CITY OF OAKLAND
BUILDING SERVICES

BUILDING SERVICES DIVISION
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612
510.238.3443 FAX: 510.238.2263

PERMIT INSPECTION MANUAL

Residential Repairs & Replacements

Oakland Municipal Code
Oakland Planning Code

California Building Code
California Electrical Code
California Plumbing Code
California Mechanical Code
California Green Building Code
California Residential Building Code

This Manual contains many deficiencies commonly identified during the permit processing and permit inspections of residential buildings. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

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INTRODUCTION

If a builder builds a house for someone, even though he has not yet completed it, and if then the walls seem toppling, the builder must make the walls solid from his own means. Code of Hammurabi (1772 B.C.E.)

Regulations for building construction have existed in one form or another since the time of the Babylonians. The excerpt above shows that for thousands of years safety in building construction has been sufficiently important for society to codify it as law. Modern building codes still maintain structural safety as primarily important, and also include minimum performance standards and prescriptive methods of construction. Responsibility for compliance has expanded to include the Designer, the Jurisdiction, the enforcement Official, and the Inspector.

The Inspector has two primary responsibilities:

- assuring that construction conforms with the approved plans, adopted codes, and applicable regulations and ordinances, and
- assisting builders with resolving construction-related problems, foreseeing potential code-related issues, and moving the construction process forward.

Maintaining positive relationships with co-workers and the public is an essential part of the Inspector's job. Courtesy, forthrightness, and reasoned application of codes and regulations are the minimum expectations of owners and contractors. Performing thorough inspections, identifying deficiencies, advising remedies, and maintaining clear and concise records are the minimum expectations of the employer. Inspectors are part of, not independent from, the regulatory team. Denigrating the employer or co-workers or failing to read, understand and follow the approved plans, codes, and applicable regulations and ordinances degrades the Inspector's professional competence and diminishes the reputations of co-workers and the employer.

This Manual is organized by chapters starting with administration and followed in progression of construction from foundation through final inspection. Inspection check lists are provided as an aid, but not a complete source, for the inspection process.

Chapter 1

PERMIT AND INSPECTION RECORDS

This chapter introduces the minimum documentation necessary to issue Permits and perform inspections (Permit Documents). These include the Permit, Permit Inspection Record, Soils and Special Inspection Reports, Structural and Energy Calculations, and Approved Plans.

Permit and Inspection Records provide important information such as the permit number, job site address, work description, owner, contractor, and issued date (see permit expiration). Related permits for the project are shown under the description field. Separate Job Cards for related permits are only issued when subcontractors are issued separate trade permits (electrical, plumbing, etc.). Only copies of issued permits may be taken into the field.

Other important information on the Permit and Job Card includes the type of work (1 = new, 2 = repair, 3 = addition, 6 = demolition, etc.) , type of construction (VB = wood framing non-fire rated), estimated value of work (basis for permit fees), number of dwelling units, and occupancy of the building (R3 = one & two family dwelling, R2 = 3+ dwelling units, etc.). Should your inspection assignment be other than Type 2 or Type 6, discuss this with the Senior Specialty Combination Inspector before leaving the office. The value of the work should be revised if the scope of work increased or decreases during construction. Issue a Correction Notice with the revised description and valuation advising the permittee to go immediately to the Permit Counter.

If the Sprinkler field has "yes", the building has an automatic fire extinguishing system (AFES), and the Fire Inspector must approve any alterations (new or relocated head, etc.) or potential obstructions (new wall, etc.) before an "ok to cover" and "final" are approved. Plans, topographic and boundary survey, soils report, structural calculations, and energy calculations will be in the Records Archive if these documents are submitted as part of the permit package. If the "Zone Insp" field has a fee, additional inspections by the Planner for the Zoning Permit are required before Major Inspections (Foundation, Frame, Rough, Final) are approved. Otherwise, the Specialty Combination Inspector is responsible for assuring compliance with the Planning Code. Special Inspections (concrete, reinforcing steel, welding, design engineer, etc.) are shown next to the fees along with their name and approval date. The Specialty Combination Inspector is also responsible initialing and dating the inspection boxes on the Job Card to record approvals. The "Project Final" field is filled-in when the entire project is completed. After the project is finaled, the Specialty Combination Inspector forwards the Permit Documents to Records staff for scanning.

