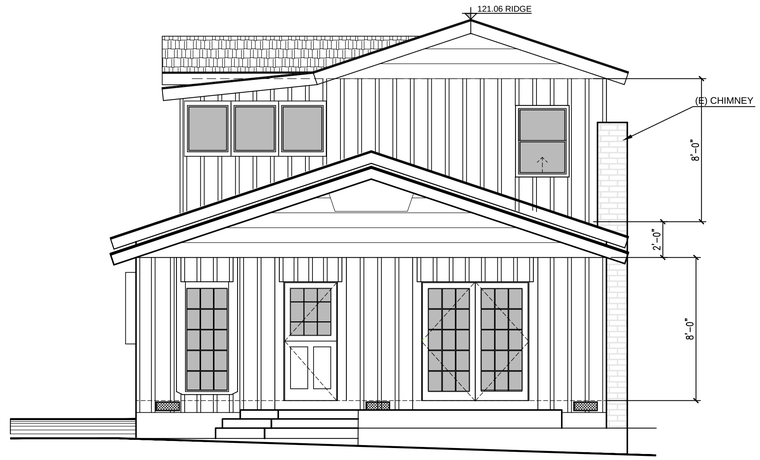
EXISTING SOUTH-EAST ELEVATION

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



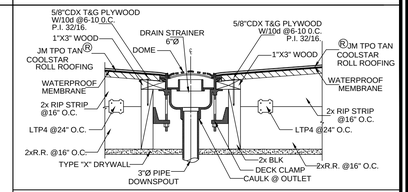
EXISTING NORTH-EAST ELEVATION

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

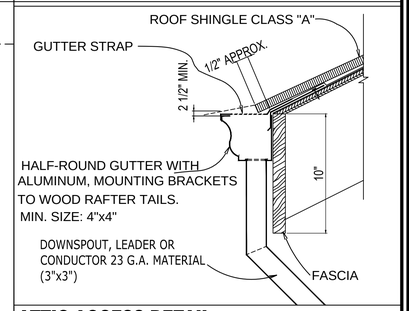


TYP. EAVES DETAIL (HEAVY TIMBER)

D1

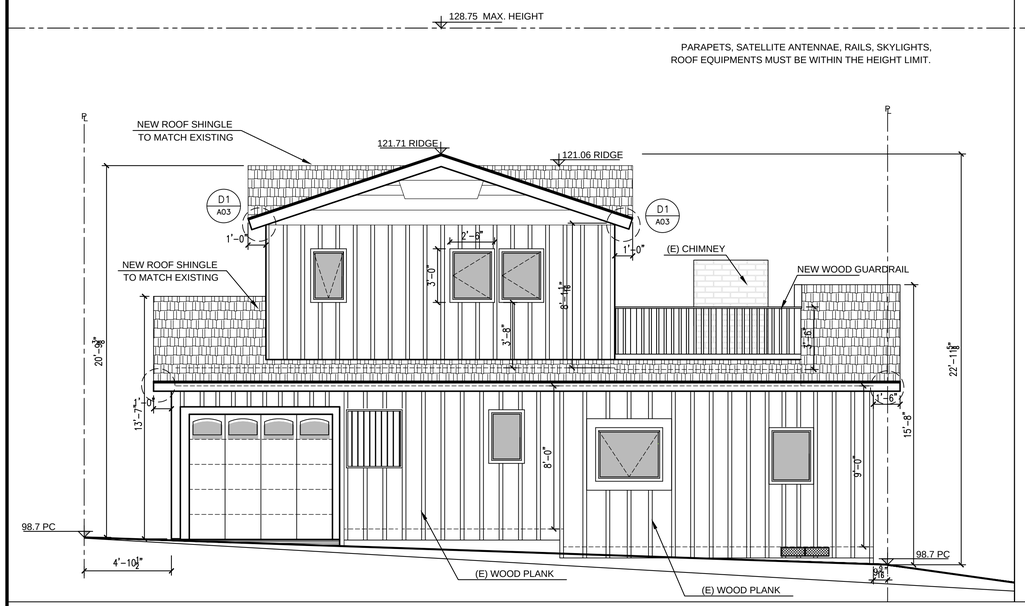


TYP. GUTTER & DOWN SPOUT



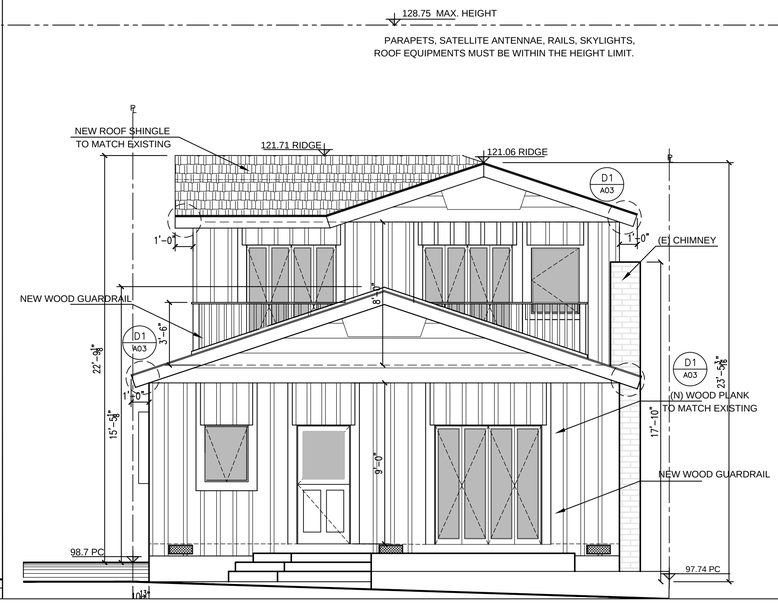
PROPOSED SOUTH-EAST ELEVATION

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

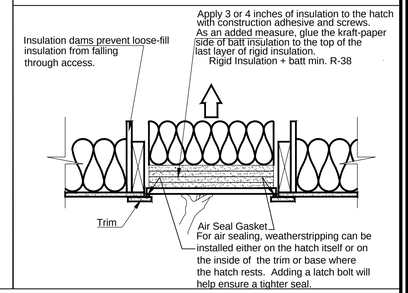


PROPOSED NORTH-EAST ELEVATION

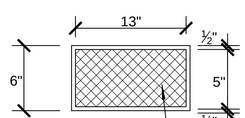
SCALE: 1/4" = 1'-0"



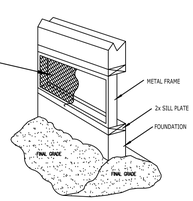
ATTIC ACCESS DETAIL



FLOOR & ROOF VENTILATION (CALCULATIONS AND DETAILS)

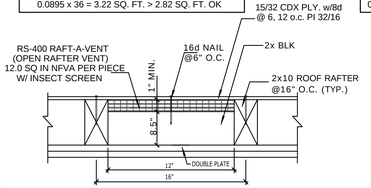


1 4"x7" VENTILATION W/ 1/8" MIN. AND 1/4" MAX. CORROSION-RESISTANT WIRE MESH



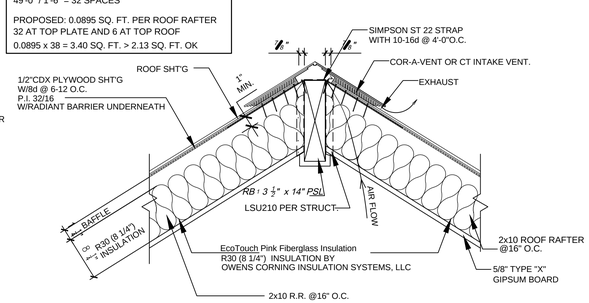
FLOOR VENTILATION
FLOOR AREA: 715.37 SQ. FT.
715.37 / 150 = 4.77 SQ. FT.
VENT. ACCESS: 1'-6"x1'-4"= 2.00 SQ. FT.
FLOOR VENT.: 7x0.45= 3.15 SQ. FT.
T. AREA: 2.00 + 3.15 = 5.15 SQ. FT. > 4.77 SQ. FT.

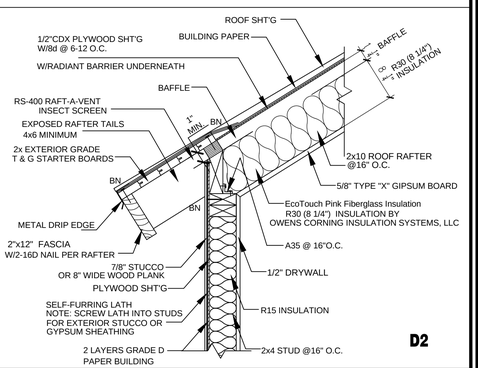
ATTIC VENTILATION - VAULTED CEILING
ATTIC AREA: 423.70 SQ. FT.
423.70 / 150 = 2.82 SQ. FT.
19'-6" / 1'-6" = 13 SPACES 23 SPACES
16'-0" / 1'-6" = 10 SPACES
PROPOSED: 0.0895 SQ. FT. PER ROOF RAFTER
13 AT TOP PLATE AND 23 AT TOP ROOF
0.0895 x 36 = 3.22 SQ. FT. > 2.82 SQ. FT. OK



ATTIC VENTILATION - FIRST FLOOR
ATTIC AREA: 318.88 SQ. FT.
318.88 / 150 = 2.13 SQ. FT.
49'-0" / 1'-6" = 32 SPACES

PROPOSED: 0.0895 SQ. FT. PER ROOF RAFTER
32 AT TOP PLATE AND 6 AT TOP ROOF
0.0895 x 38 = 3.40 SQ. FT. > 2.13 SQ. FT. OK





D2

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REVISION

NO.	DATE:	DESCRIPTION:

SHEET TITLE:
EXISTING ELEVATIONS
PROPOSED ELEVATIONS

PROJECT NO: 06162023

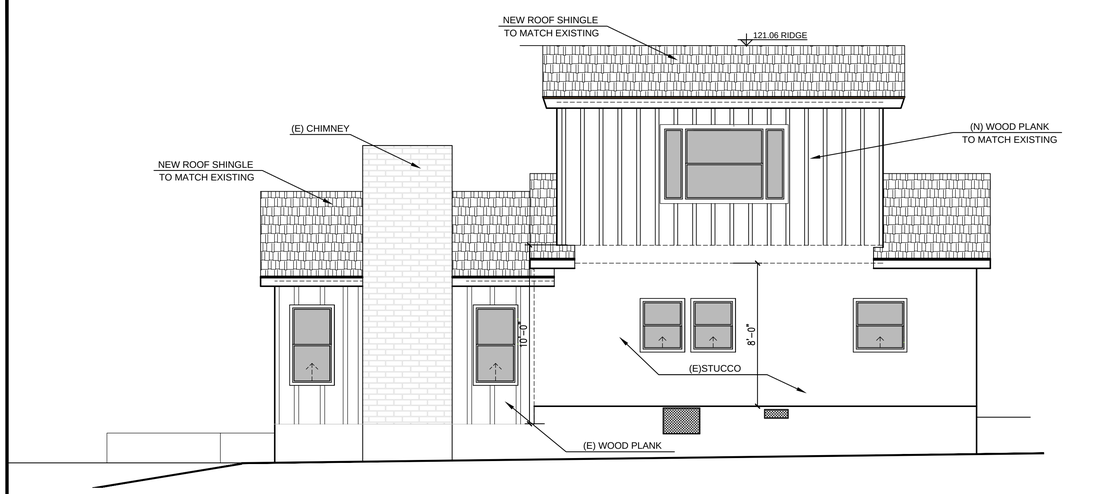
DATE 06/16/2023

SHEET NO: A03

01-02

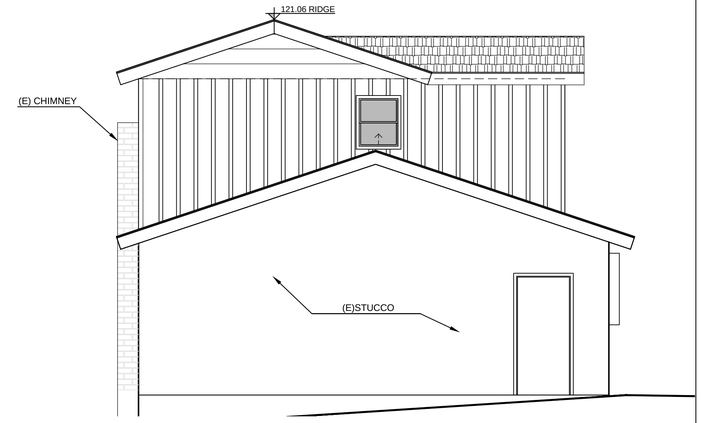
EXISTING NORTH-WEST ELEVATION

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

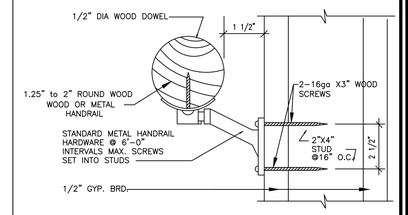


EXISTING SOUTH-WEST ELEVATION

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

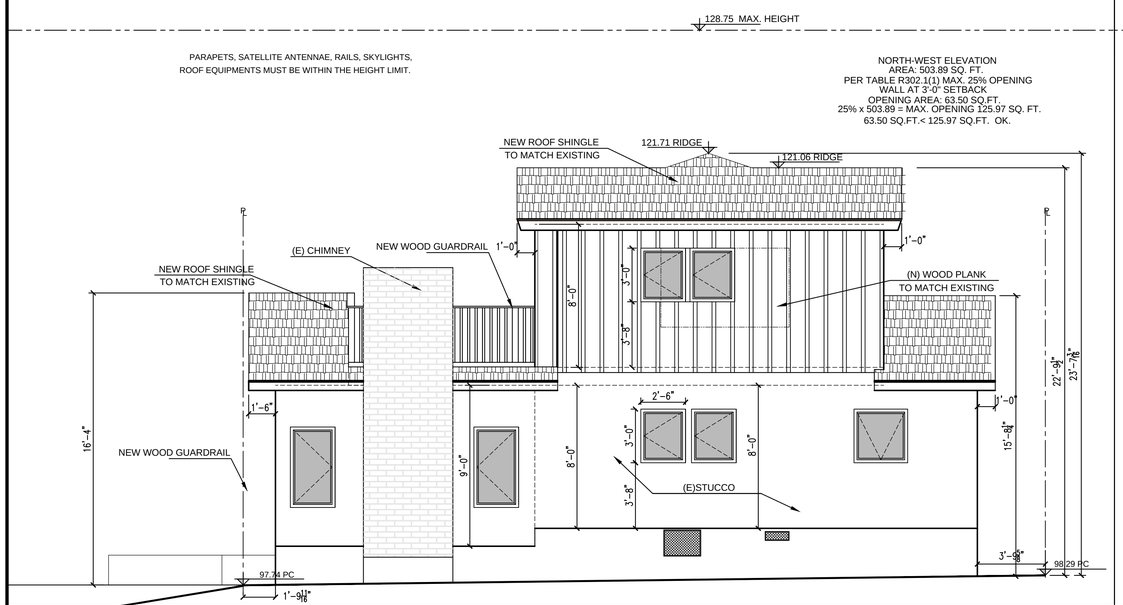


HANDRAIL DETAIL AT WALL (TYP.)



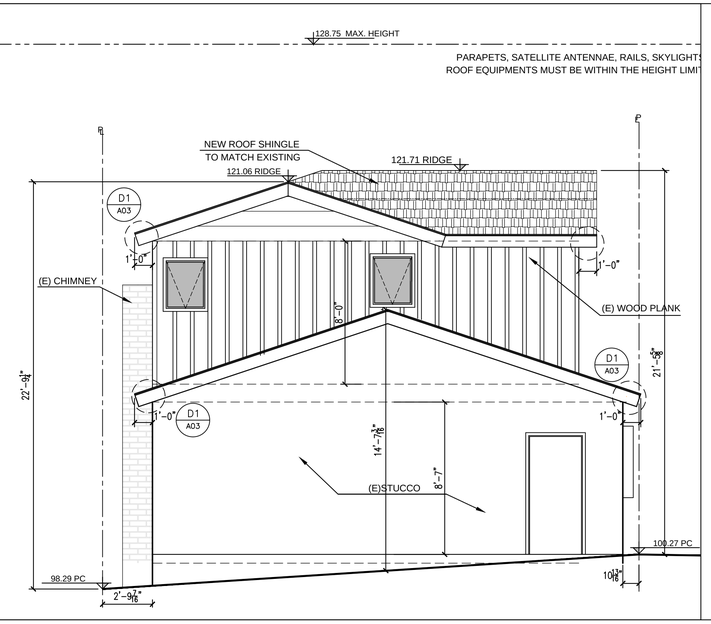
PROPOSED NORTH-WEST ELEVATION

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



PROPOSED SOUTH-WEST ELEVATION

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



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REGISTERED PROFESSIONAL ENGINEER
MANUEL A. ESPINO
No. C055526
EXP. 12-31-24
CIVIL
STATE OF CALIFORNIA

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR
REMODEL ON EXISTING
TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION		
NO.	DATE:	DESCRIPTION:

SHEET TITLE:

EXISTING ELEVATIONS
PROPOSED ELEVATIONS

PROJECT NO:

06162023

DATE

06/16/2023

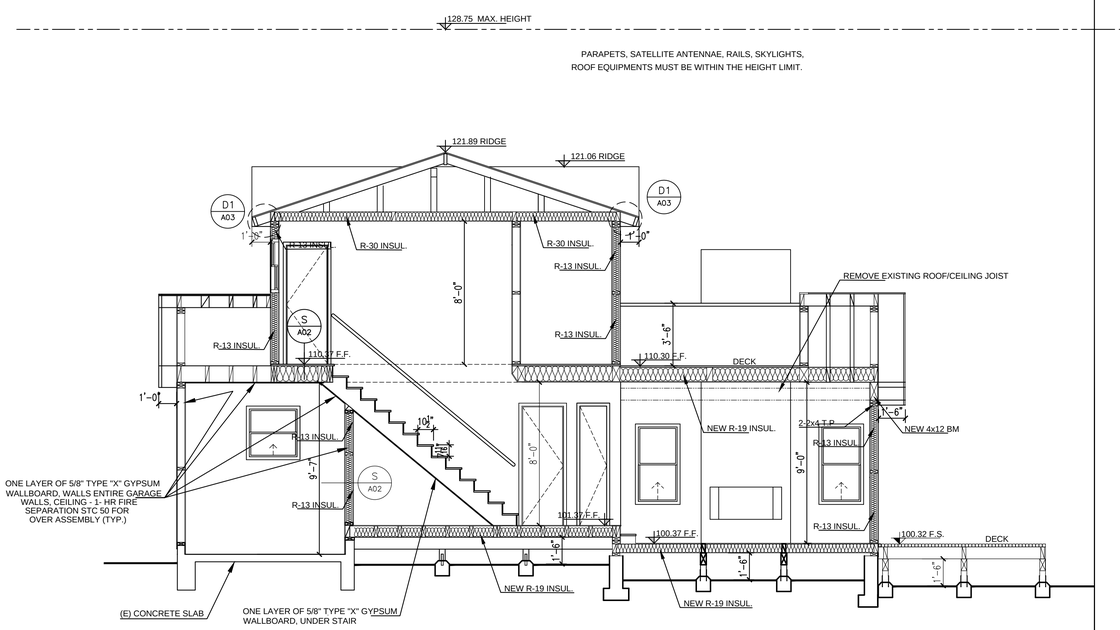
SHEET NO:

