#### NPDES NOTES

- 1. IN THE CASE OF EMERGENCY, CALL RC ALLEY AT (714) 318-4775
- 2. SEDIMENT FROM AREAS DISTURBED BY CONSTRUCTION SHALL BE RETAINED ON SITE USING STRUCTURAL CONTROLS TO THE MAXIMUM EXTENT PRACTICABLE.
- 3. STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO MINIMIZE SEDIMENT TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TACKING, OR WIND.
- 4. APPROPRIATE BMP'S FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS SHALL BE IMPLEMENTED TO MINIMIZE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTIES BY WIND OR RUNOFF.
- 5. RUNOFF FROM EQUIPMENT AND VEHICLE WASHING SHALL BE CONTAINED AT CONSTRUCTION SITES UNLESS TREATED TO REDUCE OR REMOVE SEDIMENT AND OTHER POLLUTANTS.
- BEST MANAGEMENT PRACTICES AND GOOD HOUSEKEEPING MEASURES FOR THE PROJECT SITE AND ANY ASSOCIATED CONSTRUCTION STAGING AREAS. 7. AT THE END OF EACH DAY OF CONSTRUCTION ACTIVITY ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE

6. ALL CONSTRUCTION CONTRACTOR AND SUBCONTRACTOR PERSONNEL ARE TO BE MADE AWARE OR THE REQUIRED

COLLECTED AND PROPERLY DISPOSED IN TRASH OR RECYCLE BINS. 8. CONSTRUCTION SITES SHALL BE MAINTAINED IN SUCH A CONDITION THAT AN ANTICIPATED STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE. DISCHARGES OF MATERIAL OTHER THAN STORMWATER ONLY WHEN NECESSARY FOR PERFORMANCE AND COMPLETION OF CONSTRUCTION PRACTICES AND WHERE THEY DO NOT: CAUSE OR CONTRIBUTE TO A VIOLATION OF ANY WATER QUALITY STANDARD; CAUSE OR THREATEN TO CAUSE POLLUTION,

CONTAMINATION, OR NUISANCE; OR CONTAIN A HAZARDOUS SUBSTANCE IN A QUANTITY REPORTABLE UNDER

- FEDERAL REGULATIONS 40 CFR PARTS 117 AND 302. 9. POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: SOLID OR LIQUID CHEMICAL SPILLS; WASTES FROM PAINTS, STAINS, SEALANTS, GLUES, LIMES, PESTICIDES, HERBICIDES, WOOD PRESERVATIVES AND SOLVENTS; ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS; FUELS, OILS, LUBRICANTS, AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS; FERTILIZERS, VEHICLE/EQUIPMENT WASH WATER AND CONCRETE WASH WATER; CONCRETE, DETERGENT OR FLOATABLE WASTES; WASTES FROM ANY ENGINE/EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING AND SUPER CHLORINATED POTABLE WATER LINE FLUSHING. DURING CONSTRUCTION, PERMITTEE SHALL DISPOSE OF SUCH
- STORMWATER RUNOFF, WITH ULTIMATE DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS. 10. DEWATERING OF CONTAMINATED GROUNDWATER, OR DISCHARGING CONTAMINATED SOILS VIA SURFACE EROSION IS PROHIBITED. DEWATERING OF NON- CONTAMINATED GROUNDWATER REQUIRES A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FROM THE RESPECTIVE STATE REGIONAL WATER QUALITY CONTROL BOARD.

MATERIALS IN A SPECIFIED AND CONTROLLED TEMPORARY AREA ON-SITE, PHYSICALLY SEPARATED FROM POTENTIAL

- 11. GRADED AREAS ON THE PERMITTED AREA PERIMETER MUST DRAIN AWAY FROM THE FACE OF SLOPES AT THE CONCLUSION OF EACH WORKING DAY. DRAINAGE IS TO BE DIRECTED TOWARD DESILTING FACILITIES.
- 12. THE PERMITTEE AND CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.
- 13. THE PERMITTEE AND CONTRACTOR SHALL INSPECT THE EROSION CONTROL WORK AND INSURE THAT THE WORK IS IN ACCORDANCE WITH THE APPROVED PLANS.
- 14. THE PERMITTEE SHALL NOTIFY ALL GENERAL CONTRACTORS, SUBCONTRACTORS, MATERIAL SUPPLIERS, LESSEES, AND PROPERTY OWNERS: THAT DUMPING OF CHEMICALS INTO THE STORM DRAIN SYSTEM OR THE WATERSHED IS PROHIBITED.
- 15. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
- 16. ALL REMOVABLE EROSION PROTECTIVE DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE 5-DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.
- 17. SEDIMENTS FROM AREAS DISTURBED BY CONSTRUCTION SHALL BE RETAINED ON SITE USING AN EFFECTIVE COMBINATION OF EROSION AND SEDIMENT CONTROLS TO THE MAXIMUM EXTENT PRACTICABLE, AND STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO MINIMIZE SEDIMENT TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TRACKING, OR WIND.
- 18. APPROPRIATE BMPS FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS OR RESIDUES SHALL BE IMPLEMENTED AND RETAINED ON SITE TO MINIMIZE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTY BY WIND OR RUNOFF.

#### PROJECT NOTES

- 1. CALIFORNIA TITLE 24 REQUIREMENTS HAVE BEEN TAKEN INTO CONSIDERATION. REFER TO TITLE 24 ENERGY ANALYSIS CALCULATIONS FOR MORE INFORMATION.
- 2. UNDERGROUND ALL UTILITIES TO THE NEAREST UTILITY POLE OR OTHER SERVICE CONNECTION.
- 3. THE FOLLOWING ITEMS REQUIRE A SEPARATE REVIEW AND PERMIT AS THEY APPLY TO THIS PROJECT: SITE WALLS, PLANTERS, FENCES/GATES, HARDSCAPE.
- A/C CONDENSERS, AND MECHANICAL EQUIPMENT.
- (iii) GRADING & RETAINING WALLS.
- WORK W/I PUBLIC RIGHT OF WAY POOLS, SPAS & FOUNTAINS.
- (vi) FIRE SPRINKLER SYSTEMS.
- 4. THERE SHALL BE NO TRENCHES OR EXCAVATIONS 5' OR MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND, OR OBTAIN FROM CAL/OSHA (714-558-4451). THIS PERMIT AND ANY OTHER SAFETY PERMIT SHALL BE OBTAINED PRIOR TO BEGINNING ANY WORK.
- 5. THE CONSTRUCTION DOCUMENTS ARE PREPARED BASED ON CERTAIN HEIGHT LIMITS, SETBACKS, AREA CALCULATIONS AND OTHER DESIGN CRITERIA UNIQUE TO THIS PROJECT. NO CHANGES SHALL BE MADE TO THE PROJECT WITHOUT CONSULTING THE ARCHITECT AND OBTAINING APPROVALS BY THE GOVERNING AGENCIES PRIOR TO CONSTRUCTING THE CHANGES.
- 6. ALL NEW PERIMETER FOUNDATION LOCATIONS, FINISH FLOOR & FINISH ROOF HEIGHTS SHALL BE SET & CERTIFIED BY THE LAND SURVEYOR OF RECORD. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY NEW CONSTRUCTION THAT IS NOT BUILT IN ACCORDANCE WITH CITY APPROVED DESIGN DRAWINGS AND CONSTRUCTION DOCUMENTS.
- 7. PROVIDE SHOP DRAWINGS FOR THE ARCHITECT'S REVIEW FOR THE FOLLOWING ITEMS:
- STRUCTURAL STEEL CABINETRY, DECORATIVE WOOD WORK, FINISH TRIMS, TILE LAYOUTS.
- 8. THE GENERAL CONTRACTOR SHALL ANALYZE ALL SECTIONS OF THE WORK, RESOLVE ANY QUESTIONS HE/SHE MAY HAVE WITH THE ARCHITECT REGARDING THE MEANING & INTENT OF THE CONSTRUCTION DOCUMENTS AND APPORTION THE WORK AMONG THE VARIOUS TRADES AS HE/SHE DEEMS MOST SUITABLE.
- 9. THE GENERAL CONTRACTOR SHALL RIGIDLY ENFORCE A PROGRESSIVE CLEAN-UP PROGRAM. THE SITE AND BUILDING SHALL BE KEPT CLEAN AND FREE OF ANY HAZARDOUS ENCUMBRANCES AT ALL TIMES DURING WORK. ALL DEBRIS SHALL BE REMOVED FROM THE JOB SITE WEEKLY. TAKE CARE IN PROTECTING WORK, ADJACENT SURFACES AND AREAS NOT BEING REMODELED. THE GENERAL CONTRACTOR SHALL REPAIR OR REPLACE DAMAGED ITEMS AT NO COST TO THE CLIENT.
- 10. <u>DO NOT SCALE THESE DRAWINGS</u>: WRITTEN DIMENSIONS AND ELEVATION HEIGHTS SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. ANY AND ALL DISCREPANCIES, ERRORS, OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION
- OF THE ARCHITECT PRIOR TO THE COMMENCEMENT OF ANY WORK. 11. FLOOR AND ROOF HEIGHTS ARE MAXIMUMS AND ARE TO FINISH MATERIALS, UNLESS OTHERWISE NOTED. THE GENERAL CONTRACTOR SHALL COORDINATE W/ THE LAND SURVEYOR OF RECORD TO ESTABLISH BUILDING SETBACKS, ROUGH CONC. SLAB HEIGHTS, ROUGH FRAMING HEIGHTS AT WOOD FRAMED FLOORS AND ROOFS.
- FLOOR PLAN DIMENSIONS ARE TO ROUGH FRAMING. 12. PRIOR TO ANY EXCAVATIONS CONTACT DIG ALERT (DIAL #811) (WWW.DIGALERT.ORG) TO VERIFY EXIST.
- CONDITIONS. 13. THE PROJECT SHALL COMPLY WITH ALL NPDES, SUSMP, & BMP REQUIREMENTS.
- 14. ALL PRODUCTS, SYSTEMS, AND EQUIPMENT SHALL BE INSTALL PER MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS. MANUFACTURER'S PRODUCT INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION AND PROVIDED TO THE OWNER AT COMPLETION OF CONSTRUCTION.
- 15. FIRE SPRINKLERS ARE REQUIRED FOR THIS PROJECT 16. CIVIL ENGINEER OF RECORD SHALL CERTIFY AT PROJECT COMPLETION THAT THE SITE DRAINAGE IS IN SUBSTANTIAL
- COMPLIANCE WITH THE APPROVED DRAINAGE PLAN.
- 17. THERE SHALL BE NO TRENCHES OR EXCAVATIONS 5' OF MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND, OR OBTAIN PERMITS FROM CAL/OSHA. THIS PERMIT, ALONG WITH ANY OTHER SAFETY PERMIT SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF ANY WORK. CONTACT CAL/OSHA AT 714-558-4451
- 18. THE STRUCTURE SHALL BE BUILT TO THE CALIFORNIA BUILDING CODE (CBC) CHAPTER 7A STANDARD

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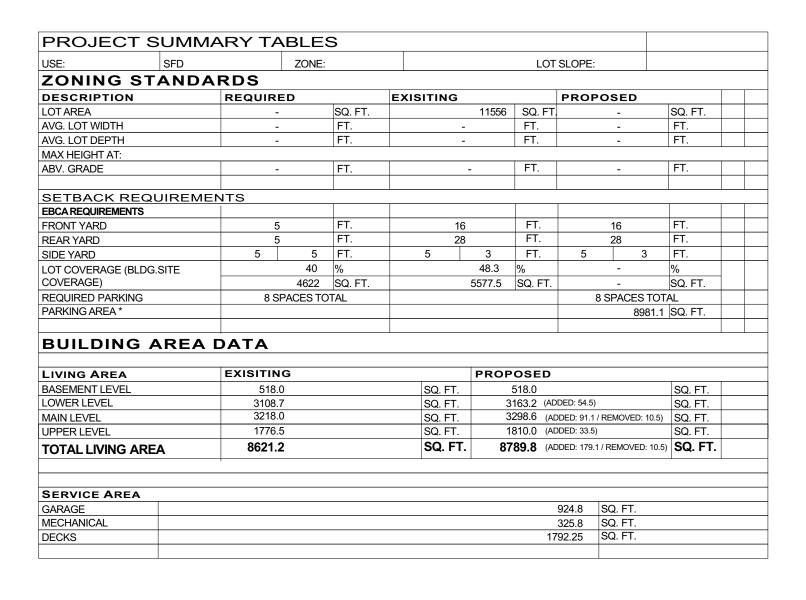
#### **ABBREVIATIONS**

& @	AND AT	FIXT. FLOUR.	FIXTURE FLUORESCENT	R OR RAD. RECP.	RADIUS RECEPTACLE
ABV.	ABOVE	FLR. FOUND.	FLOOR FOUNDATION	REFR. REINF.	REFRIGERATOR REINFORCED
A/C	AIR CONDITIONER	F.P.	FIRE PLACE	REQ'D.	REQUIRED
A.D. ADJUST.	AREA DRAIN ADJUSTABLE	FR. DR. FRM'G.	FRENCH DOOR FRAMING	RET. RF.('G) R.O.	RETURN ROOF(ING)
A.F.F. A.F.G.	ABOVE FINISH FLOOR ABOVE FINISH GRADE	F.S. FT'G.	FINISH SURFACE FOOTING	R.Ò. R.O.W.	ROUGH OPENING RIGHT OF WAY
A.F.I. A.F.S.	ARC FAULT INTERRUPT ABOVE FINISH SURFACE	F.Y.	FRONT YARD	RM. R.R.	ROOM ROOF RAFTER
ALUM./AL.	ALUMINUM	GA.	GAUGE	R.Y.	REAR YARD
AVG. AWN.	AVERAGE AWNING	GAL. GALV.	GALLON GALVANIZED	S	SOUTH
BA.	BATHROOM	G.F.I.	GROUND FAULT INTERRUPT	S.B. SCHED.	SETBACK SCHEDULE
BD. BDRM.	BOARD BEDROOM	G.I. GL.(BLK)	GALVANIZED IRON GLASS (BLOCK)	SFM SHT.	STATE FIRE MARSHALL SHEET
BLDG.	BUILDING	G.M.	GAS METER	SHT'G.	SHEATHING
BLK.('G) BLW.	BLOCK(ING) BELOW	GRND. Gyp. Bd.	GROUND GYPSUM WALL BOARD	SHWR. SIM.	SHOWER SIMILAR
BM. B.O.F.	BEAM BOTTOM OF FOOTING	H.B.	HOSE BIB	SLP. SPECS.	SLOPE SPECIFICATIONS
BOT. B.W.	BOTTOM BOTH WAYS	HDR. HGT. OR H.	HEADER HEIGHT	SPKR. SQ.	SPEAKER SQUARE
BYND.	BEYOND	HR.	HOUR	S.S.	STAINLESS STEEL
C.B.	CATCH BASIN	HOR. H.W.	HORIZONTAL HOT WATER	STR. STL.	STAIRS STEEL
CEM.(BD.) C.J.	CEMENT (BOARD) CEILING JOIST	I.R.	INSIDE RADIUS	STOR. Struct.	STORAGE STRUCTURAL
C.L.	CENTER LINE	INSUL.	INSULATION	SURF.	SURFACE
CLOS./CL. CLG.	CLOSET CEILING	INT. INV.	INTERIOR INVERT	S.Y.	SIDE YARD
CLR. C.M.U.	CLEAR CONCRETE MASONRY	J-BOX	JUNCTION BOX	T. T.	THERMOSTAT TREAD
C.O.	UNIT CLEAN OUT	JST.	JOIST	T&G TEL.	TONGUE AND GROOV TELEPHONE
CO. COL.	COPPER COLUMN	KIT. OR K.	KITCHEN	THK. THRESH.	THICK
COL. CONC.(BLK.) CONT.	CONCRETE BLOCK	LAV.	LAVATORY	T.P. T.O.C./T.C.	THRESHOLD TOP PLATE TOP OF CURB
CONT. CSMT.	CONTINUOUS CASEMENT	LAM. LAUND.	LAMINATE LAUNDRY	T.O.C./T.C. T.O.S./T.S.	TOP OF CURB TOP OF SLAB
CTR. CU.YD./C.Y.	CENTER CUBIC YARD	LB(S). L.V.	POUND(S) LOW VOLTAGE	T.O.W./T.W. T.S.	TOP OF WALL TUBE STEEL
C.W.	COLD WATER	LWR.	LOWER	TYP.	TYPICAL
DB.	DECIBEL	MANUF.	MANUFACTURER	T.V.	TELEVISION
DBL. Deg. or °	DOUBLE Degree	MAS. MAX.	MASONRY MAXIMUM	U.O.N.	UNLESS OTHERWISE NOTED
DEMO. D.F.	DEMOLISH DOUGLAS FIR	MECH. MEM.	MECHANICAL MEMBRANE	UTIL.	UTILITY
D.H.	DOUBLE HUNG	MIN.	MINIMUM	VAC.	VACUUM VEDIEV IN FIELD
DIAG. DIA. OR Ø	DIAGONAL DIAMETER	MLD'G. MTL.	MOULDING METAL	V.I.F. VERT.	VERIFY IN FIELD VERTICAL
DISP. D.J.	DISPOSAL DECK JOIST	N N.	NORTH NEW	W	WEST
DN. DTL.	DOWN DETAIL	N.T.S.	NOT TO SCALE	W. W.	WASHER WIDTH
D.W.	DISHWASHER	0/	OVER	W/	WITH
DWG.	DRAWING	OBS. O.C.	OBSCURE ON CENTER	W.C. WD.	WATER CLOSET WOOD
E E.G.	EAST EXISTING GRADE	OPP. O.R.	OPPOSITE OUTSIDE RADIUS	WDW. W.H.	WINDOW Water Heater
E.S.	EXISTING SURFACE	OSB	ORIENTED STRAND	W.I.	WROUGHT IRON
EL. ELECT.	ELEVATION ELECTRICAL		BOARD	W.M. W/O	WATER METER WITHOUT
ELEV. E.M.	ELEVATOR ELECTRICITY METER	PERF. P.L.	PERFORATED PROPERTY LINE	W.P. WTR.	WATERPROOF WATER
EQ. EQUIP.	EQUAL EQUIPMENT	PLYWD. PR.	PLYWOOD PAIR	W.W.M.	WELDED WIRE MESH
E.W.	EACH WAY	PSI	POUNDS PER SQ. IN.		
EXIST./E. EXT.	EXISTING EXTERIOR	PWDR. PVC	POWDER POLYVINYL CHLORIDE		
F.F.	FINISH FLOOR	QTR.	QUARTER		
F.G. F.G.	FINISH GRADE FUEL GAS	QTY.	QUANTITY		
F.J.	FLOOR JOIST	R.	RISER		

# SYMBOL LEGEND

+00,00'	ELEVATION OR SURFACE MARKER	EXISTING GRADE PROPOSED GRADE	TOPOGRAPHIC CONTOURS	(B)	CARBON MONOXIDE ALARM
ф неіднт	SPOT ELEVATION		SETBACK LINE		SMOKE ALARM
4 × 2	INTERIOR ELEVATION REFERENCE MARKER		PROPERTY LINE	•	EXHAUST
X	SECTION REFERENCE MARKER	N	NORTH ARROW		
X AXX	DETAILREFERENCE MARKER		REVISION REFERENCE		
X	DETAIL (SECTION) REFERENCE MARKER	—×	DOOR MARKER		
- X AXX	DETAIL (SECTION) REFERENCE MARKER	<b>−</b> ⊗	WINDOW MARKER		

## **BUILDING AND SITE DATA**



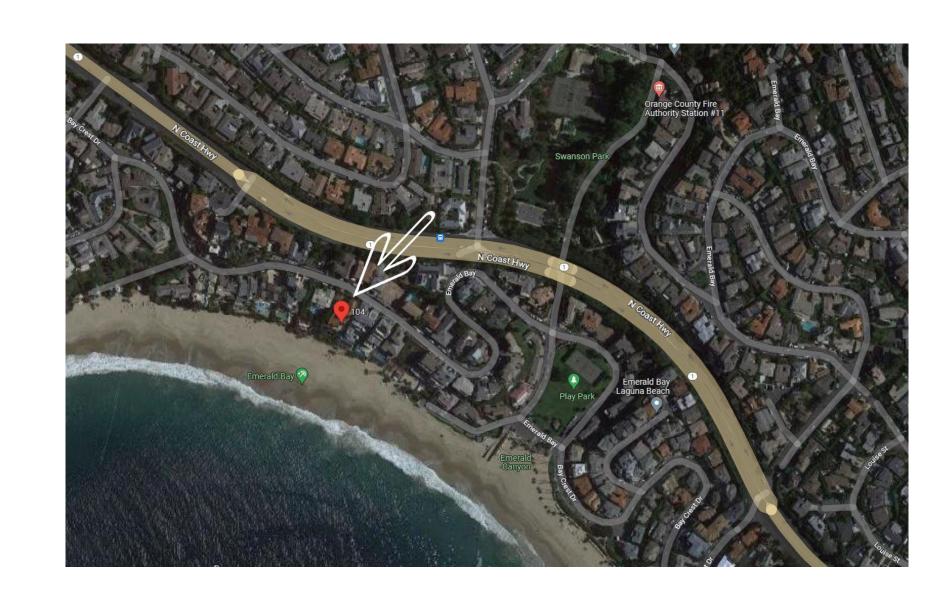
# PROJECT DATA

LOCATION MAP

PROJECT ADRESS:	104 EMERALD BAY, LAGUNA BEACH, CA 92651
LEGAL DESCRIPTION:	
ASSESSOR'S PARCEL NUMBER:	
	CONSTRUCTION:

INTERIOR REMODEL OF A SINGLE FAMILY RESIDENCE / LOWERING A PART OF THE ROOF AND REPLACING IT WITH

A DECK/ REPLACING TILE ROOFING WITH STANDING SEAM METAL ROOF / REMOVING CHIMNEY



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LOWER LEVEL REFLECTED CEILING PLAN

PROJECT INFORMATION

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SD.1	DETAILS

# BALDWIN RESIDENCE 104 EMERALD BAY,



# CHANGED GLASS CONSERVATORY ROOF TO FLAT ROOF

LOWERED ROOF AND REPLACED WITH DECK

**ELIMINATED CHIMNEY** 





**BEFORE AFTER**  01060. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CODES AND ORDINANCES SPECIFIED ON THE COVER SHEET OF THIS SET OF DRAWINGS.

#### 01062. STATE OF CALIFORNIA REQUIREMENTS:

SEE DRAWINGS FOR ENERGY COMPLIANCE FORMS.

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF 2013 TITLE 24 OF THE CALIFORNIA BUILDING CODE.
- MANDATORY ENERGY CONSERVATION REQUIREMENTS FOR THE STATE OF CALIFORNIA:
- a. ALL HEATING, VENTILATING, AIR CONDITIONING AND WATER HEATING EQUIPMENT SHALL MEET ALL THE REQUIREMENTS OF THE APPLIANCE EFFICIENCY STANDARDS AND SHALL BE CERTIFIED TO THE CALIFORNIA ENERGY COMMISSION.
- b. A TWO-STAGE THERMOSTAT, WHICH CONTROLS THE SUPPLEMENTARY HEAT ON IT'S SECOND STAGE, IS REQUIRED ON HEAT PUMPS.
- c. THERMOSTATS, EXCEPT THOSE CONTROLLING HEAT PUMPS, SHALL BE EQUIPPED WITH AN AUTOMATIC SETBACK WHICH THE BUILDING OCCUPANT CAN PROGRAM TO AUTOMATICALLY SET BACK THE THERMOSTAT. SET POINTS FOR AT LEAST TWO PERSONS IN 24 HOURS.
- d. EQUIPMENT WHICH REQUIRES PREVENTATIVE MAINTENANCE TO MAINTAIN EFFICIENT OPERATION SHALL BE FURNISHED WITH COMPLETE NECESSARY MAINTENANCE INFORMATION
- e. ALL GAS-FIRED FAN TYPE CENTRAL FURNACES, GAS- FIRED FAN TYPE WALL FURNACES AND COOKING
- APPLIANCES SHALL BE EQUIPPED WITH INTERMITTENT IGNITION DEVICES
- f. ALL FAN SYSTEMS EXHAUSTING AIR TO THE OUTSIDE SHALL BE PROVIDED WITH BACKDRAFT DAMPERS. a. ALL TRANSVERSE DUCT, PLENUM AND FITTING JOINTS SHALL BE SEALED WITH PRESSURE SENSITIVE TAPE OR
- MASTIC TO PREVENT AIR LOSS AND SHALL BE INSULATED TO CONFORM TO THE PROVISIONS OF CHAPTER 6 CMC, LATEST EDITION.
- h. A VAPOR BARRIER IS REQUIRED IN CLIMATE ZONES 1, 14 AND 16.
- ALL MANUFACTURED WINDOWS AND SLIDING GLASS DOORS SHALL MEET THE 1972 ANSI AIR INFILTRATION STANDARDS, AND SHALL BE CERTIFIED AND LABELED.
- ALL SWINGING DOORS AND WINDOWS LEADING TO UN- CONDITIONED AREAS SHALL BE FULLY WEATHER STRIPPED.
- k. STORAGE TYPE WATER HEATERS AND STORAGE AND BACK-UP TANKS FOR SOLAR SYSTEMS SHALL BE EXTERNALLY WRAPPED WITH R-12 INSULATION OR GREATER.

#### 01070. GENERAL NOTES:

- 1. IT IS THE INTENT AND MEANING OF THESE DRAWINGS AND SPECIFICATIONS TO PROVIDE FOR AND SECURE A FIRST CLASS, WORKMANLIKE JOB OF HIGH QUALITY FROM ALL SUBCONTRACTORS. THE FINISHED STRUCTURE(S) SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND FUNCTIONAL PROJECT.
- 2. THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL REVIEW THESE DRAWINGS AND SPECIFICATIONS AND SHALL NOTIFY THE DESIGNER OF ANY DISCREPANCIES, ERRORS OR OMISSIONS PRIOR TO CONSTRUCTION. FAILURE TO DO SO SHALL HOLD THE GENERAL CONTRACTOR AND SUBCONTRACTORS RESPONSIBLE FOR SUCH DISCREPANCIES, ERRORS OR OMISSIONS IN THESE DRAWINGS AND SPECIFICATIONS.
- 3. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE DESIGNER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
- 4. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER THESE GENERAL SPECIFICATIONS.
- 5. THE DESIGN, ADEQUACY AND SAFETY OF ERECTION, BRACING, SHORING, TEMPORARY SUPPORTS, ETC. IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR, AND HAS NOT BEEN CONSIDERED BY THE STRUCTURAL ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE PRIOR TO THE APPLICATION OF ALL SHEAR PANEL, ROOF AND FLOOR DIAPHRAGMS AND FINISH MATERIALS. HE OR SHE SHALL PROVIDE ALL THE NECESSARY BRACING AND/OR SHORING TO PROVIDE STABILITY PRIOR TO THE APPLICATION
- OF THE AFORE-MENTIONED MATERIALS, OBSERVATION VISITS BY THE DESIGNER OR STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
- VIBRATIONAL EFFECTS OF MECHANICAL EQUIPMENT HAVE NOT BEEN CONSIDERED BY THE STRUCTURAL
- 8. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER SHOWN HEREON OR NOT AND TO PROTECT THEM FROM DAMAGE. THE GENERAL CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT IN CONJUNCTION WITH THE EXECUTION OF THIS WORK. 01200. ADDITION AND REMODELING:
- 1. THE GENERAL AND SUBCONTRACTORS SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AS SHOWN ON DRAWINGS AND NOTIFY THE DESIGNER IMMEDIATELY OF ANY DISCREPANCIES.
- 2. SHORE AND/OR BRACE ALL EXISTING FRAMING AS REQUIRED PRIOR TO REMOVING EXISTING CONSTRUCTION. REMOVE AFTER ERECTION OF NEW SUPPORTS HAS BEEN COMPLETED.

# DIVISION 2: SITE WORK

# 02055. DEMOLITION

- . INCLUDES REMOVAL OF EXISTING BUILDING, OR PORTIONS THEREOF, INCLUDING FOUNDATIONS AND DOMESTIC UTILITIES FROM SITE AS INDICATED ON DRAWINGS.
- 2. DEMOLITION CONTRACTOR SHALL BE HELD LIABLE FOR ANY DAMAGE TO ADJACENT PUBLIC OR PRIVATE PROPERTIES OR STRUCTURES DURING DEMOLITION AND DEBRIS REMOVAL OPERATIONS.
- 3. REMOVE EXISTING STRUCTURES OR PORTIONS THEREOF AS INDICATED ON DRAWINGS. EXISTING CONSTRUCTION TO REMAIN SHALL BE ADEQUATELY PROTECTED DURING ALL DEMOLITION AND DEBRIS REMOVAL OPERATIONS.
- 4. ALL DEMOLITION DEBRIS SHALL BE REMOVED FROM SITE AND TRANSPORTED TO A LEGAL DUMP SITE PER APPLICABLE MUNICIPAL AND/OR COUNTY REQUIREMENTS.
- 5. SITE SHALL BE LEFT IN NEAT AND ORDERLY CONDITION AFTER COMPLETION OF DEMOLITION AND DEBRIS REMOVAL OPERATIONS.

# 02200. EARTHWORK:

- INCLUDES ALL ROUGH GRADING, EXCAVATION, RECOMPACTION AND TRENCHING TO PREPARE SITE FOR CONSTRUCTION OF STRUCTURE(S). GRADING WORK SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS AND PROCEDURES FOR A PROPER JOB.
- 2. SEE FOUNDATIONPLAN FOR SOIL DESIGN PRESSURE DATA AND CHARACTER OF SOIL
- 3. ALL EARTHWORK AND GRADING SHALL BE CONDUCTED PER SOILS REPORT PREPARED BY THE PERSON(S) NOTED IN THE PROJECT CONTACT LIST ON THE FRONT SHEET OF THIS SET OF DRAWINGS. SEE SOILS REPORT FOR LIST OF SPECIAL INSPECTIONS
- 4. UTILITY TRENCH AND RETAINING WALL BACKFILLING SHALL BE EXECUTED AS SPECIFIED IN THE SOILS REPORT. 5. SOILS ENGINEER SHALL VERIFY THAT CONSTRUCTION AT SITE IS IN ACCORDANCE WITH THE COMMENDATIONS
- AND CONCLUSIONS CONTAINED IN SOILS REPORT.
- 6. BEFORE ANY CONCRETE IS PLACED, EXCAVATIONS SHALL E CHECKED AND APPROVED BY A QUALIFIED SOILS ENGINEER TO INSURE COMPLIANCE WITH THE REQUIREMENTS OF THE SOILS REPORT.