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Appl# RB1201005 Job Site 1819 74TH AV Parcel# 040 -3317-003-00
District: RD-INSP 05
Descr Remodel kitchen & bath; non-structural. Install 21 retrofit window inserts with retention of original framing materials per Sect. 3403.1 exceptn #2; safety glazing per Code. Permit Issued 03/28/12
To schedule inspection call (510) 238-3444
Related RE1200930 RP1200698 RM1200533

Work Type ALTERATION #Units 2 Plans Energy Calcs
Bldg Sq Ft #Stories 1 Survey Struct Calcs
Est Value $15,000 Const Type 5B Soil Report Occup Codes R-3
Bldg Use DUPLEX Sprinkler Zoning

	Applcnt	Phone#	Lic#	--License Classes--
Owner MILLS JIMMIE L & WELLS HENRIET				
Contractor BQP CONSTRUCTION	X	(510)282-9767	910468 B	C10
Arch/Engr				
Agent				

Applic Addr 469 SPRINGS RD, VALLEJO, CA, 94590

$1,271.19 FEES TO BE PAID AT ISSUANCE

$71.00	Applic	$125.24	State Bldg
$341.55	Process	$.00	School
$.00	Bedroom	$.00	Plot Plan
$.00	Address	$.00	
$1.50	SMIP	$58.16	Tech Enhc
$.00	Fire	$.00	Zoning Cnd
$379.50	Inspectn	$105.24	Recd Mgmt
$.00	Wrk Comc	$15.00	Gen Plan
$.00	Other	$.00	Fld Chk
$173.00	Zone Insp	$.00	Proc Coord
$1.00	CBSC		

Plans Checked By _____ Date _____ Permit Issued By _____ Date _____
Special Inspections
Finaled By _____ Date _____

ADDRESS

DIST

CITY OF OAKLAND

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Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Permit# RB1201005 Parcel# 040 -3317-003-00 1819 74TH AV
Related RE1200930 RP1200698 RM1200533

Licensed Contractors' Declaration
I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Construction Lending Agency Declaration
I hereby affirm under penalty of perjury that there is a construction-lending agency for the performance of the work for which this permit is issued, as provided by Section 3097 of the Business and Professions Code. N/A under Lender implies No Lending Agency.

Lender_____
Address_____

Workers' Compensation Declaration

I hereby affirm under penalty of perjury one of the following declarations:

[ ] I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

[ ] I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

[ ] I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE ONE HUNDRED THOUSAND IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3707 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

Hazardous Materials Declaration
I hereby affirm that the intended occupancy [ ] WILL [ ] WILL NOT use, handle or store any hazardous, or acutely hazardous, materials. (Checking "WILL" acknowledges that Sections 25505, 25533, & 25534 of the Health & Safety Code, as well as filing instructions were made available to you.)

I HEREBY CERTIFY THE FOLLOWING: That I have read this document; that the above information is correct; and that I have truthfully affirmed all applicable declarations contained in this document. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection purposes.

I hereby agree to save, defend, indemnify and keep harmless the City of Oakland and its officials, officers, employees, representatives, agents and volunteers from all actions, claims, demands, litigation, or proceedings, including those from attorneys' fees, against the City in consequence of the granting of this permit or from the use or occupancy of the public right-of-way, public easement, or any sidewalk, street or sub-sidewalk or otherwise by virtue thereof, and will in all things strictly comply with the conditions under which this permit is granted. I further certify that I am fully authorized by the owner to access the property and perform the work authorized by this permit.