A04

02-05

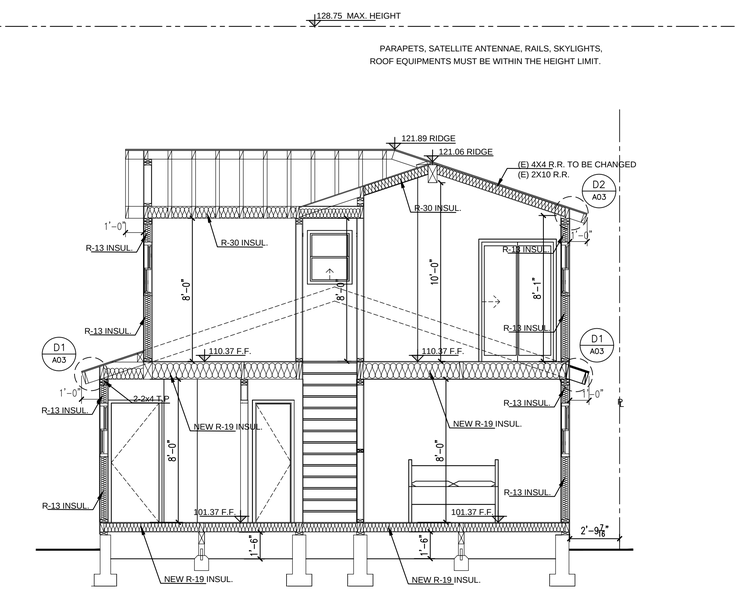
SECTION AA

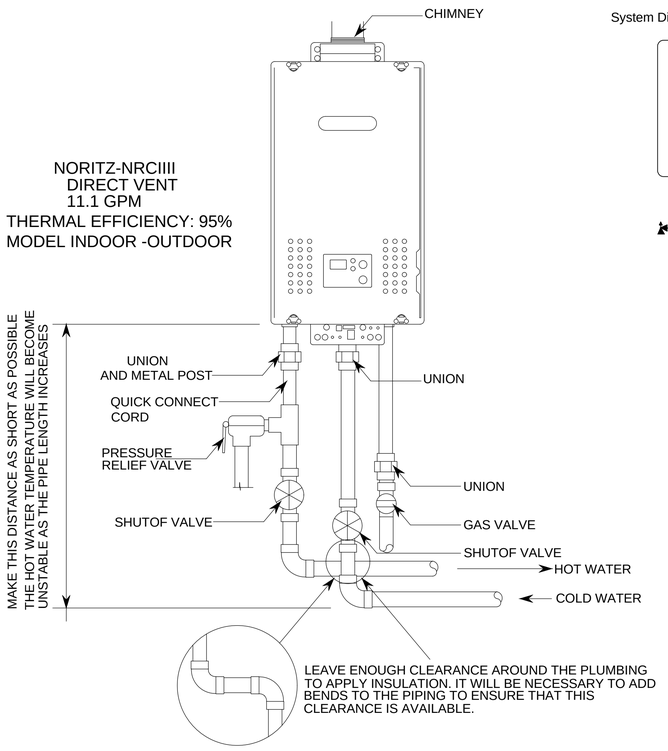
SCALE: 1/4" = 1'-0"



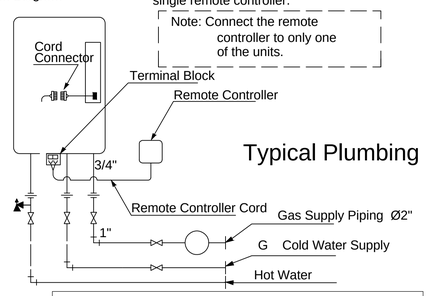
SECTION BB

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





System Diagram



* When connecting three units, use only a single remote controller.

Note: Connect the remote controller to only one of the units.

Typical Plumbing

Gas Line Sizing for a Noritz Condensing Tankless Gas Water Heater

Adapted from UPC 1997

Maximum Natural Gas Delivery Capacity in Cubic Feet per Hour (0.60 Specific Gravity, 0.5" WC Pressure Drop)

Pipe	Length in Feet										
Size	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	125'
1/2"	174	119	96	82	73	66	61	56	53	50	44
3/4"	363	249	200	171	152	138	127	118	111	104	93
1"	684	470	377	323	286	259	239	222	208	197	174
1 1/4"	1404	965	775	663	588	532	490	456	428	404	358
1 1/2"	2103	1445	1161	993	880	798	734	683	641	605	536
2"	4050	2784	2235	1913	1696	1536	1413	1315	1234	1165	1033
2 1/2"	6405	4401	3533	3049	2703	2449	2253	2096	1966	1857	1646
3"	11472	7943	6296	5391	4778	4329	3983	3705	3476	3284	2910
3 1/2"	16.709	11.484	9222	7893	6995	6338	5831	5425	5090	4808	4261
4"	22,277	15,398	12,241	10,395	9143	8830	8121	7557	7091	6698	5938

Contact the Gas Supplier for Btu/Cubic Ft. of the Supplied Gas. 1000 BTU/Cubic Ft. is a Typical Value

Maximum Liquified Petroleum (Undiluted) Delivery Capacity in Thousands of Btuh (0.5" WC Pressure Drop)

Pipe	Length in Feet												
Size	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	125'	150'	200'
1/2"	275	189	152	129	114	103	96	89	83	78	69	63	55
3/4"	567	393	315	267	237	217	196	185	173	162	146	132	112
1"	1071	732	590	504	448	409	378	348	322	307	275	252	213
1 1/4"	2205	1496	1212	1039	913	834	771	724	677	630	567	511	440
1 1/2"	3307	2299	1858	1559	1417	1315	1181	1086	1023	976	866	787	675
2"	6321	4331	3465	2992	2646	2394	2205	2047	1921	1811	1606	1496	1260

** For reference only. Please consult gas pipe manufacturer for actual pipe capacities.

Maximum Capacity of Flex TracPipe in Cubic Feet per Hour of Natural Gas (0.60 Specific Gravity, 0.5" WC Pressure Drop)

Pipe	Length in Feet												
Size	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	150'	200'
3/8"	206	147	121	105	94	86	80	75	71	67	55	48
1/2"	383	269	218	188	168	153	141	132	125	118	94	82
3/4"	614	418	334	284	251	227	209	194	181	171	137	116
1"	1261	888	723	625	559	509	471	440	415	393	320	277
1 1/4"	2934	2078	1698	1472	1317	1203	1114	1042	983	933	762	661

Maximum Capacity of Flex TracPipe in Thousands of Btuh Liquified Petroleum (0.5" WC Pressure Drop)

Pipe	Length in Feet												
Size	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	150'	200'
3/8"	325	232	191	166	149	136	126	118	112	106	87	76
1/2"	605	425	344	297	265	241	222	208	197	186	143	129
3/4"	971	661	528	449	397	359	330	307	286	270	217	183
1"	1993	1404	1143	988	884	805	745	696	656	621	506	438
1 1/4"	4638	3285	2684	2327	2082	1902	1761	1647	1554	1475	1205	1045

* For reference only. Please consult gas pipe manufacturer for actual pipe capacities.
TracPipe® is a registered trademark of Omega Flex.

Maximum Capacity for Gas Flex Connectors in Cubic Feet per Hour of Natural Gas (0.60 Specific Gravity, 0.5" WC Pressure Drop)

Pipe	Length in Inches					
Size	12"	24"	36"	48"	60"	72"
1/2"	180	150	125	106	93	86
3/4"	—	290	255	215	187	173
1"	—	581	512	442	397	347
1 1/4"	—	1470	1200	1120	960	930

Maximum Capacity for Gas Flex Connectors in Thousands of Btuh Liquified Petroleum (0.5" WC Pressure Drop)

Pipe	Length in Inches					
Size	12"	24"	36"	48"	60"	72"
1/2"	288	240	200	169	149	137
3/4"	—	465	409	344	315	278
1"	—	930	825	708	638	556
1 1/4"	—	2352	1920	1808	1536	1488

** For reference only. Please consult gas pipe manufacturer for actual pipe capacities.

ANAMART CORP.

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SHEET TITLE:

SECTIONS AA / BB

PROJECT NO:

06162023

DATE

06/16/2023

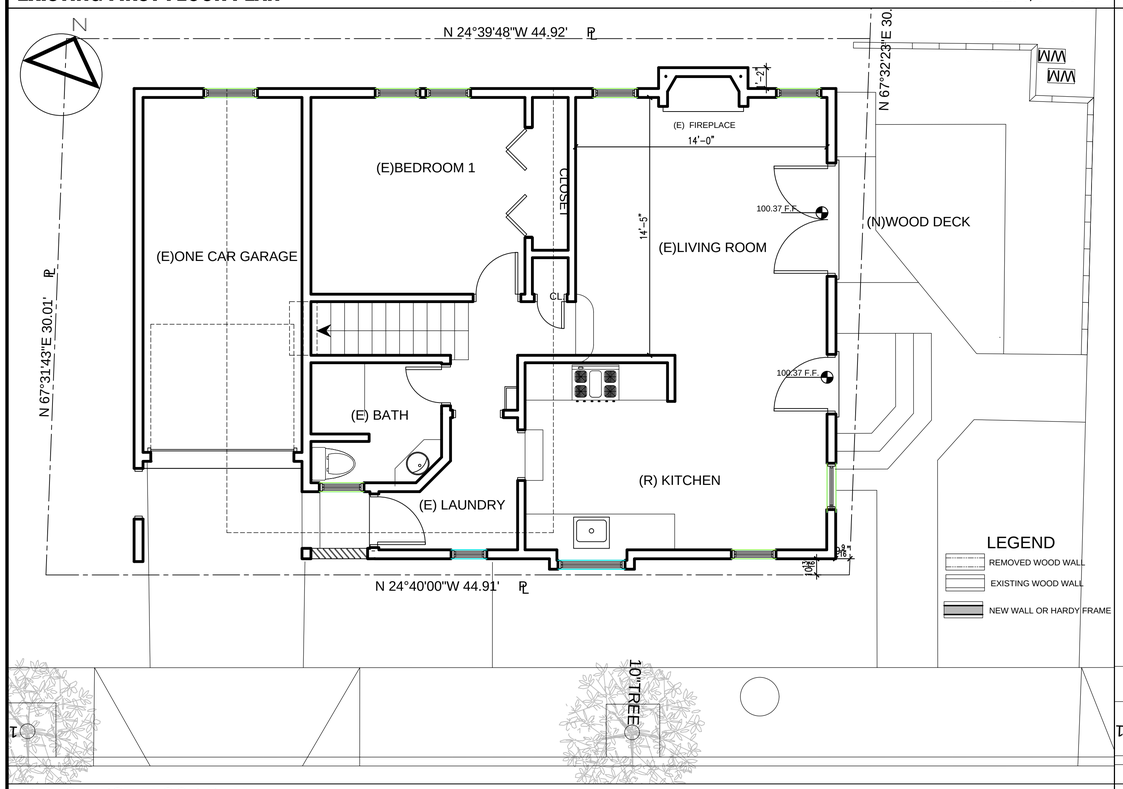
SHEET NO:

A05

05-05

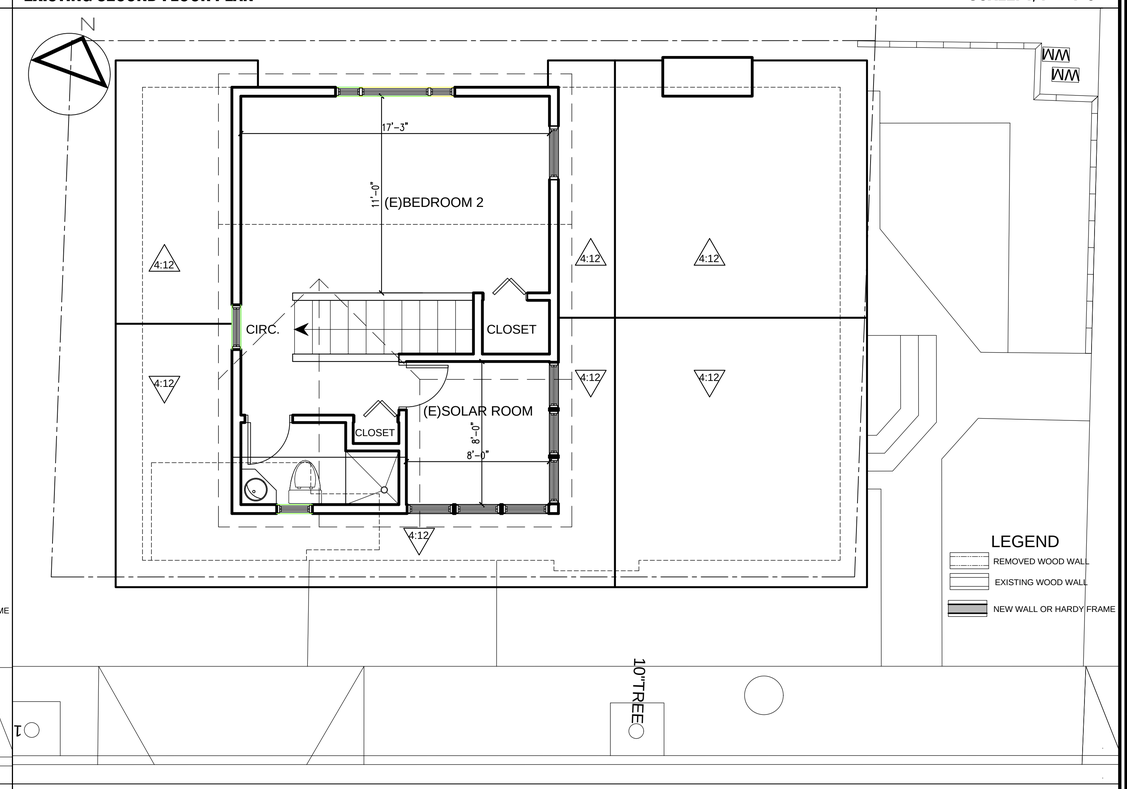
EXISTING FIRST FLOOR PLAN

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



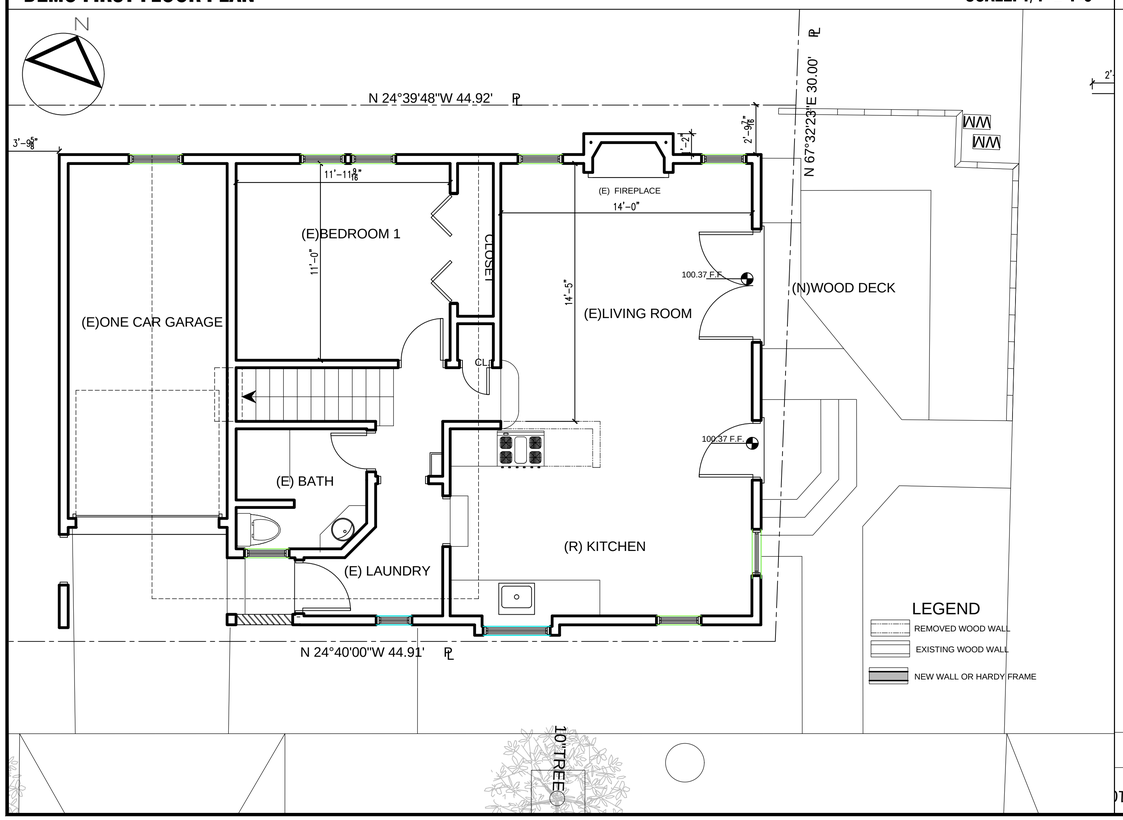
EXISTING SECOND FLOOR PLAN

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



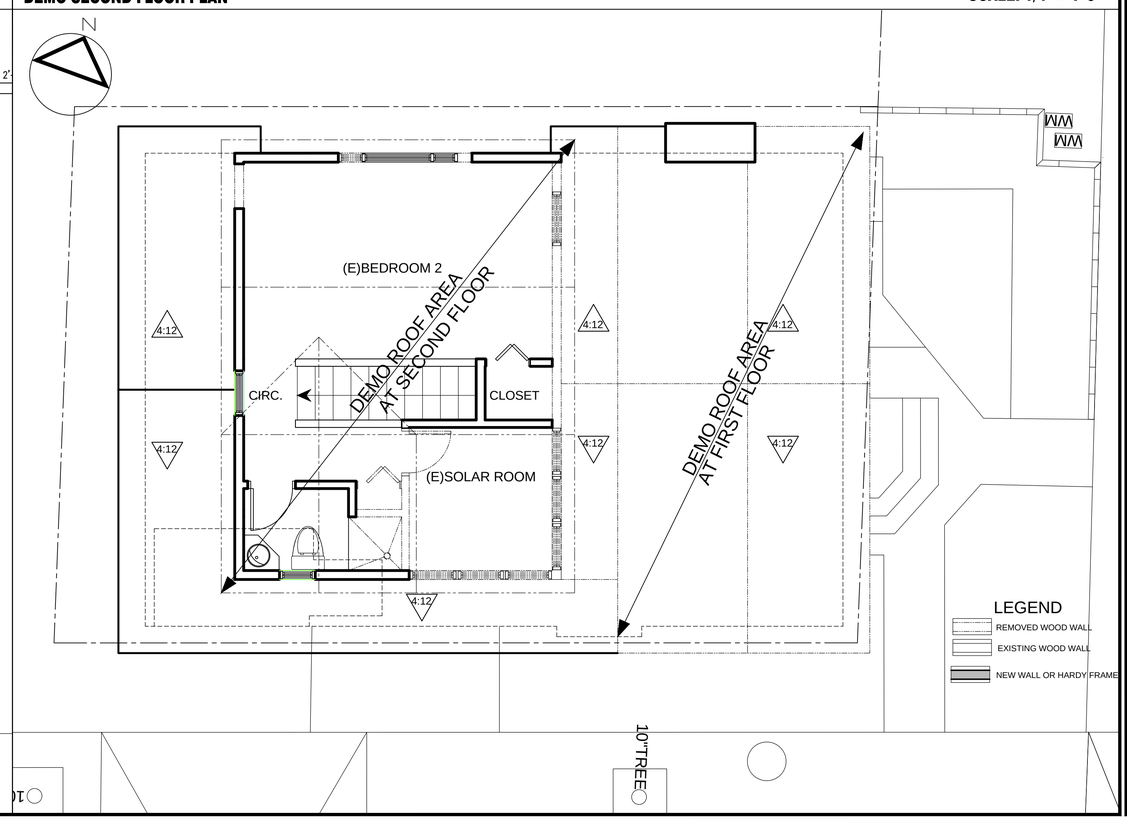
DEMO FIRST FLOOR PLAN

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



DEMO SECOND FLOOR PLAN

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



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PROJECT ADDRESS:

REVISION		
NO.	DATE:	DESCRIPTION:

SHEET TITLE:
EXISTING FLOOR PLANS
DEMO FLOOR PLANS

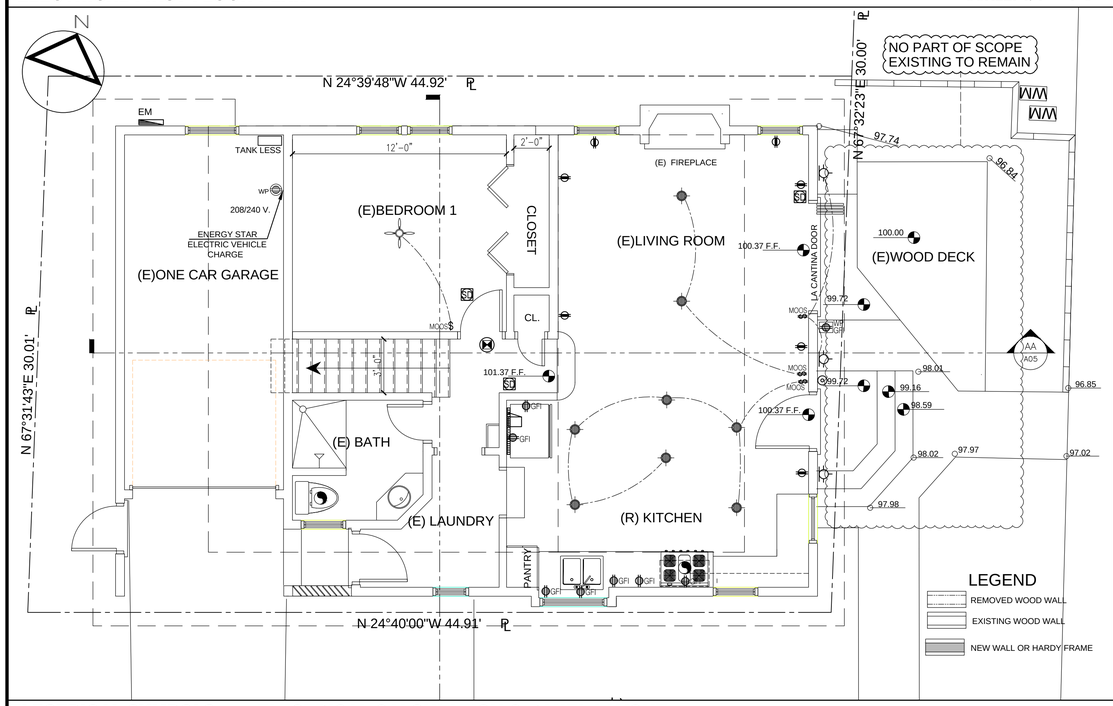
PROJECT NO:
06162023

DATE
06/16/2023

SHEET NO:
A06
01-02

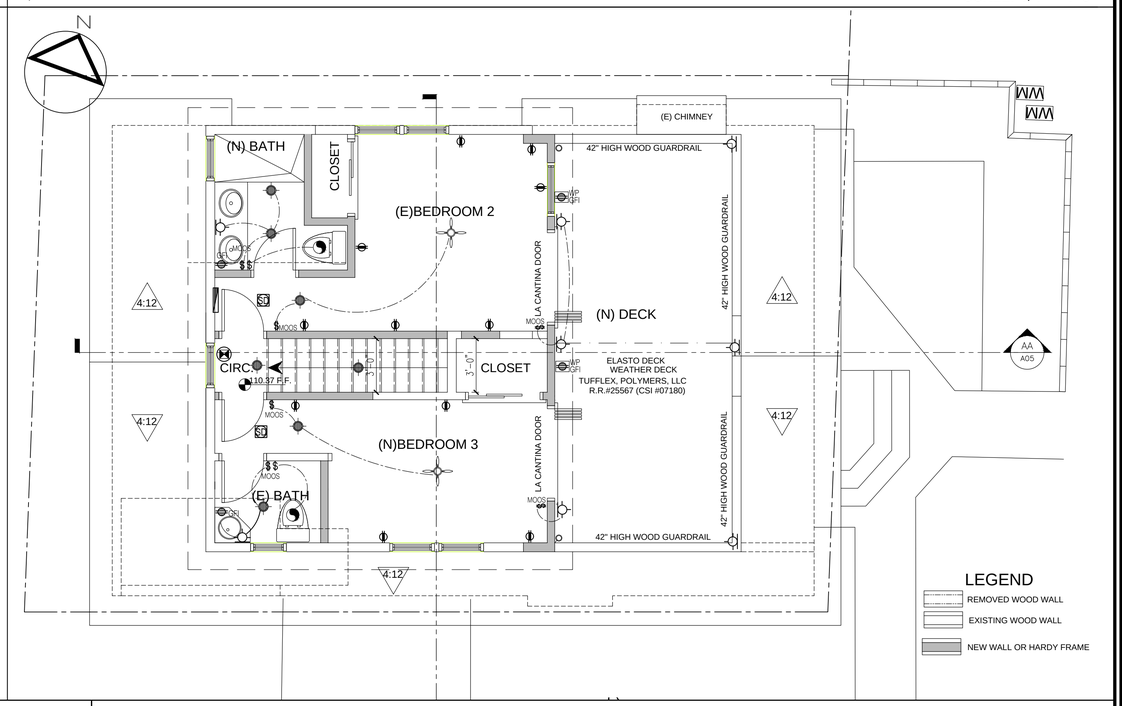
ELECTRICAL FIRST FLOOR PLAN

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



E;LECTRICAL SECOND FLOOR PLAN

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



ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	LIGHT - HIGH EFFICIENT
	LIGHT - HIGH EFFICIENT-RECESSED
	LIGHT WALL MOUNTED — Motion Sensor OR Switch
	CEILING FAN W/ LIGHTING OUTLET OR CEILING PENDANT LIGHTING OUTLET
	WALL FIXTURE
	5" OR 7" WIDE STEP LIGHT (AT 03 STEPS)
	OUTLET
	OUTLET W/ AFCI
GFI	OUTLET W/ GROUND FAULT INTERRUPTER (GFI OR GFCI)
	BELL SWITCH W/ CAMERA
$	LIGHT SWITCH (SINGLE) — D (Dimmer) MOOS (Manual-on-occ. sensor)
$	LIGHT SWITCH (DOUBLE) — D (Dimmer) MOOS (Manual-on-occ. sensor)
$3	LIGHT SWITCH 3 WAY — D (Dimmer) MOOS (Manual-on-occ. sensor)
SD	SMOKE ALARM SHALL BE INTERCONNECTED HARDWIRED WITH BATTERY BACKUP AND SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 72.
	EXHAUST FAN DIRECT TO OUTSIDE FIVE AIR CHARGES PER HOUR, CONTROLLED BY A HUMIDISTAT WHICH SHALL BE READILY ACCESSIBLE. 150 CFM
	CARBON MONOXIDE ALARMS HARDWIRED INTERCONNECTED WITH BATTERY BACK UP.
	BELL
	ELECTRICAL PANEL W/ METER

ELECTRICAL CALCULATION & PANEL LAYOUT

Residential Standard Calculation
Version 2020 B1

Job Name
JULIE NEITZ
232 19th Street
MANHATTAN BEACH, CA 90266
Telephone and Fax
9/25/2023 16:59

STEP 1 Article 220.42 & 220.52

sq. ft.	1224	General Lighting load	3,672 VA
	2	Small Appliance	3,000 VA
	2	Laundry circuit	3,000 VA
	Gen.Ltg, Sm App & Laun. Load		9,672 VA
		3,000 VA @ 100%=	3,000 VA
		6,672 VA @ 35% =	2,335 VA
		VA @ 25% =	VA
		General Lighting Demand Load	5,335 VA

STEP 2 Article 220.50 & 220.51

2.5 ton	4,400 VA	AHU 1 5kW	5,800 VA	Total Heat Load	5,800 VA
A/C #2	VA	AHU 2 Select	VA	Total Cooling Load	4,400 VA
A/C #1	VA	AHU 3 Select	VA	Greater of Heat @ 100% vs.A/C @ 100%	5,800 VA
A/C #4	VA	AHU 4 Select	VA		
A/C #5	VA	AHU 5 Select	VA		

STEP 3 Article 220.53

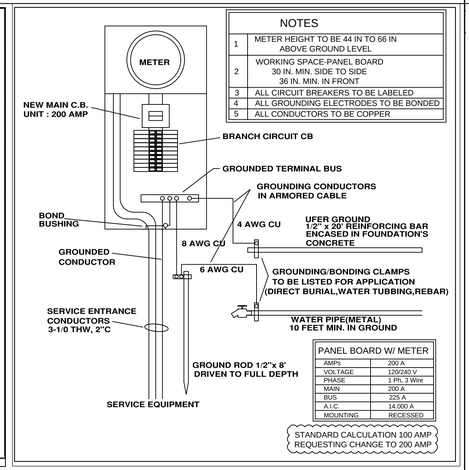
4,500 VA		Water Heater	VA	
1,600 VA	1	Refrigerator	1,600 VA	Appliance Demand Load 5,642 VA
600 VA	1	Freezer	600 VA	
1,030 VA	1	Dishwashier	1,030 VA	Dryer Demand Load VA
690 VA	1	Disposal	690 VA	
400 VA	1	Trash Compactor	400 VA	Range Demand Load VA
1,630 VA	1	Microwave	1,630 VA	
1,440 VA		Central Vac	VA	Service Demand 16,777 VA
170 VA		Mini Refrigerator	VA	
400 VA	1	Range hood	400 VA	Demand Load 70 A
480 VA		Hurricane Shutters	VA	
1,500 VA		Ironing Center	VA	Neutral Demand 41 A
	1/4 hp	Jacuzzi Tub	667 VA	Min.Service Req. 100 A
	1/6 hp	Sprinkler Pump	506 VA	
	select	Well Pump	VA	Min. Feeder size 4
	select	Fountain Pump	VA	Min. Neutral size 6
	select	Elevator	VA	Eq. Grding Cond. 8
		Pool Equip. Panel	VA 100% Demand	Copper
			VA No Demand	
			VA No Demand	Total Appliance Load 7,523 VA
				4 or more demand @ 75% plus 100% demand loads 5,642 VA

STEP 4 Article 220.54
Electric Clothes Dryers

STEP 5 Article 220.55

Electric Ranges	Col. C demand	W
or Number of appliances		
	Cooktop	Col B demand
	Cooktop	Col B demand
	Oven(s)	Col B demand
	Oven(s)	Col B demand
Number of appliances	Dem. Factor	0%
	Cooktop & Oven Demand Load	W

☐ Check Box for Gas Range



NOTES

1	METER HEIGHT TO BE 44 IN TO 66 IN ABOVE GROUND LEVEL
2	WORKING SPACE-PANEL BOARD 30 IN. MIN. SIDE TO SIDE 36 IN. MIN. IN FRONT
3	ALL CIRCUIT BREAKERS TO BE LABELED
4	ALL GROUNDING ELECTRODES TO BE BONDED
5	ALL CONDUCTORS TO BE COPPER

PANEL BOARD W/ METER

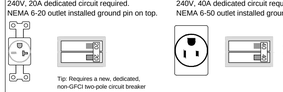
AMPs	200 A
VOLTAGE	120/240 V
PHASE	1 Ph, 3 Wire
MAIN	200 A
BUS	225 A
A.I.C.	14,000 A
MOUNTING	RECESSED

EV CHARGING - PLUG INSTALLATION

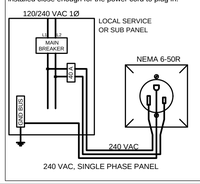
Plug Installation

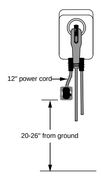
ChargePoint Home 12: 16A Station
240V, 20A dedicated circuit required.
NEMA 6-20 outlet installed ground pin on top.

ChargePoint Home 25: 32A Station
240V, 40A dedicated circuit required.
NEMA 6-50 outlet installed ground pin on top.



The NEMA outlet should be located 20-26" from the ground. Refer to the installation template to decide where to install the station.
The power cord will not bend and is only 12" long (as per the National Electric Code for EV chargers), so ensure the outlet is installed close enough for the power cord to plug in.





○ Neutral is not required at the outlet
○ Install outlet with ground pin on top

ELECTRICAL NOTES

* Newly installed bathroom exhaust fans, not functioning as a component of a whole house ventilation system, must be controlled by a Humidistat which shall be readily accessible.

compliant and be ducted to terminate to the outside of the building.
Provide the manufacturer's cut sheet for verification.

ELECTRICAL NOTES:
Ground-Fault Circuit-Interruption (GFCI) for personnel shall be provided and installed in readily accessible location. (EC 210.8(A))

Arc-Fault Circuit-Interruption shall be installed to provide protection of the branch circuit. (EC 210.12)

Tamper-Resistant receptacles shall be installed in all areas specified in 210.52, all nonlockingtype 12-volt; 15- and 20-ampere receptacles shall be listed tamper-resistant receptacles. (EC 406.12)

All branch circuits that supply 125 volt, single phase, 15 and 20 ampere outlets installed in dwelling units shall be protected by an arc-fault circuit interrupter(s). (CEC 210.12)
Note this requirements is for entire circuit, no just the outlets.

High Efficacy Light Sources

Luminaires manufactured, designed and rated for use with only lighting technologies in this column shall be classified as high efficacy:

- Pin-based linear fluorescent lamps or pin-based compact fluorescent lamps, provided that the ballast in the luminaire is electronic. Compact fluorescent lamps ≥ 13 watts have 4 pins for compliance with the electronic ballast requirements in §150.0(k)1D.
- Pulse-start metal halide lamps.
- High pressure sodium lamps.
- GU-24 sockets rated for LED lamps.
- GU-24 sockets rated for compact fluorescent lamps.
- Luminaires using LED light sources which have been certified to the Commission as high efficacy in accordance with Reference Joint Appendix JA8.
- Luminaire housings rated by the manufacturer for use with only LED light engines.
- Induction lamps.

Note: Adaptors which convert an incandescent lamp holder to a high-efficacy lamp holder shall not be used to classify a luminaire as high efficacy, even if the manufacturer declares that such adaptors as permanent.

ELECTRICAL PRODUCT SPECIFICATIONS

PRODUCT SPECIFICATIONS
HIGH-EFFICACY RESIDENTIAL LIGHTING

These compliant luminaires and light engines meet the requirements of Joint Appendix 8 (JA8), Including:
Minimum 90 CRI for indoor LEDs
CCT of 2,700 - 4,000 K for indoor luminaire
(2,700 - 5,000 K for outdoor luminaires)
Integral LED luminaire or LED light engine
GU-24 base sources

CEILING-MOUNTED RECESSED

PRODUCT	DESCRIPTION	CCT	CRI	WATTS	EFFICACY (Lumens / Watt)	LOCATION
	dmf Lighting 4", 5", 6" LED DRD2M10927	2700 K	90	15 W	67	KITCHEN, PANTRY, HALL HALLWAY, GARAGE

CEILING-MOUNTED SUSPENDED LUMINAIRES

PRODUCT	DESCRIPTION	CCT	CRI	WATTS	EFFICACY (Lumens / Watt)	LOCATION
	Artika Lighting Essence 30 Watt int. LED Chrome	2700 K	90	30 W	60	STAIR BEDROOM AND MASTER BEDROOM DINING ROOM

CEILING-MOUNTED SURFACE LUMINAIRES

PRODUCT	DESCRIPTION	CCT	CRI	WATTS	EFFICACY (Lumens / Watt)	LOCATION
	Hinkley Lighting BRANTLEY 4631**-LED	2700 K	90	32 W	65	LIVING ROOM
	Hinkley Lighting HADLEY 3301**-LED	2700 K	90	32 W	65	BEDROOM AND MASTER BEDROOM GAME ROOM
	Hunter 44" Hugger Ceiling Fan	2700 K	90	32 W	65	LIVING ROOM BEDROOM AND MASTER BEDROOM

WALL-MOUNTED LUMINAIRES

PRODUCT	DESCRIPTION	CCT	CRI	WATTS	EFFICACY (Lumens / Watt)	LOCATION
	Hinkley Lighting LUNA 58504MZ**-LED	2700 K	90	13 W	64	PORCH EXTERIOR DOOR
	SKYTALENT POST LIGHTS OUTDOOR FIXTURE, WATERPROOF EXTERIOR PILLAR LIGHT	2700 K	90	13 W		OPEN DECK

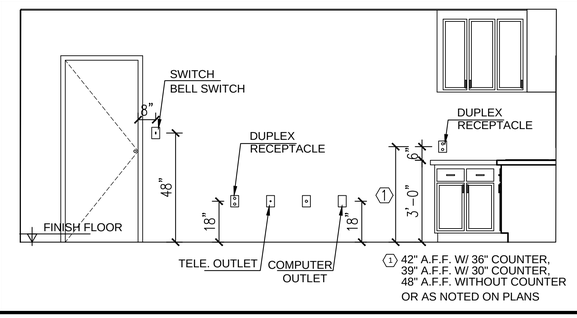
VANITY LUMINAIRES

PRODUCT	DESCRIPTION	CCT	CRI	WATTS	EFFICACY (Lumens / Watt)	LOCATION
	Hinkley Lighting DARIA 2-LED 55483**-LED	2700 K	90	16 W	60	BATHROOM
	Hinkley Lighting LATITUDE 4-LED 5654**-LED	2700 K	90	32 W	60	MASTER BATHROOM

WALL-MOUNTED LUMINAIRES

PRODUCT	DESCRIPTION	CCT	CRI	WATTS	EFFICACY (Lumens / Watt)	LOCATION

MOUNTING HEIGHTS



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REGISTERED PROFESSIONAL ENGINEER
MANUEL A. ESPINO
No. C055526
EXP. 12-31-24
CIVIL
STATE OF CALIFORNIA

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION

NO.	DATE:	DESCRIPTION:

SHEET TITLE:
EXISTING FLOOR PLANS
DEMO FLOOR PLANS

PROJECT NO:
06162023

DATE
06/16/2023

SHEET NO:
A07
01-02

Mechanical Ventilation:

Local Exhaust Bathroom Ventilation Rate Summary
Enter the required fan flow rate (cfm).