# 02520. PORTLAND CEMENT CONCRETE PAVING

- ALL NON-STRUCTURAL EXTERIOR SLABS SHALL BE MINIMUM3 1/2 INCHES THICK WITH #3 DEFORMED BAR REINFORCEMENT PLACED AT 18 INCHES ON CENTER EACH WAY IN MIDDLE THIRD OF SLAB THICKNESS. SLABS SHALL BE PLACED OVER A MINIMUM OF 3 INCHES OF CLEAN SAND BEDDING.
- 2. SLABS SHALL BE FORMED AND FINISHED TO SLOPE AS INDICATED ON DRAINAGE/GRADING PLAN TO WITHIN 1/4 INCH OF SPECIFIED ELEVATIONS.
- 3. ALL SLABS SHALL RECEIVE LIGHT BROOM FINISH UNLESS OTHERWISE NOTED ON DRAWINGS.
- 4. EXPANSION, CONSTRUCTION, AND CONTROL JOINTS SHALL BE PLACED AS INDICATED ON DRAWINGS OR AT INTERVALS TO DIVIDE SLAB INTO MAXIMUM 400 SQ. FT. SECTIONS.

# 02725. SITE UTILITY AND DRAINAGE PIPING

1. SITE DRAINAGE PIPING SHALL BE SCHEDULE 40 PVC, SIZE AS INDICATED ON DRAWINGS.

- 2. LANDSCAPE DRAINS, AREA DRAINS AND CATCH BASINS SHALL BE PROVIDED WITH GRATINGS OR SCREENS TO PREVENT THE ENTRANCE OF FOREIGN MATERIALS OR DEBRIS INTO DRAINAGE SYSTEM(S)
- COPPER WATER SERVICE FROM BUILDING TO GATE VALVE AT METER (FERROUS WATER PIPING NOT PERMITTED
- BELOW GRADE)
- SEWER LINE FROM BUILDING TO FRONT PROPERTY LINE.

3. PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL:

- 4. ELECTRICAL FEEDER CONDUITS SHALL BE CONCRETE ENCASED PER UTILITY COMPANY REQUIREMENTS. SUPPLY AND PLACEMENT OF CONDUIT(S) IN TRENCHES AND CONNECTION TO SERVICE BY ELECTRICAL CONTRACTOR.
- 5. NATURAL GAS SERVICE PIPING MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS.
- 6. SITE UTILITY PIPING SHALL BE INSTALLED PER APPLICABLE UTILITY COMPANY REQUIREMENTS
- 7. TRENCH BACKFILLING MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH SOILS REPORT SPECIFICATIONS WHEN APPLICABLE.
- 02830. FREE STANDING WALLS AND FENCES:

NATURAL GAS SERVICE PIPING

- 1. WOOD FENCES SHALL BE CONSTRUCTED OF REDWOOD, CEDAR OR OTHER WOOD OF NATURAL RESISTANCE TO DECAY.
- 2. HARDWARE SHALL BE GALVANIZED UNLESS NOTED OTHERWISE ON DRAWINGS.
- 3. WOOD FENCES SHALL BE CONSTRUCTED IN SUCH A MANNER AS TO REMAIN STURDY AND PLUMB UNDER NORMAL WEAR AND TEAR.

#### DIVISION 3: CONCRETE

#### ---SEE STRUCTURAL DRAWINGS FOR STRUCTURAL CONCRETE SPECIFICATIONS

#### 03505. NON-STRUCTURAL LIGHTWEIGHT CONCRETE

- 1. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150
- 2. AGGREGATES SHALL CONFORM TO ASTM C-33-03 FOR LIGHTWEIGHT CONCRETE 3. FLOOR SHEATHING SHALL BE SWEPT CLEAN AND FREE OF DEBRIS, STANDING WATER OR FOREIGN MATTER
- IMMEDIATELY PRIOR TO UNDERLAYMENT INSTALLATION.
- 4. INSTALL PRIMER AND LIGHTWEIGHT CONCRETE PER MANUFACTURER'S RECOMMENDATIONS TO FINAL THICKNESS INDICATED ON DRAWINGS.

#### 03510. GYPSUM CONCRETE UNDERLAYMENTS

- 1. MATERIAL SHALL BE "GYP-CRETE" AS MANUFACTURED BY GYP-CRETE CORPORATION, OR EQUAL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS TO FINAL THICKNESS INDICATED ON PLANS.
- 2. FLOOR SHEATHING SHALL BE SWEPT CLEAN AND FREE OF DEBRIS, STANDING WATER OR FOREIGN MATTER IMMEDIATELY PRIOR TO UNDERLAYMENT INSTALLATION.
- 3. UNDERLAYMENT SHALL ATTAIN A FINAL COMPRESSIVE STRENGTH OF 1000 PSI WHEN TESTED.

# DIVISION 4: MASONRY

#### ---SEE STRUCTURAL DRAWINGS FOR STRUCTURAL MASONRY AND GROUT SPECIFICATIONS—

# 04270. GLASS MASONRY UNITS:

- 1. GLASS BLOCK SHALL BE AS MANUFACTURED BY PITTSBURGH CORNING CORPORATION, OR EQUAL, VERIFY STYLE WITH DESIGNER.
- 2. EXPANSION JOINTS SHALL BE PROVIDED AT EDGES OF GLASS BLOCK PANELS AT THE SIDES AND TOP WITH A MINIMUM THICKNESS OF 1/2 INCH. EXPANSION JOINTS SHALL BE ENTIRELY FREE OF MORTAR AND SHALL BE FILLED WITH RESILIENT MATERIAL
- 3. GLASS BLOCK PANELS SHALL HAVE MORTAR JOINTS MINIMUM 3 INCHES WIDE AND MORTARED EDGES OF UNITS SHALL BE TREATED FOR PROPER MORTAR BONDING.
- 4. COURSES SHALL BE LEVEL AND TRUE, AND FACE OF PANELS SHALL BE FLUSH AND NEATLY FINISHED WITH NO DEPRESSED OR PROJECTING UNITS.

# DIVISION 5: METALS

# —SEE STRUCTURAL DRAWINGS FOR STRUCTURAL METALS SPECIFICATIONS—

- 05500. METAL FABRICATIONS.
- 1. STEEL PIPE HANDRAILS AND GUARDRAILS SHALL BE CONSTRUCTED AND INSTALLED AS INDICATED ON DRAWINGS. HANDRAILS AND GUARDRAILS SHALL BE CONSTRUCTED OF MINIMUM GRADE 40 STEEL
- 2. FABRICATOR SHALL SUBMIT SHOP DRAWINGS TO DESIGNER OF OTHER ARCHITECTURAL METAL FABRICATIONS SUCH AS BALCONIES, DECORATIVE GRILLES WINDOW GRILLES, ETC. UNLESS SPECIFICALLY DETAILED ON DRAWINGS.
- 3. METALWORK SURFACES TO BE WELDED SHALL BE FREE OF ANY PAINT, GREASE, LOOSE SCALE AND FOREIGN MATTER. ALL WELDING SHALL CONFORM TO AWA STANDARDS.
- 4. FABRICATOR SHALL DELIVER FINISHED COMPONENTS PAINTED WITH A MINIMUM OF TWO COATS OF RUST
- 5. FABRICATIONS SHALL HAVE ALL REQUIRED FASTENING POINTS READY TO RECEIVE FASTENERS UPON DELIVERY TO SITE.

# DIVISION 6: WOOD AND PLASTIC

## —SEE STRUCTURAL DRAWINGS FOR STRUCTURAL WOOD PRODUCTS AND METHODS SPECIFICATIONS— 06200. FINISH CARPENTRY:

# 1. INSTALL ALL BATH AND WASHROOM ACCESSORIES.

- 2. FABRICATIONS AND INSTALLATIONS BY THIS SECTION SHALL BE CLEAN AND NEAT, AND FREE OF TOOLING MARKS, SCRATCHES OR OTHER DEFACEMENTS OF FINISHED, VISIBLE SURFACES.
- 3. ALL FASTENERS IN ARCHITECTURAL WOODWORK SHALL BE COUNTERSUNK AND PLUGGED OR FILLED TO MATCH SURROUNDING FINISH SURFACES UNLESS NOTED OTHERWISE ON DRAWINGS.
- 4. PRE-MANUFACTURED CASEWORK SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- 5. THIS SECTION SHALL INSTALL ALL PLASTIC LAMINATE COUNTER TOPS OR SHALL PROVIDE AND INSTALL PLYWOOD COUNTER TOP BASE TO RECEIVE TILE OR STONE WORK WHERE INDICATED ON PLANS.
- 6. FINISH CARPENTRY SHALL BE ADEQUATELY PROTECTED FROM DAMAGE BY OTHER TRADES BY THE FINISH CARPENTRY SUB.

# DIVISION 7: WOOD AND PLASTIC

#### —SEE STRUCTURAL DRAWINGS FOR RETAINING WALL AND GENERAL FOUNDATION DAMP-PROOFING SPECIFICATIONS—

# 07180. WATER REPELLENT MATERIALS

1. EXPOSED, UN-STAINED ROUGH SAWN WOOD: "THOMPSON'S WATER SEAL WATERPROOFING FORMULA" OR EQUAL IN TWO APPLICATIONS, FIRST AT A RATE OF 100 SQUARE FEET PER GALLON, SECOND AT A RATE OF 150 SQUARE FEET PER GALLON.

- 2. SMOOTH, UN-STAINED WOOD: "THOMPSON'S WATER SEAL WATERPROOFING FORMULA" OR EQUAL IN TWO APPLICATIONS, FIRST AT A RATE OF 200 SQUARE FEET PER GALLON, SECOND AT A RATE OF 300 SQUARE FEET
- 3. CONCRETE SEALER: "THOMPSON'S WATER SEAL WATERPROOFING FORMULA" OR EQUAL IN TWO APPLICATIONS, FIRST AT A RATE OF 200 SQUARE FEET PER GALLON, SECOND AT A RATE OF 400 SQUARE FEET
- 4. CONCRETE BLOCK SEALER (WHERE CONCRETE BLOCK IS LEFT TO WEATHER EXPOSURE): "THOMPSON'S WATER SEAL WATERPROOFING FORMULA" OR EQUAL IN TWO APPLICATIONS, FIRST AT A RATE OF 50 SQUARE FEET PER GALLON, SECOND AT A RATE OF 100 SQUARE FEET PER GALLON.
- 5. UN-PAINTED EXTERIOR PLASTER: "THOMPSON'S WATER SEAL ARCHITECTURAL 55" OR EQUAL IN TWO APPLICATIONS, FIRST 3 FOG COATS AT 2 HOUR INTERVALS, SECOND SAME. NOTE, TEST THIS PRODUCT PRIOR TO FINAL APPLICATION TO VERIFY COMPATIBILITY WITH PLASTER COLOR COAT.

## 07190. VAPOR AND AIR BARRIERS

- 1. UNDER-SLAB VAPOR BARRIER: GLASS FIBER REINFORCED POLYETHYLENE SHEET. SHALL MEET OR EXCEED ASTM E-96 A & B.
- 2. 2. VAPOR BARRIER MATERIALS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS FOR SPECIFIC APPLICATIONS.

#### 07210. BUILDING INSULATION

- 1. BATT THERMAL INSULATION: "CERTAINTEED FOIL FACED" OR EQUAL IN R VALUES INDICATED ON DRAWINGS.
- 2. BATT INSULATION PRODUCTS SHALL BE INSTALLED TO COMPLETELY FILL ALL VOIDS IN FRAMING AND SHALL BE SECURELY ATTACHED SO AS TO REMAIN IN PLACE UNTIL WALL, ROOF OR CEILING FINISH ASSEMBLIES ARE APPLIED.

#### 07320. ROOFING TILE

- 1. SEE SECTION 07620 FOR METAL FLASHINGS, VENTS AND OTHER SHEET METAL ACCESSORIES FOR INSTALLATION BY THIS SECTION.
- 2. ROOFING FELTS: GEORGIA PACIFIC GP-30 RESIDENTIAL, UNPERFORATED, OR EQUAL. SHALL MEET OR EXCEED ASTM D-4869-05.
- 3. INSTALLER SHALL VERIFY AND INSURE THAT ROOF DECK IS CLEAN, SOLID AND FREE OF VOIDS OR PROJECTIONS AND OTHERWISE READY TO RECEIVE WORK.
- 4. ROOFING TILES SHALL BE INSTALLED PER ALL MANUFACTURER'S RECOMMENDATIONS USING ALL SPECIFIED FASTENERS.

#### 07510. BUILT-UP BITUMINOUS ROOFING:

- 1. FURNISH AND INSTALL CLASS A BUILT BITUMINOUS ROOFING AND BALLAST AT AREAS INDICATED ON DRAWINGS. ROOFING SYSTEM(S) SHALL BE COMPLETE IN EVERY DETAIL, INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER, WATERTIGHT, FUNCTIONING INSTALLATION.
- 2. SEE SECTION 07620 PROVIDES METAL FLASHINGS FOR INSTALLATION BY THIS SECTION.
- 3. BITUMEN SHALL BE TYPE II ASPHALT.
- 4. BALLAST SHALL BE CRUSHED TILE OR COLORED CRUSHED ROCK. COLOR AS INDICATED ON DRAWINGS.
- 5. MINERAL SURFACE CAP SHEET FLASHING SHALL BE MINERAL SURFACED AND SHALL COMPLY WITH ASTM
- 6. THIS SECTION SHALL FURNISH AND INSTALL 3 INCH X 3 INCH CANT STRIP AT ALL ROOF INTERSECTIONS WITH
- 7. ROOF DECK SHALL BE SWEPT CLEAN OF DEBRIS, STANDING WATER OR OTHER FOREIGN MATERIALS IMMEDIATELY PRIOR TO ROOFING.
- 8. CARE SHALL BE TAKEN NOT TO DAMAGE OR DEFACE OTHER WORK DURING ROOFING OPERATIONS.
- 9. BUILT-UP ROOF COVERING MATERIALS SHALL COMPLY WITH THE STANDARDS IN 2013 CRC TABLE R905.9.2. AND SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

# 07620. SHEET METAL FLASHING AND TRIM:

- 1. ROOF ATTIC VENTS SHALL BE OF SIZE AND QUANTITY INDICATED ON DRAWINGS, 1/4 INCH GALVANIZED WIRE
- MESH SCREENED. 2. COPPER FLASHINGS SHALL BE MINIMUM 16 OZ., UNCOATED
- 3. EQUIPMENT SHALL BE COMPLETE IN EVERY DETAIL INCLUDING
- 4. ALL SHEET METAL FLASHINGS SHALL BE INSTALLED IN WORKMAN-LIKE MANNER IN COMPLIANCE WITH STANDARD INDUSTRY PRACTICES TO INSURE A CLEAN, TRUE TO LINE, WATERTIGHT JOB.

5. SEALANTS AND CAULKING FURNISHED BY SECTION 07900 SHALL BE INSTALLED IN CONJUNCTION WITH SHEET

METAL FLASHINGS WHERE APPLICABLE. 6. ROOF ACCESSORIES OR FLASHINGS INSTALLED ON ROOF PLANES SHALL BE PAINTED TO MATCH ROOF MATERIAL

# DIVISION 8: DOORS AND WINDOWS

# 08210. WOOD DOORS AND FRAMES

- 1. DOOR AND FRAME ASSEMBLIES SHALL BE DELIVERED FREE OF DEFECTS IN MATERIAL OR WORKMANSHIP.
- 2. FIRE RATED DOORS AS INDICATED ON DRAWINGS SHALL BEAR APPROPRIATE LABELLING AS TO THEIR FIRE RESISTANCE BY UNDERWRITER'S LABORATORIES.
- 3. FIRE RATED DOORS SHALL BE PROVIDED WITH SMOKE GASKETS AT HEAD AND JAMBS, AND APPROVED TYPE
- 4. EXTERIOR DOORS SHALL BE FULLY WEATHERSTRIPPED TO PREVENT AIR INFILTRATION. 5. METAL THRESHOLDS AT FIRE RATED AND EXTERIOR DOORS SHALL BE FURNISHED BY THIS SECTION.
- 6. 6. HOLLOW CORE DOORS SHALL BE INTERNALLY REINFORCED AT ALL HARDWARE ATTACHMENT POINTS.

# 08305. ACCESS DOORS:

- 1. ACCESS DOORS SHALL BE WEATHERTIGHT AT EXTERIOR APPLICATIONS AND SHALL HAVE PROVISION FOR LOCKING WHEN ACCESSIBLE TO PUBLIC.
- 2. ACCESS DOORS PLACED IN FIRE RATED WALLS OR PARTITIONS, WHERE PERMITTED SHALL BE APPROPRIATE FIRE
- RESISTANCE FOR APPLICATIONS AND SHALL BEAR U.L. LABEL. 3. ACCESS DOORS SHALL BE PLACED TO ALLOW FOR PROPER WORKING SPACE TO SERVICE ITEMS BEING
- 4. DOORS SHALL BE PLACED SOLIDLY IN OPENING AND DOOR LEAF AND HARDWARE SHALL HAVE FREE OPERATION

# 08505. METAL WINDOWS AND SLIDING DOORS

- 1. 1. FURNISH ALUMINUM FRAME WINDOWS AND SLIDING GLASS DOORS OF SIZE, TYPE AND QUANTITY INDICATED ON DRAWINGS.
- 2. WINDOW AND DOOR ASSEMBLIES AND HARDWARE PACKAGES SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND FUNCTIONING INSTALLATION.

#### 08605. WOOD WINDOWS AND SLIDING DOORS:

- 1. FURNISH ALL WOOD SASH AND FRAME WINDOWS AND SLIDING GLAZED DOORS AS INDICATED ON DRAWINGS. GLAZING SHALL BE AS SPECIFIED IN SECTION 08800. WINDOW AND SLIDING DOOR UNITS SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND FUNCTIONING INSTALLATION. SEE DRAWINGS FOR SPECIFICATION OF ANY SPECIAL LOCKING DEVICES OTHER THAN THE
- STANDARD HARDWARE PACKAGE SUPPLIED BY THE WINDOW OR SLIDING DOOR MANUFACTURER. 2. ALL WINDOWS AND SLIDING DOORS SHALL BE COMPLETELY WEATHER STRIPPED WITH POLYMERIC MATERIAL AND WHICH SHALL BECOME COMPRESSED FOR A POSITIVE SEAL BETWEEN SASH AND FRAME UPON
- 3. ALL MANUFACTURED UNITS SHALL MEET OR EXCEED ASTM E283, 331 AND E330 STANDARDS, AND SHALL BE CERTIFIED AND LABELED INDICATING THAT THEY MEET THE APPROPRIATE STANDARDS LISTED IN TABLE 2-53V OF THE STATE BUILDING CODE.

#### 08705. DOOR HARDWARE:

- 1. HARDWARE SHALL BE AS MANUFACTURED BY SCHLAGE LOCK COMPANY "E SERIES" OR EQUAL. SEE DRAWINGS OR CONSULT GENERAL CONTRACTOR FOR STYLE AND FINISH.
- 2. HARDWARE TYPES AND PLACEMENT SHALL BE AS INDICATED ON DRAWINGS. HARDWARE SHALL FUNCTION PROPERLY AND FREELY WITHOUT BINDING, AND ALL MECHANISMS SHALL CYCLE COMPLETELY WITHOUT ANY SPECIAL EFFORT. ALL HARDWARE SHALL BE INSTALLED PER MANUFACTURE'S RECOMMENDATIONS USING ALL SUPPLIED AND/OR SPECIFIED FASTENERS.

#### 08800. GLAZING:

- 1. SPECIFICATIONS HEREIN SHALL APPLY TO ALL DOOR AND WINDOW GLAZING.
- 2. ALL WINDOWS AND SLIDING DOORS SHALL BE GLAZED AS SPECIFIED IN TITLE 24 COMPLIANCE CALCULATIONS. ALL GLAZING SHALL BE PROPERLY SEALED IN SASH TO PREVENT INTRUSION OF WIND, WATER OR PARTICULATE MATTER. DUAL GLAZED PANES SHALL HAVE A SEALED AIRSPACE AND SHALL NOT PERMIT CONDENSATION FORMATION ON INTERIOR SIDES OF PANES.
- 3. SAFETY GLAZING
- a. GLASS AND GLAZING SUBJECT TO THE FOLLOWING SPECIFICATIONS SHALL BE CERTIFIED AND LABELED BY THE MANUFACTURER PER 2013 CRC SECTION R308.
- b. SAFETY GLAZING, WHERE REQUIRED, SHALL BE TEMPERED OR LAMINATED GLASS.
- c. SAFETY GLAZING SHALL BE REQUIRED AS FOLLOWS:
- i. GLAZING IN INGRESS AND EGRESS DOORS EXCEPT JALOUSIES. ii. GLAZING IN FIXED PANELS AND SLIDING OR SWINGING PANELS OF SLIDING OR SWING-TYPE DOORS
- OTHER THAN WARDROBE DOORS.
- iii. GLAZING IN STORM DOORS
- iv. GLAZING IN ALL UNFRAMED SWINGING DOORS
- v. GLAZING IN SHOWER AND BATHTUB DOORS AND ENCLOSURES
- vi. GLAZING, OPERABLE OR INOPERABLE, ADJACENT TO A DOOR IN ALL BUILDINGS AND WITHIN THE SAME WALL PLANE AS THE DOOR WHOSE NEAREST VERTICAL EDGE IS WITHIN 12 INCHES OF THE DOOR IN A CLOSED POSITION AND WHOSE BOTTOM EDGE IS LESS THAN 60 INCHES ABOVE THE FLOOR OR WALKING SURFACE.
- vii. GLAZING IN FIXED PANELS OTHER THAN THOSE COVERED BY ITEM (F.) WHICH HAVE A GLAZED AREA IN EXCESS OF 9 SQUARE FEET AND THE LOWEST EDGE IS LESS THAN 18 INCHES ABOVE THE FINISHED FLOOR LEVEL OR WALKING SURFACE WITHIN 36 INCHES OF SUCH GLAZING.
- VIII. GLAZING IN FIXED PANELS OTHER THAN THOSE COVERED BY ITEM (F.) WHICH HAVE A GLAZED AREA IN EXCESS OF 9 SQUARE FEET AND THE LOWEST EDGE IS LESS THAN 18 INCHES ABOVE THE FINISHED SURFACE.

# **DIVISION 9: FINISHES**

#### 09220. PORTLAND CEMENT PLASTER

- FURNISH AND INSTALL ALL FIBER GLASS REINFORCED PORTLAND CEMENT EXTERIOR PLASTER, LATH, JOINTS BEADING AND WIRE ACCESSORIES, REQUIRED FLASHINGS, PAPER BACKING, ETC. PLASTER FINISH SYSTEM SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS FOR A TRUE, PROPER AND
- BOXES, OUTLETS OR STUB-OUTS. FAILURE TO DO SO SHALL RENDER THE PLASTER CONTRACTOR RESPONSIBLE FOR REQUIRED ALTERATIONS AND REPAIRS. 3. INSTALLER SHALL TAKE CARE NOT TO COVER ANY ELECTRICAL, MECHANICAL, PLUMBING OR VENTILATION
- FOR REQUIRED ALTERATIONS AND REPAIRS. 4. LATH AT VERTICAL SURFACES SHALL BE K-LATH "STUCCO-RITE" PAPER BACKED OR EQUAL. LATH SHALL BE
- ON CENTERS, UNLESS NOTED OTHERWISE ON SHEAR PANEL SCHEDULE (SEE STRUCTURAL DRAWINGS). 5. LATH AT HORIZONTAL SURFACES SHALL BE 3/8 INCH HIGH RIBBED KRAFT PAPER BACKED, GALVANIZED EXPANDED METAL. LATH SHALL BE NEW, DOMESTIC MAKE, AND FREE FROM ALL DEFECTS KRAFT PAPER
- BACKED, GALVANIZED EXPANDED METAL. LATH SHALL BE ATTACHED TO ALL STRUCTURAL FRAME MEMBERS WITH NO. 16 GAUGE X 7/8 INCH LEG STAPLES AT 3 INCHES ON CENTERS.
- 6. CORNER BEAD SHALL BE INSTALLED FIRMLY AND TRUE TO LINE TO PROVIDE STRAIGHT, CONSISTENT CORNERS. 7. EXPANSION AND CRACK CONTROL JOINTS SHALL BE PLACED TO LIMIT FLAT, CONTINUOUS PLASTER PANELS TO MAXIMUM 400 SQUARE FEET IN AREA. REVIEW DRAWINGS TO VERIFY SPECIAL PLACEMENT OR

ANY WAY. THIS ITEM WILL BE STRICTLY ENFORCED UPON FINAL INSPECTION.

ARRANGEMENT OF JOINTS INDICATED, IF ANY. PRIOR TO PLACEMENT OF PLASTER MATERIALS, GROOVES IN JOINTS SHALL BE MASKED TO PREVENT THE INCURSION OF PLASTER INTO THEM.

- BOARD INSTALLATION SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL ITEMS FOR A PROPER AND
- TO 2013 CRC CHAPTER 7. 2. INSTALLER SHALL TAKE CARE NOT TO COVER ANY ELECTRICAL, MECHANICAL, PLUMBING OR VENTILATION
- CAPACITIES. THE INSTALLER SHALL TAKE SPECIAL CARE IN VERIFYING ANY SPECIAL NAILING OR GYPSUM BOARD ASSEMBLIES INDICATED ON ARCHITECTURAL AND STRUCTURAL DRAWINGS, AND SHALL BE RESPONSIBLE FOR ADHERENCE TO AND REMEDY OF DEPARTURES FROM, THESE SPECIFICATIONS.
- 4. GYPSUM BOARD MATERIALS:
- a. 1/2 INCH THICKNESS SHALL CONFORM TO ASTM C-36.
- b. 5/8 INCH THICKNESS SHALL BE TYPE X, WITH TAPERED EDGES. SHALL CONFORM TO ASTM C-79 TYPE X,
- USED IN ALL BATHTUB AND SHOWER ENCLOSURES OR ROOMS, SAUNAS OR OTHER MOIST OR WET ENVIRONMENTS. NO GREEN BOARD ALLOWED.
- 5. ACCESSORIES AND FINISHING MATERIALS:
- a. NAILS SHALL BE 8D COOLER NAILS PLACED AT 8 INCHES ON CENTERS UNLESS NOTED OTHERWISE ON
- FRAMING A MINIMUM OF 5/8 INCH.





- BOXES, OUTLETS OR STUB-OUTS. FAILURE TO DO SO SHALL RENDER THE PLASTER CONTRACTOR RESPONSIBLE
  - ATTACHED TO ALL STRUCTURAL FRAME MEMBERS WITH NO. 16 GAUGE X 7/8 INCH LEG STAPLES AT 6 INCHES
- 8. INSIDE CORNERS OF PLASTER SURFACES SHALL BE WELL STRUCK, STRAIGHT AND NOT COVED OR CURVED IN

# 09260. GYPSUM BOARD SYSTEMS:

- 1. FURNISH AND INSTALL ALL GYPSUM WALLBOARD AND ACCESSORIES AS INDICATED ON DRAWINGS. GYPSUM FUNCTIONING INSTALLATION READY TO RECEIVE PAINT OR OTHER FINAL FINISH. ALL WORK SHALL CONFORM
- BOXES, OUTLETS OR STUB-OUTS. FAILURE TO DO SO SHALL RENDER THE DRYWALL CONTRACTOR RESPONSIBLE FOR REQUIRED ALTERATIONS AND REPAIRS. 3. GYPSUM WALLBOARD IS USED IN SOME CASES ON THIS PROJECT IN STRUCTURAL AND FIRE-PROTECTIVE
- c. 1/2 INCH THICK WATER-RESISTANT SHALL CONFORM TO ASTM C-630. WATER RESISTANT BOARD SHALL BE
- b. SCREWS SHALL CONFORM TO ASTM C1002 AND BE LONG ENOUGH TO PENETRATE INTO WOOD

- c. CASING BEAD SHALL BE UTILIZED AT ALL EDGES OF GYPSUM BOARD NOT COVERED BY WOOD CASING OR OTHER FINISH TRIM MATERIAL.
- d. RESILIENT CHANNEL MATERIAL (WHERE USED) SHALL BE 26 GAUGE GALVANIZED STEEL, INSTALLED PERPENDICULAR TO FRAMING AND FASTENED WITH SCREWS.
- 6. CEILING MATERIAL SHALL BE INSTALLED USING SCREWS.
- 7. ALL MATERIAL SHALL BE PLACED WITH LONG DIMENSION OF SHEETS PERPENDICULAR TO FRAMING OR
- 8. ALL FACE JOINTS OF GYPSUM WALLBOARD SHALL BE TAPED AND NAILS COATED. ALL TAPING AND NAILS SHALL BE COATED TWICE, IN SEPARATE OPERATIONS, OR MORE IF REQUIRED, AND SHALL BE SANDED TO A SMOOTH, UNIFORM FINISH IF NECESSARY.
- 9. ALL JOINTS SHALL BE TIGHT-FITTING, AND MATERIAL SHALL NOT BE CRUSHED OR DEFORMED DURING OR AFTER INSTALLATION.
- 10. ALL MATERIALS SHALL BE DELIVERED TO SITE IN GOOD CONDITION AND FREE OF DEFECTS. ALL MATERIALS SHALL BE NEW. MATERIALS SHALL BE STORED IN SUCH A MANNER THAT THEY WILL NOT BE DAMAGED BY THE ELEMENTS OR OTHER TRADES PRIOR TO INSTALLATION.