Name :_____

Signature _____
Contractor, or [ ] Agent Date

NOTICE: No activities related to the approved work, including storage/use of materials, is allowed within the public right-of-way without an encroachment permit. Dust control measures shall be used throughout all phases of construction.

ADDRESS:_____
DIST:_____

The Job Card summarizes the inspection history for a project. After each inspection, additional notes related to an approval or partial approval are written on the back page under the appropriate trade heading. Note that the back page of the job card must not be used to record corrections. Always use a Correction Notice for recording deficiencies. Notes on the back page of the job card should always be data entered in the F-24 screen in PTS. If MAJOR INSPECTIONs are not approved every six months, the permit will expire.

CITY OF OAKLAND
Department of Planning and Building
BUILDING SERVICES
250 Ogawa Plaza · 2nd Floor · Oakland, CA 94612
telephone (510) 238-3444 · facsimile (510) 238- 7287 · www.oaklandnet.com

PERMIT INSPECTION RECORD

ONE and TWO-FAMILY DWELLINGS

California Residential Building, Electrical, Plumbing, Mechancial, Energy, and Green Buildng Codes
Oakland Building, Planning, Sustainablity, Fire, and Municipal Codes

Address: _____ Suite:_____ APN:_____
_____
Description: _____
Owner: _____ Issued:_____
Contractor:_____ Type:_____
Construction:_____ Sprinklers: Yes____ No _____
Spec Insp: _____

pre-paid inspections

	GENERAL NOTES
1a	This Inspection Record Card and the Approved Plans must be readily available for all inspections. Protect all documents from the weather.
1b	All construction must remain readily visable for inspection until the "OK TO CONCEAL" or "OK TO COVER" boxes on this Inspection Record Card have been signed and dated by the City inspector.
1c	Noise levels and Hours of Construction shall conform with the Zoning Conditions of Approval and Oakland Municipal Code regulations.
1d	Follow all hazardous material testing, worker protection, remediation, and disposal regulations (lead-based paint, asbestos, etc.).
1e	Toilet facilities must be provided on-site for construction workers.
	PERMIT EXPIRATION & REFUNDS
2a	A permit may be extended (fee required) for a total of one year from the date of issuance only if no inspections have been performed.
2b	Each permit will expire separately unless each of the Major Inspections (Foundation, First Floor, Frame, Final) is approved by the City Inspector every 6 months (or sooner). An expired permit cannot be reinstated if an inspection has been performed.
2c	A Refund Request must be filed for all refunds. Up to 80% of inspection fees may be refunded if no inspections have been performed. No fees may be refunded more than 180 days after a permit has expired.
	SITE MAINTENANCE
3a	"Best Management Practices" must be used daily for dust control and to protect storm water drainage systems (C6).
3b	Jobsite must be cleaned daily of trash and debris. Construction materials must be neatly stockpiled on-site. Vehicles and equipment must be parked on-site (see 5a below).
	INSPECTIONS
4a	To avoid being charged for an inspection, a cancellation must be received before 9:00 am on the morning of the scheduled inspection.
4b	For Building (RB), Electrical (RE), Plumbing (RP), Mechanical (RM), Grading (GR), Solar (SE, SP), Zoning, and Infrastructure (PX, PZ) inspections, call (510) 238-3444 weekdays 8:00 am to 4:00 pm, Wednesdays 9:30 am to 4:00 pm well in advance. Each permit must be scheduled separately.
4c	For Fire inspections, call (510) 238-3851. For Public Works inspections, call (510) 238-3651. For EBMUD sewer lateral certification inspections, call (866) 403-2683.
4d	When a permit is Greenpoint or LEED energy rated, third-party inspections by a pre-Certified Rater must be also be completed. City inspections are not a substitute for the Certified Rater's inspections and approvals.
	ADDITIONAL PERMITS
5a	Separate permits (OB) are required to reserve curbside parking or to obstruct the sidewalk or street in any way (scaffolding, pedestrian canopy, construction fencing, material stockpiles, debris dumpsters, traffic lane closure, etc.).
5b	Separate Fire Prevention Bureau permits are required for fire sprinkler and fire alarm systems.
5c	Separate permits (X, SL, CGS) are required for excavation and repair work in the Public Right-of-Way (sidewalk, curb, gutter, driveway approach, sewer

MAJOR INSPECTIONs must be approved every six months or the permit will expire..