- Bathroom Fan Flow (cfm) = 50.0 (# of Bathrooms 3)

Use the fan flow rate from this summary for selection of the local ventilation fan and for the duct design for the local ventilation

system from Table 7.1.

- Duct Size (in) = 5"Ø (NL)
- Maximum Allowable Duct Length (ft) = NO LIMIT ON DUCT LENGTH

Local Exhaust Kitchen Ventilation Rate Summary
Enter the required fan flow rate (cfm).

- Kitchen Fan Flow (cfm) = 100.0 (# of Kitchens 1)

Use the fan flow rate from this summary for selection of the local ventilation fan and for the duct design for the local ventilation

system from Table 7.1.

- Duct Size (in) = 5"Ø
- Maximum Allowable Duct Length (ft) = 35'-0" MAX. LIMIT ON DUCT LENGTH

Sound Rating
Majority of the local exhaust fans will operate intermittently, and are required to be rated for sound at a maximum of 3 sone, unless their maximum rated airflow exceeds 400 cfm (200 L/s).

Whole-Building Ventilation:

Whole-Building Ventilation Rate Summary
Enter the required fan flow rate (cfm).

- Continuous Fan Flow (cfm) = 40.02

whole-building ventilation system from Table 7.1.

- Duct Size (in) = 5"Ø (NL)
- Maximum Allowable Duct Length (ft) = NO LIMIT ON DUCT LENGTH

	LOCATION	AREA	VENT.= AREA / 20	PROPOSED
FIRST FLOOR	LIVING/DINING	A: 202.21 SQ. FT	202.21/20= 10.11 SQ FT.	40.00 SQ. FT. 22.48 SQ. FT.
	KITCHEN	A: 184.68 SQ. FT	184.68/20=9.23 SQ FT.	19.80 SQ. FT.
	BATHROOM	A: 47.95 SQ. FT.	47.95 /20 = 2.40 SQ FT.	7.5 SQ. FT.
	CIRCULATION	55.90 SQ FT.		
	BEDROOM 1	A: 131.55 SQ. FT	131.55 /20 =6.58 SQ FT.	2x7.50 SQ. FT.
	LAUNDRY	A: 42.21 SQ. FT.	42.21 /20 = 2.11 SQ FT.	6.0 SQ. FT.
SECOND FLOOR	CIRCULATION	A: 9.00 SQ. FT.		
	BEDROOM 2	A: 117.00 SQ. FT	117.0 /20 =5.85 SQ FT.	2x7.50 SQ. FT.
	MASTER BED.	A: 141.30 SQ. FT	141.30 /20 = 7.06 SQ FT.	2x7.50 SQ. FT.
	MASTER BATH	A: 43.96 SQ FT.	43.96 /20 = 2.20 SQ FT.	7.5 SQ. FT.
	BATHROOM	A: 27.11 SQ FT.	27.11 /20 = 1.36 SQ FT.	7.5 SQ. FT.
		1,002.87 SQ FT.		

ASHRAE Standard 62.2 Equation 4.1(a):
The whole-building exhaust fan shall provide a minimum ventilation rate according to Equation 4.1(a) below:

$$Qfan = 0.01Afloor + 7.5(Nbr + 1)$$

Where:
Qfan = fan flow rate, (cfm)
Afloor = conditioned floor area ft2
Nbr = number of bedrooms; not to be less than one

FLOOR AREA: 1,002.87 SQ. FT.
NUMERO DE BEDROOM 03

Qfan = 0.01(1,002.87) + 7.5(3+1)
Qfan = 10.03+ 7.5(4)
Qfan = 10.02 + 30.0
Qfan = 40.02 cfm

Sound Rating and Continuous Operation
The whole-building ventilation exhaust fan will operate continuously, and is required to be rated for sound at a maximum of 1 sone. This exhaust fan can be controlled by a standard on/off switch, but the switch must be labeled to inform the occupant that the exhaust fan is the whole-building ventilation exhaust fan and is intended to operate continuously. No specific wording is mandated, but the wording needs to make clear what the control is for and the importance of operating the system. This may be as simple as "Ventilation Control" or might include wording such as: "Operate when the house is in use" or "Keep on except when gone over 7 days" or "Fan is to be left on to ensure indoor air quality\U+358"

ASHRAE Standard 62.2 Table 7.1

Table 7.1 Prescriptive Duct Sizing Requirements

Duct Type	Flex Duct				Smooth Duct			
Fan Rating cfm @ 0.25 in. w.g.	50	80	100	125	50	80	100	125
	Maximum Allowable Duct Length (ft)							
Diameter, (in)	Flex Duct				Smooth Duct			
3	X	X	X	X	5	X	X	X
4	70	3	X	X	105	35	5	X
5	NL	70	35	20	NL	135	85	55
6	NL	NL	125	95	NL	NL	NL	145
7 and above	NL	NL	NL	NL	NL	NL	NL	NL

This table assumes no elbows. Deduct 15 ft of allowable duct length for each turn, elbow, or fitting. Interpolation and extrapolation in Table 7.1 is not allowed. For fan rating values not listed, use the next higher value. This table is not applicable for fan ratings > 125 cfm.

NL = no limit on duct length of this size.
X = not allowed, any length of duct of this size with assumed turns, elbows, fittings will exceed the rated pressure drop (0.25 in w.g.).
Note: water gauge (w.g). is the same as water column (w.c.)

How to operate your whole house fan.

1. Open windows in your house when operating the whole-house fan to avoid creating concentrated suction in any one spot.

2. Close any fireplace dampers before turning on the fan to avoid pulling soot into a room.

3. Turn on the whole-house fan when the air outdoors is cool and dry, particularly during the evening hours when temperatures have cooled. Turn off the fan during the day when temperatures outside rise higher than in the house.

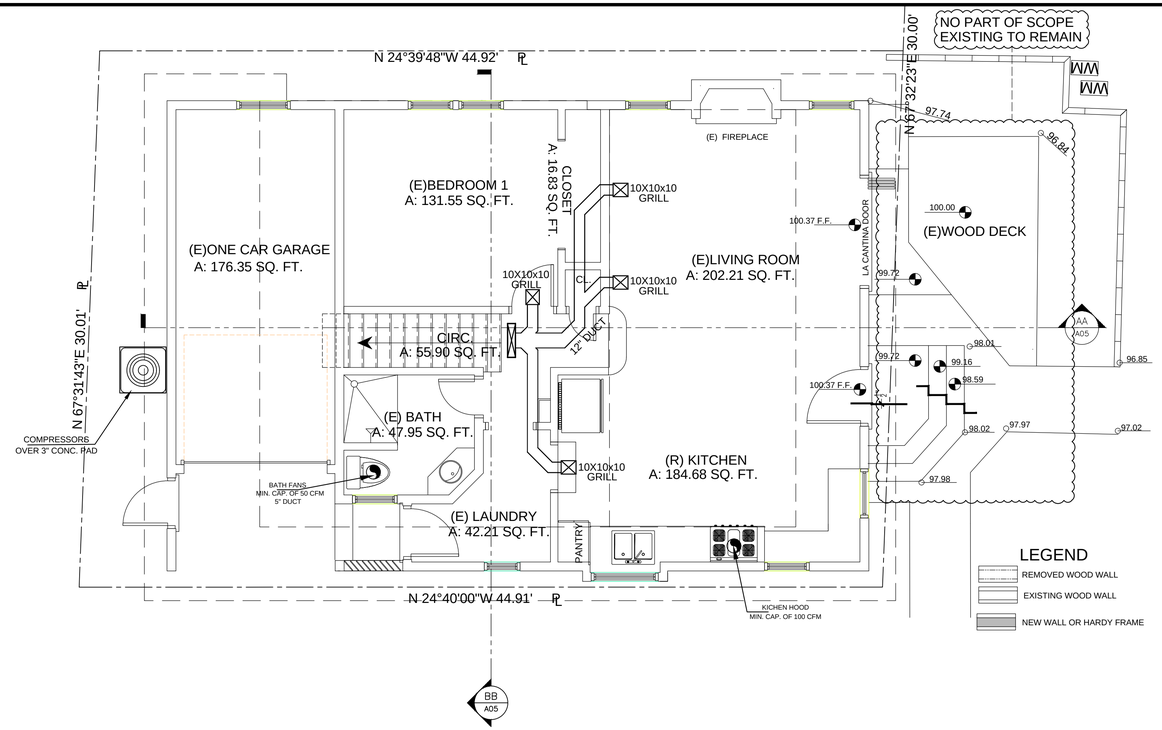
4. Turn on the fan and open the windows during a hot day if maintaining an inside temperature about the same as the outside temperature is acceptable. The moving air helps make people inside feel more comfortable and uses less energy than an air conditioner.

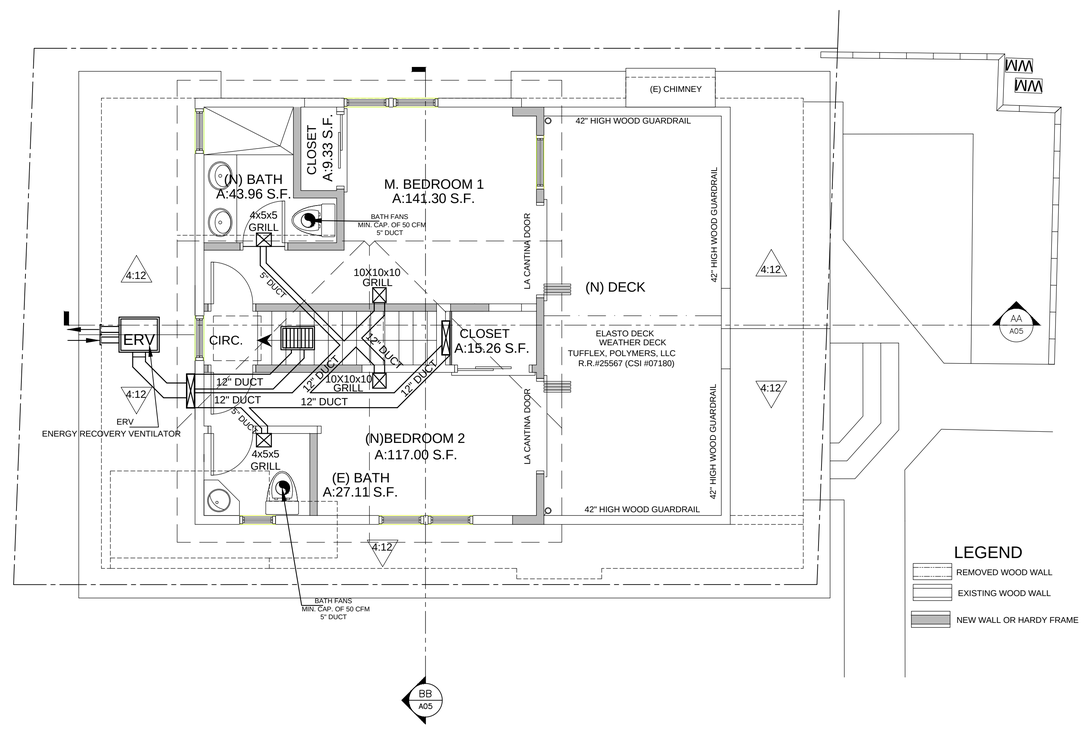
5. Fully open the windows in any particular rooms you wish to cool, closing windows in other rooms. This helps increase the air movement where you need it most.

6. Use optional timers and thermostats only to turn off the fan. Do not use the controls to automatically switch on the fan as it is essential that you open windows and close the fireplace damper before operating the fan.

ROOF VENTILATION
PROPOSED: TOP ROOF = 3.40 SQ. FT.
PROPOSED: BOTTOM ROOF = 3.22 SQ. FT.

FAN CAPACITY 40.02 CFM MINIMUM 4.44 SQ FT (ATTIC NFVA)
PROPOSED: 3.40 +3.22 SQ. FT. = 6.62 SQ. FT.
PROPOSED 6.62 SQ. FT. OF NFVA IN THE ATTIC > 4.44 SQ. F.T OK.





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(323) 379-6216 (562) 622-6927

REGISTERED PROFESSIONAL ENGINEER MANUEL A. ESPINO No. C055526 EXP. 12-31-24 CIVIL STATE OF CALIFORNIA

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION		
NO.	DATE:	DESCRIPTION:

SHEET TITLE:
CALCULATION WHOLE BUILDING VENTILATION

PROJECT NO: 06162023

DATE 06/16/2023

SHEET NO: A08

01-02

2019 CALGREEN MANDATORY MEASURES CHECKLIST
NEW RESIDENTIAL BUILDINGS
COMMUNITY DEVELOPMENT DEPARTMENT
1400 Highland Avenue, Manhattan Beach, CA 90266-4795
Telephone [310] 802-5500 FAX [310] 802-5501 TDD [310] 546-3501
Website: www.citymb.info

PROJECT INFORMATION

Plan Check Number:	Owner's Name:
Project Address:	
Description of Work:	NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE
Designer Responsible for CALGreen Compliance:	Manuel A. Espino — Phone: (323) 379-6216 (562) 622-6927
Signature of Designer Responsible for CALGreen Compliance:	M Espino — Date:

INSTRUCTIONS

The Owner or the Owner's Agent shall employ a Design Professional experienced with the 2019 *California Green Building Standards Code* to assure that all required work described herein is properly planned and implemented in the project.

The Design Professional shall complete this checklist, and in the Plan Reference column provide the applicable plan Sheet number and detail/note where CALGreen compliance is detailed. The completed and signed checklist shall be printed on all final sets of plans.

MANDATORY FEATURE OR MEASURE	Plan Reference
Chapter 1 - ADMINISTRATION	
101.3 Scope. The provisions of the CALGreen code shall apply to the planning, design, operation, construction, use and occupancy of every newly constructed building or structure.	
102.2 Information on construction documents. The construction documents shall be of sufficient clarity to indicate the location, nature and scope of the proposed green building features and show that it will conform to the provisions of this code, the *California Building Standards Code* and other relevant laws, ordinances, rules and regulations.	
102.3 Verification. Documentation of conformance for applicable green building measures shall be provided. All projects shall submit a completed CALGreen Checklist including mandatory measures and Tier 1 or Tier 2 as applicable.	
Chapter 3 – GREEN BUILDING	
301.1 Scope. Builcings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code.	
302.1 Mixed occupancy buildings. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.	

MANDATORY FEATURE OR MEASURE	Plan Reference
Section 4.106 - SITE DEVELOPMENT	
4.106.2 Storm water drainage and retention during construction. Projects, which disturb less than 1 acre of soil and are not part of a larger common plan of development shall manage storm water drainage during construction. Erosion and sediment control devices Best Management Practices (BMPs) shall be implemented around the construction site to prevent discharges to the street and adjacent properties. BMPs shall be identified and shown on the plan. Control measures must also be taken to prevent street surface water from entering the site. Refer to the State Water Resources Control Board for projects which disturb one acre or more of soil or are part of a larger common plan of development which in total disturbs one acre or more of soils.	A01 BMPs Notes
4.106.3 Grading and paving. Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings.	ST SURVEY PLAN
Section 4.106.4 - ELECTRIC VEHICLE (EV) CHARGING FOR NEW CONSTRUCTION	
4.106.4 Electric vehicle (EV) charging for new construction. New construction shall comply with Section 4.106.4.1, 4.106.4.2, or 4.106.4.3, to facilitate for future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the *California Electrical Code*, Article 625.	A06 DETAIL GARAGE
Section 4.106.4.1- EV CHARGING FOR 1- & 2- FAMILY DWELLINGS AND TOWNHOUSES	
4.106.4.1 New one- and two-family dwellings and townhouses with attached private garages. • For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. • The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). • The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. • Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. • The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device. **4.106.4.1.1** The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE".	A06 DETAIL GARAGE
Section 4.106.4.2 - EV CHARGING FOR MULTI-FAMILY DWELLINGS	
4.106.4.2 EV charging for new multifamily dwellings – If residential parking is available, twenty-five (25) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE and five (5) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging stations (EVCS). Calculations for the required number of EV spaces and EVCS shall be rounded up to the nearest whole number. [MBMC 9.36.020]	N/A
4.106.4.2.1 EV charging space (EV space) locations for multifamily dwellings. Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents. **4.106.4.2.1.1 Electric vehicle charging stations (EVCS).** When EV chargers are installed, EV spaces required by Section 4.106.4.2.2, Item 3, shall comply with at least one of the following options: 1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the *California Building Code*, Chapter 11A, to allow use of the EV charger from the accessible parking space. 2. The EV space shall be located on an accessible route to the building, as defined in the *California Building Code*, Chapter 2.	N/A