#### 09900. PAINTING

- 1. INTERIOR WALLS AND CEILINGS SHALL RECEIVE MINIMUM TWO COATS OR AS MANY COATS AS REQUIRED TO OBTAIN PROPER COVERAGE OVER ONE COAT PVA SEALER AS INDICATED ON DRAWINGS.
- 2. PAINTING CONTRACTOR SHALL PROTECT EXISTING CONSTRUCTION FROM PAINTING OPERATIONS AND SHALL BE LIABLE FOR DAMAGE TO ANY OTHER WORK

#### DIVISION 10: SPECIALTIES

#### 10305. MANUFACTURED FIREPLACES

1. FURNISH AND INSTALL MANUFACTURED FIREPLACE AND FLUE SYSTEM(S) AS INDICATED ON DRAWINGS PER MANUFACTURER'S SPECIFICATIONS. FINAL INSTALLATIONS SHALL BE COMPLETE IN EVERY DETAIL. 10800. TOILET AND BATH ACCESSORIES

#### 1. FURNISH TOWEL BARS, TOILET PAPER DISPENSERS, ETC. IN ALL BATHROOMS AND TOILET ROOMS. VERIFY ITEMS AND

### PLACEMENT WITH OWNER AND DESIGNER.

11450. RESIDENTIAL EQUIPMENT

DIVISION 11: EQUIPMENT

# 1. FURNISH APPLIANCES AS INDICATED ON DRAWINGS. GAS FIRED APPLIANCES SHALL HAVE INTERMITTENT

IGNITION DEVICES. 2. PLUMBING AND ELECTRICAL CONTRACTORS SHALL PROVIDE HOOKUP TO UTILITY SERVICE AS APPLICABLE.

#### DIVISION 12: FURNISHING

12100. CONSULT INTERIOR DESIGNER FOR ANY SPECIAL REQUIREMENTS

# DIVISION 13: SPECIAL CONSTRUCTION

NOT USED

#### **DIVISION 14: CONVEYING SYSTEMS**

14100. SEE DRAWINGS FOR RESIDENTIAL ELEVATOR SPECIFICATIONS WHERE OCCUR (IF ANY).

# **DIVISION 15: MECHANICAL**

# 15300. FIRE PROTECTION

1. FURNISH AND INSTALL RESIDENTIAL FIRE SPRINKLER SYSTEM PER CITY CODE REQUIREMENTS. FIRE SPRINKLER SYSTEM SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND FUNCTIONING INSTALLATION.

# SECTION 15400. PLUMBING

# 1. BASIC MATERIALS:

- a. CLEAN OUTS SHALL BE ICC-ES APPROVED WITH PLASTIC RINGS
- b. HOSE BIBS SHALL BE CALCO NO.108 OR EQUAL WITH ANTI-SIPHON DEVICE C. COPPER TUBING SHALL BE TYPE L HARD DRAWN FOR ABOVE SLAB INSTALLATIONS.
- d. COPPER TUBING IN BELOW-SLAB INSTALLATIONS SHALL BE TYPE K WITH PLASTIC SHEATHING AT CONTACT
- WITH CONCRETE.
- e. FITTINGS FOR COPPER TUBING SHALL BE WROUGHT OR CAST COPPER, STANDARD WEIGHT.
- f. COPPER PIPING SHALL CONFORM TO ASTM B-42-02E01, STANDARD WEIGHT, IRON PIPE SIZES. g. SANITARY SOIL, WASTE AND VENT PIPING AND FITTINGS SHALL BE ABS PLASTIC U.N.O. ON DRAWINGS.
- h. FUEL GAS PIPING SHALL BE BLACK PIPE (STEEL) AND SHALL MEET ALL CODE REQUIREMENTS FOR
- UNDERGROUND PIPING.

# SECTION 15440. PLUMBING FIXTURES

- 1. FURNISH AND INSTALL ALL PLUMBING FIXTURES, FAUCETS, CONTROLS AND DEVICES AS INDICATED ON
- DRAWINGS. 2. PLUMBING FIXTURES SHALL BE KOHLER OR EQUAL. VERIFY SELECTIONS WITH OWNER AND DESIGNER.

# 15500. HEATING, VENTILATING AND AIR CONDITIONING:

- 1. FURNISH AND INSTALL HVAC SYSTEMS AND EQUIPMENT INCLUDING BUT NOT LIMITED TO: AIR CONDITIONING UNITS, EXHAUST FANS, ALL RIGID AND FLEXIBLE DUCTWORK AND FITTINGS, DIFFUSERS, REGISTERS, GRILLES, DAMPERS, LOUVERS, DUCT INSULATION, CONTROL SYSTEMS, FLASHINGS, FIRE STOPPING, LABELING AND TAGGING, PAINTING AS SPECIFIED HEREIN, MOTOR STARTERS IF NOT A PART FACTORY PREFABRICATED PACKAGES, ALL IN-LINE AND LOW VOLTAGE WIRING AND CONDUIT THAT FORMS A PART OF THE HVAC SYSTEMS AND CONDENSATE PIPING.
- 2. HVAC SYSTEM(S) SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND
- FUNCTIONING INSTALLATION. 3. WHETHER SHOWN ON DRAWINGS OR NOT, ALL DUCT AND CONDUIT PENETRATIONS THROUGH FIRE-RATED FLOORS OR WALLS SHALL BE SEALED AGAINST THE SPREAD OF FIRE OR SMOKE WITH APPROVED DUCT AND CONDUIT FIRE STOPS, FIRE DAMPERS AND/OR FIRE RESISTANT SEALANT, TO GIVE THE EQUIVALENT FIRE RATING BEFORE THE PENETRATION. SEE SECTION 07270. FOR PERMITTED SEALANT MATERIALS/SYSTEMS.
- 4. SYSTEMS INSTALLED BY THIS SECTION SHALL BE TESTED AND CORRECTED FOR PROPER FUNCTIONING AS OUTLINED IN SECTION 15990.
- 5. THE LOCATIONS OF APPARATUS AND EQUIPMENT INDICATED ON DRAWINGS ARE APPROXIMATE. INSTALL PIPING, DUCTS, REGISTERS, DIFFUSERS AND EQUIPMENT IN SUCH A MANNER AS TO AVOID ALL OBSTRUCTIONS,

- PRESERVE HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. NO HOLES OR OPENINGS WILL BE ALLOWED IN, NOR SHALL ANY EQUIPMENT, DUCTS OR PIPES BE SUPPORTED FROM ANY STRUCTURAL MEMBER WITHOUT WRITTEN CONSENT OF THE STRUCTURAL ENGINEER. COORDINATE THE LOCATIONS OF ALL DIFFUSERS, REGISTERS AND GRILLES WITH OTHER WORK INDICATED ON THE DRAWINGS.
- 6. THIS SECTION SHALL HOOK-UP ALL ELECTRICALLY SERVICED EQUIPMENT.
- 7. INSTALL THERMOSTATS AS INDICATED ON DRAWINGS AT 60 INCHES ABOVE FINISH FLOOR.
- 8. UPON COMPLETION AND TESTING, PROVIDE OWNER WITH OPERATION AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT.

#### 15600. FURNACES

#### 15740. AIR CONDITIONING EQUIPMENT:

- 1. EQUIPMENT SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS NECESSARY FOR PROPER
- 2. TEMPERATURE CONTROL SYSTEM SHALL CONSIST OF A THERMOSTAT AND ALL MOUNTING HARDWARE WITH AUTOMATIC CHANGE OVER, CONCEALED SET POINT, AND THERMOMETER. AN AUTOMATIC TEMPERATURE CONTROL DEVICE SHALL BE PROVIDED FOR EACH SEPARATE HVAC SYSTEM AND/OR ZONE.

#### 15880. AIR DISTRIBUTION:

- 1. FURNISH ALL RIGID AND FLEXIBLE DUCTWORK, ELBOWS, FITTINGS, DUCT INSULATION, DIFFUSERS, GRILLES, REGISTERS, DAMPERS, LOUVERS, ETC. TO PROVIDE FOR A COMPLETE INSTALLATION BY SECTION 15500. ALL
- PRODUCTS SHALL BE NEW, DOMESTIC MAKE, AND FREE FROM ALL DEFECTS OR IMPERFECTIONS. 2. GALVANIZED STEEL DUCTWORK SHALL CONFORM TO ASTM A653, A653M-07 WITH A CLASS D COATING.
- 3. FLEXIBLE DUCTWORK SHALL BE "GLASS-FLEX TYPE SL" OR EQUAL CONSISTING OF A GALVANIZED SPRING STEEL WIRE HELIX COVERED WITH A CONTINUOUS, NON-PERFORATED INTERIOR AIR SEAL LINER AND WRAPPED WITH A 1 INCH THICKNESS OF GLASS FIBER INSULATION JACKETED WITH A VAPOR BARRIER JACKET, FACTORY SEALED AT BOTH ENDS OF EACH SECTION. THE FLEXIBLE DUCT SHALL BE LABELLED BY UNDERWRITER'S LABORATORIES, INC. AS AN AIR DUCT.

#### 4. DUCT SUPPORT:

- a. RECTANGULAR DUCTS WITH A MAXIMUM SIDE NOT EXCEEDING 30 INCHES SHALL BE SUPPORTED BY 1 INCH WIDE, 18 GAUGE GALVANIZED STEEL STRAPS.
- b. RECTANGULAR DUCTS WITH A MAXIMUM SIDE OF MORE THAN 30 INCHES SHALL BE SUPPORTED BY 1 INCH WIDE, 16 GAUGE GALVANIZED STEEL STRAPS.
- c. ROUND, RIGID DUCTS SHALL BE SUPPORTED BY 1 INCH WIDE GALVANIZED STEEL STRAPS EQUAL TO GAUGE OF DUCT WALL, MINIMUM.
- d. VERTICAL RIGID DUCTS SHALL BE SUPPORTED BY GALVANIZED STEEL ANGLES.
- 5. DUCTWORK ACCESS PANELS SHALL BE AIRTIGHT, ZINC COATED, CONTINUOUS HINGE TYPE, WITH ZINC COATED SASH LOCKS UTILIZING LOCKING FEATURE TO KEEP DOOR AIRTIGHT. "DURO-DYNE" OR EQUAL.

#### 6. VOLUME DAMPERS:

- a. PROVIDE SINGLE BLADE VOLUME DAMPERS IN RECTANGULAR DUCTS NOT EXCEEDING 8 INCHES IN DEPTH, CONSTRUCTED OF NOT LESS THAN 16 GAUGE GALVANIZED STEEL WITH EDGES BENT AND CENTER GROOVED. HARDWARE LOCKING QUADRANT SHALL BE HEAVY-DUTY TYPE AS MANUFACTURED BY "DURO-DYNE" TYPE KS-385 WITH 3/8 INCH ROD, K-4 QUADRANT AND SB-338 CLOSED END BEARING, OR EQUAL.
- b. PROVIDE SINGLE BLADE VOLUME DAMPERS IN ROUND DUCTS CONSTRUCTED OF 22 GAUGE GALVANIZED STEEL AND "DURO- DYNE" KS-145L HARDWARE, OR EQUAL, FOR DAMPERS NOT LARGER THAN 10 INCHES; 20 GAUGE WITH "DURO-DYNE" KS-195L HARDWARE FOR DAMPERS NOT LARGER THAN 20 INCHES; AND 18 GAUGE WITH "DURO-DYNE" KS-385L HARDWARE FOR DAMPERS EXCEEDING 20 INCHES IN DIAMETER.
- 7. DUCT SEALANT SHALL BE "TUFF-BOND" NO.12 (BUNA N RUBBER BASED) AS MANUFACTURED BY GOODLOE E.

#### MOORE INC., OR EQUAL. 8. DIFFUSERS AND REGISTERS:

- a. CEILING OR WALL MOUNTED RETURN AND EXHAUST AIR REGISTERS SHALL HAVE BAKED ENAMEL FINISH AND OPPOSED BLADE DAMPER.
- b. WALL AND CEILING REGISTERS SHALL BE ADJUSTABLE LOUVER TYPE AND PAINTED TO MATCH WALL FINISH.

#### 15950. CONTROLS

- 1. FURNISH THERMOSTATS, LOW VOLTAGE TRANSFORMERS, REMOTE CONTROLS, OUTDOOR BULB RELAYS, LABELS, NAMEPLATES, LOW LIMIT ELECTRICAL SWITCHES, CONTROLS, ETC. TO PROVIDE FOR A COMPLETE
- 2. CONTROL DEVICES AND SYSTEMS SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL ITEMS NECESSARY FOR A PROPER AND FUNCTIONING INSTALLATION.
- 3. THERMOSTATS SHALL BE HONEYWELL, OR EQUAL, AND SHALL PERMIT READY AND POSITIVE ACTING AND ENTIRELY FREE FROM ANY OBJECTIONABLE NOISES.

# 15990. TESTING, ADJUSTING AND BALANCING

# 1. PERFORM ALL TESTS TO THE SATISFACTION OF THE OWNER AND THE GENERAL CONTRACTOR.

- 2. HVAC SYSTEMS:
- a. AFTER COMPLETION OF THE WORK, TEST AND REGULATE ALL HEATING, VENTILATING AND AIR SYSTEMS TO PROVIDE PROPER AND COMFORTABLE AIR VOLUME OR AS NOTED ON DRAWINGS. ADJUST APPARATUS AND DUCT DAMPERS TO SECURE PROPER VOLUMES AND FACE DISTRIBUTION OF AIR FOR EACH REGISTER AND/OR DIFFUSER. WHERE REQUIRED BY THE OWNER OR GENERAL CONTRACTOR LARGER OR SMALLER PULLEYS SHALL BE INSTALLED AT NO ADDITIONAL EXPENSE.

# DIVISION 16: ELECTRICAL

# 16010. GENERAL

FOR UNIT(S).

- 1. INSTALL ALL ELECTRICAL WORK ON SITE FOR POWER AND LIGHTING, INCLUDING SERVICE TO MECHANICAL
- SYSTEMS AND EQUIPMENT REQUIRING ELECTRICAL SERVICE, AS INDICATED ON DRAWINGS. 2. ELECTRICAL SYSTEMS SHALL BE COMPLETE IN EVERY DETAIL, INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND FUNCTIONING INSTALLATION. ALL REQUIRED PERMITS AND INSPECTIONS SHALL BE OBTAINED AND PAID FOR BY ELECTRICAL CONTRACTOR.
- 3. PROVIDE TEMPORARY POWER AND LIGHTING DURING CONSTRUCTION. REMOVE TEMPORARY WIRING UPON COMPLETION OF THE PROJECT. TEMPORARY SERVICES SHALL BE AS REQUIRED BY NEC AND OSHA.
- 4. GROUND CONTINUITY SHALL BE MAINTAINED THROUGHOUT THE ELECTRICAL SYSTEM. CONSULT NEC 250.94
- AND .95 FOR APPLICABLE REQUIREMENTS. 5. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ELECTRICAL POWER WIRE FOR THE HEATING AND AIR CONDITIONING SYSTEMS, INCLUDING DISCONNECT SWITCHES AND INTERNAL POWER
- ELECTRICAL CONTRACTOR SHALL ARRANGE WITH UTILITY COMPANY FOR THE INSTALLATION OF METER(S)
- 7. ELECTRICAL CONTRACTOR SHALL ARRANGE WITH TELEPHONE COMPANY TO PROVIDE SERVICE TO THE PREMISES.
- 8. PROVIDE 3/4 INCH X 20 FOOT LONG UNDERGROUND AT ELECTRICAL SERVICE. 9. SMOKE AND/OR HEAT DETECTOR WIRING SHALL BE LABELLED TO ASSURE PROPER INSTALLATION LOCATION

- 10. ELECTRICAL CONTRACTOR SHALL VERIFY LOCATION OF ALL OUTLETS, SWITCHES, PHONE JACKS, WALL BRACKETS AND OTHER IN-WALL ACCESSORIES PRIOR TO INSTALLATION OF FINISH WALL MATERIALS.
- 11. THE ELECTRICAL DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC, DO NOT SCALE THE ELECTRICAL DRAWINGS FOR LOCATION OF ANY ARCHITECTURAL, STRUCTURAL, CIVIL OR MECHANICAL ITEMS. REFER TO THE APPROPRIATE DISCIPLINE'S DRAWINGS FOR REQUIRED INFORMATION. THE LOCATIONS OF ANY ELECTRICAL DEVICES OR LIGHTING FIXTURES SHOWN ON ARCHITECTURAL DRAWINGS TAKE PRECEDENCE OVER THOSE SHOWN ON THE ELECTRICAL DRAWINGS.
- 12. TESTING AND ADJUSTMENTS:
- UPON COMPLETION OF ALL ELECTRICAL WORK, THE ELECTRICAL CONTRACTOR SHALL ADJUST AND TEST ALL CIRCUITS, OUTLETS, SWITCHES, LIGHTS AND ELECTRICAL EQUIPMENT. ITEMS, FIXTURES, AND PARTS IN NEED OF CORRECTION AND DISCOVERED DURING SUCH TESTING SHALL BE IMMEDIATELY REPAIRED OR REPLACED WITH ALL NEW EQUIPMENT AND THAT PART OF THE SYSTEM SHALL THEN BE RETESTED. ALL SUCH REPLACEMENT OR REPAIR SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER.

#### 16050. ELECTRICAL DEVICES:

EQUIPPED WITH A GROUND FAULT INTERRUPTER.

- 1. FURNISH ALL ELECTRICAL SWITCHES, OUTLETS, BOXES, ETC. TO COMPLETE JOB. DEVICES SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS NECESSARY FOR A PROPER AND FUNCTIONING
- 2. ALL OUTLETS SHALL BE MOUNTED AT 12 INCHES ABOVE FINISH FLOOR, EXCEPT AT KITCHEN AND BATH COUNTERTOPS, WHICH SHALL BE MOUNTED AT 42 INCHES ABOVE FINISH FLOOR AND AT GARAGES WHICH
- SHALL BE MOUNTED AT 48 INCHES ABOVE FINISH FLOOR; OR AS NOTED ON DRAWINGS. 3. ALL EXTERIOR OUTLETS SHALL BE EQUIPPED WITH A GROUND FAULT INTERRUPTER AND WEATHER RESISTANT
- FACEPLATE. 4. OUTLETS WITHIN 6 FEET OF A LAVATORY OR SINK, AND ALL GARAGE [AND WAREHOUSE] OUTLETS SHALL BE
- 5. ALL SWITCHES SHALL BE MOUNTED AT 48 INCHES ABOVE FINISH FLOOR, OR AS NOTED ON DRAWINGS.
- 6. DEVICE COVER PLATES SHALL BE OF TYPE AND NUMBER OF GANGS FOR DEVICES INSTALLED

#### 16110. CONDUITS:

- 1. FURNISH ALL FLEXIBLE AND RIGID CONDUITS TO COMPLETE JOB. CONDUIT SYSTEMS SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL ITEMS NECESSARY FOR A PROPER AND FUNCTIONING INSTALLATION.
- 2. CONDUITS SHALL BE OF GALVANIZED STEEL OR RIGID GALVANIZED STEEL WHERE SUBJECT TO MECHANICAL DAMAGES SUCH AS IN MECHANICAL SPACES, LOCATED IN SLABS OR LOCATED BELOW 8 FEET OF FINISH GRADE OR WALKING SURFACE AND EXPOSED. MINIMUM SIZE OF CONDUIT IN OR UNDER FLOOR SLAB(S)
- SHALL BE 3/4 INCH. 3. THIN WALL STEEL FLEXIBLE CONDUITS SHALL BE USED FOR CONNECTION TO RECESSED LIGHTING FIXTURES, MOTOR CONNECTIONS AND IN AREAS WHERE INSTALLATION OF RIGID CONDUITS ARE NOT PRACTICAL, OR WHERE MOVEMENT OF THE ITEM IS REQUIRED DUE TO VIBRATION OR FOR MAINTENANCE. FLEXIBLE ALUMINUM
- CONDUITS ARE NOT PERMITTED. 4. ALL CONDUITS SHALL BE CONCEALED FROM VIEW WHEREVER PRACTICAL. ELECTRICAL CONTRACTOR SHALL NOTIFY DESIGNER IF CONCEALMENT CAN NOT BE OBTAINED.
- 5. CONDUITS AND WIRING IN CEILINGS SHALL BE SELF SUPPORTING AND IN NO WAY SHALL BE SUPPORTED BY LIGHTS, FIXTURES OR THEIR SUPPORTS. CONDUITS SHALL BE HELD MINIMUM 7 1/2 INCHES ABOVE GRID IN ACOUSTIC TILE CEILINGS.

# 16120. CONDUCTORS:

- 1. FURNISH ALL CONDUCTOR MATERIALS AND ASSEMBLIES FOR COMPLETION OF JOB. CONDUCTORS SHALL BE COMPLETE IN EVERY DETAIL.
- 2. ALL CONDUCTORS SHALL BE SOFT-DRAWN COPPER AND BE INSULATED WITH 600 VOLT, 75 DEGREES
- CENTIGRADE CODE GRADE INSULATION. 3. ALL CONDUCTORS #8 AWG AND LARGER SHALL BE MADE UP OF STRANDED SINGLE CONDUCTOR CABLE AND SHALL HAVE THWN OR THHN INSULATION AS APPLICABLE. CONDUCTORS IN UNDERGROUND CONDUITS
- AND SERVICE ENTRANCE CONDUCTORS SHALL HAVE XHHW OR THWN INSULATION. 4. ALUMINUM WIRE SHALL NOT PERMITTED

## 16400. ELECTRICAL PANELS:

1. FURNISH ALL ELECTRICAL POWER AND OR LIGHTING PANELS TO COMPLETE JOB. PANEL SYSTEMS SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL ITEMS NECESSARY FOR A PROPER AND FUNCTIONING

# 16500. LIGHTING FIXTURES:

INSTALLATION.

- 1. FURNISH ALL INTERIOR AND EXTERIOR LUMINARIES AS INDICATED ON DRAWINGS, LUMINARIES SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS NECESSARY FOR A PROPER AND
- FUNCTIONING INSTALLATION. 2. LAMPS USED IN LUMINARIES FOR GENERAL LIGHTING IN KITCHEN(S) AND BATHROOMS SHALL HAVE AN EFFICIENCY NOT LESS THAN 25 LUMENS PER WATT. LIGHTING USED FOR SPECIFIC VISUAL TASKS OR
- DECORATIVE EFFECT MAY BE EXEMPTED FROM THIS REQUIREMENT. 3. ALL LIGHTING FIXTURES SHALL HAVE LAMPS INSTALLED.
- 4. SINGLE AND THREE-LAMP FLUORESCENT FIXTURES SHALL BE TANDEM-WIRED TO TWO-LAMP BALLASTS WHERE INSTALLED END TO END.
- 5. ALL RECESSED INCANDESCENT FIXTURES INSTALLED IN GYPSUM BOARD CEILINGS SHALL BE EQUIPPED WITH AUTO-RESETTING THERMAL PROTECTION.

6. ALL LIGHTING FIXTURES SHALL BE SUPPLIED WITH THE MOUNTING ACCESSORIES, TRIMS, AND/OR SHROUDS

NECESSARY TO PROPERLY AND COMPLETELY INSTALL THE FIXTURES IN THE TYPE OF CEILINGS SHOWN ON THE ARCHITECTURAL DRAWINGS. VERIFY PRIOR TO ORDERING. 7. FOR ALL CUSTOM OR SPECIAL LIGHTING FIXTURES, OR WHERE LIGHTING FIXTURES ARE INDICATED TO BE

MOUNTED IN ARCHITECTURAL ELEMENTS, VERIFY FROM JOB SITE CONDITIONS AND MEASUREMENTS, THE

EXACT FIXTURE DIMENSIONS, MOUNTING REQUIREMENTS AND FITTINGS REQUIRED TO INSTALL THE FIXTURES. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION. 8. FIXTURES INSTALLED IN FIRE RESISTIVE WALLS AND CEILINGS SHALL BE INSTALLED IN AN APPROVED FIRE

RESISTIVE MANNER CONSISTENT WITH THE RATING OF THE WALL OR CEILING

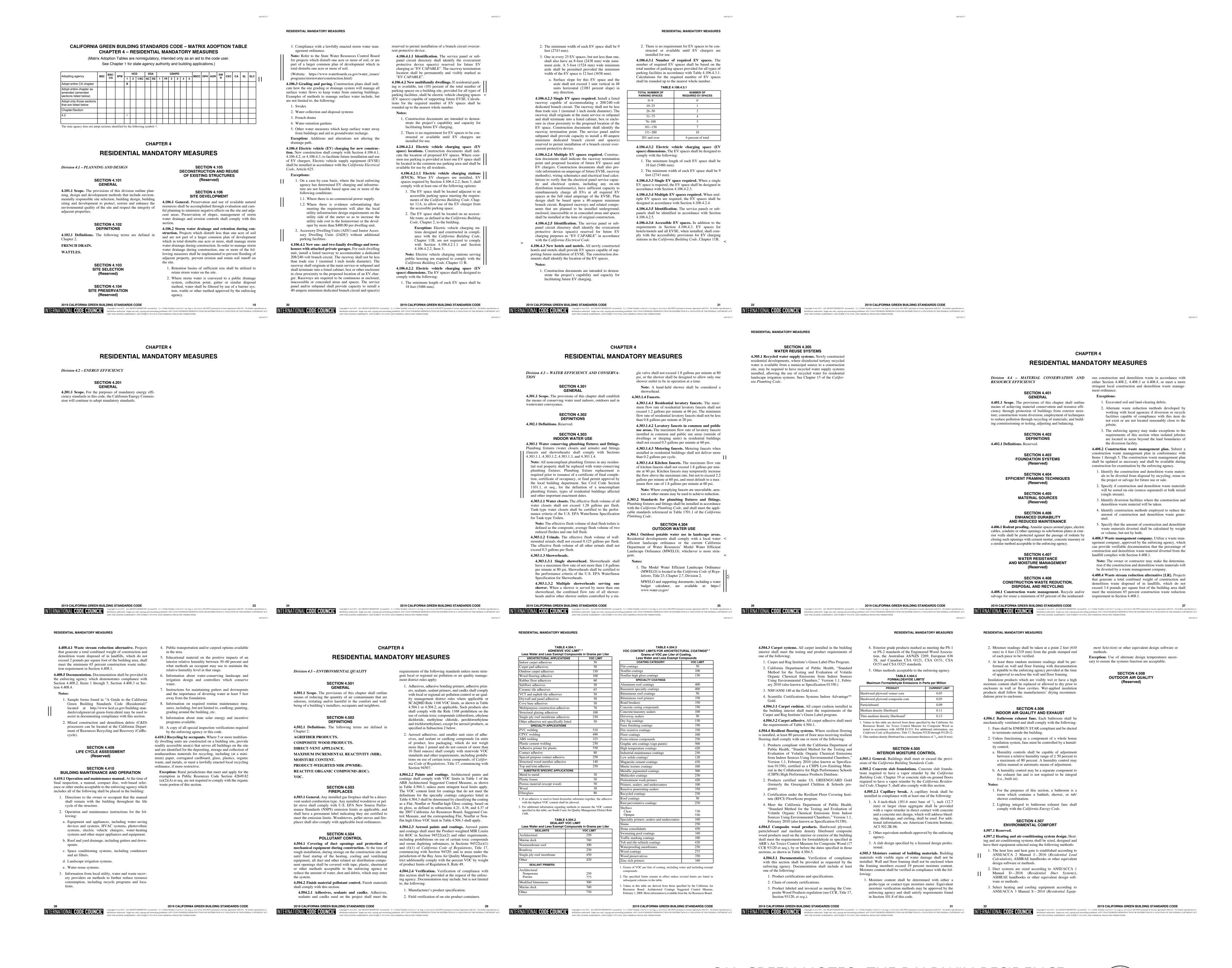
9. ALL LIGHTING FIXTURES SHALL BE U.L. LISTED.

# 16700. COMMUNICATIONS SYSTEMS:

1. FURNISH ALL COMMUNICATION DEVICES AS INDICATED ON DRAWINGS, INCLUDING BUT NOT LIMITED TO: DOOR CHIME SYSTEM, CABLE TELEVISION OUTLETS AND WIRING, INTERCOM SYSTEMS, ETC. COMMUNICATIONS SYSTEMS SHALL BE COMPLETE IN EVERY DETAIL INCLUDING ALL INCIDENTAL ITEMS NECESSARY FOR A PROPER AND FUNCTIONING INSTALLATION.







#### **ENFORCEMENT REQUIREMENTS FOR DOCUMENTATION BY OTHERS**

Certificate of Installation. For all buildings, the person in charge of the construction or installation, who is eligible under Division 3 of the Business and Professions Code to accept responsibility for the construction or installation of features, materials, components, or manufactured devices regulated by Part 6 or the Appliance Efficiency Regulations (responsible person) shall sign and submit Certificate of Installation documentation as specified in Section 10-103(a)3 to certify conformance with Part 6. If more than one person has responsibility for the construction or installation, each person shall sign and submit the Certificate of Installation documentation applicable to the portion of the construction or installation for which they are responsible; alternatively, the person with chief responsibility for the construction or installation shall sign and submit the Certificate of Installation documentation for the entire construction or installation scope of work for the project. Subject to the requirements of Section 10-103(a)3, persons who prepare Certificate of Installation documentation (documentation authors) shall sign a declaration statement on the documents they prepare to certify the information provided on the documentation is accurate and complete. In accordance with applicable requirements of 10-103(a)3, the signatures provided by responsible persons and documentation authors shall be original signatures on paper documents or electronic signatures on electronic documents conforming to the electronic

signature specifications in Reference Joint Appendix JA7. Certificate of Field Verification and Diagnostic Testing (Certificate of Verification). For all buildings for which compliance requires HERS field verification, a certified HERS Rater shall conduct all required HERS field verification and diagnostic testing in accordance with applicable procedures specified in Reference Appendices RA2, RA3, NA1, and NA2. All applicable Certificate of Verification documentation shall be completed, signed, and submitted by the certified HERS Rater who performed the field verification and diagnostic testing services (responsible person) in accordance with the requirements of Section 10- 103(a)5, and Reference Appendices RA2, and NA1, to certify conformance with Part 6. If more than one rater has responsibility for the HERS verification for the building, each rater shall sign and submit the Certificate of Verification documentation applicable to the portion of the building for which they are responsible. Subject to the requirements of Section 10-103(a)5, persons who prepare Certificate of Verification documentation (documentation authors) shall sign a declaration statement on the documents they prepare to certify the information provided on the documentation is accurate and complete. The signatures provided by responsible persons and documentation authors shall be electronic signatures on

Compliance, Operating, Maintenance, and Ventilation Information to be provided by Builder.