1	FOUNDATION Major Inspection	2	FIRST FLOOR Major Inspection	3	FRAME Major Inspection	4	FINAL Major Inspection	5	SITE
ELECTRICAL		**ELECTRICAL**		**ELECTRICAL**		**ELECTRICAL**		**PRE-CONSTRUCTION**	
RE 10	CONSTRUCTION POWER	RE 20	UNDERFLOOR	**RE 30**	SUBPANEL / FEEDER	**RE 40**	UTILITY RELEASE	**S 50A**	CONSTRUCT MNGT PLAN
RE 11	UFER			**RE 31**	INTERIOR / EXT WIRING	**RE 41**	ENERGY CODE	**S 50B**	OBSTRUCT / ENCROACH
RE 12	UNDERGROUND			**RE 32**	BOX MAKE-UP	**RE 42**	CALGREEN	**S 50C**	SURVEY / ELEVATION
				RE 33	SMOKE & CO ALARMS			**S 50D**	GRADING
				RE 38	FRAME O.K.	**RE 86**	**FINAL ELECTRICAL**	**S 50E**	CREEK PROTECTION
PLUMBING		**PLUMBING**		**PLUMBING**		**PLUMBING**		**S 50F**	TREE PROTECTION
RP 10	UNDERGROUND	**RP 20**	UNDERFLOOR	**RP 30**	DWV PIPING	RP 40	WATER SERVICE	**S 50G**	VEGETATION CLEARING
RP 11	BACKWATER VALVE			**RP 31**	GAS PIPING	RP 41	GAS TEST	**S 50H**	DUST & EROSION CONTROL
				RP 32	WATER PIPING	RP 42	UTILITY RELEASE	**S 50J**	C6 & RAINWATER RUNOFF
				RP 33	TUB / SHOWER PAN	RP 43	ENERGY FORMS / CALGREEN	**S 50K**	EXCAVATION SHORING
				RP 34	ANTI-SIPHON VALVE	RP 44	CHLORINATION / SI REPORTS	**S 50L**	TRAFFIC CONTROL & PARKING
				RP 38	FRAME O.K.	RP 86	**FINAL PLUMBING**	**S 50M**	BLIGHT/ NOISE/ TOILET
MECHANICAL		**MECHANICAL**		**MECHANICAL**		**MECHANICAL**		**INFRASTRUCTURE**	
RM 10	UNDERGROUND	RM 20	UNDERFLOOR DUCTS	RM 30	FLUE	RM 40	EQUIPMENT	PZ 50	SEWER / BACKWATER
RM 11	RADIANT/ COILS	RM 21	RADIANT / COILS	RM 31	RADIANT / COILS	RM 41	ENERGY FORMS / CALGREEN	PZ 51	STORM DRAIN
				RM 32	DUCT (LOW PRESSURE)			PZ 52	DRAINAGE
				RM 33	MANUF FIREPLACE			PZ 53	HARDSCAPE
				RM 34	COMBUSTION AIR			PZ 54	SHARED DRIVEWAY
				RM 35	EXHAUST DUCTS			PZ 55	C3 FACILITY