MANDATORY FEATURE OR MEASURE	Plan Reference
4.106.4.2.2 EV charging space (EV space) dimensions for multifamily dwellings 1. The minimum length of each EV space shall be 18 feet. 2. The minimum width of each EV space shall be 9 feet. 3. One in every 25 EV spaces, but not less than one, shall also have an 8-foot wide minimum aisle. A 5-foot wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet. a. Surface slope for this EV space and aisle shall not exceed one unit vertical in 48 units horizontal (2.083% slope) in any direction.	N/A
4.106.4.2.3 Single EV space required for multifamily dwellings • Install listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. • The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). • The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space. • Construction documents shall identify the raceway termination point. • The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.	N/A
4.106.4.2.4 Multiple EV spaces required for multifamily dwellings • Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. • Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at full rated amperage of the EVSE. • Plan design shall be based upon a 40-ampere minimum branch circuit. • Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.	N/A
4.106.4.2.5 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the *California Electrical Code*.	N/A
Section 4.106.4.3.- EV CHARGING FOR NEW HOTELS AND MOTELS	
4.106.4.3 EV charging for new hotels and motels. All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE and EVCS. The construction documents shall identify the location of the EV spaces and EVCS. [MBMC 9.36.020]	N/A
4.106.4.3.1 Number of required EV spaces and EVCS. The number of required EV spaces and EVCS shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces and EVCS shall be rounded up to the nearest whole number. Refer to amended Table 4.106.4.3.1 in Ord. 19-0015. [MBMC 9.36.020]	N/A
4.106.4.3.2 Electric vehicle charging space (EV space) dimensions for hotels and motels 1. The minimum length of each EV space shall be 18 feet. 2. The minimum width of each EV space shall be 9 feet.	N/A
4.106.4.3.3 Single EV space required. When a single EV space is required, the EV space shall be designed in accordance with Section 4.106.4.2.3.	N/A
4.106.4.3.4 Multiple EV spaces required. When multiple EV spaces are required, the EV spaces shall be designed in accordance with Section 4.106.4.2.4.	N/A
4.106.4.3.5 Identification. The service panels or subpanels shall be identified in accordance with Section 4.106.4.2.5.	N/A
4.106.4.3.6 Accessible EV spaces. In addition to the requirements in Section 4.106.4.3, EV spaces for hotels/motels and all EVSE, when installed, shall comply with the accessibility provisions in the *California Building Code*, Chapter 11B.	N/A

MANDATORY FEATURE OR MEASURE	Plan Reference
Division 4.2 - ENERGY EFFICIENCY	
4.201. Building meets or exceeds the requirements of the 2019 *California Energy Code*.	
Section 4.303 - INDOOR WATER USE	
4.303.1 Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the prescriptive requirements of 4.303.1.1 through 4.303.1.4.4. **Noncompliant plumbing fixtures.** All noncompliant plumbing fixtures in any residential real property shall be replaced with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificate of final completion, certificate of occupancy, or final permit approval. [See CA Civil Code 1101.1 for further information]	PER TABLE MAXIMUM FIXTURE WATER USE SHEET A09 D4
4.303.1.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the US EPA WaterSense Specification for Tank-type Toilets. The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.	PER TABLE MAXIMUM FIXTURE WATER USE SHEET A09 D4
4.303.1.2 Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush. The effective flush volume of all other urinals shall not exceed 0.5 gallons per flush.	PER TABLE MAXIMUM FIXTURE WATER USE SHEET A09
4.303.1.3.1 Single showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the US EPA WaterSense Specification for Showerheads.	PER TABLE MAXIMUM FIXTURE WATER USE SHEET A09 D4
4.303.1.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time. Note: a hand-held shower shall be considered a showerhead.	PER TABLE MAXIMUM FIXTURE WATER USE SHEET A09 D4
4.303.1.4.1 Residential lavatory faucets. The maximum flow rate of residential lavatory faucets shall not exceed 1.2 gallons per minute at 60 psi. The minimum flow rate of residential lavatory faucets shall not be less than 0.8 gallons per minute at 20 psi.	PER TABLE MAXIMUM FIXTURE WATER USE SHEET A09
4.303.1.4.2 Lavatory faucets in common and public use areas. The maximum flow rate of lavatory faucets installed in common and public use areas (outside of dwellings or sleeping units) in residential buildings shall not exceed 0.5 gallons per minute at 60 psi.	PER TABLE MAXIMUM FIXTURE WATER USE SHEET A09 D4
4.303.1.4.3 Metering faucets. Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.	
4.303.1.4.4 Kitchen faucets. The maximum flow rate of kitchen faucets shall not exceed 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi. Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.	PER TABLE MAXIMUM FIXTURE WATER USE SHEET A09 D4
4.303.2 Standards for plumbing fixtures and fittings. Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable referenced standards.	
Section 4.304 - OUTDOOR WATER USE	
4.304.1 Outdoor potable water use in landscape areas. Residential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.	N/A
4.305.1 Recycled water supply systems. Newly constructed residential developments, where disinfected tertiary recycled water is available from a municipal source to a construction site, may be required to have recycled water supply systems installed, allowing the use of recycled water for residential landscape irrigation systems. See Chapter 15 of the *California Plumbing Code*.	N/A

MANDATORY FEATURE OR MEASURE	Plan Reference
Section 4.406 - ENHANCED DURABILITY AND REDUCED MAINTENANCE	
4.406.1 Rodent proofing. Annular spaces around pipes, electric cables, conduits or other openings in sole/bottom plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency.	SEE DETAIL HEREON SHEET A09 D1
Section 4.408 - CONSTRUCTION WASTE REDUCTION DISPOSAL AND RECYCLING	
4.408.1 Construction waste management. Recycle and/or salvage for reuse a **minimum of 65%** of the nonhazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4.	CONTRACTOR
4.408.2 Construction waste management plan. Submit a construction waste management plan meeting Items 1 through 5 in Section 4.408.2. Plans shall be updated as necessary and shall be available for examination during construction.	CONTRACTOR
4.408.3 Waste management company. Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1.	CONTRACTOR
4.408.5 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Sections 4.408.2, 4.408.3, or 4.408.4.	CONTRACTOR
Section 4.410 - BUILDING MAINTENANCE AND OPERATION	
4.410.1 Operation and maintenance manual. At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency which covers 10 specific subject areas shall be placed in the building.	N/A
4.410.2 Recycling by occupants. Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible area(s) that serves all buildings on the site and is identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals.	N/A
Section 4.503 - FIREPLACES	
4.503.1 General. Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits. Woodstoves, pellet stoves and fireplaces shall also comply with applicable local ordinances including South Coast Air Quality Management District regulations.	N/A
Section 4.504 - POLLUTANT CONTROL	
4.504.1 Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation, during storage on the construction site and until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of water, dust and debris which may enter the system.	PER TABLE 4.504.1 HEREON
4.504.2.1 Adhesives, sealants and caulks. Adhesives, sealants and caulks used on the project shall meet the requirements of the following standards unless more stringent local or regional air pollution or air quality management district rules apply: 1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 4.504.1 or 4.504.2, as applicable. Such products shall also comply with Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in Subsection 2 below. 2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than 1 pound and do not consist of more than 16 fluid ounces) shall comply with Statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of the California Code of Regulations (CCR), Title 17, commencing with Section 94507.	PER TABLE 4.504.1 HEREON

MANDATORY FEATURE OR MEASURE	Plan Reference
4.504.2.2 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the Air Resources Board Architectural Suggested Control Measure, as shown in Table 4.504.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 4.504.3 shall be determined by classifying the coating as Flat, Nonflat, or Nonflat-high Gloss coating, based on its gloss, as defined in subsections 4.21, 4.36, and 4.37, of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat, or Nonflat-high Gloss VOC limit in Table 4.504.3 shall apply.	PER TABLE 4.504.1 HEREON
4.504.2.3 Aerosol paints and coatings. Aerosol paints and coatings shall meet the Product-Weighted MIR Limits for ROC in Section 94522(a)(2) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Section 94522(e)(1) and (f)(1) of the CCR, Title 17, commencing with Section 94520.	PER TABLE 4.504.1 HEREON
4.504.2.4 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following: 1. Manufacturer's product specification. 2. Field verification of on-site product containers.	PER TABLE 4.504.1 HEREON
4.504.3 Carpet systems. All carpet installed in the building interior shall meet the testing and product requirements of one of the following: 1. Carpet and Rug Institute's Green Label Plus Program 2. California Department of Public Health, "Standard Method for Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350) 3. NSF/ANSI 140 at the Gold level 4. Scientific Certifications Systems Indoor Advantage™ Gold	N/A
4.504.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label Program.	N/A
4.504.3.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 4.504.1.	N/A
4.504.4 Resilient flooring systems. Where resilient flooring is installed, at least 80% of floor area receiving resilient flooring shall comply with one or more of the following: 1. Products compliant with the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350), certified as a CHPS Low-Emitting Material in the Collaborative for High Performance Schools (CHPS) High Performance Products Database. 2. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children & Schools Program) 3. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program 4. Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350)	PER TABLE 4.504.5 HEREON
4.504.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in the Air Resources Board's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et. seq.), by or before the dates specified in those sections, as shown in Table 4.504.5.	PER TABLE 4.504.5 HEREON
4.504.5.1 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the five specified methods.	
Section 4.505 - INTERIOR MOISTURE CONTROL	
4.505.2 Concrete slab foundations. Concrete slab foundations or concrete slab-on-ground floors required to have a vapor retarder by the *California Building Code*, Chapter 19, or the *California Residential Code*, Chapter 5, respectively, shall also comply with this section.	N/A

MANDATORY FEATURE OR MEASURE	Plan Reference
4.505.2.1 Capillary break. A capillary break shall be installed in compliance with at least one of the following: 1. A 4-inch thick base of 1/2-inch or larger clean aggregate shall be provided with a vapor retarder in direct contact with concrete and a concrete mix design, which will address bleeding, shrinkage, and curling shall be used. For additional information, see American Concrete Institute, ACI 302.2R-06. 2. Other equivalent methods approved by the enforcing agency. 3. A slab design specified by a licensed design professional.	PER TABLE 4.505.5 HEREON
4.505.3 Moisture content of building materials. Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19% moisture content. Moisture content shall be verified in compliance with the following: 1. Moisture content shall be determined with either a probe-type or a contact-type moisture meter. Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements in Section 101.8. 2. Moisture readings shall be taken at a point 2 feet to 4 feet from the grade-stamped end of each piece to be verified. 3. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing. Insulation products which are visibly wet or have a high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure.	PER TABLE 4.505.5 HEREON
Section 4.506 - INDOOR AIR QUALITY AND EXHAUST	
4.506.1 Bathroom exhaust fans. Each bathroom shall be mechanically ventilated and shall comply with the following: 1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building. 2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidity control. a. Humidity controls shall be capable of adjustment between a relative humidity range of ≤ 50% to a maximum of 80%. A humidity control may utilize manual or automatic means of adjustment. b. A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in). Notes: 1. For the purposes of this section, a bathroom is a room which contains a bathtub, shower, or tub/shower combination. 2. Lighting integral to bathroom exhaust fans shall comply with the *California Energy Code*.	ELECTRICAL PLAN SHEET A07
Section 4.507 - ENVIRONMENTAL COMFORT	
4.507.2 Heating and air-conditioning system design. Heating and air conditioning systems shall be sized, designed, and equipment selected using the following methods: 1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J – 2016 (*Residential Load Calculation*), ASHRAE handbooks or other equivalent design software or methods. 2. Duct systems are sized according to ANSI/ACCA 1 Manual D – 2016 (*Residential Duct Systems*), ASHRAE handbooks or other equivalent design software or methods. 3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S – 2014 (*Residential Equipment Selection*) or other equivalent design software or methods. Exception: Use of alternate design temperatures necessary to ensure the systems functions are acceptable.	TITLE 24 REPORT T1 / T-2
CHAPTER 7 - INSTALLER AND SPECIAL INSPECTOR QUALIFICATION	
702.1 Installer training. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program.	PER INSTALLER
702.2 Special. Special inspectors must be qualified and able to demonstrate competence to the enforcing agency in the discipline in which they are inspecting.	PER INSTALLER
703.1 Documentation. Documentation of compliance shall include, but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the local enforcing agency. Other specific documentation or special inspections necessary to verify compliance are specified in appropriate sections of CALGreen.	PER INSTALLER

TABLE 4.504.1
ADHESIVE VOC LIMIT[1, 3]
Less Water and Less Exempt Compounds in Grams per Liter

ARCHITECTURAL APPLICATIONS	VOC LIMIT
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single-ply roof membrane adhesives	250
Other adhesives not specifically listed	50
SPECIALTY APPLICATIONS	
PVC welding	510
CPVC welding	490
ABS welding	325
Plastic cement welding	250
Adhesive primer for plastic	550
Contact adhesive	80
Special purpose contact adhesive	250
Structural wood member adhesive	140
Top and trim adhesive	250
SUBSTRATE SPECIFIC APPLICATIONS	
Metal to metal	30
Plastic foams	50
Porous material (except wood)	50
Wood	30
Fiberglass	80

1. If an adhesive is used to bond dissimilar substrates together, the adhesive with the highest VOC content shall be allowed.
2. For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1168.

TABLE 4.504.2
SEALANT VOC LIMIT
Less Water and Less Exempt Compounds in Grams per Liter

SEALANTS	VOC LIMIT
Architectural	250
Marine deck	760
Nonmembrane roof	300
Roadway	250
Single-ply roof membrane	450
Other	420
SEALANT PRIMERS	
Architectural Nonporous Porous	 250 775
Modified bituminous	500
Marine deck	760
Other	750

TABLE 4.504.3
VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[1, 3]
Grams of VOC per Liter of Coating,
Less Water and Less Exempt Compounds

COATING CATEGORY	VOC LIMIT
Flat coatings	50
Nonflat coatings	100
Nonflat-high gloss coatings	150
SPECIALTY COATINGS	
Aluminum roof coatings	400
Basement specialty coatings	400
Bituminous roof coatings	50
Bituminous roof primers	350
Bond breakers	350
Concrete curing compounds	350
Concrete/masonry sealers	100
Driveway sealers	50
Dry fog coatings	150
Faux finishing coatings	350
Fire resistive coatings	350
Floor coatings	100
Form-release compounds	250
Graphic arts coatings (sign paints)	500
High temperature coatings	420
Industrial maintenance coatings	250
Low solids coatings[2]	120
Magnesite cement coatings	450
Mastic texture coatings	100
Metallic pigmented coatings	500
Multicolor coatings	250
Pretreatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings	50
Rust preventative coatings	250
Shellacs Clear Opaque	 730 550
Specialty primers, sealers and undercoaters	100
Stains	250
Stone consolidants	450
Swimming pool coatings	340
Traffic marking coatings	100
Tub and tile refinish coatings	420
Waterproofing membranes	250
Wood coatings	275
Wood preservatives	350
Zinc-rich primers	340

1. Grams of VOC per liter of coating, including water and including exempt compounds.
2. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
3. Values in this table are derived from those specified by the California Air Resources Board. Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available from the Air Resources Board.

TABLE 4.504.5
FORMALDEHYDE LIMITS[1]
Maximum Formaldehyde Emissions in Parts per Million

PRODUCT	CURRENT LIMIT
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard[2]	0.13

1. Values in this table are derived from those specified by the California Air Resources Board, Air Toxics Control Measure for Composite Wood as tested in accordance with ASTM E1333. For additional information, see *California Code of Regulations*, Title 17, Sections 93120 through 93120.12.
2. Thin medium density fiberboard has a maximum thickness of 5/16 inch (8 mm).

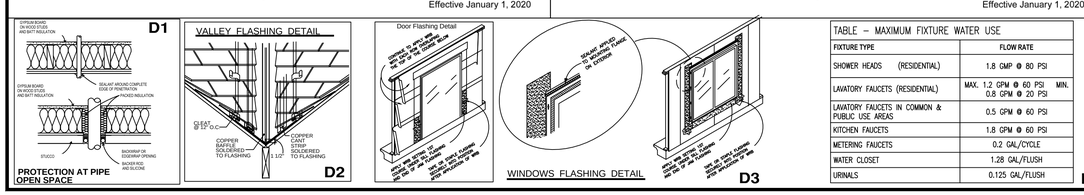

TABLE – MAXIMUM FIXTURE WATER USE

FIXTURE TYPE	FLOW RATE
SHOWER HEADS (RESIDENTIAL)	1.8 GMP @ 80 PSI
LAVATORY FAUCETS (RESIDENTIAL)	MAX. 1.2 GPM @ 60 PSI MIN. 0.8 GPM @ 20 PSI
LAVATORY FAUCETS IN COMMON & PUBLIC USE AREAS	0.5 GPM @ 60 PSI
KITCHEN FAUCETS	1.8 GPM @ 60 PSI
METERING FAUCETS	0.2 GAL/CYCLE
WATER CLOSET	1.28 GAL/FLUSH
URINALS	0.125 GAL/FLUSH

D4

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EXP. 12-31-24
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STATE OF CALIFORNIA

M Espino

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR
REMODEL ON EXISTING
TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION

NO.	DATE:	DESCRIPTION:

SHEET TITLE:
GREEN BUILDING REQUIREMENTS

PROJECT NO:
06162023

DATE
06/16/2023

SHEET NO:
A09

01-02

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 1 of 11)**

Calculation Description: Title 24 Analysis — **Input File Name:** MANHATTAN BEACH-2a.ribd22x

GENERAL INFORMATION

01	Project Name	Residential			
02	Run Title	Title 24 Analysis			
03	Project Location				
04	City	Manhattan Beach	05	Standards Version	2022
06	Zip code		07	Software Version	EnergyPro 9.2
08	Climate Zone	6	09	Front Orientation (deg/ Cardinal)	45
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	Addition and/or Alteration	13	Number of Bedrooms	3
14	Addition Cond. Floor Area (ft^2)	0	15	Number of Stories	2
16	Existing Cond. Floor Area (ft^2)	1224.28	17	Fenestration Average U-factor	0.24
18	Total Cond. Floor Area (ft^2)	1224.28	19	Glazing Percentage (%)	19.51%
20	ADU Bedroom Count	n/a	21	ADU Conditioned Floor Area	n/a
22	Fuel Type	Natural gas	23	Occupancy U-	No

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

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 2 of 11)**

Calculation Description: Title 24 Analysis — **Input File Name:** MANHATTAN BEACH-2a.ribd22x

ENERGY USE SUMMARY

Energy Use	Standard Design Source Energy (EDR1) (kBtu/ft^2 - yr)	Standard Design TDV Energy (EDR2) (kTOU/ft^2 -yr)	Proposed Design Source Energy (EDR1) (kBtu/ft^2 -yr)	Proposed Design TDV Energy (EDR2) (kTOU/ft^2 -yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	0	4.85	0	17.7	0	-12.85
Space Cooling	0	20.7	0	17.61	0	3.09
IAQ Ventilation	0	0	0	0	0	0
Water Heating	0	30.65	0	20.58	0	10.07
Self Utilization/Flexibility Credit						
Efficiency Compliance Total	**0**	**56.2**	**0**	**55.89**	**0**	**0.31**
Photovoltaics		0		0		
Battery				0		
Flexibility						
Indoor Lighting	0	8.07	0	8.07		
Appl. & Cooking	0	30.38	0	30.23		
Plug Loads	0	46.73	0	46.73		
Outdoor Lighting	0	1.81	0	1.81		
TOTAL COMPLIANCE	**0**	**143.19**	**0**	**142.73**		

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 3 of 11)**

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ENERGY USE INTENSITY

	Standard Design (kBtu/ft^2 - yr)	Proposed Design (kBtu/ft^2 - yr)	Compliance Margin (kBtu/ft^2 - yr)	Margin Percentage
Gross EUI[1]	22.58	20.96	1.62	7.17
Net EUI[2]	22.58	20.96	1.62	7.17

Notes
1. Gross EUI is Energy Use Total (not including PV) / Total Building Area.
2. Net EUI is Energy Use Total (including PV) / Total Building Area.