- A. For low-rise residential buildings, at final inspection, the enforcement agency shall require the builder to leave in the building, copies of the completed, signed, and submitted compliance documents for the building owner at occupancy. For low-rise residential buildings, such information shall, at a minimum, include copies of all Certificate of Compliance, Certificate of Installation, and Certificate of Verification documentation submitted. These documents shall be in paper or electronic format and shall conform to the applicable requirements of
- 2. Operating information. At final inspection, the enforcement agency shall require the builder to leave in the building, for the building owner at occupancy, operating information for all applicable features, materials, components, and mechanical devices installed in the building. Operating information shall include instructions on how to operate the features, materials, components, and mechanical devices correctly and efficiently. The instructions shall be consistent with specifications set forth by the Executive Director. For low-rise residential buildings, such information shall be contained in a folder or manual which provides all information specified in Section 10-103(b). This operating information shall be in paper or electronic format. For dwelling units, buildings or tenant spaces that are not individually owned and operated, or are centrally operated, such information shall be provided to the person(s) responsible for operating the feature, material, component or mechanical device installed in the
- building. This operating information shall be in paper or electronic format. Maintenance information. At final inspection, the enforcement agency shall require the builder to leave in the building, for the building owner at occupancy, maintenance information for all features, materials, components, and manufactured devices that require routine maintenance for efficient operation. Required routine maintenance actions shall be clearly stated and incorporated on a readily accessible label. The label may be limited to identifying, by title and/or publication number, the operation and maintenance manual for that particular model and type of feature, material, component or manufactured device. For Low-rise residential buildings, this information shall include a schedule of all interior luminaires and lamps installed to comply with Section 150.0(k). This information shall be in paper or electronic format.
- 4. Ventilation information. A. For low-rise and high-rise residential buildings, the enforcement agency shall require the builder to leave in the following information in the
  - i. A description of the quantities of outdoor air that the whole-dwelling unit ventilation system(s) are designed to provide to the building's conditioned space, and instructions for proper operation and maintenance of the ventilation system. ii. Instructions for proper operation and maintenance of local exhaust systems, including instructions for conditions for which any occupant-
- controlled systems such as kitchen range hoods and bathroom exhaust fans should be used. For buildings or tenant spaces that are not individually owned and operated, or are centrally operated, Compliance, Operating, Maintenance & Ventilation

information shall be provided to the person(s) responsible for operating and maintaining the feature, material, component or mechanical ventilation device installed in the building.

#### INDOOR AIR QUALITY AND MECHANICAL VENTILATION

§150.0(o): Requirements for Ventilation and Indoor Air Quality. All dwelling units shall meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in Section 150.0(o)1 below. All dwelling units shall comply with Section 150.0(o)2 below.

§150.0(o)1. Amendments to ASHRAE 62.2 requirements.

and 6.7.1 (Filter Pressure Drop) shall not be required.

- A. Window operation is not a permissible method of providing the dwelling unit ventilation airflow specified in Section 150.0(o)1c. B. Continuous operation of central forced air system air handlers used in ventilation systems is not a permissible method of providing the
- dwelling unit ventilation airflow required in Section 150.0(o)1C. C. 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 shall have mechanical ventilation airflow as specified in subsections i, ii, and iii. D. Air filtration shall conform to the specifications in Section 150.0(m)12. Compliance with ASHRAE 62.2 Sections 6.7 (Minimum Filtration)
- E. Multifamily attached dwelling units shall have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B [ASHRAE 62.2:4.1.1], and comply with one of the following subsections i or ii below. When subsection ii below is utilized for compliance, all dwelling units in the multifamily building shall use the same ventilation system type. i. A balanced ventilation system shall provide the required dwelling-unit ventilation airflow, or
- ii. Continuously operating supply ventilation systems, or continuously operating exhaust ventilation systems shall be allowed to be used to provide the required dwelling unit ventilation airflow if the dwelling-unit envelope leakage is less than or equal to 0.3 cubic feet per minute at 50 Pa (0.2 inch water) per ft2 of dwelling unit envelope surface area as confirmed by field verification and diagnostic testing in accordance with the procedures specified in Reference Residential Appendix RA3.8.
- F. Multifamily building central ventilation systems that serve multiple dwelling units shall be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B [ASHRAE 62.2:4.1.1], but no more than twenty percent greater than the specified rate. These systems shall utilize balancing means to ensure the dwelling-unit airflows can be adjusted to meet this balancing requirement. These system balancing means may include but not be limited to constant air regulation devices, orifice plates, and variable speed central fans.
- G. A local mechanical exhaust system shall be installed in each kitchen and bathroom. Systems shall be rated for airflow in accordance with ASHRAE 62.2 Section 7.1 and shall be rated for sound in accordance with Section 7.2 of AHRAE 62.2 at no less than the minimum airflow rate required by Section 150.0(o)1Gi, ii, iii, iv, v and vi.
- H. The airflow required by Section 150.0(o)1C is the quantity of outdoor ventilation air supplied or indoor air exhausted by the mechanical ventilation system as installed and shall be measured by using a flow hood, flow grid or other airflow measuring device at the mechanical ventilation fan's inlet terminals/grilles or outlet terminals/grilles in accordance with the procedures in Reference Residential Appendix RA3.7. Balanced mechanical ventilation system airflow shall be the average of the supply fan and exhaust fan flows. I. Dwelling unit ventilation systems shall be rated for sound in accordance with Section 7.2 of AHRAE 62.2 at no less than the minimum
- airflow rate required by Section 150.0(o)1C. J. Compliance with AHSRAE 62.2 Section 4.4 (Control and Operation) shall require manual ON-OFF control switches associated with wholedwelling unit ventilation systems to have a label clearly displaying the following text, or equivalent text: "This switch controls the indoor air
- quality ventilation for the home. Leave switch in the 'on' position at all times unless the outdoor air quality is very poor. K. All dwelling units shall conform to the applicable requirements specified in California Mechanical Code Chapter 7, Combustion Air and shall conform to the requirements in AHRAE 62.2 Section 6.4, Combustion and Solid-Fuel-Burning Appliances.
- §150.0(o)2. Field Verification and Diagnostic Testing. A. Airflow Performance. The dwelling unit ventilation airflow required by Sections 150.0(o)1C shall be confirmed through field verification and diagnostic testing in accordance with the applicable procedures specified in Reference Residential Appendix RA3.7. Balanced mechanical ventilation system airflow shall be the average of the supply fan and exhaust fan flows. Ventilation airflow of systems with multiple operating modes shall be tested in all modes designed to comply with the required ventilation airflows.
- B. Kitchen Range Hoods. Vented range hoods installed to comply with local mechanical exhaust requirements specified in Section 150.0(o)1G shall be field verified in accordance with the procedures in Reference Residential Appendix RA3.7.4.3 to confirm the model is rated by HVI or AHAM to comply with the following requirements
- i. The minimum ventilation airflow rate as specified by Section 150.0(o)1G, or alternatively the minimum capture efficiency as specified by Section 150.0(o)1G. ii. The maximum sound rating as specified in Section 150.0(o)1Gvi. C. Heat Recovery Ventilation (HVR) and Energy Recovery Ventilation (ERV) System Fan Efficacy. Systems with heat or energy
- recovery serving a single dwelling unit shall have a fan efficacy of ≤1.0 w/cfm as confirmed by HERS field verification in accordance with Reference Appendix RA3.7.4.4.

#### §150.2(a)1C and §150.2(a)2C: Mechanical Ventilation for Indoor Air Quality for Additions. b. Additions to an existing dwelling unit that increase the conditioned floor area of the existing dwelling unit by more than 1,000 square

feet shall have mechanical ventilation airflow in accordance with Sections 150.0(o)1C, 150.0(o)1E, or 150.0(o)1F as applicable. The dwelling unit mechanical ventilation airflow rate shall be based on the conditioned floor area of the entire dwelling unit comprised of the existing dwelling unit conditioned floor area plus the addition conditioned floor area. c. New dwelling units that are additions to an existing building shall have mechanical ventilation airflow provided in accordance with Sections 150.0(o)1C, 150.0(o)1E, or 150.0(o)1F as applicable. The mechanical ventilation airflow rate shall be based on the conditioned floor area of the new dwelling unit.

The following summarizes the key requirements for most newly constructed residences.

- 1. A dwelling unit mechanical ventilation system shall be provided. The Airflow rate provided by the system shall be confirmed through field verification and diagnostic testing in accordance with the applicable procedures specified in Reference Residential Appendix RA3.7 2. Kitchens and bathrooms shall have local exhaust systems vented to the outdoors.
- 3. Clothes dryers shall be vented to the outdoors. 4. Ventilation air shall come from the outdoors and shall not be transferred from adjacent dwelling units, garages, unconditioned attics or
- 5. Ventilation system controls shall be labeled and the home owner shall be provided with instructions on how to operate the system. 6. Combustion appliances shall be properly vented and air systems shall be designed to prevent back drafting. 7. The walls and openings between the house and the garage shall be sealed or gasketed.
- 8. Habitable rooms shall have windows with a ventilation area of at least 4 percent of the floor area.
- 9. Mechanical systems including heating and air-conditioning systems that supply air to habitable spaces shall have MERV 13 filters or better and be designed to accommodate the system's air filter media rated pressure drop for the system design airflow rate. 10. Dedicated air inlets (not exhaust) that are part of the ventilation system design shall be located away from known contaminants. 11. A carbon monoxide alarm shall be installed in each dwelling unit in accordance with NFPA 720.
- 12. Air-moving equipment used to meet the dwelling unit ventilation requirement and the local ventilation exhaust requirement shall be rated a. Dwelling unit ventilation and continuously operating local exhaust fans must be rated at a maximum of 1.0 sone (measurement of
- b. Demand-controlled local exhaust fans must be rated at a maximum of 3.0 sone. c. Kitchen exhaust fans must be rated at a maximum of 3.0 sone at one or more airflow settings greater than or equal to 100 CFM.
- d. Remotely located air-moving equipment (mounted outside habitable spaces) are exempt from the sound requirements provided there is at least 4 feet of ductwork between the fan and the interior grille.

#### 150.0(n) WATER HEATING SYSTEM.

- 1. Systems using gas or propane water heaters to serve individual dwelling units shall designate a space at least 2.5 feet by 2.5 feet wide and 7 feet tall suitable for the future installation of a heat pump water heater (HPWH) by meeting either A or B below. All electrical components shall be installed
- in accordance with the California Electrical Code: A. If the designated space is within 3 feet from the water heater, then this space shall include
- i. A dedicated 125 volt, 20 amp electrical receptacle that is connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within 3 feet from the water heater and accessible to the water heater with no obstructions; and
- ii. Both ends of the unused conductor shall be labeled with the word "spare" and be electrically iii. A reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker
- for the branch circuit in A above and labeled with the words "Future 240V Use"; and iv. A condensate drain that is no more than 2 inches higher than the base of the installed water heater, and allows natural draining without pump assistance.
- B. If the designated space is more than 3 feet from the water heater, then this space shall include the i. A dedicated 240 volt branch circuit shall be installed within 3 feet from the designated space. The
- branch circuit shall be rated at 30 amps minimum. The blank cover shall be identified as "240V ready"; and ii. The main electrical service panel shall have a reserved space to allow for the installation of a
- permanently marked as "For Future 240V use"; and iii. Either a dedicated cold water supply, or the cold water supply shall pass through the designated HPWH location just before reaching the gas or propane water heater; and

double pole circuit breaker for a future HPWH installation. The reserved space shall be

through the designated HPWH location before serving any fixtures; and v. The hot and cold water piping at the designated HPWH location shall be exposed and readily accessible for future installation of an HPWH; and vi. condensate drain that is no more than 2 inches higher than the base of the installed water heater,

iv. The hot water supply pipe coming out of the gas or propane water heater shall be routed first

- and allows natural draining without pump assistance. 2. Water heating recirculation loops serving multiple dwelling units shall meet the requirements of Section
- 3. Solar water-heating systems and collectors shall 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. 4. Instantaneous water heaters with an input rating greater than 6.8 kBTU/hr (2kW) shall meet the requirements of Section 110.3(c)6.

#### Table 150.0-E Demand-Controlled Local Ventilation Exhaust Airflow Rates and Capture Efficiency Compliance Criteria

Enclosed Kitchen or Nonenclosed Kitchen	Vented range hood, including appliance-range hood combinations shall meet either the capture efficiency (CE) or the airflow rate specified in Table 150.0-G as applicable.			
Enclosed Kitchen	Other kitchen exhaust fans, including downdraft: 300 cfm (150 L/s) or a capacity of 5 ACH			
Nonenclosed Kitchen	Other kitchen exhaust fans, including downdraft: 300 cfm (150 L/s)			
Bathroom	50 cfm (25 L/s)			

velling Unit Floor Area (ft²)	Hood Over Electric Range	Hood Over Natural Gas Range
According to L	Dwelling Unit Floor Area and Kitchen Re	ange Fuel Type
able 150.0-G Kitchen Range Ho	od Airflow Rates (cfm) and ASTM E308	37 Capture Efficiency (CE) Ratings

Dweiling Unit Floor P	Hood Over Electric Range						nood Over ivatural Gas kange						
>1500			50% CE or 110 cfm					70% CE or 180 cfm					
>1000 - 1500			50% CE or 110 cfm					80% CE or 250 cfm					
750 - 1000		55% CE or 130 cfm					85% CE or 280 cfm				***************************************		
<750			65% CE or 160 cfm 85% CE or 280 cfm					cfm					
Table 15	0.0-Н I	Prescrip	tive Ve	ntilatio	n Syste	m Duc	t Sizing	[ASHR/	4E 62.2	:Table	5-3]		
Fan Airflow Rating,													
cfm at minimum static	≤50	≤80	≤100	≤125	≤150	≤175	≤200	≤250	≤350	≤400	≤450	≤700	≤800
pressure <sup>f</sup> <b>0.25</b> in. water (25) (40)		(50)	(60)	(70)	(85)	(95)	(120)	(165)	(190)	(210)	(330)	(380)	
(L/s at minimum 62.5 Pa)													
Minimum Duct Diameter,	4	5	5	6	6	7	7	8	9	10	10	12	12

elbows to have a minimum bend radius to duct diameter ratio of 1.0. f. When a vented range hood utilizes a capture efficiency rating to demonstrate compliance with 150.0(o)1Giiib, a static pressure greater than or equal to 0.25 in. of water at the rating point shall not be required, and the airflow listed in the approved directory corresponding to the compliant capture efficiency rating point shall be applied to Table 150.0-H for determining compliance.

Use of this table for verification of flex duct systems requires flex duct to be fully extended and any flex duct

Minimum Duct Diameter, 4 5 6 6 7 7 8 8 9 10 NP NP

#### Prior to final inspection an electronically signed and registered copy of the following checked CF2R & CF3R installation certificates and verification/diagnostic testing certificates shall be posted and made available to the

Verification Certificate	Installation Certificate	Document	Category	Document
CF3R (HERS)	CF2R	Category	Description	Description
			Envelope	
	X	ENV-01	Non HERS	Fenestration/Glazing
			Envelope	
	X	ENV-03	Non HERS	Insulation Installation
			Envelope	Roofing - Ventilation
		ENV-04	Non HERS	Cool Roof or Radiant Barrier (If Required)
			Envelope	Building Envelope Air Leakage
		ENV-20H	HERS	Blower Door Test
		ENV-	Envelope	
****		21H-22H	HERS	Quality Insulation Installation (QII)
			Lighting	
	Х	LTG-01	Non HERS	Single Family Lighting
			Lighting	
		LTG-02	Non HERS	Multi-Family Lighting
			Mechanical	HVAC Systems & Ducts
···	X	MCH-01	Non HERS	Return Air Filter Labeling
		140110011	Mechanical	Duct Leakage Test
		MCH-20H	HERS	Low Leakage Air Handler (LLAH)
		MOLLOGIA	Mechanical	Duct Location
		MCH-21H	HERS	Conditioned Space
		MOLLOOLI	Mechanical	F \\\( \text{\tint{\text{\tin}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tex{\tex
		MCH-22H	HERS	Fan Watt Draw Efficacy (FWD)
		MCH-23H	Mechanical HERS	Cooling Coil Airflow (CCA)
***************************************		WCH-Z3H	Mechanical	(350 CFM/Ton)
		MCH-25H	HERS	Refrigerant Charge Verification
		WC11-2311	Mechanical	Heat/Pump Capacity
		MCH-26H	HERS	SEER & EER & HSPF Verification
		1011-2011	Mechanical	Indoor Air Quality & Mechanical Ventilation
		MCH-27H	HERS	ASHRAE 62.2 (Continuous Fan)
		MOIT ZIII	Mechanical	Supply Duct Surface Area.
		MCH-29H	HERS	R-Value & Buried Ducts
			Mechanical	TO VALLE & DATE DATE
		MCH-02	Non HERS	Whole House Fan
		MCH-31H	HERS	***************************************
			Mechanical	
		MCH-32H	HERS	Local Mechanical Exhaust
			Plumbing	
		PLB-01	Non HERS	
		PLB-21H	HERS	Multi-Family Hot Water Distribution System
			Plumbing	
		PLB-02	Non HERS	
		PLB-22H	HERS	Single Family Hot Water Distribution System
		PVB-01	Solar	Solar Photovoltaic System
		PVB-02	Non HERS	Solar Battery Storage

se coordinate with the subcontractors and HERS rater the importance of having the above checked certificates filled out on time to prevent any hold-ups during final inspection. The Certificate of Occupancy will not be issued until the CF2R & CF3R certificates are reviewed and approved by the enforcement agency. Keep in mind that some of these items need to be inspected by the HERS rater prior to drywall.

# 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

(04/2022) uilding Envolo	
Building Envelo	
§ 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):	<b>Wall Insulation.</b> 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.
ireplaces, Deco	prative 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.
3	Combustion Intake. Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in