				RM 38	FRAME O.K.	RM 86	**FINAL MECHANICAL**	PZ 86	**FINAL INFRASTRUCTURE**
BUILDING		**BUILDING**		**BUILDING**		**BUILDING**		**GRADING**	
RB 10	SURVEY / STAKING	**RB 20**	FLOOR ELEVATION	**RB 30**	ROOF FRAMING & NAILING	**RB 40**	DECK / RETAIN WALL	**GR 50**	SUBGRADE
RB 11	SETBACK	**RB 21**	PRE-FRAME ROOF HEIGHT	**RB 31**	ZONING ROUGH	**RB 41**	ZONING CONDITIONS	**GR 51**	PAD
RB 12	**SP INSPECT REPORT**	**RB 22**	**SP INSPECT REPORT**	**RB 32**	**SP INSPECT REPORT**	**RB 42**	**SP INSPECT REPORT**	**GR 52**	**SP INSPECT REPORT**
RB 13	PIERS	**RB 23**	FLOOR FRAMING	**RB 33A**	FIRE RATED ASSEMBLY	**RB 43**	ENERGY CF-6R	**GR 86**	**FINAL GRADING**
RB 14	FOOTING / GRADE BEAM	**RB 24**	INSULATION	**RB 33B**	SOUND ASSEMBLY	**RB 44**	CALGREEN	**RIGHT OF WAY**	
RB 15	EMBEDMENTS			**RB 34A**	SHEAR INTERIOR	**RB 45**	GPR COMPLIANCE	**PX 50**	SIDEWALK / DRIVE-WAY
RB 16	SLAB FLOOR/ VAPOR BARRIER			**RB 34B**	SHEAR EXTERIOR	**RB 46**	SMOKE & CO ALARMS	**PX 51**	EBMUD LATERAL CER-TIFICATION
RB 17	WP PROTECTION & DRAINAGE			**RB 35**	FLOOR & WALL FRAMING	**RB 47**	RECYCLING CDSR	**PX 86**	**FINAL ROW**
RB 18	MASONRY WALLS			**RB 35B**	INSULATION	**RB 48**	OK TO OCCUPY	**6**	FIRE MARSHALL
				RB 36B	WP MEMBRANE			**FM 86**	**FINAL FIRE (510) 238-3851**
				RB 37	EGRESS WINDOWS SAFETY GLAZING			**7**	PLANNING
				RB 38	OK TO COVER			**ZC 58**	ROUGH
				RB 39A	TUB / SHOWER WALL			**ZC 59A**	LANDSCAPE / HARD-SCAPE
				RB 39B	GYPSUM WALL-BOARD			**ZC 59B**	SITE IMPROVEMENTS
				RB 39C	FIRE SAFING	**RB 86**	**FINAL BLDG**	**ZC 86**	**FINAL ZONING**
1 86	**FOUNDATION APPVD**	**2 86**	**FIRST FLOOR APPVD**	**3 86**	**FRAME APPVD**	**4 98**	**RESIDENCE FINAL**	**9 99**	**PROJECT FINAL**