REQUIRED SPECIAL FEATURES

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

- Ceiling has high level of insulation
- 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 building tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry.

- Compact distribution system expanded credit
- Drain water heat recovery system

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft^2)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Residential	1224.28	1	3	2	0	1

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	Status
1st Floor Zone	Conditioned	Baseboard1	760.12	8	DHW Sys 1	Existing

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 4 of 11)**

Calculation Description: Title 24 Analysis — **Input File Name:** MANHATTAN BEACH-2a.ribd22x

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	Status
2nd Floor Zone	Conditioned	baseboard2	464.16	8	DHW Sys 1	Existing

OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
Front Wall	1st Floor Zone	R-15 Wall	45	Front	278.58	73.92	90	none	New	n/a
Left Wall	1st Floor Zone	R-15 Wall	135	Left	260.44	25.15	90	none	New	n/a
Back Wall	1st Floor Zone	R-15 Wall	135	Left	53.83	20.4	90	none	New	n/a
Right Wall	1st Floor Zone	R-15 Wall	315	Right	260.44	37.5	90	none	New	n/a
Front Wall 2	2nd Floor Zone	R-15 Wall	45	Front	209.87	80.5	90	none	New	n/a
Left Wall 2	2nd Floor Zone	R-15 Wall	135	Left	207.5	31	90	none	New	n/a
BackWall	2nd Floor Zone	R-15 Wall	225	Back	158	12	90	none	New	n/a
Right Wall 2	2nd Floor Zone	R-15 Wall	315	Right	260.44	15	90	none	New	n/a
Roof	1st Floor Zone	R-38 HP Attic	n/a	n/a	450	n/a	n/a		New	n/a
Roof 2	2nd Floor Zone	R-38 HP Attic	n/a	n/a	560	n/a	n/a		New	n/a
Raised Floor	1st Floor Zone	R-19 Floor No Crawlspace	n/a	n/a	760.12	n/a	n/a		New	n/a
Raised Floor 2	2nd Floor Zone	R-19 Floor No Crawlspace	n/a	n/a	464.16	n/a	n/a		New	n/a
Raised Floor-deck	2nd Floor Zone	R-30 Floor No Crawlspace	n/a	n/a	243	n/a	n/a		New	n/a
Interior Surface	2nd Floor Zone	R-19 Floor Crawlspace	n/a	n/a	464.16	n/a	n/a		New	n/a

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

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ATTIC

01	02	03	04	05	06	07	08	09	10
Name	Construction	Type	Roof Rlse (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof	Status	Verified Existing Condition
Attic 1st Floor Zone	Attic Roof1st Floor Zone	Ventilated	4	0.1	0.85	No	No	New	n/a
Attic 2nd Floor Zone	Attic Roof2nd Floor Zone	Ventilated	4	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 (ft^2)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
Front Windows	Window	Front Wall	Front	45			1	40	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Front Window	Window	Front Wall	Front	45			1	7.66	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Left Windows	Window	Left Wall	Left	135			1	6	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Left Window	Window	Left Wall	Left	135			1	11.25	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Left Window 2	Window	Left Wall	Left	135			1	7.9	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Right Windows	Window	Right Wall	Right	315			1	7.5	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Right Window	Window	Right Wall	Right	315			1	7.5	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Right Window 2	Window	Right Wall	Right	315			1	11.25	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 6 of 11)**

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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 (ft^2)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
Right Window 3	Window	Right Wall	Right	315			1	11.25	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Front Windows 2	Window	Front Wall 2	Front	45			1	35	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Front Window 2	Window	Front Wall 2	Front	45			1	35	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Front Window 3	Window	Front Wall 2	Front	45			1	10.5	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Left Windows 2	Window	Left Wall 2	Left	135			1	7.5	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Left Window 3	Window	Left Wall 2	Left	135			1	7.5	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Left Window 4	Window	Left Wall 2	Left	135			1	6	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Back Windows	Window	BackWall	Back	225			1	6	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Back Window	Window	BackWall	Back	225			1	6	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Right Windows 2	Window	Right Wall 2	Right	315			1	7.5	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA
Right Window 4	Window	Right Wall 2	Right	315			1	7.5	0.24	NFRC	0.2	NFRC	Bug Screen	New	NA

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

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OPAQUE DOORS

01	02	03	04	05	06
Name	Side of Building	Area (ft^2)	U-factor	Status	Verified Existing Condition
Entry Door	Front Wall	26.26	0.2	New	n/a
Door	Back Wall	20.4	0.2	New	n/a

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
R-15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: 3 Coat Stucco
Attic Roof1st Floor Zone	Attic Roofs	Wood Framed Ceiling	2x6 @ 24 in. O. C.	R-19	None / 0	0.055	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x6
Attic Roof2nd Floor Zone	Attic Roofs	Wood Framed Ceiling	2x6 @ 24 in. O. C.	R-19	None / 0	0.055	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x6
R-38 HP Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	None / None	0.025	Over Ceiling Joists: R-28.9 Insul. Cavity / Frame: R-0.1 / 2x4 Inside Finish: Gypsum Board
R-19 Floor No Crawlspace	Exterior Floors	Wood Framed Floor	2x10 @ 16 in. O. C.	R-19	None / None	0.047	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x10

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 8 of 11)**

Calculation Description: Title 24 Analysis — **Input File Name:** MANHATTAN BEACH-2a.ribd22x

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
R-30 Floor No Crawlspace	Exterior Floors	Wood Framed Floor	2x10 @ 16 in. O. C.	R-30	None / None	0.034	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-30 / 2x10
R-19 Floor Crawlspace	Interior Floors	Wood Framed Floor	2x10 @ 16 in. O. C.	R-19	None / None	0.045	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x10 Ceiling Below Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04	05
Quality Insulation Installation (QII)	High R-value Spray Foam Insulation	Building Envelope Air Leakage	CFM50	CFM50
Not Required	Not Required	N/A	n/a	n/a

WATER HEATING SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
Name	System Type	Distribution Type	Water Heater Name	Number of Units	Solar Heating System	Compact Distribution	HERS Verification	Water Heater Name (8)	Status	Verified Existing Condition	Existing Water Heating System
DHW Sys 1	Domestic Hot Water (DHW)	Standard	DHW Heater 1	1	n/a	Expanded	DHW Sys 1-hers-dhw	DHW Heater 1 (1)	New	NA	

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 9 of 11)**

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WATER HEATERS

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Name	Heating Element Type	Tank Type	# of Units	Tank Vol. (gal)	Heating Efficiency Type	Efficiency	Rated Input Type	Input Rating or Pilot	Tank Insulation R-value (Int/Ext)	Standby Loss or Recovery Eff	1st Hr. Rating or Flow Rate	Tank Location	Status	Verified Existing Condition
DHW Heater 1	Gas	Consumer Instantaneous	1	0	UEF	0.97	Btu/Hr	200000	0	n/a	n/a		New	n/a

WATER HEATING - COMPACT DISTRIBUTION

01	02	03	04	05	06	07
Dwelling Unit type	Water Heating System Name	Master Bath distance of furthest fixture to Water Heater (ft)	Kitchen distance of furthest fixture to Water Heater (ft)	Furthest Third furthest fixture to Water Heater (ft)	Compactness Factor	HERS Verification
Dwelling	DHW Sys 1	n/a	n/a	n/a	0.6	Expanded Credit

WATER HEATING - DRAIN WATER HEAT RECOVERY

01	02	03	04	05	06
Dwelling Unit type	DHW System and DWHR Names	Installation Configuration	Shower Drains	Shower Drain Water Heat Recovery Efficiency (%)	HERS Verification
Dwelling	DHW Sys 1 - 1 - DWHR-1	Equal Flow	2	43	Required

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Shower Drain Water Heat Recovery
DHW Sys 1 - 1/1	Not Required	Not Required	Required	Expanded	Not Required	Required

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 10 of 11)**

Calculation Description: Title 24 Analysis — **Input File Name:** MANHATTAN BEACH-2a.ribd22x

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
Name	System Type	Heating Unit Name	Heating Equipment Count	Cooling Unit Name	Cooling Equipment Count	Fan Name	Distribution Name	Required Thermostat Type	Status	Verified Existing Condition	Existing HVAC System
Baseboard1	Heating and cooling system other	Heating Component 1	1	Cooling Component 1	1	HVAC Fan 1	n/a	Non-setback thermostat	New	No	
baseboard2	Heating and cooling system other	Heating Component 2	1	Cooling Component 2	1	HVAC Fan 2	n/a	Non-setback thermostat	New	No	

HVAC - HEATING UNIT TYPES

01	02	03	04	05
Name	System Type	Number of Units	Heating Efficiency	Heating Unit Brand
Heating Component 1	Electric	1	HSPF -	n/a
Heating Component 2	Electric	1	HSPF -	n/a

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	Name
HVAC Fan 1	HVAC Fan	0.45	n/a
HVAC Fan 2	HVAC Fan	0.58	n/a

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Residential — **Calculation Date/Time:** 2023-08-30T14:12:16-07:00 — **(Page 11 of 11)**

Calculation Description: Title 24 Analysis — **Input File Name:** MANHATTAN BEACH-2a.ribd22x

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: MIGUEL A. RODRIGUEZ	Documentation Author Signature: MIGUEL A. RODRIGUEZ
Company: ANAMART CORP	Signature Date: 2023-08-30 14:18:30
Address: 830 FEATHER AVENUE	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: LA PUENTE, CA 91746	Phone: 626-337-1301

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: MIGUEL A. RODRIGUEZ	Responsible Designer Signature: MIGUEL A. RODRIGUEZ
Company: ANAMART CORP	Date Signed: 2023-08-30 14:18:30
Address: 830 FEATHER AVENUE	License: Intl. Assoc. AIA #30509905
City/State/Zip: LA PUENTE, CA 91746	Phone: 626-337-1301

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.

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ANAMART CORP.

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INTL. ASSC. AIA
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ENGINEER: Manuel A. Espino
CIVIL ENGINEER RCE 55526
12109 Woodruff Ave. * Downey, CA 90241
(323) 379-6216 (562) 622-6927

REGISTERED PROFESSIONAL ENGINEER — MANUEL A. ESPINO — No. C055526 — EXP. 12-31-24 — CIVIL — STATE OF CALIFORNIA

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION

NO.	DATE:	DESCRIPTION:

SHEET TITLE:

TITLE 24 REPORT

PROJECT NO:

DATE: 06162023

06/16/2023

SHEET NO:

T-01

01-02

2022 Single-Family Residential Mandatory Requirements Summary

NOTE: Single-family residential buildings subject to the Energy Codes must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information.
(04/2022)

Building Envelope:

§ 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):	**Roof Deck, Ceiling and Rafter Roof Insulation.** Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184. Ceiling and rafter roofs minimum R-22 insulation in wood-frame ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. 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 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 0.45; or area-weighted average U-factor of all fenestration must not exceed 0.45.*

Fireplaces, Decorative Gas Appliances, and Gas Log:

§ 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:

§ 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-N.*
§ 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)3:	**Insulation.** Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.
§ 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.

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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.
§ 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:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in § 609.11 of the California Plumbing Code. *
§ 150.0(j)2:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by §120.3(b). Insulation exposed to weather must be weather resistant 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 designate a space at least 2.5' x 2.5' x 7' suitable for the future installation of a heat pump water heater, and meet electrical and plumbing requirements, based on the distance between this designated space and the water heater location; and a condensate drain no more than 2' higher than the base of the water heater
§ 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:

§ 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 CMC §§ 601.0-605.0 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 R-6.0 or higher; ducts located entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8) do not require insulation. 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 UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and either mesh or tape must be used to seal openings greater than ¼". If mastic or tape is used. Building cavities, air handler support platforms, 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 these spaces must not be compressed.*
§ 150.0(m)2:	**Factory-Fabricated Duct Systems.** Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closure; 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 due tosunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service (e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover). Cellular foam insulation must be protected as above or coated with a water resistant and solar radiation-resistant coating.
§ 150.0(m)10:	**Porous Inner Core Flex Duct.** Porous inner cores of flex ducts must have a non-porous layer or air barrier 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 Reference Residential Appendix RA3.1.
§ 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. Clean-filter pressure drop and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the filter. *

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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. *

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)1B:	**Central Fan Integrated (CFI) Ventilation Systems.** Continuous operation of CFI air handlers is not allowed to provide the whole-dwelling unit ventilation airflow required per §150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed andcontrolled per §150.0(o)1Biii&iv. CFI ventilation systems must have controls that track outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with §150.0(o)1C.
§ 150.0(o)1C:	**Whole-Dwelling Unit Mechanical Ventilation for Single-Family Detached and townhouses .** 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 specified in § 150.0(o)1Ci-iii.
§ 150.0(o)1G:	**Local Mechanical Exhaust.** Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demand-controlled exhaust system meeting requirements of §150.0(o)1Gii,enclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting §150.0(o)1Giii-iv. Airflow must be measured by the installer per §150.0(o)1Gv, and rated for sound per §150.0(o)1Gvi. *
§ 150.0(o)1H&I:	**Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems.** The airflow required per § 150.0(o)1C must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/grilles per Reference Residential Appendix RA3.7. Whole-Dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 §7.2 at no less than the minimum airflow rate required by §150.0(o)1C.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficacy must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per §150.0(o)1G

Pool and Spa Systems and Equipment:

§ 110.4(a):	**Certification by Manufacturers.** Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDbS; 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 bulk-on 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:

§ 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, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openers; navigation lighting less than 5 watts; and lighting internal to drawers, cabinets, and linen closets with an efficacy of at least 45 lumens per watt.
§ 150.0(k)1B:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. *
§ 150.0(k)1C:	**Recessed Downlight Luminaires in Ceilings.** Luminaires recessed into ceilings must not contain screw based sockets, must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.
§ 150.0(k)1D:	**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)1E:	**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 shall be no more than the number of bedrooms. These boxes must be served by a dimmer, vacancy sensor control, low voltage wiring, or fan speed control.
§ 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).

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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)2A:	**Accessible Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off. *
§ 150.0(k)2B:	**Multiple Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
§ 150.0(k)2C:	**Mandatory Requirements.** Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	**Energy Management Control Systems.** An energy management control system (EMCS) may be used to comply with dimming, occupancy, and control requirements if it provides the functionality of the specified control per § 110.9 and the physical controls specified in § 150.0(k)2A.
§ 150.0(k)2E:	**Automatic Shutoff Controls.** In bathrooms, garages, laundry rooms, utility rooms and walk-in closets, at least one installed luminaire must be controlled by an occupancy or vacancy sensor providing automatic-off functionality. Lighting inside drawers and cabinets with opaque fronts or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.0(k)2F:	**Dimmers.** Lighting in habitable spaces (e.g., living rooms, dining rooms, kitchens, and bedrooms) must have readily accessible wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.0(k)2K:	**Independent controls.** Integrated lighting of exhaust fans shall be controlled independently from the fans. Lighting under cabinets or shelves, lighting in display cabinets, and switched outlets must be controlled separately from ceiling-installed lighting.
§ 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 have a manual on/off switch and either a photocell and motion sensor or automatic time switch control) or an astronomical time clock. An energy management control system that provides the specified control functionality and meets all applicable requirements may be used to meet these requirements.
§ 150.0(k)4:	**Internally illuminated address signs.** Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 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 §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.

Solar Readiness:

§ 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)-(e).
§110.10(b)1A:	**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. *
§ 110.10(b)2:	**Azimuth.** All sections of the solar zone located on steep-sloped roofs must have an azimuth between 90-300° 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 horizontal distance 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)-(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."

Electric and Energy Storage Ready:

5/6/22

2022 Single-Family Residential Mandatory Requirements Summary

§ 150.0(s)	**Energy Storage System (ESS) Ready.** All single-family residences must meet all of the following: Either ESS-ready interconnection equipment with backed up capacity of 60 amps or more and four or more ESS supplied branch circuits, or a dedicated raceway from the main service to a subpanel that supplies the branch circuits in § 150.0(s); at least four branch circuits must be identified and have their source collocated at a single panelboard suitable to be supplied by the ESS, with one circuit supplying the refrigerator, one lighting circuit near the primary exit, and one circuit supplying a sleeping room receptacle outlet; main panelboard must have a minimum busbar rating of 225 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the main panelboard, with raceways installed between the panelboard and the switch location to allow the connection of backup power source.
§ 150.0(t)	**Heat Pump Space Heater Ready.** Systems using gas or propane furnaces to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the furnace with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(u)	**Electric Cooktop Ready.** Systems using gas or propane cooktop to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the cooktop with circuit conductors rated at least 50 amps with the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(v)	**Electric Clothes Dryer Ready.** Clothes dryer locations with gas or propane plumbing to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the dryer location with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."

*Exceptions may apply.