§ 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. *						
pace Conditionir	ng, 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-off 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:	<b>Insulation.</b> 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:	<b>Isolation Valves.</b> Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.						
§ 110.5:	Pilot Lights. Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour ); and pool and						
~~~~	spa heaters. *						
§ 150.0(h)1:	Building Cooling and Heating Loads. Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.						

• ( )	dryer.
§ 150.0(h)3B:	<b>Liquid Line Drier.</b> 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 water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(n)1:	Gas or Propane Water Heating Systems. Systems using gas or propane water heaters to serve individual dwelling units must 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
	Solar Water-heating Systems. Solar water-heating systems and collectors must be certified and rated by the Solar Rating and

Clearances. Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any

Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO

ucts 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 1/4", 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 closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
0.450.04.10	Field-Fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes,

R&T), or by a listing agency that is approved by the executive director.

0/m\10:	Paraua Innex Care Elex Duet Dereus innex cares of flex duete must have a non-nexus layer as air harries between the innex care and
.0(m)9:	Protection of Insulation. Insulation must be protected from damage due to sunlight, 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 painted with a water retardant and solar radiation-resistant coating.
.0(m)8:	<b>Gravity Ventilation Dampers.</b> 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.
.0(m)7:	Backdraft Damper. Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
.0(m)3:	mastics, sealants, and other requirements specified for duct construction.

150.0(111)9:	cover). Cellular foam insulation must be protected as above or painted with a water retardant 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.	article (character)
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	

n)12:	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. *	финанциализменности
n)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 $\geq 350$ CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy $\leq 0.45$ watts per CFM for gas furnace air	<b>Внестропринатичности</b>

Air Filtration. Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13

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: 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. \* Central Fan Integrated (CFI) Ventilation Systems. Continuous operation of CFI air handlers is not allowed to provide the wholedwelling 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 and controlled 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 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.

Local Mechanical Exhaust. Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demandcontrolled exhaust system meeting requirements of §150.0(o)1Giii.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)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 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 nust 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

Lighting:	
§ 110.9:	<b>Lighting Controls and Components.</b> 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 liner 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).
§ 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 a 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:	Single-family Residences. Single-family residences located in subdivisions with 10 or more single-family residences and where the
§ 110.10(a)1:	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).

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)1A: square feet each for buildings with roof areas greater than 10,000 square feet. For single-family residences, the solar zone must be

§ 110.10(b)3B: horizontal distance of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the

Minimum Solar Zone Area. The solar zone must have a minimum total area as described below. The solar zone must comply with

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

Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof

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

access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other parts of Title 24 or in any

3	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):	<b>Documentation.</b> 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."
lectric and Ene	rgy Storage Ready:
§ 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, <u>or</u> 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 o 225 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the ma 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 cove 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 wit 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."

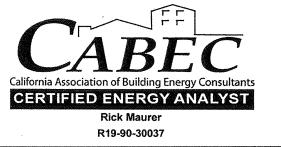
\*Exceptions may apply.

§ 110.10(b)3A: mounted equipment

§10-111 Labeling Requirements: All fenestration shall comply with this section when implementing temporary and permanent labeling using National Fenestration Rating Council (NFRC) certification requirements showing the U-factors, Solar Heat Gain Coefficients (SHGC), Visible Transmittance (VT) and Air Leakage for fenestration products under Section 110.6(a) of part 6.

# STATEMENT OF CONFORMANCE

These Calculations contain all the building features and performance specifications required for compliance by the California Code of Regulations Title 24, Part 1, Administrative Requirements; Part 6, Building Energy Efficiency Standards; and portions of Title 20, Appliance Efficiency Standards. When these features are incorporated into the architectural plans the design will be in compliance with the 2022 Energy Efficiency Standards as they apply in the specified Climate Zone for residential buildings using a California Energy Commission approved compliance method.



Date 5 /24 /23 Drawn R.A.M.

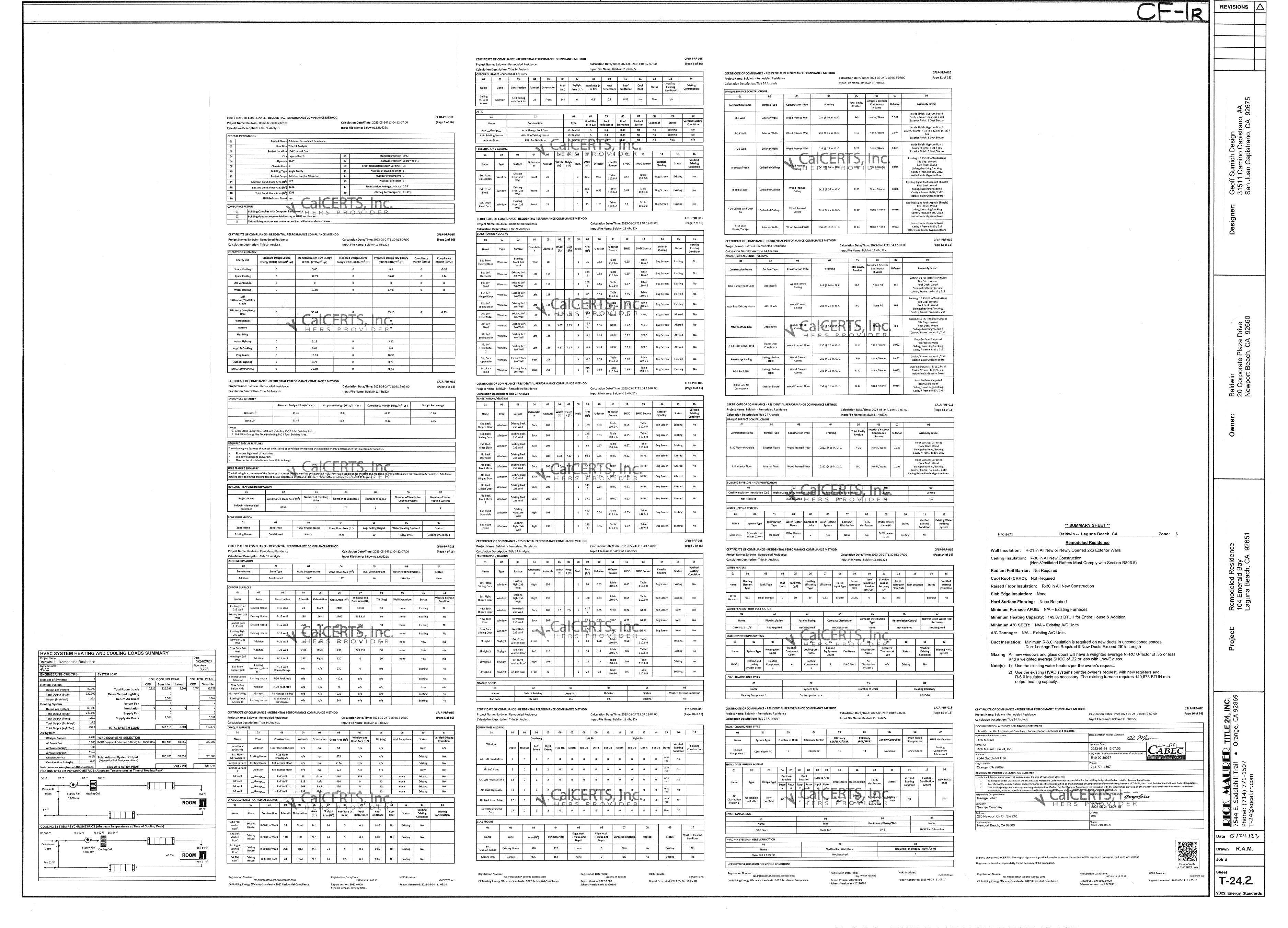
REVISIONS

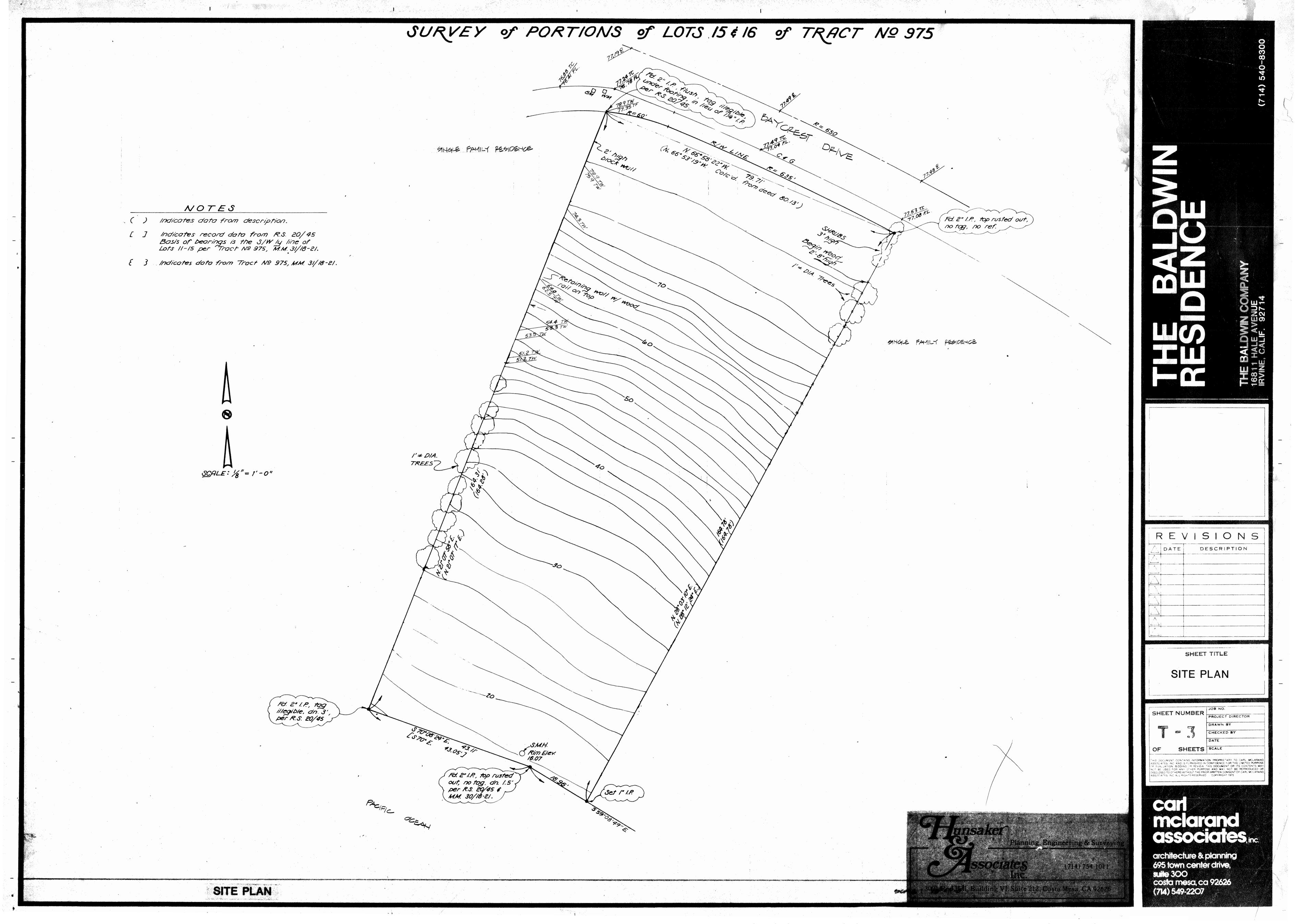
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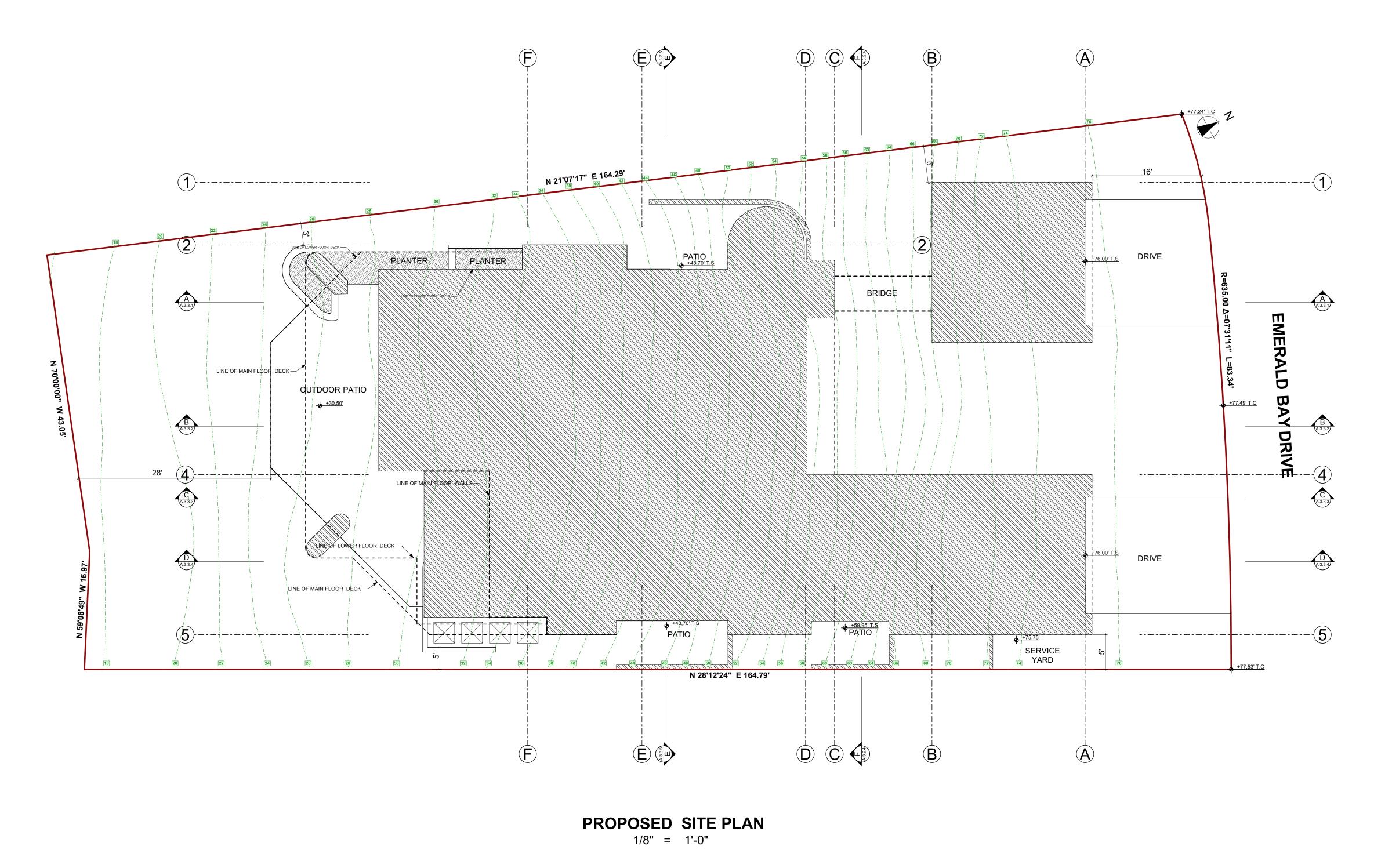
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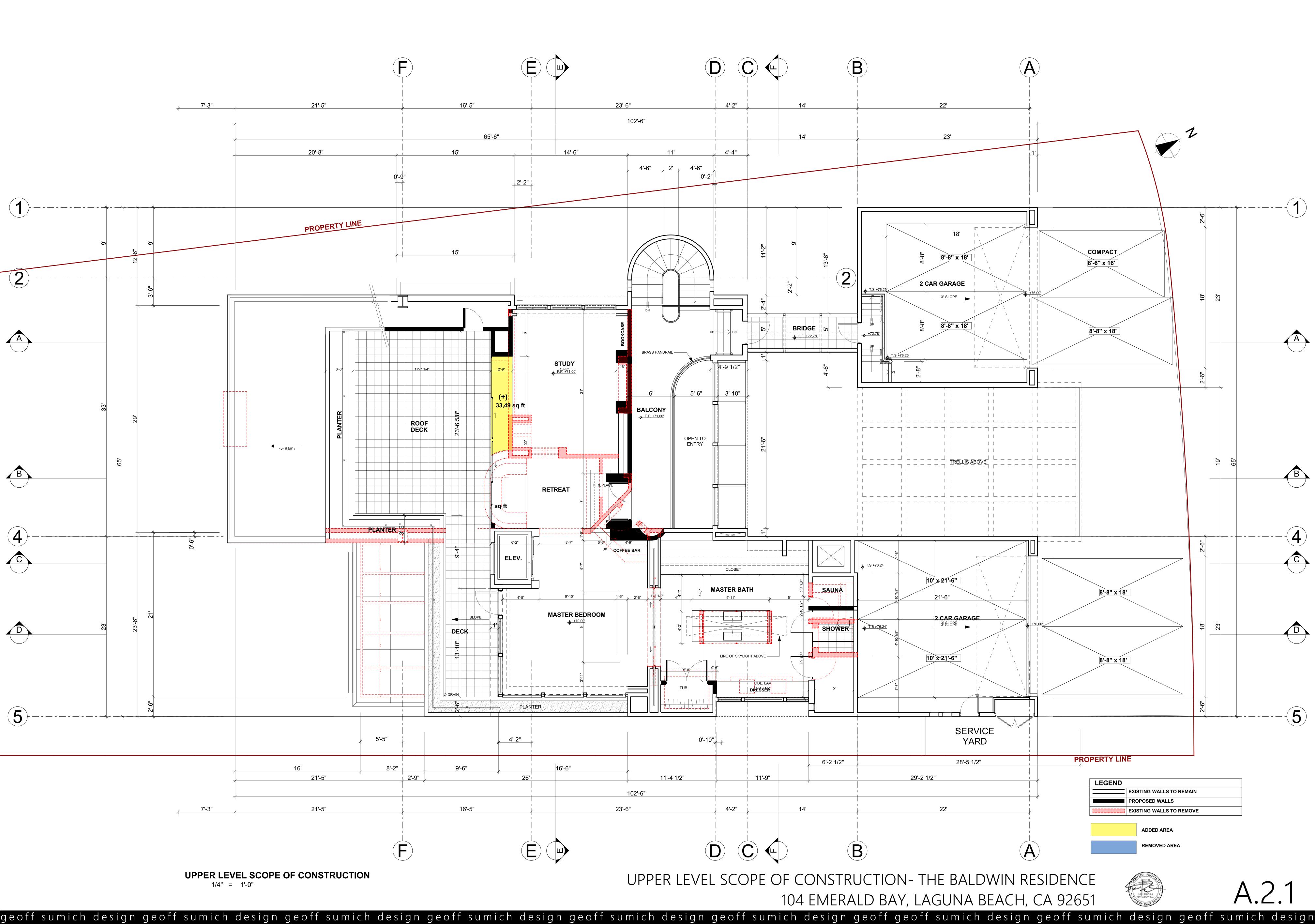
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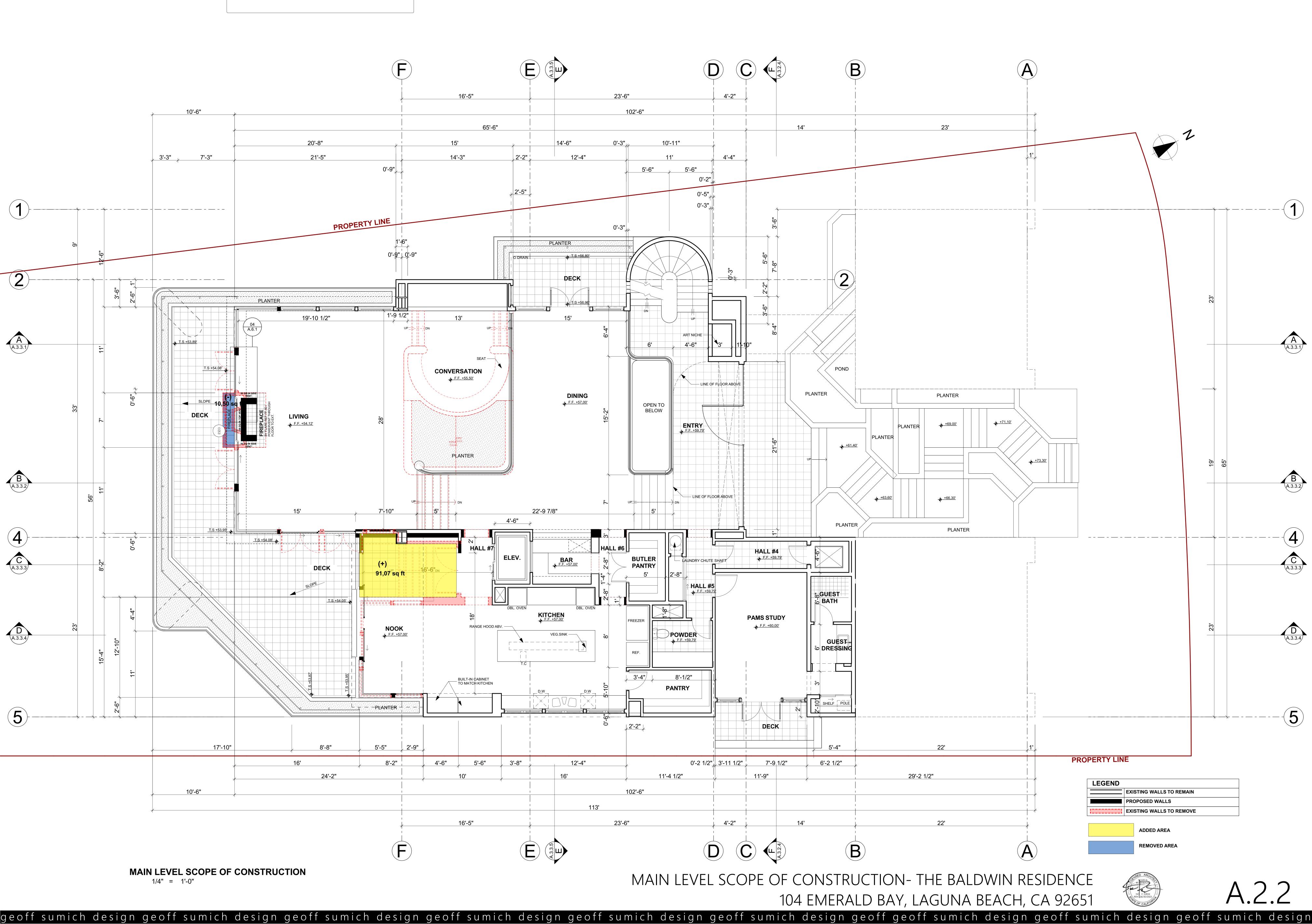


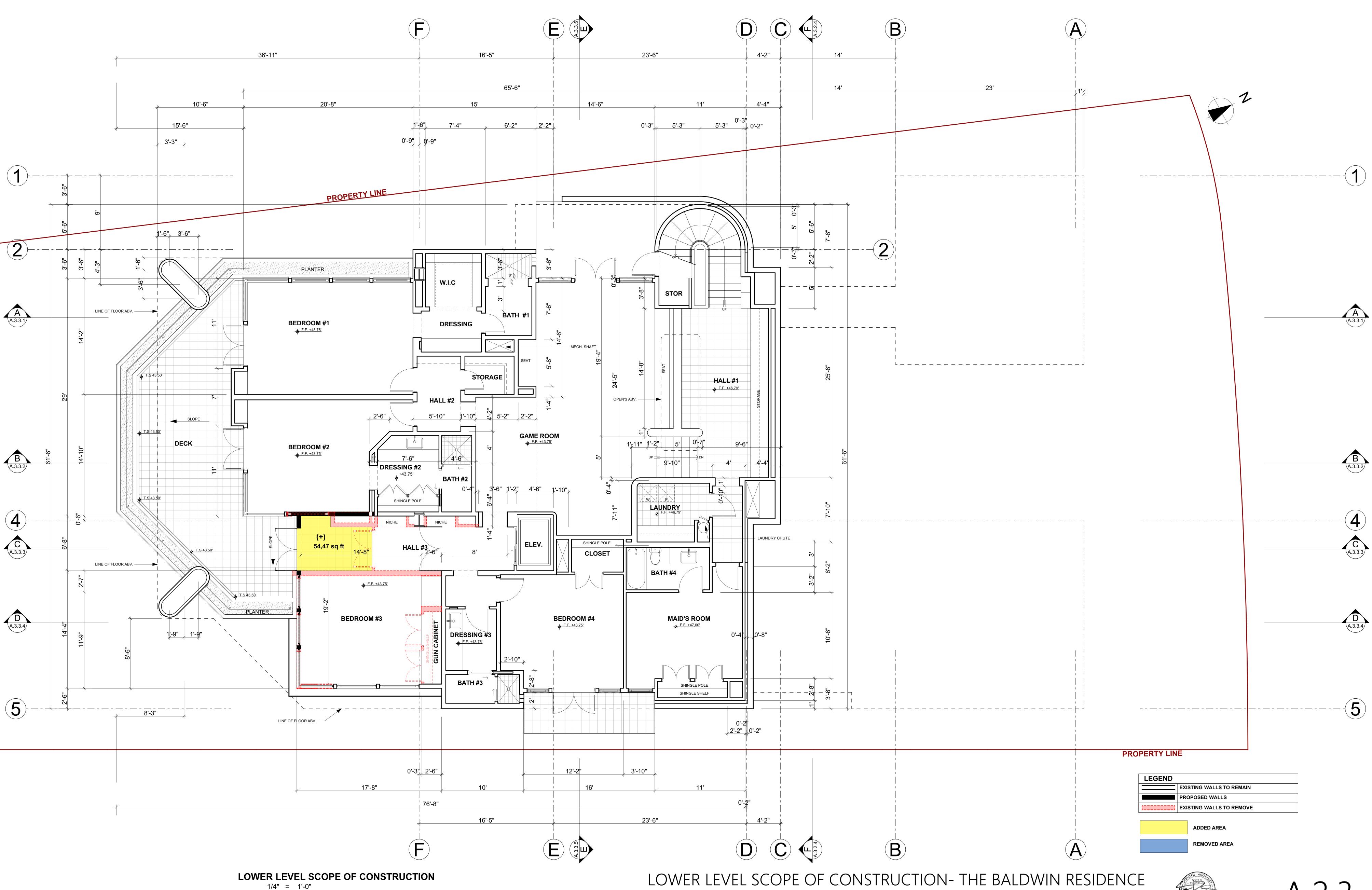




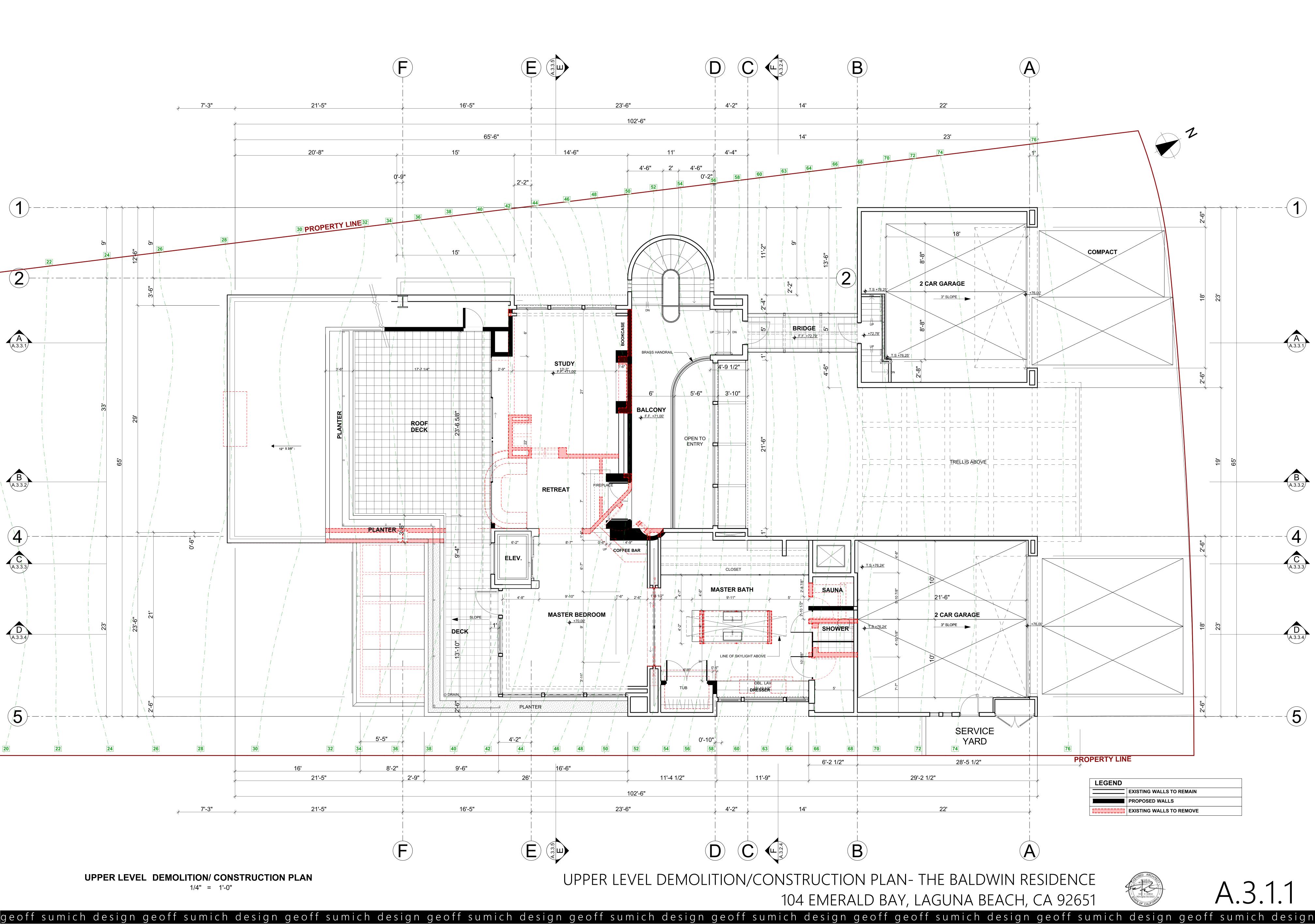
NOTE: ALL LANDSCAPE AND HARDSCAPE TO REMAIN AS EXISTING

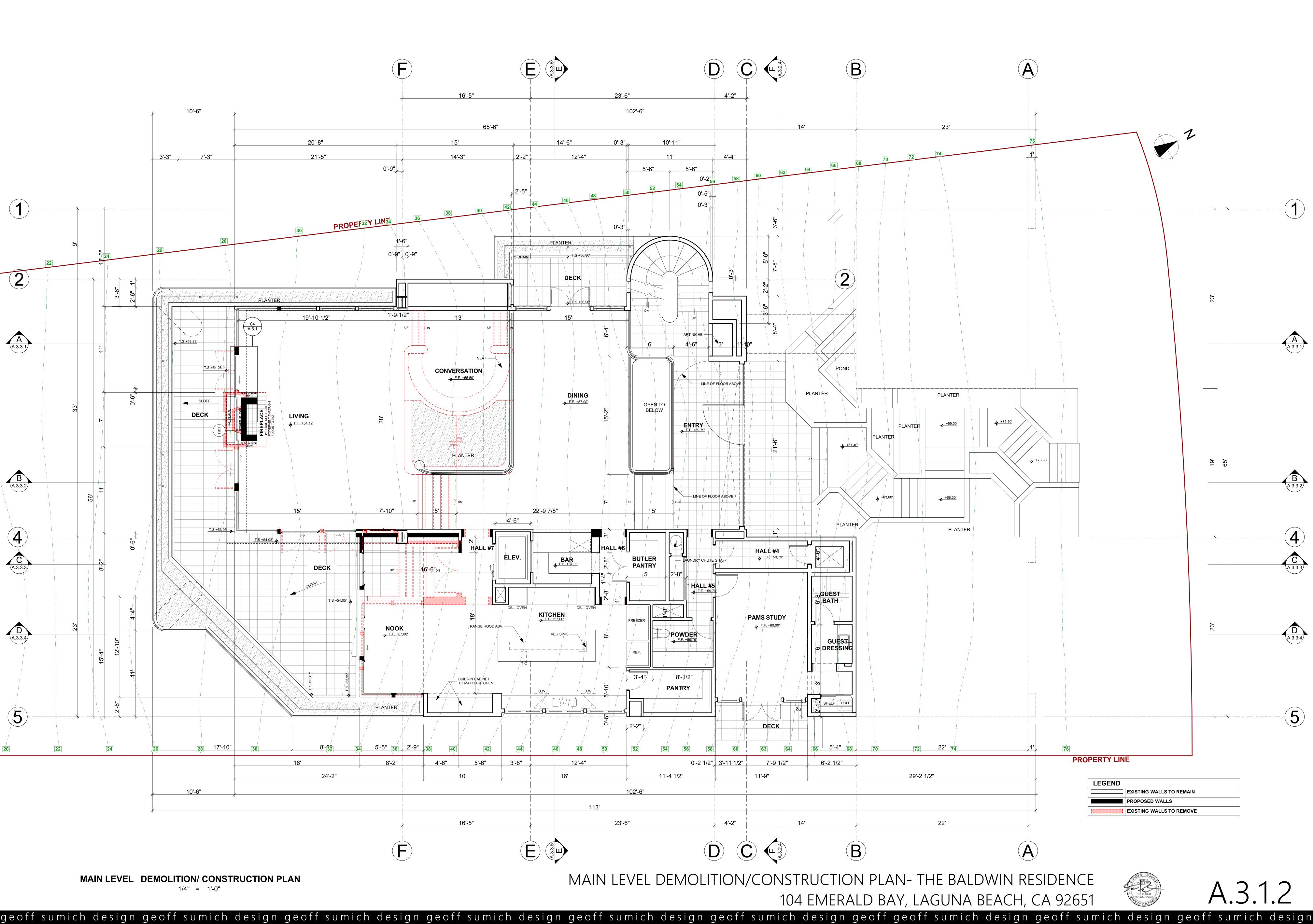


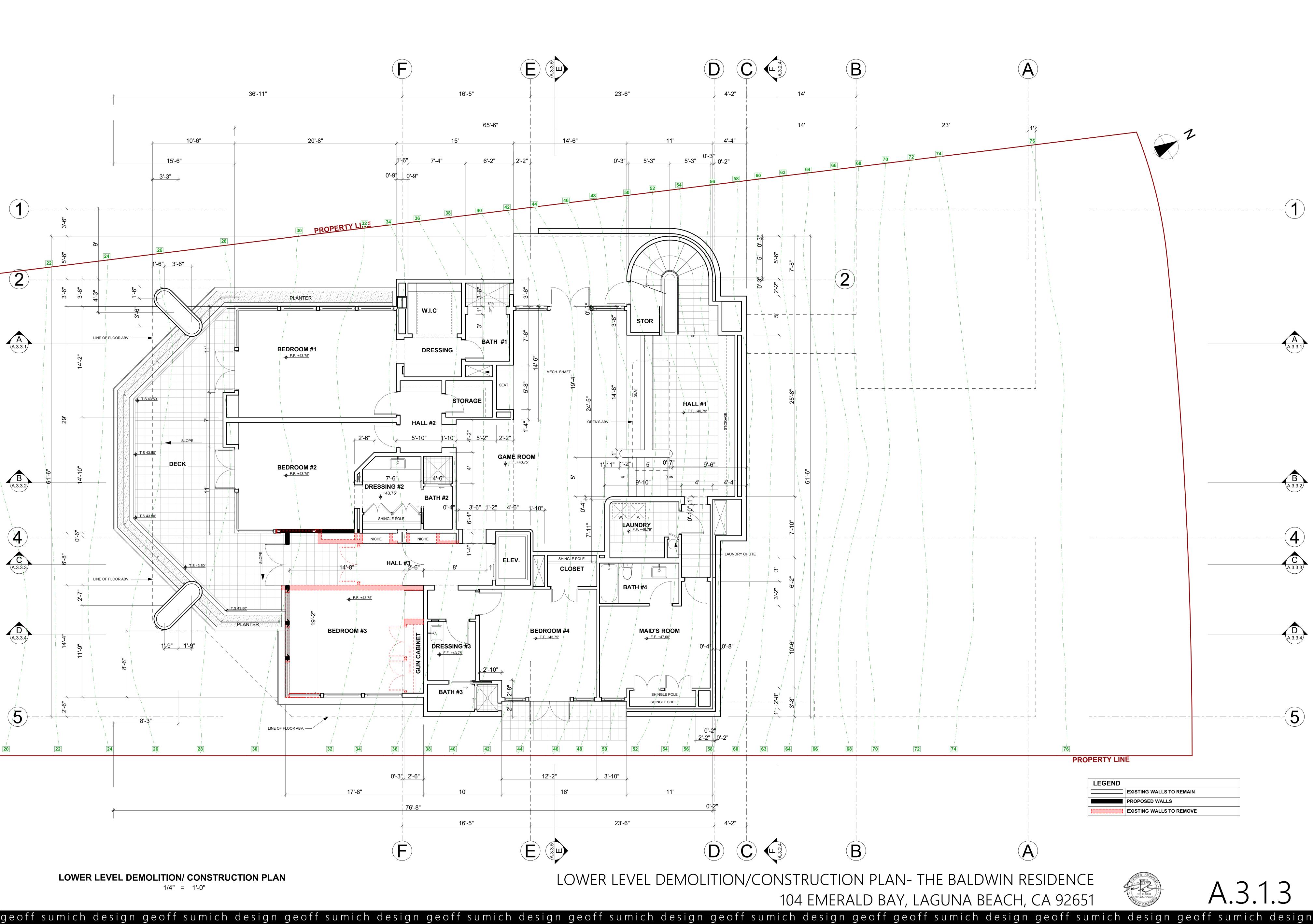


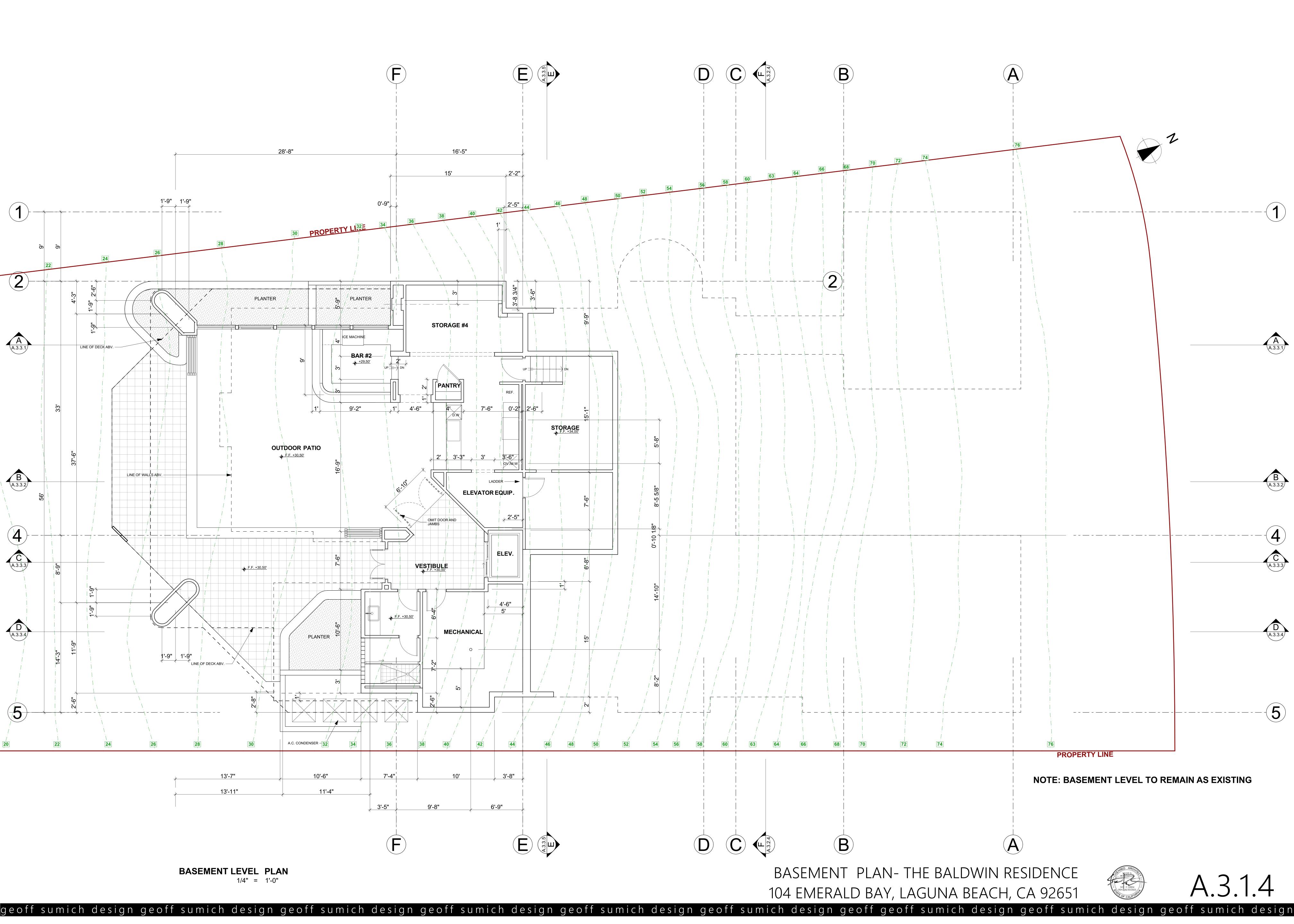


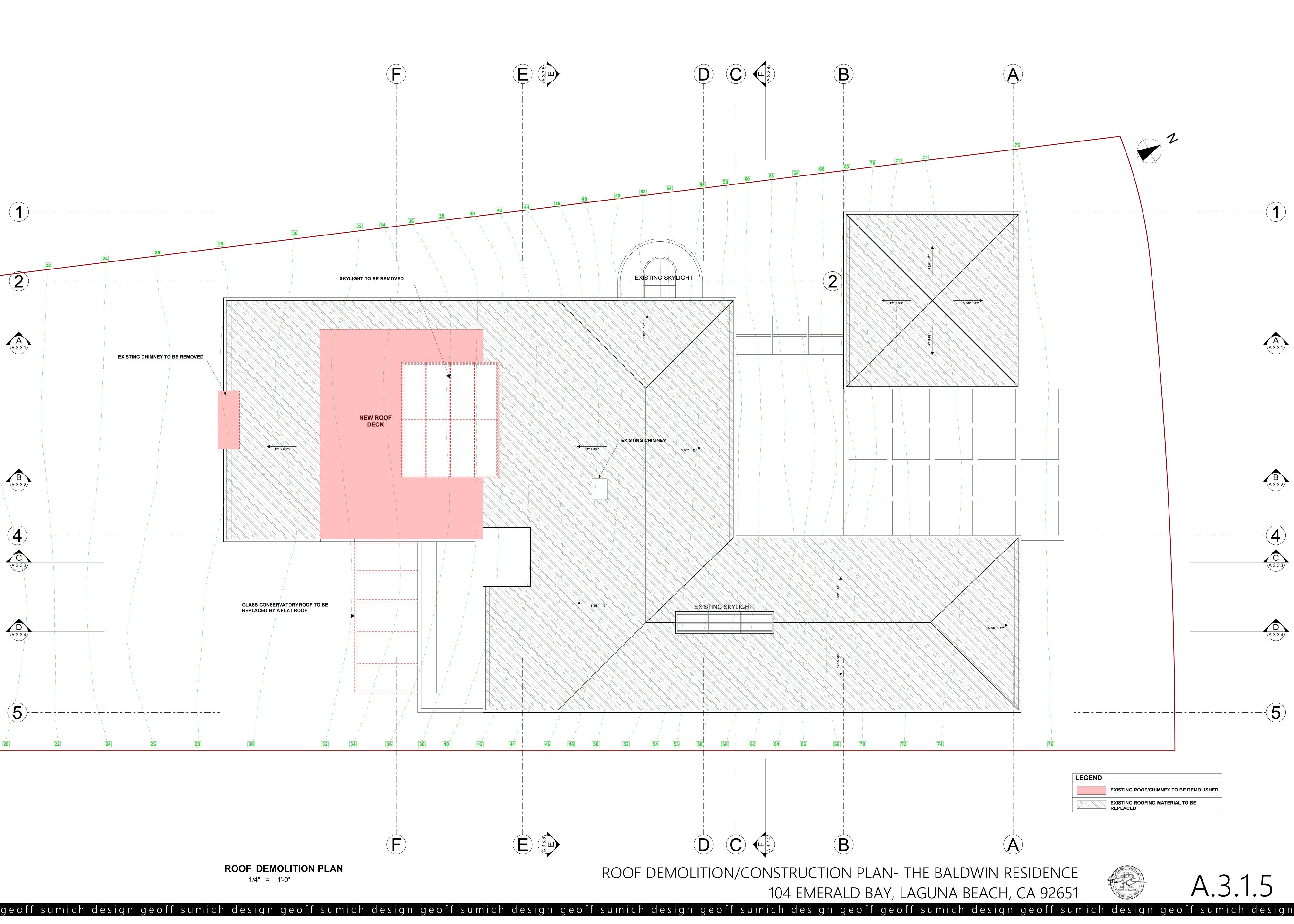
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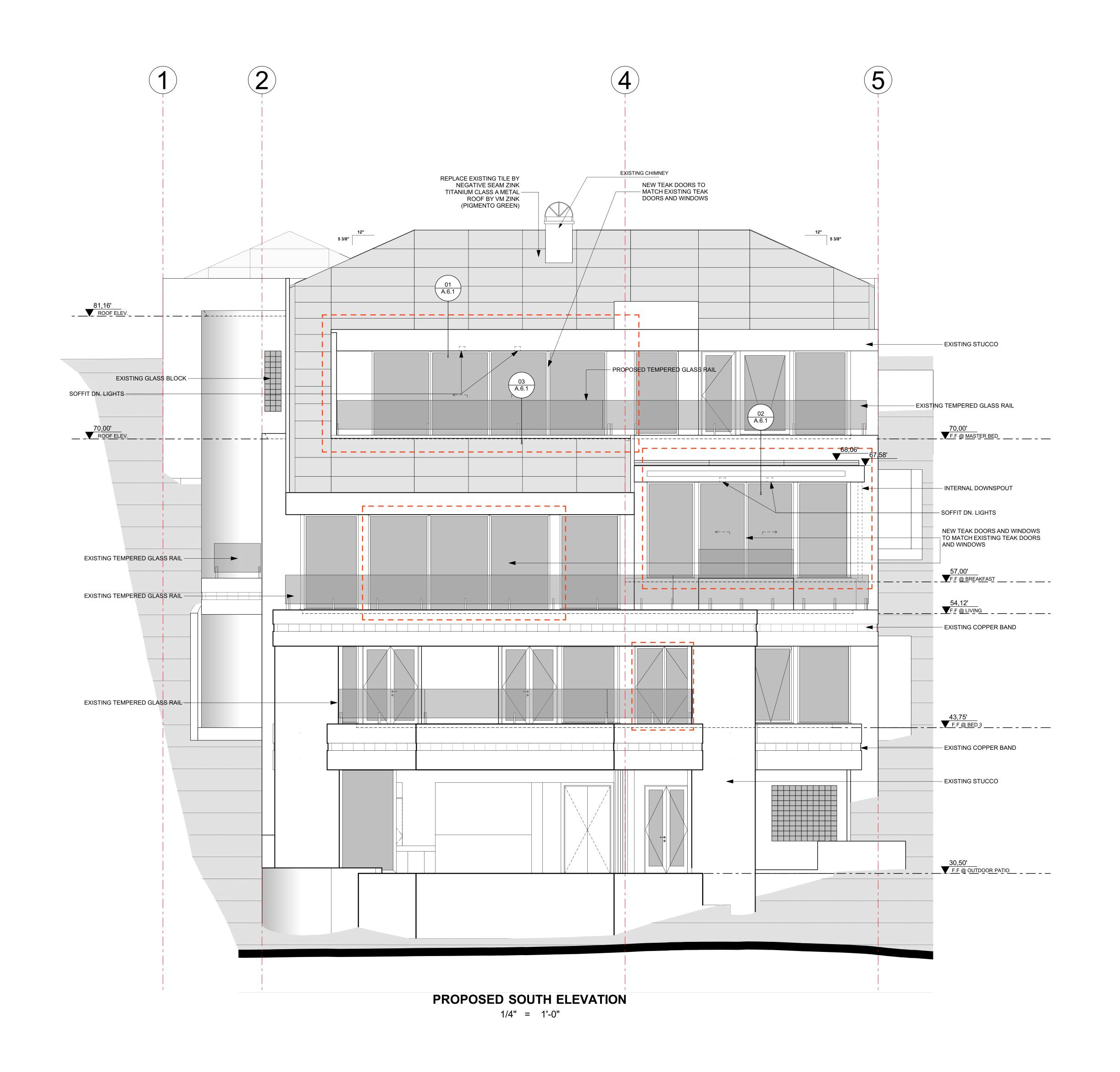




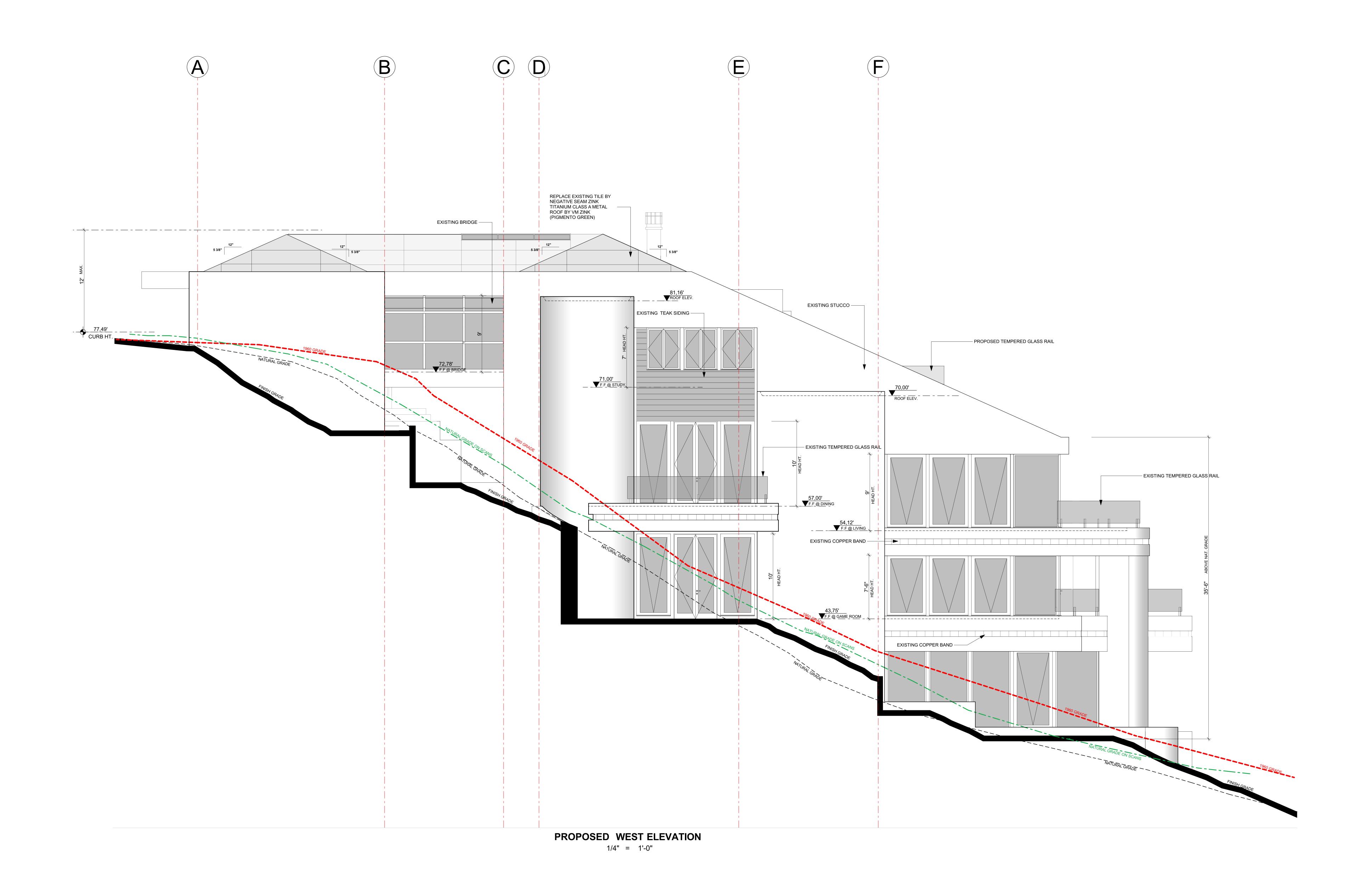


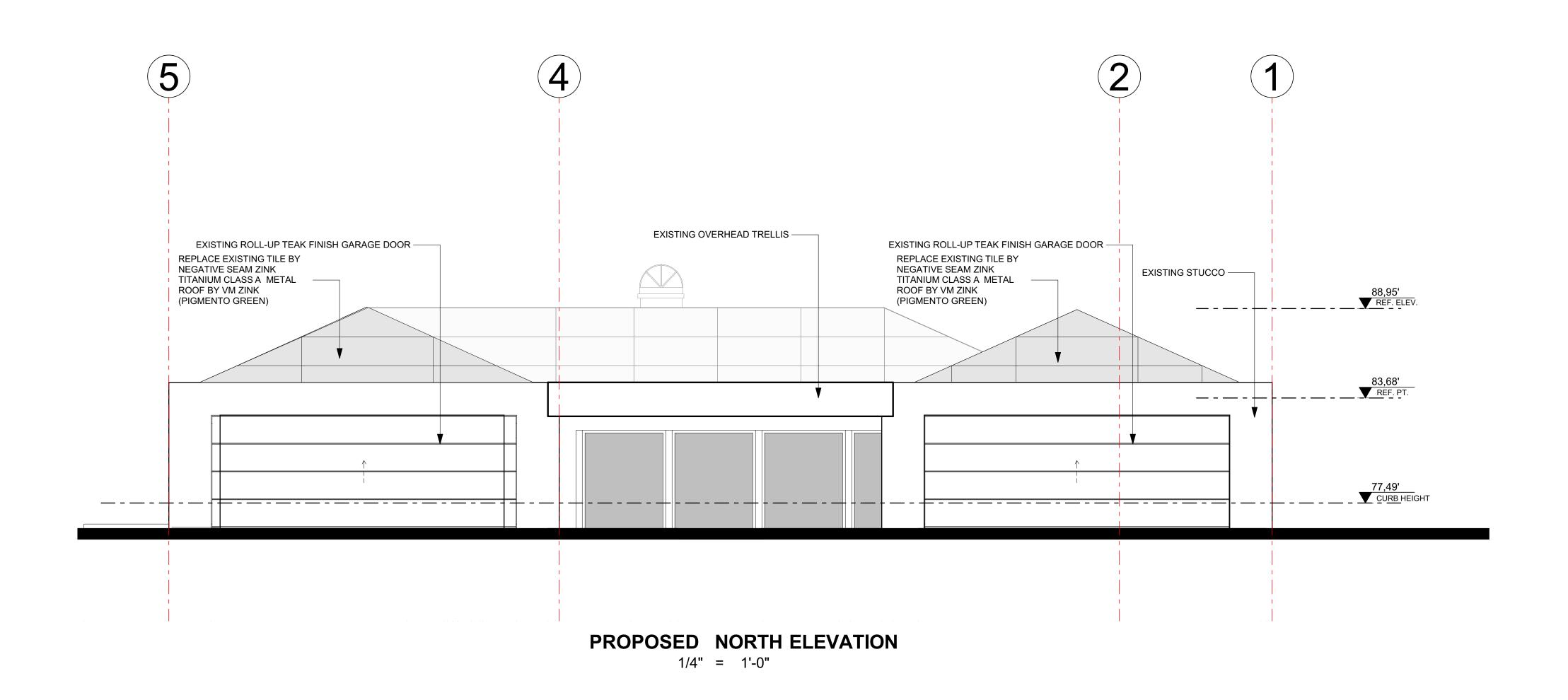


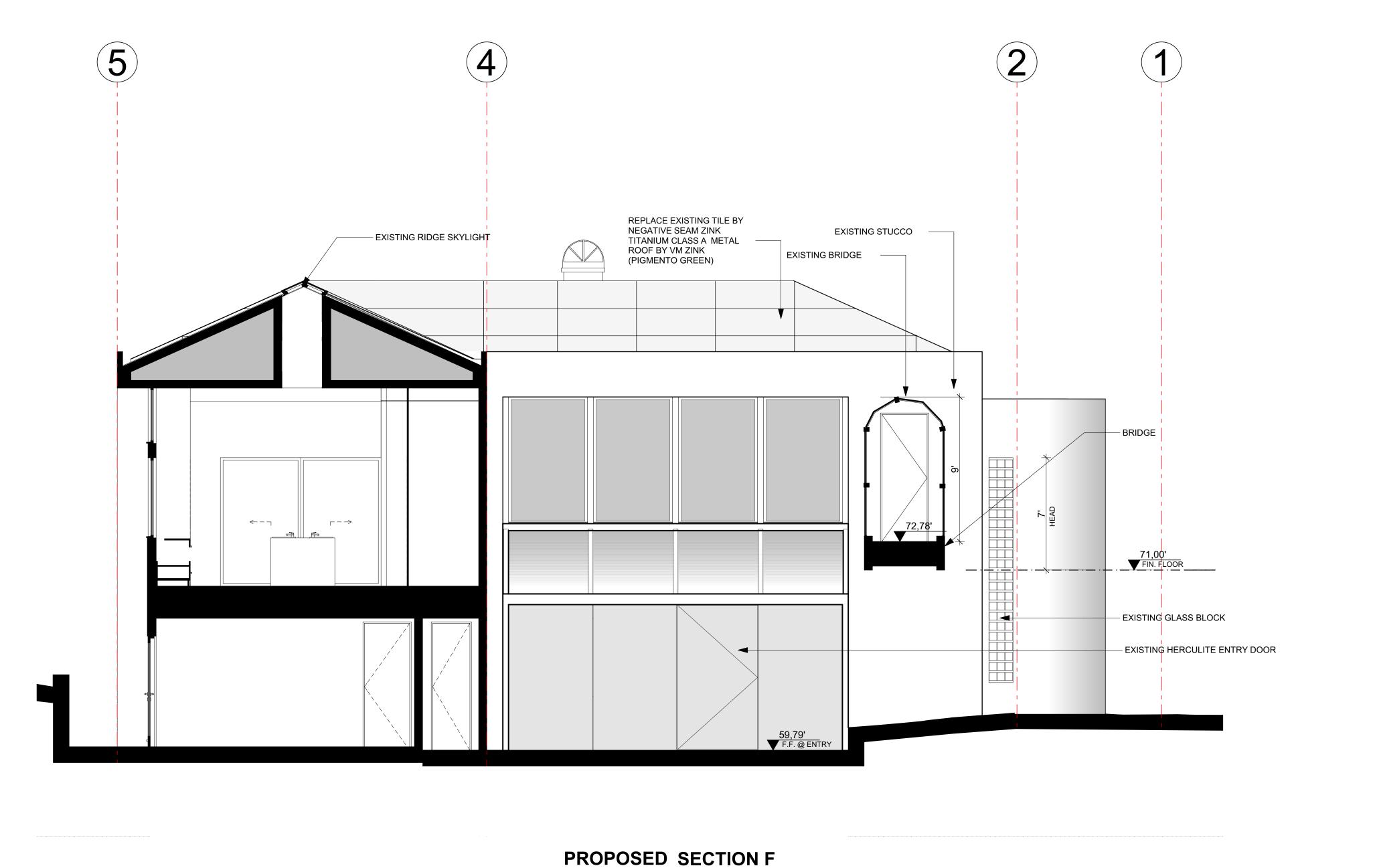






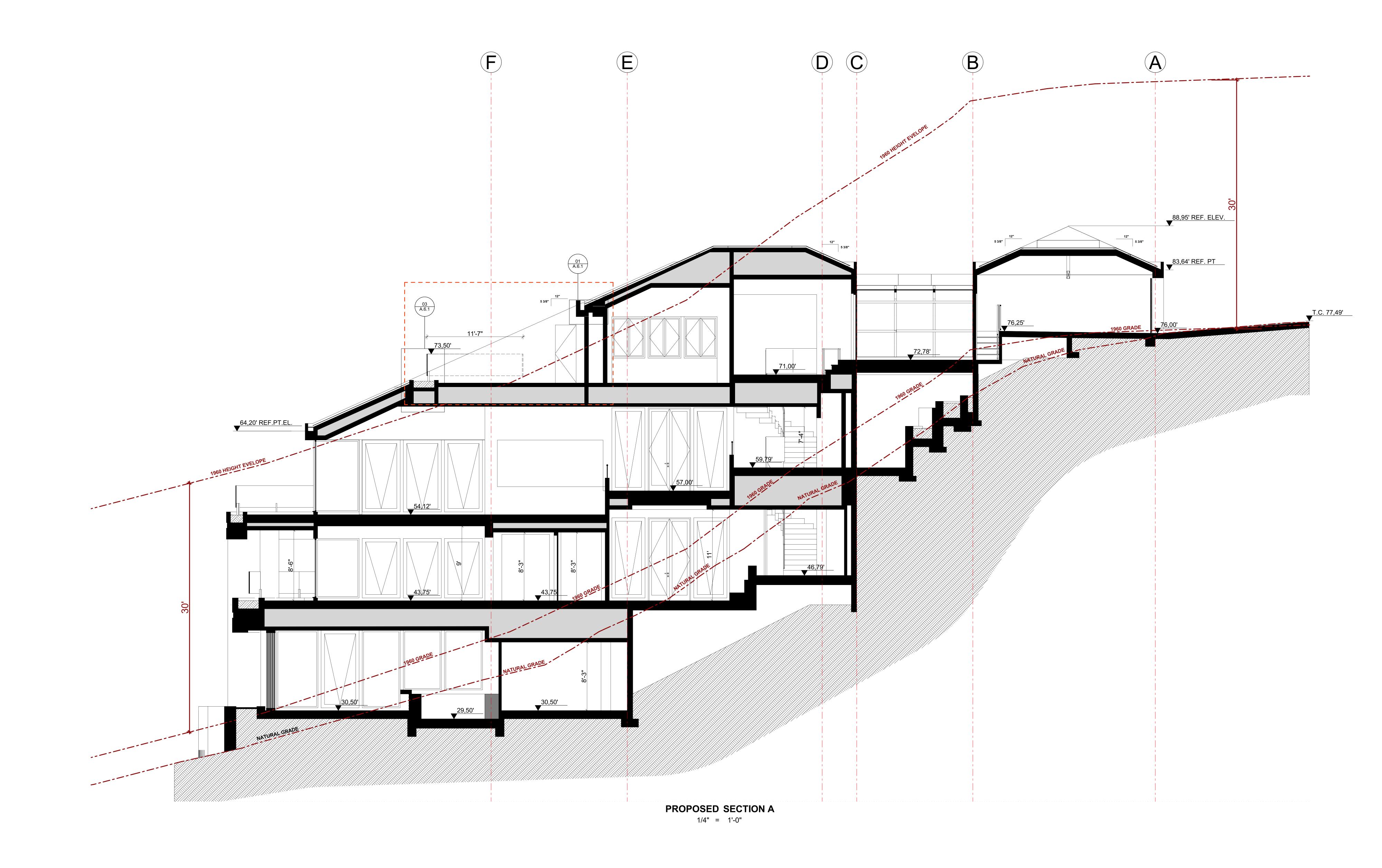


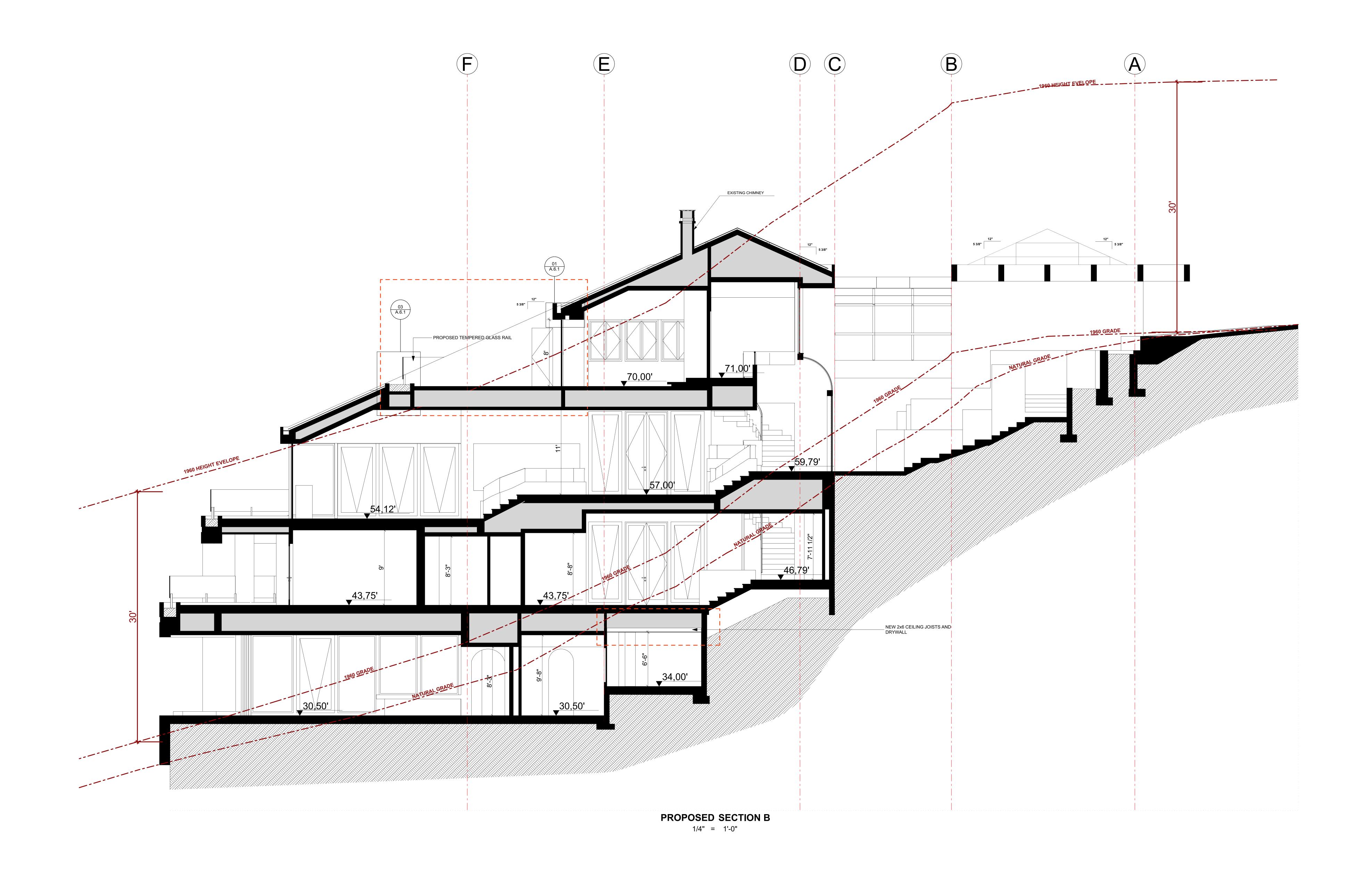


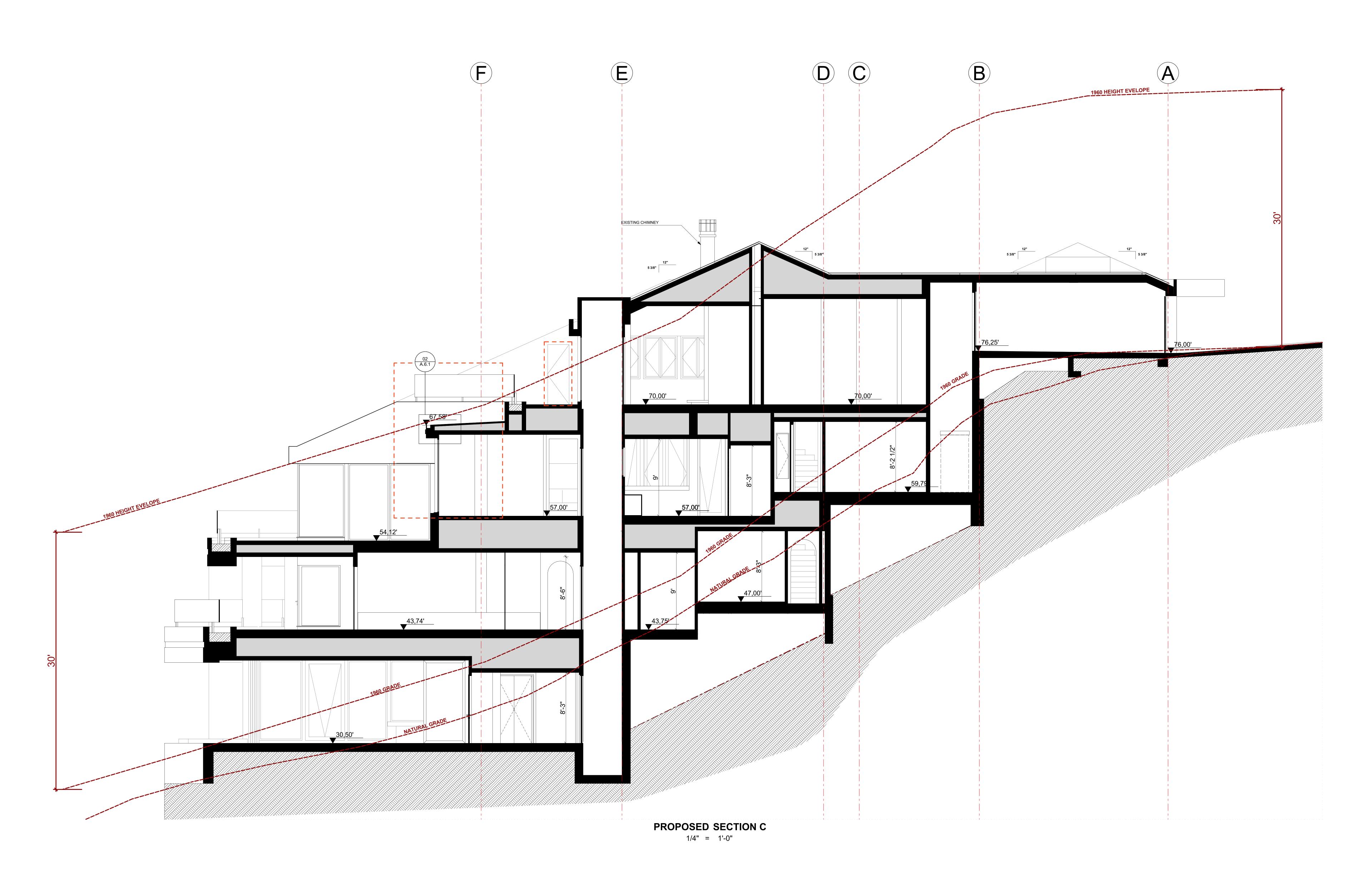


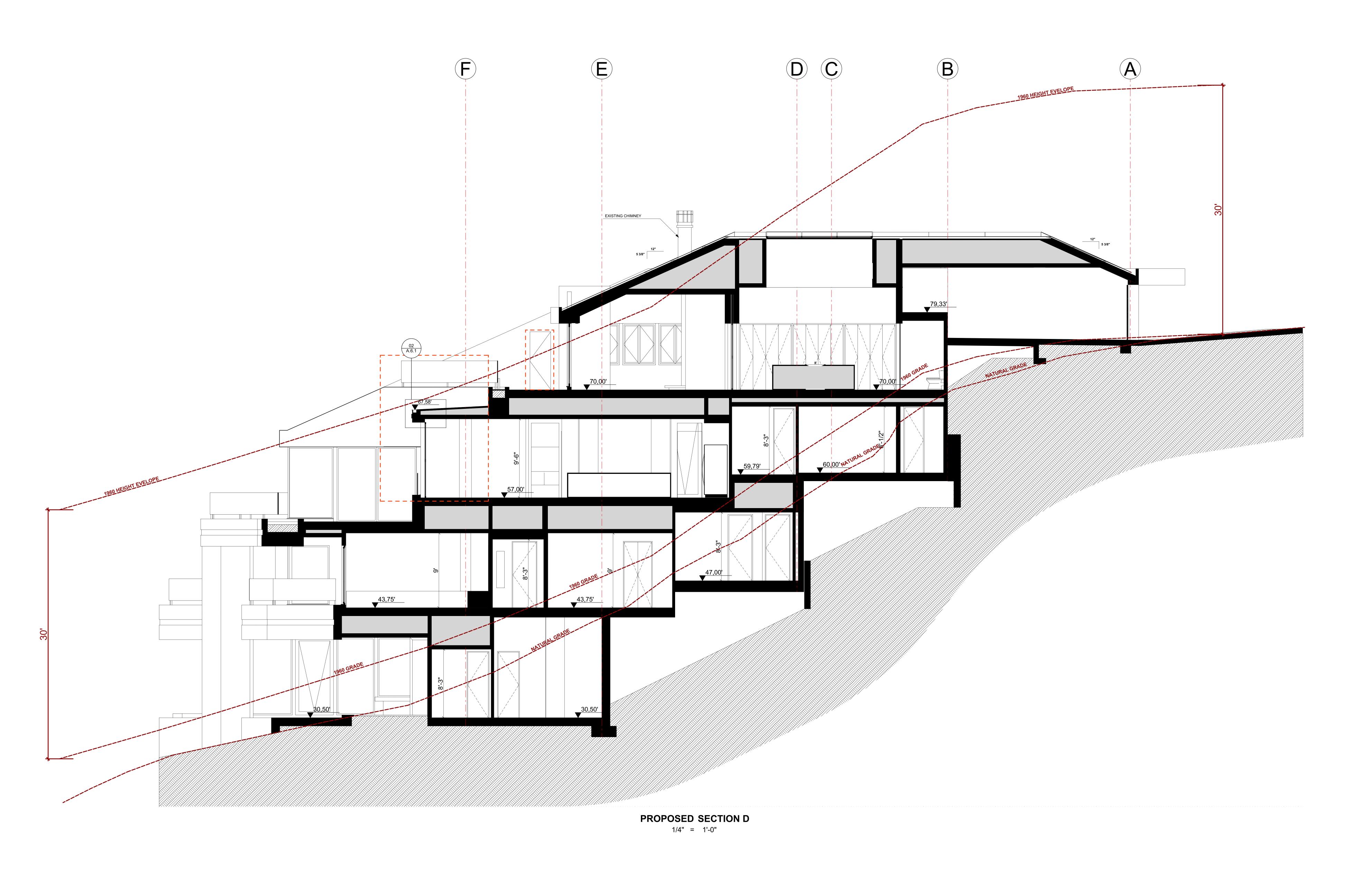
1/4" = 1'-0"

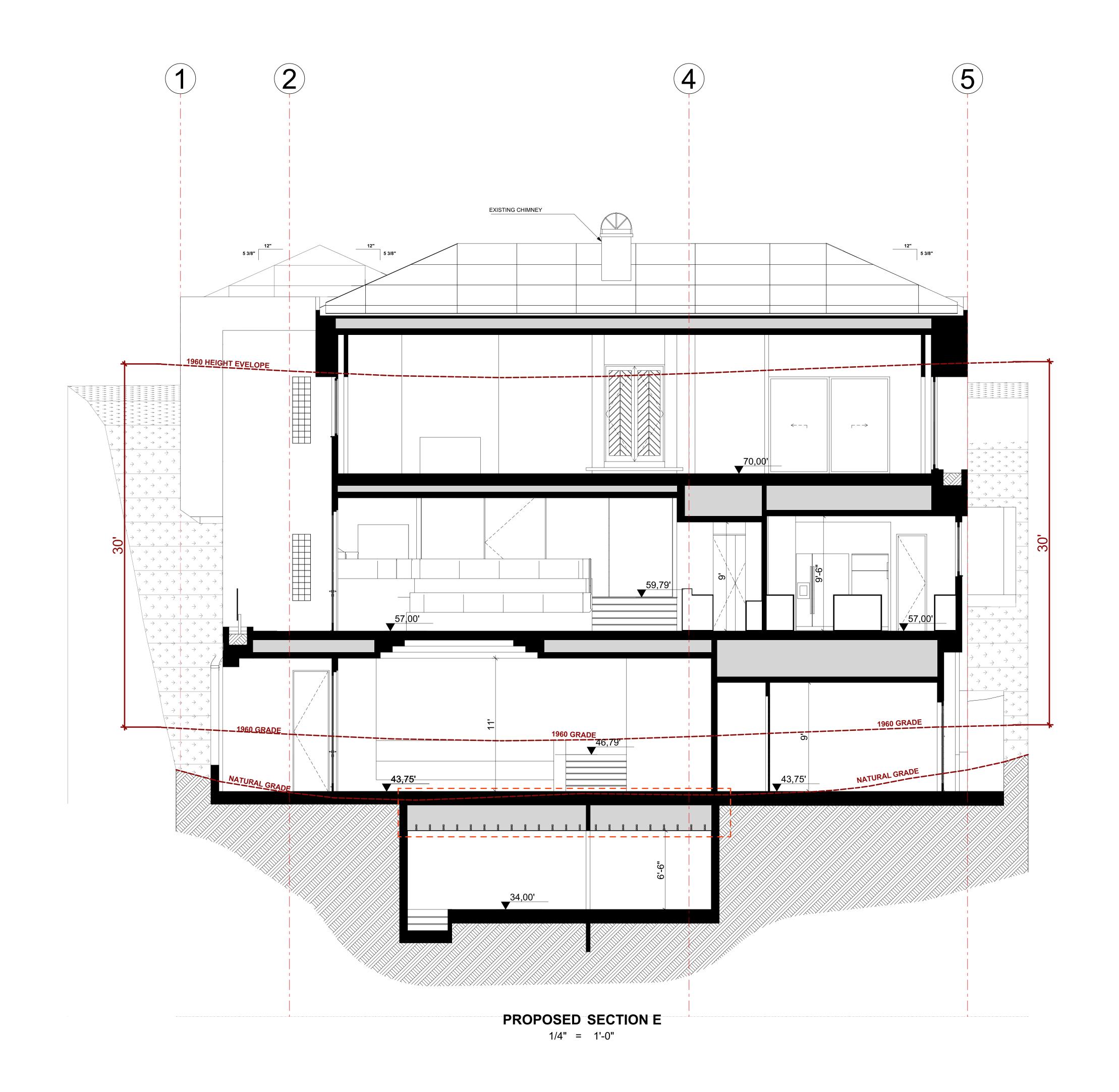


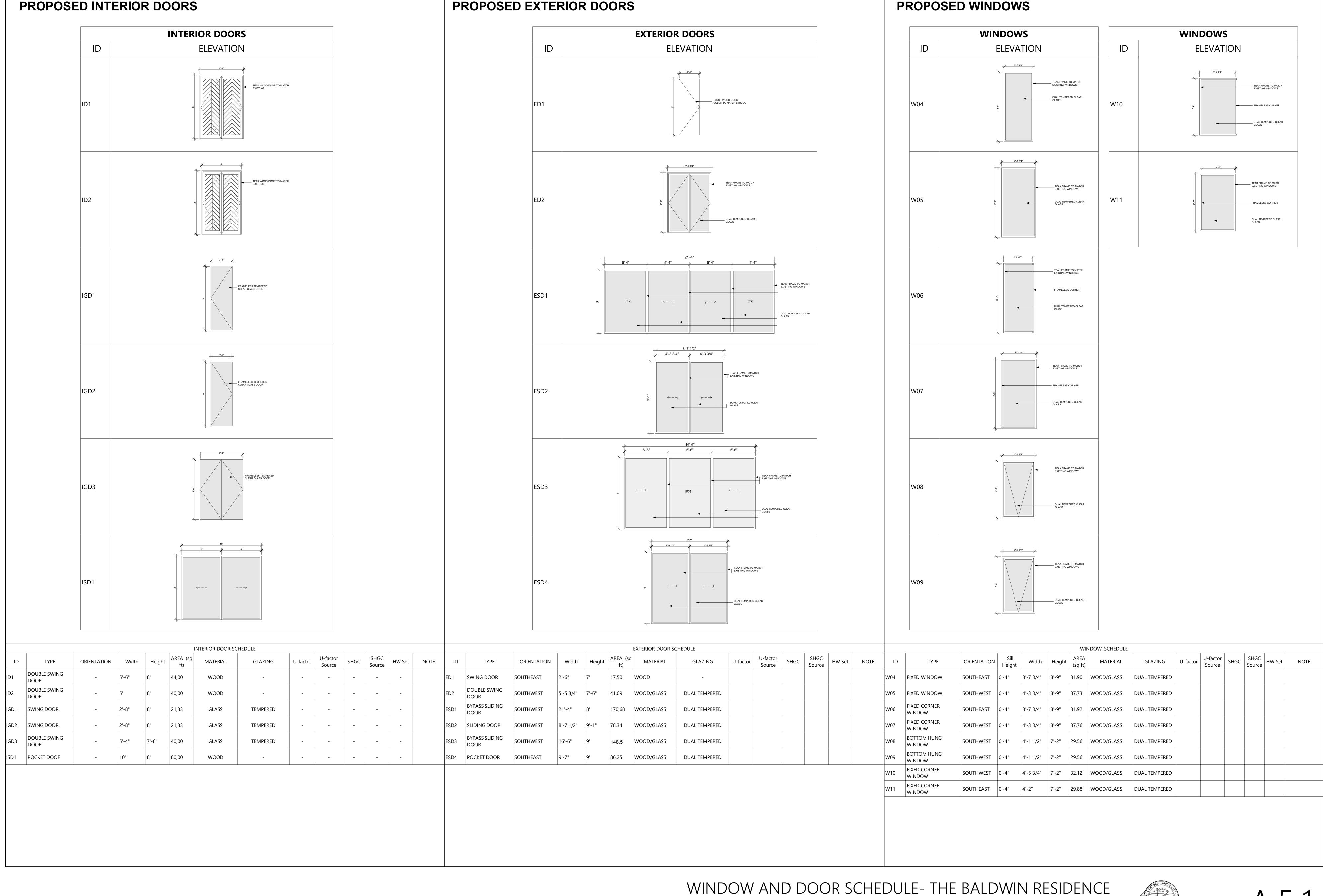


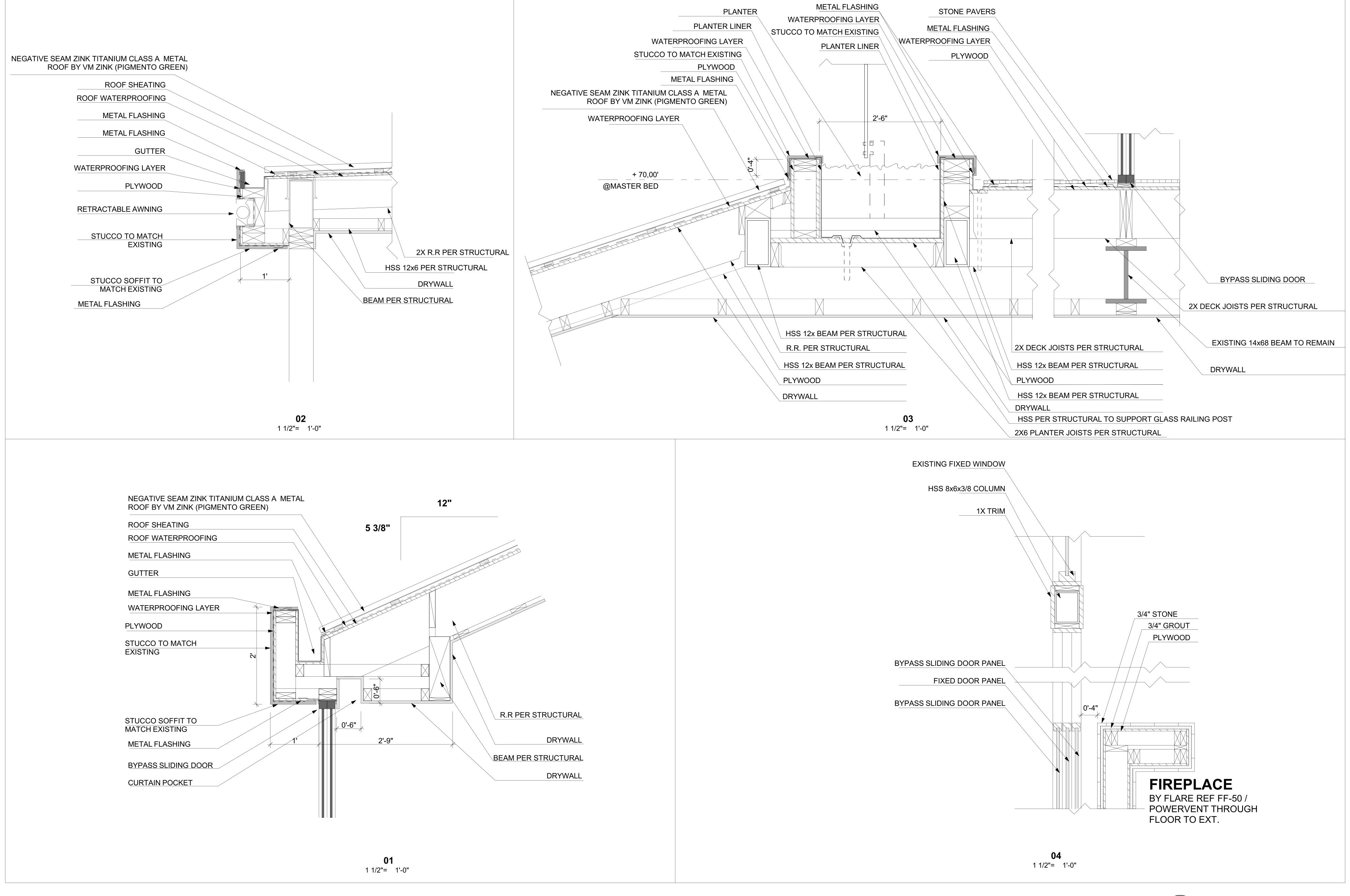


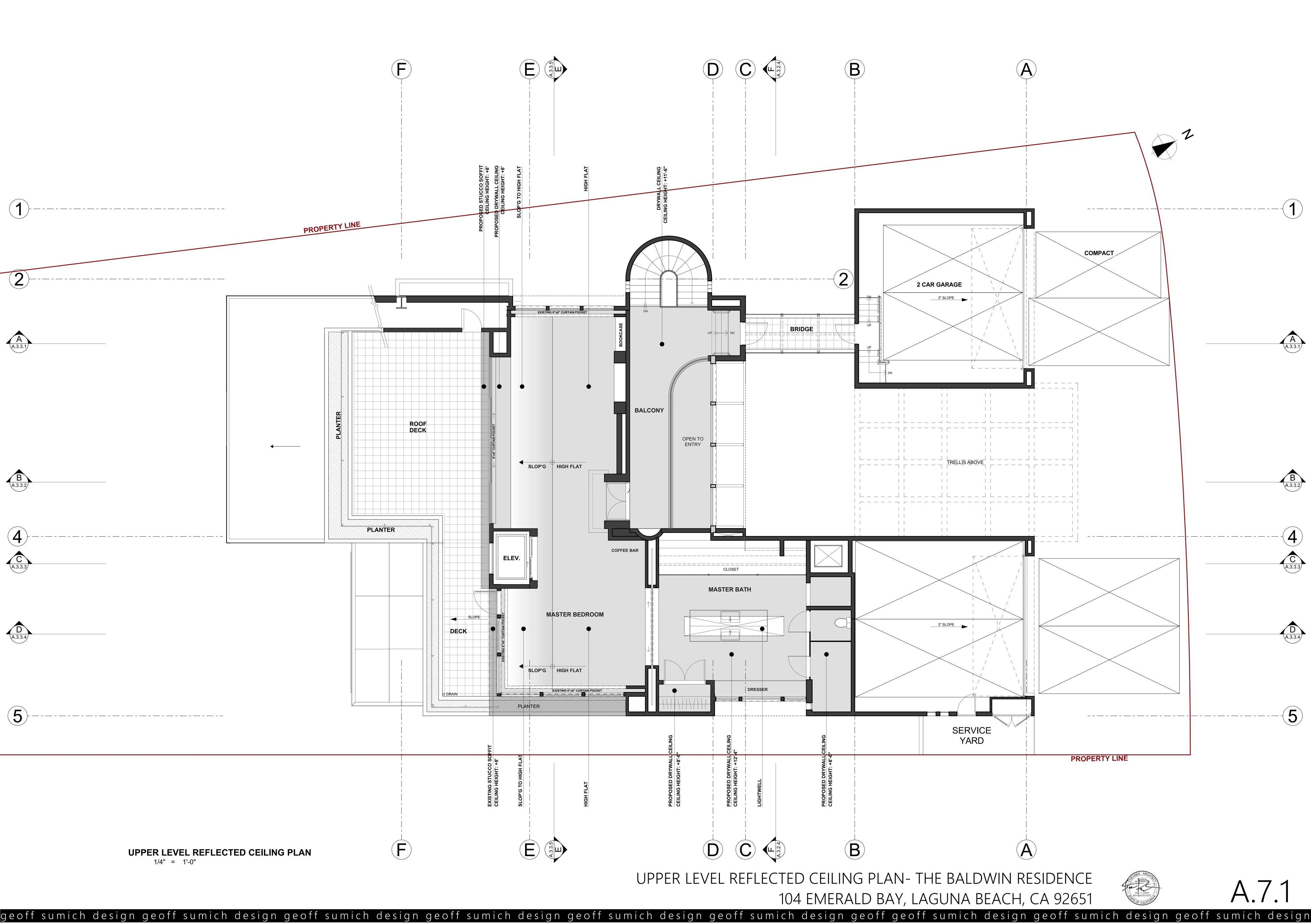


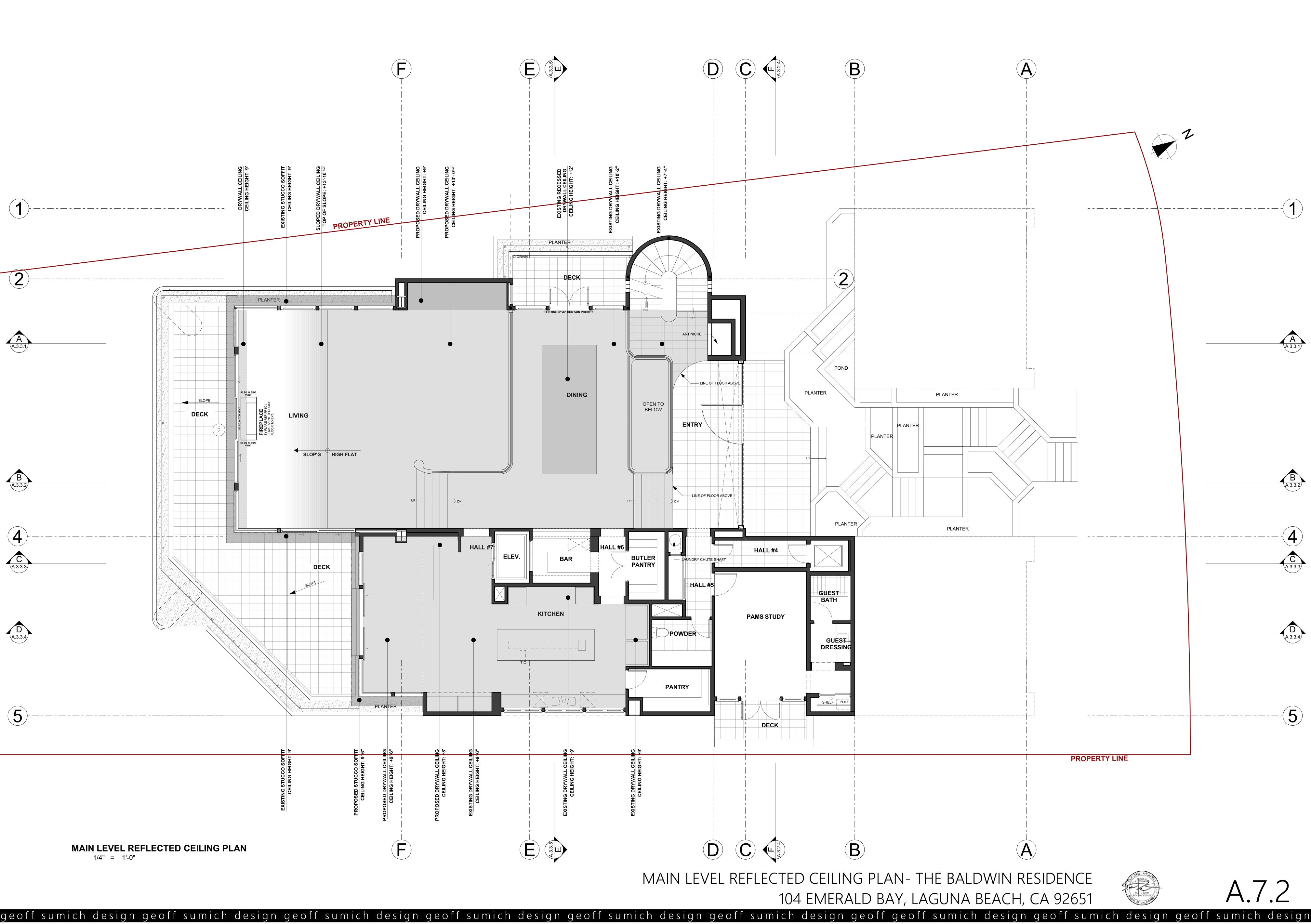














#### A. GENERAL

- 1. GENERAL CONTRACTORS SHALL VERIFY ALL GRADES, DIMENSIONS AND CONDITIONS AT THE JOB SITE WITH COMPLETE SET OF DRAWINGS PRIOR TO BIDDING AND COMMENCING CONSTRUCTION. THE ARCHITECT OR ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
- 2. ALL MATERIALS AND WORK PERFORMED SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE 2022 INTERNATIONAL BUILDING CODE AND ANY OTHER APPLICABLE CODES AND ORDINANCES. 3. THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE STRUCTURE SHOWN ON THESE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETED FORM. GENERAL CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKMAN AND OTHER PERSONS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT TO BE LIMITED
- TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT AND SHORING FOR THE STRUCTURE. 4. IN NO CASE SHALL DIMENSIONS BE SCALED FROM DRAWINGS AND/OR DETAILS. ANY DISCREPANCIES FOUND WITHIN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ARCHITECTS AND THE ENGINEERS ATTENTION FOR CLARIFICATION PRIOR TO PROCEEDING. ANY WORK INSTALLED PRIOR TO AND/OR IN CONFLICT WITH SUCH CLARIFICATION SHALL BE
- CORRECTED BY THE CONTRACTOR AT HIS EXPENSE AND AT NO ADDITIONAL COST TO THE OWNER. 5. WHERE A DETAIL, SECTION OR A NOTE IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS UNLESS NOTED OTHERWISE.
- 6. GENERAL CONTRACTOR TO NOTIFY ARCHITECT AND ENGINEER AS TO ANY DISCREPANCIES BETWEEN SPECIFICATIONS, GENERAL NOTES, STRUCTURAL PLANS AND DETAILS.
- 7. ANY REFERENCES TO THE WORDS APPROVED, OR APPROVAL IN THESE DOCUMENTS SHALL BE HERE DEFINED TO MEAN GENERAL ACCEPTANCE OR REVIEW AND SHALL NOT RELIEVE THE CONTRACTOR AND/OR HIS SUBCONTRACTORS OF ANY LIABILITY IN FURNISHING THE REQUIRED MATERIALS OR LABOR SPECIFICATION.
- 8. ALL MATERIALS SHALL BE FURNISHED AS SHOWN HEREIN UNLESS ALTERNATES ARE APPROVED IN WRITING BY THE ARCHITECT, OWNER, AND STRUCTURAL ENGINEER OF THE RECORD.
- 9. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION AND COORDINATION WITH ARCHITECTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SPRINKLER DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING THAT OF ALL SUBTRADES.
- 10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER INDICATED ON CONTRACT DRAWINGS OR NOT, AND TO PROTECT THEM FROM DAMAGE.
- REPAIR AND REPLACE OF SAID WORK SHALL BE AT THE EXPENSE OF THE CONTRACTOR. 11. UNLESS NOTED, SUBMIT SHOP DRAWINGS FOR ALL FABRICATED MATERIALS. SHOP DRAWINGS WILL NOT BE REVIEWED UNLESS, THEY ARE APPROVED AND ACCEPTED WITH A STAMP FROM
- GENERAL CONTRACTOR AS CONFORMING TO THE CONSTRUCTION DOCUMENTS. 12. UNLESS NOTED OTHERWISE, ELEVATIONS SHOWN ON THE DRAWINGS ARE TO TOP OF BEAMS SLAB, AND FOUNDATION.

#### B. DESIGN CRITERIA

DESIGN LOADS: ROOF LOADS	FLOOR LOADS
DEAD LOAD 20 PSF	DEAD LOAD 18 PS
LIVE LOAD 20 PSF	LIVE LOAD 40 PS
	DECK LOADS  DEAD LOAD 35 PS  LIVE LOAD 60 PS
WIND:	
ULTIMATE DESIGN WIND SPEED: Vult=100 M RISK CATEGORY=II WIND EXPOSURE=C	1PH
SEISMIC: SITE CLASS "D-DEFAULT"  SDC= D  MCE AT 0.20s Ss=1.346  MCE AT 1.00s S <sub>1</sub> =0.476  SITE COEFFICIENT AT 0.2s, Fa=1.  SITE COEFFICIENT AT 1.0s, Fv=1.  SDs=1.077, SD <sub>1</sub> =0.584  I=1.0, RISK CATEGORY II	
SEISMIC FORCE RESISTING SYSTEI  1. BEARING WALL SYSTEM W/ LIC SHEATED W/ WOOD STRUCTUR SHEAR RESISTANCE rho = 1.3 RESPONSE MODIFICATION FACT	GHT—FRAMED WALLS RAL PANELS RATED FOR
2. STEEL INTERMEDIATE MOMENT RESPONSE MODIFICATION FACT $rho = 1$	
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE F	PROCEDURE

# C. WOOD FRAMING

- 1. ALL FRAMING SHALL CONFORM TO THE GRADES AS SET BY THE W.C.L.I.B. OR W.W.P.A. LATEST INTERNATIONAL BUILDING CODE AND NATIONAL DESIGN SPECIFICATION (N.D.S.) ALL LUMBER SHALL BEAR THE GRADE STAMP OF AN APPROVED TESTING AGENCY, EXCEPT EXPOSED LUMBER AT
- 2. UNLESS NOTED OTHERWISE, FRAMING LUMBER SHALL BE DOUGLAS FIR-LARCH.

2.7 MOISTURE CONTENT OF ALL LUMBER SHALL BE 19% MAX.

2.1	STUDS 2" THICK, 4" WIDE (MAX. 8'-1" HT) 2" THICK, 6" WIDE AND LARGER U.N.O. (MAX. 14'-0" HT.)	STUI NO.	D GRAD
2.2	NAILERS	NO.	2
2.3	SUBPURLINS, BEAMS, STRINGERS 4" AND THICKER,		
	6" AND WIDER	NO.	1
2.4	POSTS AND COLUMNS 4x4 AND LARGER		
2.5	STRUCTURAL JOISTS AND PLANKS 2" TO 4" THICK,		
	6" AND WIDER	NO.	1
2.6	TYPICALLY ALL OTHER LUMBER UNLESS NOTED OTHERWISE SHALL BE		
	(GREATER OR BETTER)	NO.	1

- 3. PLYWOOD SHEATHING SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF
- U.S. PRODUCT STANDARDS PS 1-09. STRUCTURAL USE PANELS SHALL CONFORM TO NER-108 (APA-PRP-108). EACH PANEL SHALL BE IDENTIFIED WITH THE APPROPRIATE A.P.A. GRADE STAMP. 4. ROOF AND FLOOR SHEATHINGS SHALL BE FIVE PLY WITH THICKNESS AND PANEL INDEX AS INDICATED ON DRAWINGS. STAGGER SHEETS PER PLAN. ROOF NAILING SHALL BE PER SCHEDULE ON DRAWINGS, OR AS INDICATED ON NOTES. INSTALL SHEETS WITH FACE GRAIN ACROSS SUPPORTS EXCEPT WHERE NOTED OTHERWISE.
- 5. ROOF AND FLOOR SHEATHING, AND SHEAR WALL PANELS NAILING AND INSTALLATION SHALL BE INSPECTED AND APPROVED BY THE BUILDING DEPARTMENT PRIOR TO COVERING.
- 6. STRUCTURAL MEMBERS SHALL NOT BE CUT FOR PIPES, CONDUIT, ETC. UNLESS SPECIFICALLY DETAILED ON DRAWINGS.
- 8. ALL NAILS SHALL BE COMMON NAILS IN COMPLIANCE WITH FEDERAL SPECIFICATIONS FF-N-105B SINKERS SHALL NOT BE ALLOWED UNLESS APPROVED BY THE ENGINEER. ALL NAILS EXPOSED

7. FOR NAILING SCHEDULE COMPLY WITH INTERNATIONAL BUILDING CODE TABLE 2304.10.1.

- TO WEATHER, HEAT AND/OR MOISTURE SHALL BE GALVANIZED. 9. ALL WOOD IN CONTACT WITH THE GROUND, MASONRY, OR CONCRETE SHALL BE PRESSURE TREATED ALL NAILS IN PRESSURE TREATED WOOD SILL PLATES SHALL BE HOT DIPPED GALVANIZED, STAINLESS STEEL, OR SILICON BRONZE COPPER.
- 10. ALL FRAMING HARDWARE SHALL BE MANUFACTURED BY "SIMPSON STRONG TIE" COMPANY, INC., OR APPROVED EQUAL WITH VALID & CURRENT ICC & LARR REPORT. ALL CONNECTIONS SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION AND
- SPECIFICATION TO DEVELOP THE MAXIMUM CAPACITY. 11. LAG SCREWS SHALL CONFORM TO A.N.S.I. B.18.
- 12. BOLTS SHALL CONFORM TO ASTM A307. ALL BOLTS THROUGH WOOD SHALL HAVE STANDARD WASHERS. BOLT HOLES SHALL BE BORED 1/32" TO 1/16" LARGER THAN THE BOLT DIAMETER UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE TIGHTENED PRIOR TO BEING COVERED.
- 13. SILL PLATES SHALL BE BOLTED TO FOUNDATIONS WITH  $\frac{5}{8}$ " DIAMETER x10" LONG ANCHOR BOLTS AT 4'-0" O.C. (UNLESS NOTED OTHERWISE), EMBEDDED 7 INCHES MINIMUM IN CONCRETE. BOLTS SHALL HAVE  $3"\times3"\times\frac{1}{4}"$  PLATE WASHER. MINIMUM 2 BOLTS PER PLATE, ONE BOLT WITHIN 12 INCHES OF PLATE END CORNERS, FOUNDATION SILL SHALL BE NATURALLY DURABLE
- OR PRESERVATIVE TREATED WOOD. ALL ANCHOR BOLTS SHALL BE GALVANIZED OR ZINK COATED BOLTS. 14. PROVIDE BOUNDARY NAILING OF PLYWOOD DIAPHRAGM AT ALL ROOF OPENINGS.
- 15. PROVIDE 2x SOLID BLOCKING AT ALL JOIST AND RAFTER BEARING LOCATION.
- 16. A DOUBLE TOP PLATE MADE OF TWO MEMBERS OF THE SAME SIZE AS THE STUDS SHALL BE PLACED AT THE TOP OF EVERY BEARING PARTITION OR EXTERIOR WALL. SUCH DOUBLE PLATES SHALL BE LAPPED AT CORNERS. JOINTS IN UPPER AND LOWER MEMBERS SHALL BE AT LEAST FOUR FEET APART. EXCEPT AT CORNERS.
- 17. PROVIDE LEAD HOLE 40-70% OF THREADED SHANK DIA., AND FULL DIA. FOR SMOOTH SHANK PORTION. SOAP, PARAFFIN OR OTHER APPROVED LUBRICANT SHALL BE USED ON THREAD INSTALLATION SHALL BE SCREWING, NOT HAMMERING. CARE SHALL BE TAKEN TO AVOID OVER TORQUING BOLT OR SCREW.
- 18. ROOF LUMBER DECKING SHALL COMPLY WITH 2019 INTERNATIONAL BUILDING CODE SECTION 2304.9.
- 20. IN LIEU OF 2x STUD DOUGLAS FIR LARCH AS ALTERNATE TIMBERSTRAND LSL 1.3E  $1\frac{1}{2}$ "x5 $\frac{1}{2}$ " OR TIMBERSTRAND LSL 1.55E  $1\frac{3}{4}$ "x5 $\frac{1}{2}$ " CAN BE USED.
- 19. THE ROOF SHEATHING TO BE APPROVED BY THE BUILDING INSPECTOR BEFORE APPLICATION OF ROOFING.

#### D. MANUFACTURED BEAMS & JOISTS

MANUFACTURED BEAM PRODUCT SHALL BE REDLAM LVL 2.0E BY RED BUILT PER ICC ESR 2993 OR PARALLAM PSL 2.0E BY WEYERHAEUSER PER ICC ESR # 1387 PREFABRICATED WOOD I-JOIST PRODUCT SHALL BE RED I JOIST BY RED BUILT PER ICC ESR #2994 OR TJI JOIST BY WEYERHAEUSER PER ICC ESR #1153.

#### E. GLU-LAM BEAMS

- 1. GLULAM BEAMS SHALL BE PRODUCED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION & APA - THE ENGINEER WOOD ASSOCIATION, & ANSI/AITC A190.1-2007, & ASTM D3737 AND CONFORM TO THE FOLLOWING NEW LINE INDUSTRIAL GRADE APPEARANCE (UNLESS NOTED OTHERWISE), EXTERIOR GLUE, DRY USAGE CONDITIONS SHALL CONFORM TO THE REQUIREMENTS OF 2019 CALIFORNIA BUILDING CODE. MOISTURE CONTENT FOR GLU-LAM BEAMS IS LESS THAN 16%.
- 2. SIMPLE SPAN BEAM SHALL BE COMBINATION 24F-V4, DF/DF AND CANTILEVER BEAM SHALL
- 3. FABRICATION OF GLU-LAM BEAMS SHALL BE DONE BY A LICENSED FABRICATOR. 4. SHOP DRAWING SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- APPROVED INSPECTION CERTIFICATES SHALL BE SUBMITTED PRIOR TO ERECTION. THE INSPECTION CERTIFICATES SHALL INCLUDE THE QUAILITY CONTROL INSPECTION DATA. 5. PROVIDE CAMBER AS SHOWN ON PLAN.

## F. STRUCTURAL STEEL

BE 24F-V8 DF/DF.

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF AISC MANUAL OF STEEL CONSTRUCTION AND SHALL BE DETAILED, FABRICATED AND ERECTED IN CONFORMANCE WITH THE AISC SPECIFICATIONS.

2. N	MATERIALS:
*	TUBE MEMBERS
*	PIPE COLUMNS
*	SHAPES COLUMNS & BEAMS ASTM A572, A992 GRADE 50 OR DUAL (Fy=50KSI)
*	CHANNEL, ANGLES & PLATES ASTM A36
*	WELDED STUD BOLTS, BOLTS ASTM A307, GRADE "A" U.N.O.

- 3. STRUCTURAL STEEL FABRICATORS SHALL FURNISH SHOP DRAWINGS OF ALL STEEL FOR REVIEW
- OF STRUCTURAL ENGINEER PRIOR TO FABRICATION. 4. ALL STRUCTURAL STEEL MUST BE SUPPLIED BY A CITY OF LAGUNA BEACH APPROVED FABRICATOR SHOP.