INSPECTOR NOTES ONLY

date sign	BUILDING

date sign	ELECTRICAL

date sign	PLUMBING

date sign	MECHANICAL

date sign	INFRASTRUCTURE

date sign	RIGHT OF WAY

date sign	C6 & EROSION CONTROL/ BLIGHT & DUST/ CONSTRUCTION HOURS & NOISE/ PARKING & TRAFFIC CONTROL/ CREEK & TREE PROTECT'N

date sign	ZONING

The Daily Activity Report (DAR) is used by administrative staff to data enter inspection results into PTS. Required data fields are: inspection type, result, inspection time, mileage traveled, Inspector initials and short notes. The Comments field is limited to 80 characters and is used to record approval notes (e.g., ok to sheet rock pending Fire approval of sprinkler heads) or informational notes (e.g., canceled in office). Deficiency notes should be entered in the F-24 screen by the Specialty Combination Inspector. Inspection Type codes are shown on the front of the Job Card. Inspection Result codes are shown on the back of the Job Card and below. Arrival and departure times at the jobsite and mileage traveled between job sites are required. DARs should be filled-in before leaving a jobsite and turned-in at the end of the work day.

Inspection Result codes

88 STOP WORK	89 SUSPEND PERMIT	90 INSPECTION NOT PERFORMED	91 INSPECTION CANCELLED
92 NOT READY	93 ADDRESS NOT FOUND	94 NO ACCESS/PLANS NOT AVAILABLE	
95 RE-INSPECT FEE	96 CORRECTION NOTICE	97 PARTIAL APPROVAL	98 APPROVED

Inspection Result Codes are listed on the back of the Job Card. The numbers are entered on the DAR.

The back page of the Job Card must NOT be used to record deficiencies. Always use a Correction Notice.

DAILY ACTIVITY REPORT INSPECTOR: MORIARTY DATE: 04/02/12

NON-INSPECTION HOURS

INSPECTOR INITIALS

1 OF 1

Mileage Beg 036519 End 036543 Parking $_____

WXM

OUT 10:30 AM - IN 14:45 PM

INSPECTION ACTIVITY

#	CALL TYP	ADDRESS	SUITE	A P	APPL#	INSPECT TYPE	RSLT	START TIME	END TIME	TRVL MLGE
[redacted]		720 E 11TH ST			M1000702	58	92	13:00	13:05	2.0
	PMD-INSP 03									
	Cmts: NOT Ready - No progress									
[redacted]		720 E 11TH ST			P1001015	42	97	13:05	13:40	2.0
	PMD-INSP 03									
	Cmts: DWV STACK PARTIAL TOWNHOUSES									
[redacted]		165 GRAND AV	10FLR	A	M1200318	56	98	11:45	11:55	2.0
	PMD-INSP 01					186	98	11:55	12:05	
	Cmts: Two (2) FSd's, Final mechanical insp.									
[redacted]		1633 HARRISON ST			M1200468	58	97	10:30	11:00	.50
	PMD-INSP 01									
	Cmts: 5th Floor subducts/shaft Less #508. cover ok									
[redacted]		1633 HARRISON ST			P1101351	46	97	11:00	11:45	.50
	PMD-INSP 01									
	Cmts: 6th Floor TUB TESTS completed									
[redacted]		7799 PARDEE LN			M1101888	86	98	13:40	14:00	5.0
	PMD-INSP 06A									
	Cmts: Final mechanical FOR washing equip									
[redacted]		7799 PARDEE LN			P1102549	86	98	14:00	14:20	5.0
	PMD-INSP 06A									
	Cmts: Final plumbing inspection completed									
[redacted]		540 21ST ST	1-10	A	M1200513	56	97	12:05	12:20	1.0
	PMD-INSP 01					58	97	12:20	12:30	
	Cmts: 1ST Floor, Scope 9 FSd - OK TO SET Angles									
[redacted]		3760 39TH AV			P1200385					
	PMD-INSP 04B									
	Cmts: Ken Palmer									
[redacted]		1155 5TH ST			P1102643	41	97	12:30	12:50	3.0
	PMD-INSP 01									
	Cmts: UNDERFLOOR DRAIN THRU FOOTING - OK'd									
								:	:	
	Cmts:									
								:	:	
	Cmts:									

1 OF 1

Chapter

2

JOBSITE RESPONSIBILITIES

- Checklists are a reference guide to assist inspectors and permittees with the identifying common code deficiencies and promoting inspection consistency. Checklists do not include all code or individual approved plan requirements. Checklists do not waive code requirements not listed or allow a diminishment of the requirements of a performance (engineered) design. Checklists do not add requirements where minimum code requirements have been achieved. The Inspector is responsible for identifying all applicable deficiencies during each inspection.
- All Permit and Inspection Documents (approved plans and revisions, energy forms, special inspection approvals, equipment installation instructions, etc.) must be readily available at the jobsite for each inspection.
- Inspectors must review all Permit and Inspection Documents before performing any inspection.
- The owner, permittee, or other authorized person on the jobsite is responsible for keeping the jobsite clean, installing and maintaining wind and water erosion control measures, and providing safe access for the inspector to perform all inspections.
- Ladders, lifts, access equipment, trench shoring, scaffolding, etc. shall minimally conform to CalOSHA standards. Inspectors shall not position, extend, adjust, or move ladders or access equipment.
- The owner, permittee, or other authorized person on the jobsite is responsible for removing screws, bolts, and similar fasteners which secure access panels, covers, doors, etc. to perform inspections.