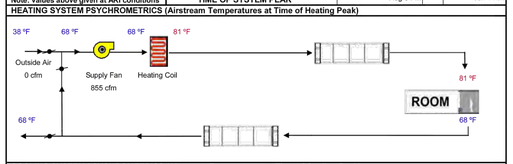
5/6/22

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

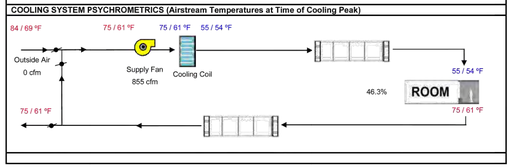
Project Name: Neitz Residence
Date: 8/30/2023
System Name: Baseboard
Floor Area: 760

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK			COIL HTG. PEAK	
Number of Systems	1		CFM	Sensible	Latent	CFM	Sensible
Heating System		Total Room Loads	263	5,633	557	389	5,456
Output per System	12,000	Return Vented Lighting		0			
Total Output (Btuh)	12,000	Return Air Ducts		61			0
Output (Btuh/sqft)	15.8	Return Fan		0			0
Cooling System		Ventilation	0	0	0	0	0
Output per System	0	Supply Fan		0			0
Total Output (Btuh)	0	Supply Air Ducts		61			0
Total Output (Tons)	0.0						
Total Output (Btuh/sqft)	0.0						
Total Output (sqft/Ton)	0.0	TOTAL SYSTEM LOAD		5,755	557		5,456
Air System							
CFM per System	855	HVAC EQUIPMENT SELECTION					
Airflow (cfm)	855	Baseboard Distribution		0	0		12,000
Airflow (cfm/sqft)	1.12						
Airflow (cfm/Ton)	0.0						
Outside Air (%)	0.0%	Total Adjusted System Output (Adjusted for Peak Design conditions)		0	0		12,000
Outside Air (cfm/sqft)	0.00						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK		Aug 3 PM			Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

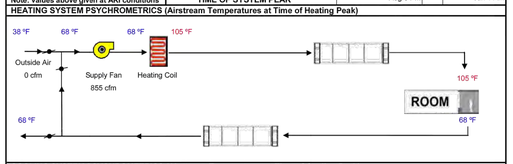


HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

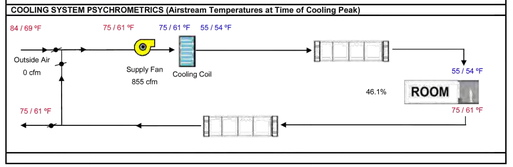
Project Name: Neitz Residence
Date: 8/30/2023
System Name: baseboard
Floor Area: 464

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK			COIL HTG. PEAK	
Number of Systems	1		CFM	Sensible	Latent	CFM	Sensible
Heating System		Total Room Loads	206	4,428	438	124	4,922
Output per System	12,000	Return Vented Lighting		0			
Total Output (Btuh)	12,000	Return Air Ducts		48			0
Output (Btuh/sqft)	25.9	Return Fan		0			0
Cooling System		Ventilation	0	0	0	0	0
Output per System	0	Supply Fan		0			0
Total Output (Btuh)	0	Supply Air Ducts		48			0
Total Output (Tons)	0.0						
Total Output (Btuh/sqft)	0.0						
Total Output (sqft/Ton)	0.0	TOTAL SYSTEM LOAD		4,524	438		4,922
Air System							
CFM per System	855	HVAC EQUIPMENT SELECTION					
Airflow (cfm)	855	Baseboard Distribution		0	0		12,000
Airflow (cfm/sqft)	1.84						
Airflow (cfm/Ton)	0.0						
Outside Air (%)	0.0%	Total Adjusted System Output (Adjusted for Peak Design conditions)		0	0		12,000
Outside Air (cfm/sqft)	0.00						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK		Aug 3 PM			Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)



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ENGINEER:

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION

NO.	DATE:	DESCRIPTION:

SHEET TITLE:
TITLE 24 REPORT

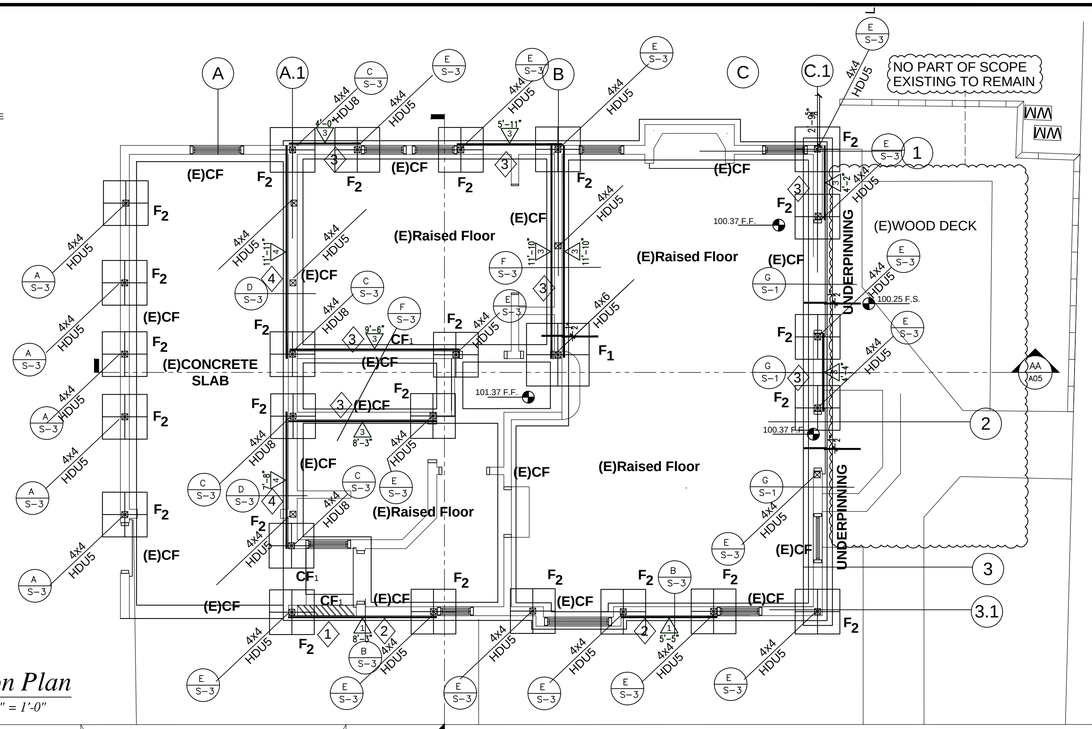
PROJECT NO:
06162023

DATE
06/16/2023

SHEET NO:
T-02
02-02

LEGEND

- REMOVED WOOD WALL
- EXISTING WOOD WALL
- NEW WALL OR HARDY FRAME



Foundation Plan

Scale: 1/4" = 1'-0"

DESIGN CRITERIA

TIMBER: DOC 2.0 DOUGLAS FIR LARCH (PER GRADING RULES 16)
2" X 4" AND 4" X 4" STANDARD GRADE (VERTICAL MEMBERS) No 2 GRADE (HORIZONTAL MEMBERS)
2" X 6" AND LARGER .....No. 2 GRADE (HORIZONTAL AND REPETIVE USES) VERTICAL MEMBERS)
4" X 6" AND LARGER .....No 1 GRADE (VERTICAL AND (BEAMS AND STRINGERS) HORIZONTAL MEMBERS)
2.0E PARALLAM PSL Headers & Beams : ESR-1387

TIMBER: MAXIMUM MOISTURE CONTENT 19%

PLYWOOD: Doc PS-1or PS2 PER APA STANDARD. PI. 32/16
GLUE LAMINATED: 24-V4 DF/DF. PER AITC STANDARDS.
Fb = 2400 PSI. Fv = 165 psi. W = 1,800,000
STRUCTURAL STEEL: ASTM A-36 STEEL Per AISC STANDARDS
PIPE AND TUBING GRADE B TYPE E OR TYPE S, ASTM A501
WELDING: AWS-E70XX Per AMERICAN WELDING SOCIETY STANDARDS

CONCRETE: (STRENGTH @ 28 DAYS) PER ACI 318 SPECIFICATIONS.
FOUNDATIONS f'c = 2,500 psi

REINFORCING STEEL: ASTM A - 615 PER CRSI STANDARDS
4 AND SMALLER GRADE 40
5 AND LARGER GRADE 60

SOIL: ALLOWABLE SOIL BEARING VALUE (Fbrg)= 1,500 PSF
PER SOILS REPORT BY: 2022 CBC TABLE 1806.2

LIVE LOADS:
ROOF = 20 psf as per 2022 CBC table 1607 A.1
CEILING = 10 psf as per 2022 CBC table 1607 A.1
FLOOR = 40 psf as per 2022 CBC table 1607 A.1
BALCONY = 60 psf as per 2022 CBC table 1607 A.1

FOUNDATIONS:
Allowable soil bearing value = 1500 psf as per 2022 CBC table 1806.2

WIND :
λ Kzt ps30
Ps=1.00x1.00x25.8 = 26 psf (28.5-3)(Simplified procedure)
λ = As per table in Fig. 28.5-1 ASCE 7-16
Kzt = 1.00 as per ASCE 7-16 section 26.8.2

V=110 mph
Exposure B
pitch 4:12

	A	B	C	D	E	F	G	H
ps30	25.8	~~-7.0~~	17.7	~~-3.8~~	~~-23.4~~	~~-16.0~~	~~-16.0~~	~~-12.4~~

EARTHQUAKE :
SS 1.91 MCER ground motion. (for 0.2 second period)
S1 0.679 MCER ground motion. (for 1.0s period)
SMS 2.291 Site-modified spectral acceleration value
SM1 null -See Section 11.4.8 Site-modified spectral acceleration value
SDS 1.528 Numeric seismic design value at 0.2 second SA
SD1 null -See Section 11.4.8 Numeric seismic design value at 1.0 second SA

SEISMIC DESIGN CATEGORY = D
SITE CLASS = D
SEISMIC IMPORTANCE FACTOR = 1.0
RISK CATEGORY = II
BASIC SEISMIC FORCE RESISTING SYSTEM=LIGHT FRAMED WALLS
DESIGN BASE SHEAR $V=\frac{FxSdsxW}{R}$
Cs = N/A

$V=\frac{1.1x2/3x1.20x1.910x1.3}{\frac{6.50}{R}}=0.34\ W$ (Simplified Lateral Procedure)

BASIC COMBINATION FOR STRENGTH DESIGN
7 . (0.9-0.2xSds) D + ρQE + 1.6H

W = Building weight
F = 1.1 for 2 story building as per ASCE 7-16 section 12.14.8.1
Fa = 1.2
R = 6.5 &Ω = 3.0 for wood shearwalls as per ASCE 7-16 TABLE 12.2-1
ρ = 1.3 as per requirements of ASCE 7-16 section 12.3.4.2

FOUNDATION NOTES

- HOLDOWNS CONNECTOR BOLTS INTO WOOD FRAMING REQUIRE 0.229"x3"x3" STEEL PLATES WASHERS ON THE POST OPPOSITE THE HOLD DOWN. HOLD-DOWNS SHALL BE FINGER TIGHT & 1/2 WRENCH TURN JUST PRIOR TO COVERING THE WALL FRAMING.
- HOLDOWN HARDWARE MUST BE SECURED IN PLACE PRIOR TO FOUNDATION INSPECTION
- HOLD-DOWN SHALL BE TIGHTENED TO FINGER TIGHT PLUS 1/2 WRENCH TURN JUST PRIOR TO COVERING THE WALL FRAMING."
- ANCHOR BOLTS SHALL BE EMBEDDED AT LEAST 7" INTO CONCRETE OR MASONRY= SPACED MAXIMUM OF 4' APART.
- ANCHOR BOLTS REQUIRED AT MAXIMUM OF 12" FROM CORNERS, OPENINGS AND SPLICES
- PLATE WASHERS ARE REQUIRED FOR ALL HOLD DOWNS.
- A CORROSION-RESISTANT 26-GAGE MIN. WEEP SCREED SHOULD BE PROVIDED AT OR BELOW THE FOUNDATION PLATE LINE ON ALL EXTERIOR STUD WALLS AND SHOULD BE PLACED AT MINIMUM OF 4" ABOVE THE EARTH OR 2" ABOVE PAVED AREAS 2512.1.2
- PROVIDE SPECIAL INSPECTION FOR ALL SIMPSON ET EPOXY APPLICATIONS
- IF ADVERSE SOIL CONDITIONS ARE ENCOUNTERED,A SOILS INVESTIGATION REPORT MAY BE REQUIRED
- FOUNDATION SILLS SHALL BE NATURALLY DURABLE OR PRESERVATIVE -TREATED WOOD FIELD CUTS ENDS,NOTCHES AND DRILLED HOLES SHALL BE FIELD TREATED PER AWPA -M4
- ANCHOR BOLTS IN CONTACT WITH PRESSURE TREATED SILL PLATES SHALL BE HOT DIPPED ZINC COATED,GALVANIZED STEEL,STAINLESS STEEL,SILICON BRONCE OR COPPER

PERIODICAL SPECIAL INSPECTION FOR :
1) FOUNDATION:
a)F'ng & Pad F'ng
b)Anchor Bolts & Hold Downs per SW Schedule
2) FRAMING:
a)Rafters,Ceilings ,Posts & Beams
3) SHEAR WALLS:
PERIODICAL SPECIAL INSPECTION is required for wood shear walls, shear panels and diaphragms,including nailing,bolting,anchoring and other fastening to other components of the seismic force-resisting system, where the specified fastener spacing at panel edges is < or = 4" o.c.

CONTINUOUS SPECIAL INSPECTION FOR :
1) FOUNDATION:
a)EPOXY TIE APPLICATIONS :AB & HOLD DOWNS

USE 3"x3"x.229" STEEL PLATE WASHERS

1. 5/8"Ø X 12"AB@ 48" o.c. USE 2x4 Sill Plate
2. 5/8"Ø X 10"AB@ 48" o.c. w/SET-XP USE (2)2x4 Sill Plate
3. 5/8"Ø X 10"AB@ 18" o.c. w/SET-XP USE (2)2x4 Sill Plate
4. 5/8"Ø X 10"AB@ 12" o.c. w/SET-XP USE (2)2x4 Sill Plate

UNDERPINNING : 18" wide X 18" deep
2 # 4 T&B

TYPE	SQ	DEEP	REINF
F_1	3'-6"	24"	4 # 4 EA. WAY
F_2	2'-6"	24"	3 # 4 EA. WAY

SHEARWALL SCHEDULE

SHEAR WALL △	ROOF-FLOOR DIAPHRAGM	DRAG STRAP	TOP PLATE CONNECTOR	WALL SHEATHING	BOTTOM PLATE CONNECTOR	HOLDOWN	SPECIAL INSPECTION REQUIRED	SHEAR VALUE	MAX SHEAR
1	15/32 CDX PLY. w/8d @ 6, 12 o.c. PI 32/16	MST 48	A35 @ 16" o.c.	15/32 STRUCT I w/8d @ 6, 6 o.c. PI 32/16	20d @ 6" O.C.	MST48-MSTC48B3	---	194	280
2	15/32 CDX PLY. w/8d @ 6, 12 o.c. PI 32/16	MST 48	A35 @ 16" o.c.	15/32 STRUCT I w/8d @ 4, 6 o.c. PI 32/16	⅝"Ø x6" LAGS@ 6" O.C.	MST48	YES	349	430*
4	15/32 CDX PLY. w/8d @ 6, 12 o.c. PI 32/16	MST 48	A35 @ 8" o.c.	15/32 STRUCT I w/8d @ 2, 6 o.c. PI 32/16	⅝"Ø x6" LAGS@ 6" O.C.	MST60-HDU8	YES	639	730*
4	19/32 CDX T&G w/10d @ 6, 10 o.c. PI 32/16	MST 60	A35 @ 8" o.c.	15/32 STRUCT I w/8d @ 2, 6 o.c. PI 32/16	5/8"Ø x10" AB@ 12" o.c.w/SET-XP	HDU8	YES	572	730*
3	19/32 CDX T&G w/10d @ 6, 10 o.c. PI 32/16	MST 60	A35 @ 16" o.c.	15/32 STRUCT I w/8d @ 3, 6 o.c. PI 32/16	5/8"Ø x10" AB@ 18" o.c.w/SET-XP 5/8"Ø X12" AB@ 18" o.c.	HDU5	YES	543	550*
1	19/32 CDX T&G w/10d @ 6, 10 o.c. PI 32/16	MST 48	A35 @ 16" o.c.	15/32 STRUCT I w/8d @ 6, 6 o.c. PI 32/16	5/8"Ø x10" AB@ 48"o.c.w/SET-XP	HDU5	---	265	280

WRITTEN DIMENSIONS SHALL BE VERIFIED ON THE JOB SITE. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORK

* THE FOLLOWING APPLIES TO ALL SHEAR WALLS WITH A LISTED DESIGN LOAD GREATER THAN 350 PLF
a) PROVIDE 3 X SILL PLATES FOR SILLS THAT REST ON CONCRETE OR MASONRY.
b) PROVIDE 3 X STUDS BETWEEN ADJACENT PANELS. IF IT IS NECESSARY TO USE 2-2X MEMBERS BETWEEN PANELS, SPECIFY 16d NAILS WITH STAGGERED NAILING, AND SPACING NO GREATER THAN THE REQUIRED PLYWOOD EDGE NAILING.
c) PROVIDE 1/2" EDGE DISTANCE FOR THE PLYWOOD BOUNDARY NAILING.
d) PLATE WASHERS ARE TO BE USED WITH ANCHOR BOLTS.
5/8" BOLT - 3 X 3 X 0.229"

CITY OF MANHATTAN BEACH
BUILDING DIVISION
STRUCTURAL OBSERVATION REPORT FORM

This report includes all construction work through the _____ day of _____, 20____.

Project Address	Structural Observer MANUEL A. ESPINO	Str. Obs. Phone No. (323) 379-6216 (562) 622-6927
Owner	Lic. or Registration No. CIVIL ENGINEER RCE 55526	Building Permit No.

Observed Structural Elements and Their Connections		Location & Portion of Building	Date
Foundation	X		
Framing/Roof System			
Gravity	X		
Lateral	X		
Other	X		

Observed Deficiencies:

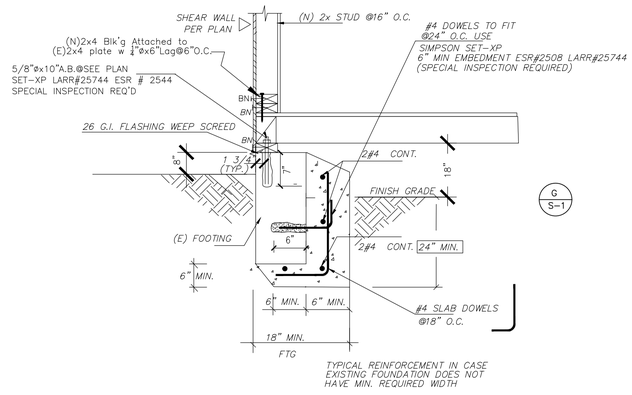
I declare that the following statements are true to the best of my knowledge and belief:

1. I am the registered engineer or licensed architect who has responsible charge for the structural observation;
2. I, or another registered engineer or licensed architect who I have designated above and is under my responsible charge, has performed the required site visits at each significant construction stage to verify if the structure is in general conformance with the approved plans and specifications;
3. All deficiencies which I documented have been corrected unless otherwise indicated above;
4. I understand the final acceptance of the structural system by the Building Division cannot occur without the correction of all observed deficiencies;
5. I am responsible for the submission of the original of this report to the Building Division of the City of Manhattan Beach.
6. I have provided structural observation in accordance with the requirements of the City of Manhattan Beach.

Signed 29 of AUGUST, 2023
Day Month Yr.
X Espino
Wet Signature of Registered Civil or Structural Engineer or Licensed Architect

REGISTERED PROFESSIONAL ENGINEER MANUEL A. ESPINO No. C055526 EXP. 12-31-24 CIVIL STATE OF CALIFORNIA
Stamp of Engineer or Architect.

STRUCTURAL OBSERVATION DOES NOT WAIVE ANY OF THE REQUIREMENTS FOR BUILDING INSPECTION BY AUTHORIZED EMPLOYEES OF THIS DIVISION.



TYPICAL REINFORCEMENT IN CASE EXISTING FOUNDATION DOES NOT HAVE MIN. REQUIRED WIDTH

ANAMART CORP.