- 5. EXCEPT WHERE ENCASED IN MASONRY, CONCRETE OR SPRAYED ON FIRE PROOFING. ALL STEEL
- SHALL RECEIVE ONE SHOP COAT OF RUST INHIBITIVE PRIMER. 6. HOLES SHALL NOT BE PLACED IN STEEL MEMBERS UNLESS SPECIFICALLY DETAILED ON DRAWINGS. STEEL MEMBERS SHALL BE SHORED WHEN PERMISSIBLE HOLES ARE CUT OR BURNED. BOLT HOLES SHALL CONFORM TO AISC SPECIFICATION, AND SHALL BE STANDARD HOLES UNLESS
- OTHERWISE NOTED. 7. GROUTING OF BASE PLATES SHALL BE WITH NON-SHRINK GROUT OR DRY PACKED WITH MINIMUM COMPRESSIVE STRENGTH AS SPECIFIED IN THE CONCRETE SECTION OF NOTES.
- ALL SURFACES SHALL BE CLEAN OF FOREIGN MATERIAL PRIOR TO GROUTING. 8. HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM A325N OR A490, AND BE PROVIDED WITH HARDENED WASHERS CONFORMING TO ASTM F436.
- 9. STRUCTURAL STEEL SHALL BE DELIVERED TO THE JOB SITE FREE OF RUST, MILL SCALE,

#### G. WELDING

GREASE, ETC.

- 1. ALL WELDING SHALL CONFORM TO THE LATEST EDITION OF THE STRUCTURAL WELDING CODE
- ANSI/AWS D1.1-2010 2. ALL WELDING SHALL BE PERFORMED USING THE SHIELDED METAL ARC WELDING PROCESS (SMAW) WITH E70XX ELECTRODES OR THE SUBMERGED ARC WELDING PROCESS (SAW) WITH E70XX. LOW HYDROGEN ELECTRODES SHALL BE USED AND PARENT METALS SHALL BE PREHEATED.
- 3. ALL WELDING SHALL BE PERFORMED BY A WELDER CERTIFIED BY CITY OF LAGUNA BEACH BLDG. DEPT.. ALL WELDING PERFORMED ON SITE SHALL BE DONE IN THE PRESENT OF CITY OF LAGUNA BEACH APPROVED SPECIAL INSPECTOR. ALL FIELD WELDING MUST BE INDICATED ON SHOP DRAWINGS.
- CITY OF LAGUNA BEACH BLDG. DEPT. LICENSED SHOP IS REQUIRED FOR SHOP WELDS. 4. ALL EXPOSED WELDED CONNECTIONS SHALL BE FILLED AND GROUND SMOOTH AND

BE BASED ON AISC STANDARDS FOR THICKER MATERIAL CONNECTED.

- SUBJECT TO ARCHITECTS APPROVAL. 5. ALL WELDS NOT SPECIFIED SHALL BE CONTINUOUS FILLET WELDS. SIZE OF WELDS SHALL
- 6. WELDED JOINTS SHALL BE DESIGNED IN ACCORDANCE WITH CHAPTER J OF THE SPECIFICATION AND A WELDING PROCEDURE SPECIFICATION (WPS) AS REQUIRED IN AWS D1.8/D1.8M AND APPROVED BY
- THE ENGINEER OR RECORD. "PROVIDE WELDING PROCEDURE SPECIFICATION" ON PLANS. 7. ALL COMPLETE-JOINT-PENETRATION GROOVE WELDS USED IN THE SEISMIC FORCE RESISTING SYSTEM SHALL BE MADE WITH A FILLER METAL THAT HAS A MINIMUM CVN TOUGHNESS OF 20 FT-LBS AT
- 8. DISCONTINUITIES IN WELD CREATED BY ERRORS OR BY FABRICATION OR ERECTION OPERATIONS, SUCH AS TACK WELDS, ERECTION AIDS, AIR-ARC GOUGING AND FLAME CUTTING, SHALL BE REQUIRED
- 9. ALL BOLTS USED AS A PART OF THE SEISMIC FORCE RESISTING SYSTEM SHALL BE FULLY TENSIONED HIGH STRENGTH BOLTS.
- 10. THE SPECIFICATION AND FABRICATION FOR STEEL FRAMES SHALL COMPLY WITH ATTACHED WELDING AND FABRICATION PROCEDURES.

# H. SPECIAL INSPECTIONS

- 1. ALL INSPECTION AND TESTS SHALL BE PERFORMED BY A QUALIFIED TESTING AGENCY RETAINED BY THE OWNER. THE SPECIAL DEPUTY INSPECTOR SHALL BE QUALIFIED, APPROVED BY THE BUILDING DEPARTMENT AND ACCEPTABLE TO THE ARCHITECT.
- 2. COPIES OF ALL TEST RESULTS SHALL BE FURNISHED TO THE ENGINEER, ARCHITECT, BUILDING DEPARTMENT AND BE AVAILABLE AT THE JOB SITE.
- 3. FINAL REPORTS FOR ALL INSPECTIONS AND TESTING MUST BE PROVIDED, FINAL REPORTS SHALL
- DOCUMENT COMPLETION OF ALL INSPECTIONS AND CORRECTION OF ALL NOTED DESCREPENCIES. 4. THE DUTIES OF SPECIAL INSPECTOR SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF
- CHAPTER 17 OF THE IBC. 5. PREMATURE NOTIFICATION OF ANY INSPECTION SHALL RESULT IN ADDITIONAL VISITS WITH ALL
- EXPENSES AT CONTRACTORS EXPENSE. 6. FAILURE OF NOTIFICATION BY THE CONTRACTOR FOR INSPECTION ON A TIMELY BASIS MAY RESULT
- IN COMPLETI 7. SPECIAL INS

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ΤE	REMO\	/AL	AND	REPL	ACEMENT	OF	ALL	WORK	PERFO	RMED	ΑT	CON	TRACTO	DR'S	<b>EXPENS</b>	SE.
SF	PECTION	RE	QUIR	ED FC	R:											_

ITEM	R	EQUIRE	ED		
11 = 101	YES	NO	N/A		
CONCRETE PLACEMENT AT SLAB-ON-GRADE	_		$\boxtimes$		
AT CLAD ON ODADE	. 🗖				
	_				
	CONCRETE PLACEMENT AT SLAB-ON-GRADE  WRITTEN CERTIFICATION FOR PROPER PLACEMENT OF REINFORCEMENTS AT SLAB-ON-GRADE.  REINFORCING PLACEMENT VERIFICATION OF MILL REPORT AND IDENTIFICATION OF STEEL AND AT JOB SITE  ALL FIELD WELDING HIGH-STENGTH BOLTING.  EPOXY BOLTS AND EPOXY REINFORCING BARS IN CONCRETE OR MASONRY ANCHOR BOLT INSTALLATION AND PLACEMENT IN CONCRETE  FOUNDATION EXCAVATION AND COMPACTION (CERTIFICATION BY SOIL ENGINEER) CONCRETE MASONRY CONSTRUCTION	CONCRETE OVER 2500 PSI AT 28 DAYS  CONCRETE PLACEMENT AT SLAB—ON—GRADE  WRITTEN CERTIFICATION FOR PROPER PLACEMENT OF REINFORCEMENTS AT SLAB—ON—GRADE  REINFORCING PLACEMENT VERIFICATION OF MILL REPORT AND IDENTIFICATION OF STEEL AND AT JOB SITE  ALL FIELD WELDING HIGH—STENGTH BOLTING  EPOXY BOLTS AND EPOXY REINFORCING BARS IN CONCRETE OR MASONRY  ANCHOR BOLT INSTALLATION AND PLACEMENT IN CONCRETE  FOUNDATION EXCAVATION AND COMPACTION (CERTIFICATION BY SOIL ENGINEER) CONCRETE MASONRY CONSTRUCTION	CONCRETE OVER 2500 PSI AT 28 DAYS.  CONCRETE PLACEMENT AT SLAB—ON—GRADE  WRITTEN CERTIFICATION FOR PROPER PLACEMENT OF REINFORCEMENTS AT SLAB—ON—GRADE.  REINFORCING PLACEMENT VERIFICATION OF MILL REPORT AND IDENTIFICATION OF STEEL AND AT JOB SITE  ALL FIELD WELDING.  HIGH—STENGTH BOLTING.  EPOXY BOLTS AND EPOXY REINFORCING BARS IN CONCRETE OR MASONRY.  ANCHOR BOLT INSTALLATION AND PLACEMENT IN CONCRETE  FOUNDATION EXCAVATION AND COMPACTION (CERTIFICATION BY SOIL ENGINEER)  CONCRETE MASONRY CONSTRUCTION		

PERIODIC SPECIAL INSPECTION IS REQ'D FOR WOOD SHEAR WALLS, SHEAR PANELS, AND DIAPHRAGMS, INCLUDING NAILING, BOLTING, ANCHORING AND OTHER FASTENING TO COMPONENTS OF THE SEISMIC FORCE RESISTING SYSTEM. SPECIAL INSPECTION BY A DEPUTY INSPECTOR IS REQ'D WHERE THE FASTENER SPACING OF SHEATHING IS 4" ON CENTER OR LESS. CONTINUOUS SPECIAL INPECTION BY A REGISTERED DEPUTY INSPECTOR IS REQUIRED FOR FIELD WELDING, CONCRETE COMPRESSIVE STRENGTH I'C GREATER THAN 2500 PSI,

8. FIELD SITE VISITS BY THE STRUCTURAL ENGINEER DO NOT CONSTITUTE AN INSPECTION.

#### I. STRUCTURAL ENGINEER OF RECORD (SER) SITE OBSERVATION

- 1. THE OWNER SHALL EMPLOY THE ENGINEER OF RECORD TO PROVIDE STRUCTURAL OBSERVATION AT THE FOLLOWING CONSTRUCTION MILESTONE. CONSTRUCTION MILESTONES:
- 1.1 AFTER STEEL MOMENT FRAME HAS BEEN INSTALLED A7 CONNECTION IS
- 1.2 SHEAR WALLS AND PLYWOOD DIAPHRAGM AFTER ALL NAILINGS ARE IN PLACED AND ALL HOLDDOWNS ARE INSTALLED BEFORE COVERING. 2. FAILURE TO NOTIFY ARCHITECT & ENGINEER OF ANY CONSTRUCTION MILESTONE MAY RESULT IN CONTRACTOR HAVING TO REMOVE WORK FOR THE PURPOSE OF

REVIEW AT CONTRACTOR'S EXPENSE. PLEASE NOTIFY ENGINEER OF RECORDS

MINIMUM OF 3 DAYS TO SCHEDULE SITE OBSERVATION VISIT. 3. PREMATURE NOTIFICATION FOR SITE VISIT WILL RESULT IN AN ADDITIONAL SITE VISIT WITH ALL EXPENSES AND FEES PAID BY THE CONTRACTOR.

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ABBREVIATIONS
          ADDITIONAL
          ALTERNATI
          ANCHOR BOLT
          ABOVE FINISHED FLOOR
          AIR CONDITIONING
          AMERICAN PLYWOOD ASSOCIATION
         AMERICAN INSTITUTE OF STEEL CONSTRUCTION AMERICAN SOCIETY OF TESTING MATERIAL
BLK.
          BLOCK
BLW.
           BOUNDARY NAILING
             ETWEEN
           BUILDING
BEARING
           BOTTOM OF
           CANTILEVER
           CAST IN PLACE
           CENTERLINE
            LEAR (CLEARANCE)
           COLUMN
           CONCRETE MASONRY UNIT
 CONN.
CONT.
CONST.
           CONNECTION
           CONSTRUCTION JOINT/CONTROL JOINT
           CHAMRER
           CENTER TO CENTER
            EILING JOIST
           DIAPHRAGM
          NAIL PENNY SIZE
           EDGE NAILING
            QUIPMENT
            XTERIOR
           EMBEDMENT
           EXPANSION JOINT
           FIELD NAILING
          FACE OF STUD
          FLANGE
          FOUNDATION
          FULL PENETRATION
F.G.
GRD.
GA.
GALV.
G.B.
          FINISH GRADE
          GALVANIZED
          GLUED LAMINATED BEAM
           GYPSUM BOARD
          GENERAL
          HANGER
          HEIGHT
          HEADED ANCHOR STUDS
           INTERIOR
             INCH
         LONG
LONG LEG HORIZONTAL
LONG LEG VERTICAL
          LAG SCREW/BOLT
          MACHINE BOLT
          MANUFACTURER
          MAXIMUM
          MECHANICAL
          MATERIAL
          NOT IN CONTRACT
           NUMBER
           OUTSIDE FACE
          OPENING
OPPOSITE
          PRESSURE TREATED
          PARTIAL PENETRATION
          PERPENDICULAR
          POUNDS PER SQUARE FOOT
          REINFORCING
           SPECIFICATION
           STRUCTURAL/STRUCTURE
                POINT
           THICKNESS
         TUBE STEEL/STRUCTURAL TUBING
          TOP OF STEEL
          TOP OF WALL
```