MIGUEL A. RODRIGUEZ
CAD SPECIALIST
INTL. ASSC. AIA
RESIDENTIAL &
COMMERCIAL DESIGN
RENDER - 3D DESIGN

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REGISTERED PROFESSIONAL ENGINEER MANUEL A. ESPINO No. C055526 EXP. 12-31-24 CIVIL STATE OF CALIFORNIA

Espino

OWNER:

PROJECT:
NEW ADDITION WITH INTERIOR REMODEL ON EXISTING TWO STORY SINGLE FAMILY RESIDENCE

PROJECT ADDRESS:

REVISION		
NO.	DATE:	DESCRIPTION:

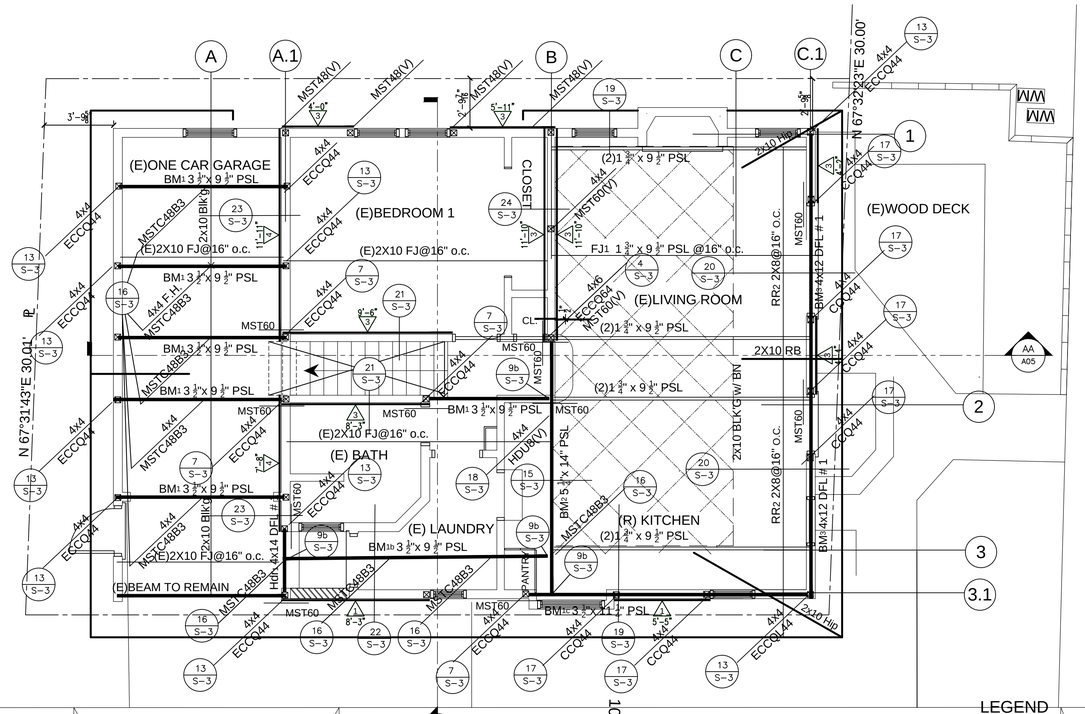
SHEET TITLE:
FOUNDATION PLAN STRUCTURAL NOTES

PROJECT NO:
06162023

DATE
06/16/2023

SHEET NO:
S1

02-02

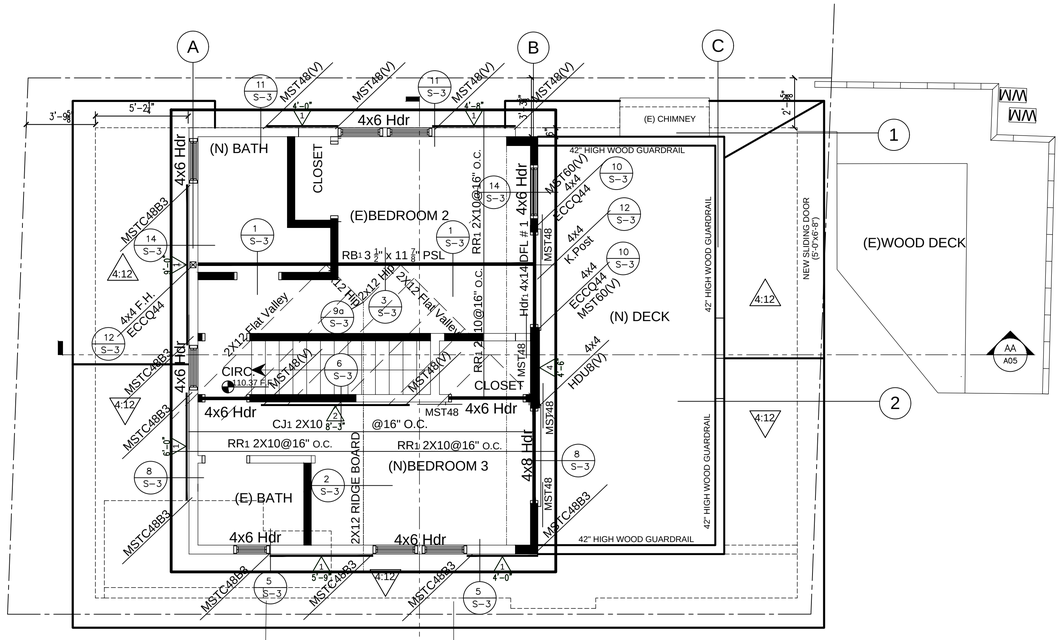


Lower Floor Framing Plan

Scale: 1/4" = 1'-0"

LEGEND

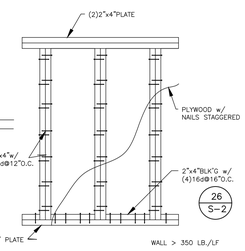
- REMOVED WOOD WALL
- EXISTING WOOD WALL
- NEW WALL OR HARDY FRAME

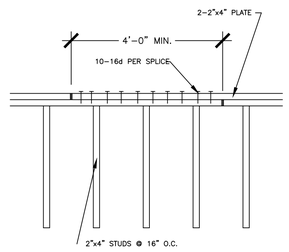


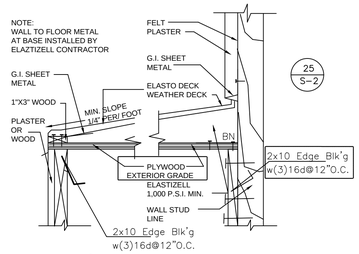
Upper Floor Framing Plan

Scale: 1/4" = 1'-0"

CALIFORNIA FRAMING







Deck/Balcony Detail

ELASTO FIBER DECK
WALKING DECK SYSTEM
ESR-2129

LATERAL SYSTEMS		
Product	Evaluation Agency Code Report	City of Los Angeles Research Report
Steel Strong-Wall Shearwall	ICC-ES ESR-1679	RR 25625
Wood Strong-Wall Shearwall	ICC-ES ESR-1267	RR 25427
Anchor Tie-Down System	ICC-ES ESR-2320	RR 25643
ANCHOR SYSTEMS		
Product	Evaluation Agency Code Report	City of Los Angeles Research Report
SET-XP Anchoring Adhesive	ICC-ES ESR-2508	RR 25744
Titen HD Screw Anchor	ICC-ES ESR-2713	RR 25741 (Concrete) RR 25560 (CMU)
Strong-Bolt Wedge Anchor	ICC-ES ESR-1771	RR 25705
GDP Gas-Actuated Fasteners	ICC-ES ESR-2811	RR 25837
WOOD CONSTRUCTION CONNECTORS		
Product	Evaluation Agency Code Report	City of Los Angeles Research Report
Column Caps	ICC-ES ESR-2604	RR 25714
Screw-Style Holdowns	ICC-ES ESR-2330	RR 25720
Nail Holdowns (Tension Ties)	IAPMO-ES ER-130	RR 25818
HD Holdowns	IAPMO-ES ER-143	RR 25828
Angles, Clips, & Ties	IAPMO-ES ER-112	RR 25814
Top Flange Hangers for Saw Lumber	ICC-ES ESR-2553	RR 25800
Face Mount Hangers for Structural Composite Lumber (SCL) and Prefabricated Wood I-Joists (EWP)	ICC-ES ESR-2552	RR 25801
Top Flange Hangers for Prefabricated I-Joints	ICC-ES ESR-1866	RR 25802
Top Flange Hangers for EWP and GLB	ICC-ES ESR-2615	RR 25803
Adjustable Hangers and Hip Connectors for Wood	ICC-ES ESR-2551	RR 25804
Wood Framing Connectors for Masonary Construction	ICC-ES ESR-2877	RR 25806
Face Mount Hangers for Wood Framing	ICC-ES ESR-2549	RR 25807
WSNTL Wood Screws for Diaphragm and Shear Wall Applications	ICC-ES ESR-1472	RR 25661
PSL Beams	ICC-ES ESR-1387	RR 25202
HFX HARDY FRAME	ICC-ES ESR-2089	RR 25759
Straps	ICC-ES ESR-2105	RR 25713
SSTB/SB Anchor Bolts	ICC-ES ESR-2611	RR 25713
REDGARD WATERPROOFING		RR 26015

FRAMING NOTES

- ROOF DIAPHRAGM NAILING TO BE INSPECTED BEFORE COVERING
- SOLID BLOCKING SHALL BE PROVIDED AT ALL HORIZONTAL JOINTS OCCURRING IN BRACED WALL PANELS."
- THE FOLLOWING APPLIES TO ALL SHEAR WALLS WITH A SHEAR VALUE GREATER THAN 350 PLF. THESE WALLS SHALL BE CLEARLY INDENTIFIED ON THE PLANS.

PROVIDE THE FOLLOWING:

a) 3x FOUNDATION SILL PLATES.
b) 3 x STUDS AND BLOCKS BETWEEN ADJACENT PANELS.
c) 1/2" EDGE DISTANCE FOR PLYWOOD BOUNDARY NAILING..
d) ALL PANEL JOINT AND SILL PLATE NAILING SHALLBE STAGGERED
e) SQUARE PLATE WASHERS SHALL BE USED WITH ALL ANCHOR BOLTS. 2304.9.5 5/8" BOLT-3x3x0.229"

- ALL DIAPHRAGM AND SHEAR WALL NAILING SHALL UTILIZE COMMON NAILS OR GALVANIZED BOX."
- FASTENERS FOR WOOD STRUCTURAL PANEL SHEATHING ON SHEAR WALLS AND DIAPHRAGMS SHALL BE COMMON NAILS WITH FULL HEADS UNLESS OTHERWISE APPROVED.
- FASTENERS FOR PRESERVATIVE TREATED & FIRE TREATED WOOD SHALL BE HOT DIPPED ZINC COATED GALVANIZED STEEL.SILICON BRONCE OR COPPER.THE COATING WEIGHTS FOR ZINC COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A153
- BOLT HOLES SHALL BE DRILLED 1/32" to 1/16" OVERSIZED
- PROVIDE LEAD HOLE 40%-70% OF THREADED SHANK DIA. AND FULL DIA. FOR SMOOTH SHANK PORTION
- PLYWOOD ROOF PANELS SHALL BE BONDED WITH INTERMEDIATE OR EXTERIOR GLUE WHERE EXPOSED TO THE WEATHER
- GLUE LAM BEAMS MUST BE FABRICATED IN A LADBS LICENCED SHOP

STUCCO LATH AND DRYWALL SHALL BE NAILED TO ALL STUDS AND T&B PLATES
-DO NOT CUT OFF OR PAINT OVER GRADE STAMP OF BEAMS

SHEARWALL SCHEDULE

SHEAR WALL △	ROOF-FLOOR DIAPHRAGM	DRAG STRAP	TOP PLATE CONNECTOR	WALL SHEATHING	BOTTOM PLATE CONNECTOR	HOLDOWN	SPECIAL INSPECTION REQUIRED	SHEAR VALUE	MAX SHEAR
1	15/32 CDX PLY. w/8d @ 6, 12 o.c. PI 32/16	MST 48	A35 @ 16" o.c.	15/32 STRUCT I w/8d @ 6, 6 o.c. PI 32/16	20d @ 6" O.C.	MST48-MSTC48B3	—	194	280
2	15/32 CDX PLY. w/8d @ 6, 12 o.c. PI 32/16	MST 48	A35 @ 16" o.c.	15/32 STRUCT I w/8d @ 4, 6 o.c. PI 32/16	¾"Ø x6" LAGS@ 6" O.C.	MST48	YES	349	430*
4	15/32 CDX PLY. w/8d @ 6, 12 o.c. PI 32/16	MST 48	A35 @ 8" o.c.	15/32 STRUCT I w/8d @ 2, 6 o.c. PI 32/16	¾"Ø x6" LAGS@ 6" O.C.	MST60-HDU8	YES	639	730*
4	19/32 CDX T&G w/10d @ 6, 10 o.c. PI 32/16	MST 60	A35 @ 8" o.c.	15/32 STRUCT I w/8d @ 2, 6 o.c. PI 32/16	5/8"Ø x10" AB@ 12" o.c.w/SET-XP	HDU8	YES	572	730*
3	19/32 CDX T&G w/10d @ 6, 10 o.c. PI 32/16	MST 60	A35 @ 16" o.c.	15/32 STRUCT I w/8d @ 3, 6 o.c. PI 32/16	5/8"Ø x10" AB@ 18" o.c.w/SET-XP 5/8"Ø X12" AB@ 18" o.c.	HDU5	YES	543	550*
1	19/32 CDX T&G w/10d @ 6, 10 o.c. PI 32/16	MST 48	A35 @ 16" o.c.	15/32 STRUCT I w/8d @ 6, 6 o.c. PI 32/16	5/8"Ø x10" AB@ 48" o.c.w/SET-XP	HDU5	—	265	280

WRITTEN DIMENSIONS SHALL BE VERIFIED ON THE JOB SITE. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORK

* THE FOLLOWING APPLIES TO ALL SHEAR WALLS WITH A LISTED DESIGN LOAD GREATER THAN 350 PLF
a) PROVIDE 3 X SILL PLATES FOR SILLS THAT REST ON CONCRETE OR MASONRY.
b) PROVIDE 3 X STUDS BETWEEN ADJACENT PANELS. IF IT IS NECESSARY TO USE 2-2X MEMBERS BETWEEN PANELS, SPECIFY 16d NAILS WITH STAGGERED NAILING, AND SPACING NO GREATER THAN THE REQUIRED PLYWOOD EDGE NAILING.
c) PROVIDE 1/2" EDGE DISTANCE FOR THE PLYWOOD BOUNDARY NAILING.
d) PLATE WASHERS ARE TO BE USED WITH ANCHOR BOLTS.
5/8" BOLT - 3 X 3 X 0.229"

ANAMART CORP.

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RENDER - 3D DESIGN

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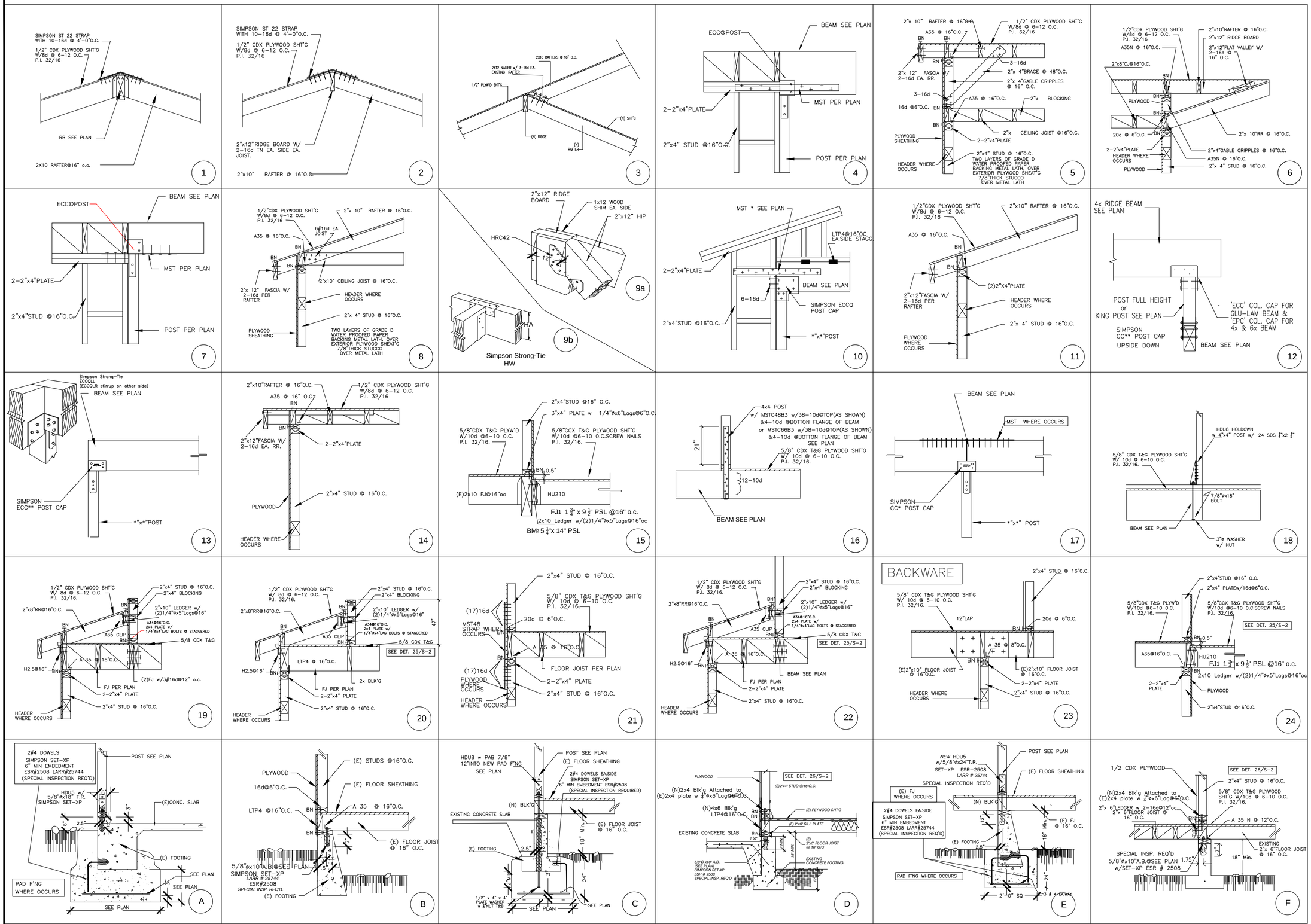
SHEET TITLE:
FRAMING PLAN
STRUCTURAL NOTES

PROJECT NO: 06162023

DATE 06/16/2023

SHEET NO: S-2

02-03



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PROJECT NO:
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06/16/2023

SHEET NO:
S-3
03-03