LEDGER TOP OF LEDGER

WITH OUT

WORKING POINT

UNIFORM BUILDING CODE

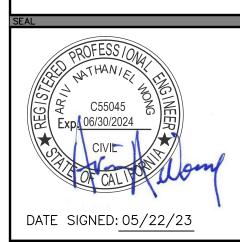
DOUBLE EXTRA STRONG.

UNLESS NOTED OTHERWISE



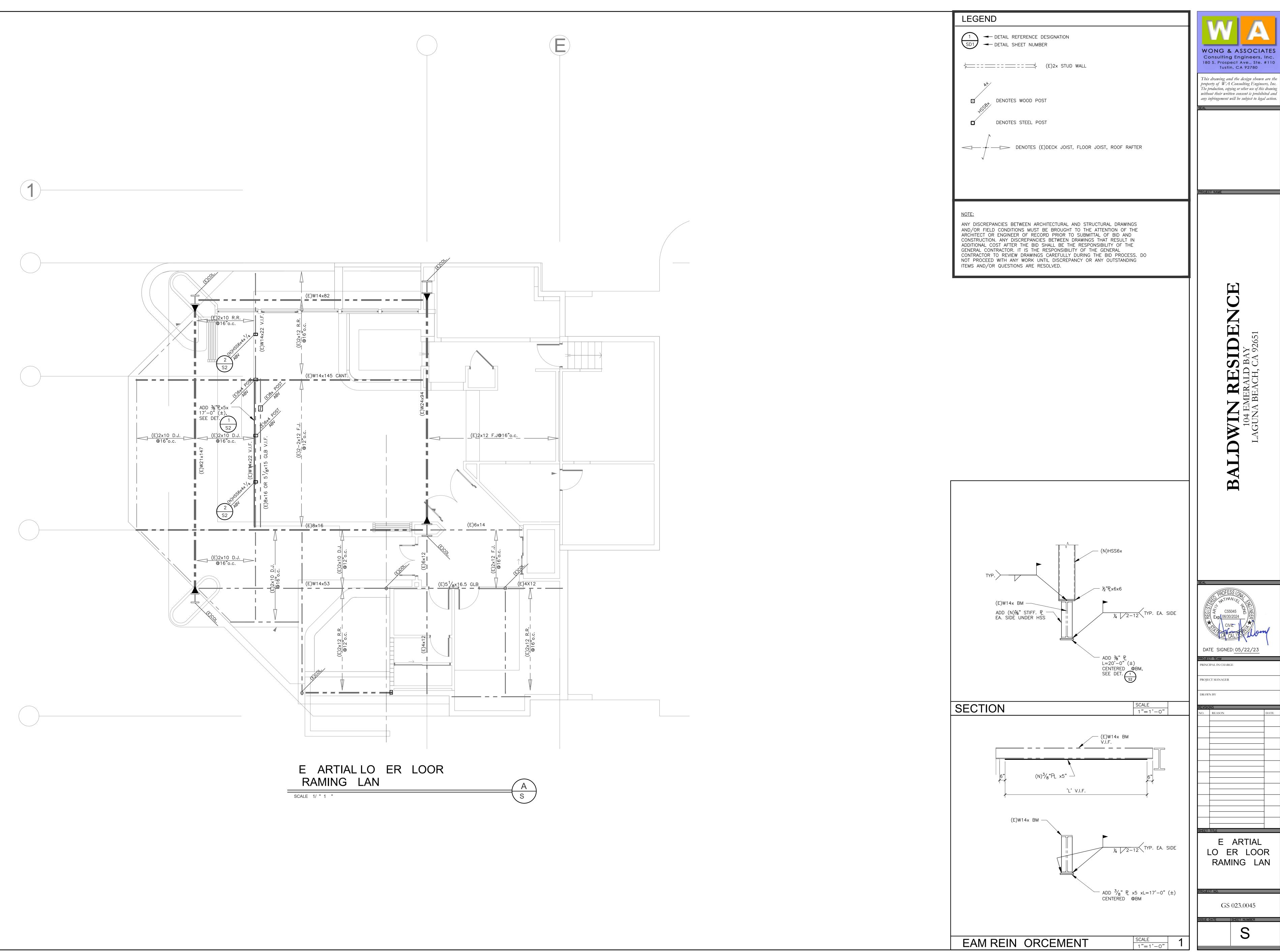
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ROJECT NAME

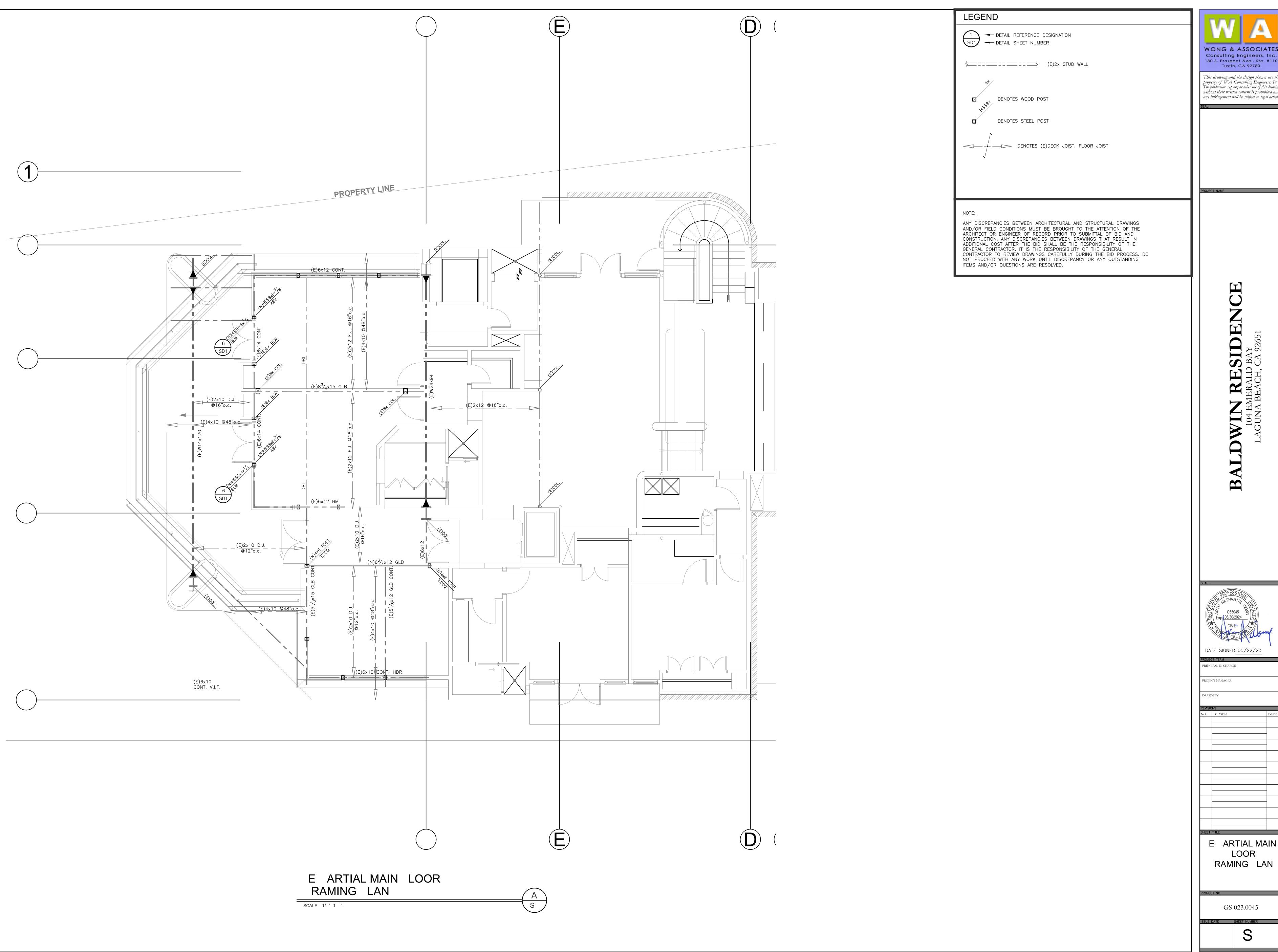


GENERAL STRUCTURAL

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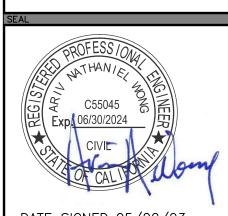


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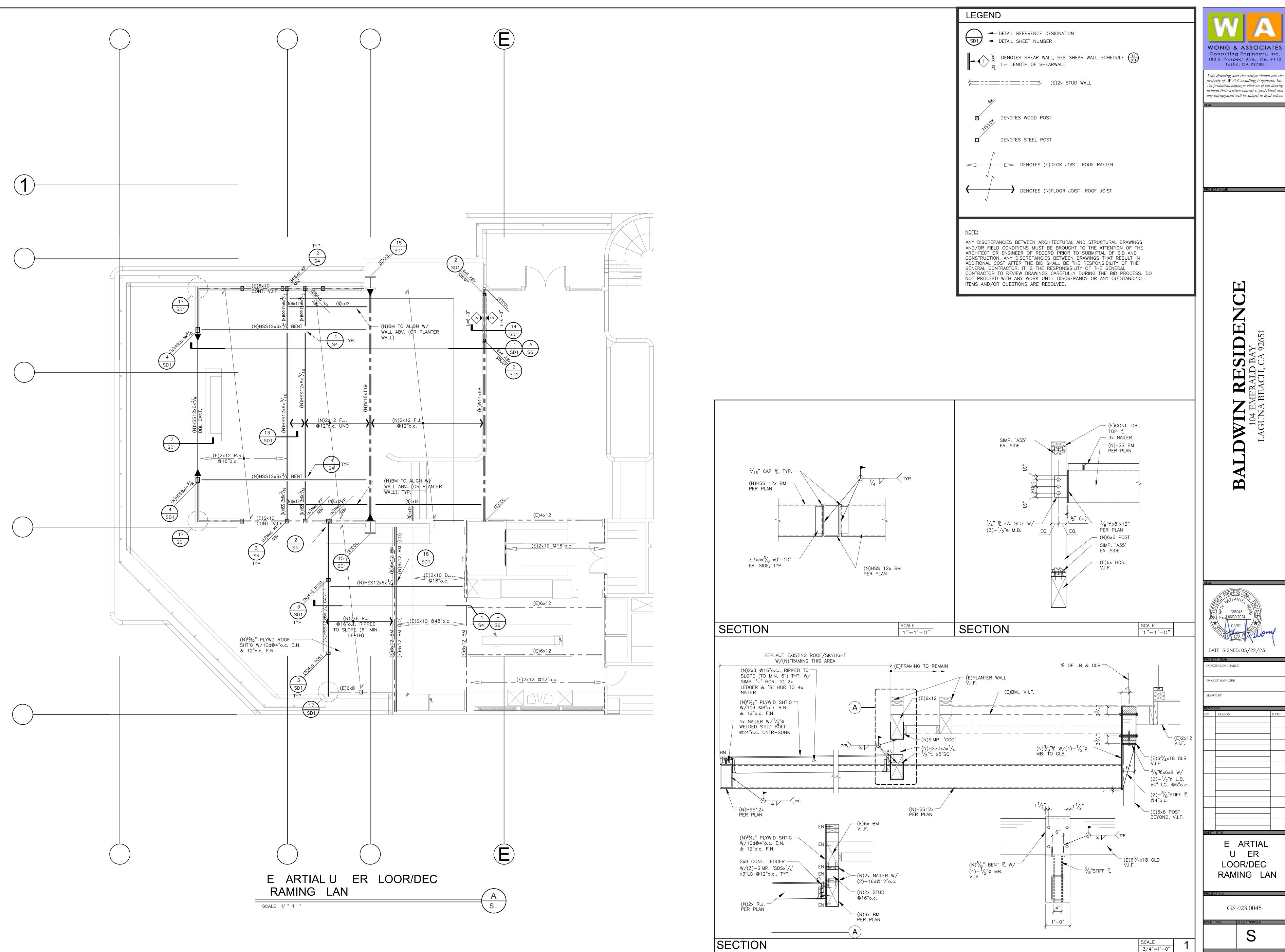
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