DEPARTMENT of PLANNING and BUILDING

CITY OF OAKLAND 250 FRANK OWAGA PLAZA. 2nd FLOOR, OAKLAND CA 94612

TO: Oakland Builders and Property Owners

FROM: Building Services - Inspection Division

SUBJECT: Jobsite Blight, Drainage Protection, and Toilet Facilities

Your construction project is an important asset to our City. Keeping Oakland beautiful and safe benefits all of us, including you, your employees, your subcontractors, your clients, and your neighbors.

Following the requirements listed below from Oakland's Blight Ordinance (Municipal Code Chapter 8.24) and federal Clean Water National Pollution Discharge Elimination System regulations (NPDES) will assure that your jobsite complies with local, regional, state, and federal laws.

- Keep your work areas clean. Provide adequate debris containers. Regularly remove trash and debris from your jobsite and immediately remove litter from the neighborhood which originated from your jobsite.
- Follow "Best Management Practices" for rainwater runoff, soil erosion, and dust control (C6 regulations). Install and maintain fugitive dust barriers for soil stockpiles, palliative dust control for grading, silt fences and wattles, street drain-inlet protection, etc. Immediately remove soil from the street which originated from your jobsite. Locate your portable toilet on-site and well-away from the street.
- Inform your employees and subcontractors about the blight and clean water regulations and the severe sanctions for non-compliance.

Failure to comply with City anti-blight and federal anti-pollution regulations will subject you to significant penalties, including the following:

- suspending your permit and/or issuing a Stop Work Order, and
- assessment of substantial fees and fines.

If you have any questions, please contact your Inspector at (510) 238-3381.

CITY OF OAKLAND

DEPARTMENT of PLANNING and BUILDING
250 FRANK OWAGA PLAZA. 2nd FLOOR. OAKLAND CA 94612

RESIDENTIAL INSPECTION - "C6" BEST MANAGEMENT PRACTICES

The following provisions are applicable for "limited" projects that will not expose or otherwise disturb on-site soil during construction.

- Stockpiles of landscaping amendments, sand, aggregates, and other fugitive-dust materials (gypsum wallboard debris and "mud" packaging, etc.) shall be protected from water and wind transport off-site.
- Fuels, oils, solvents, paints, and other toxic materials shall be stored and used in accordance with their Material Safety Data Sheets (MSDS). Approved storage containers shall be protected from the weather. Spills shall not be washed into the street.
- Runoff from pervious and impervious surfaces, equipment and vehicle washing, and similar activities shall be contained on-site.
- Concrete wash-down shall be contained on-site. Concrete waste-piles shall be disposed as solid waste.
- Trash and debris containers shall be covered.
- Sediment and similar materials shall not be transported off-site by vehicle traffic. Construction entrances shall be stabilized to contain tire-deposits (gravel, wash-down pit, etc.).

Other:

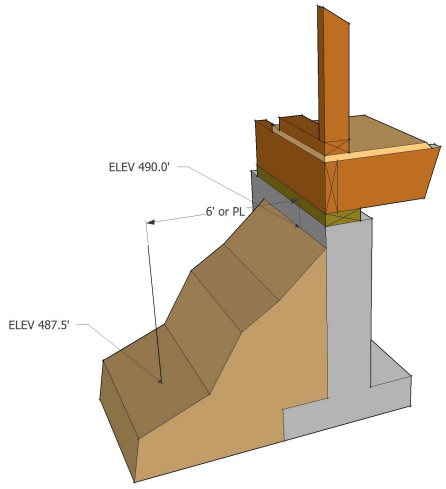
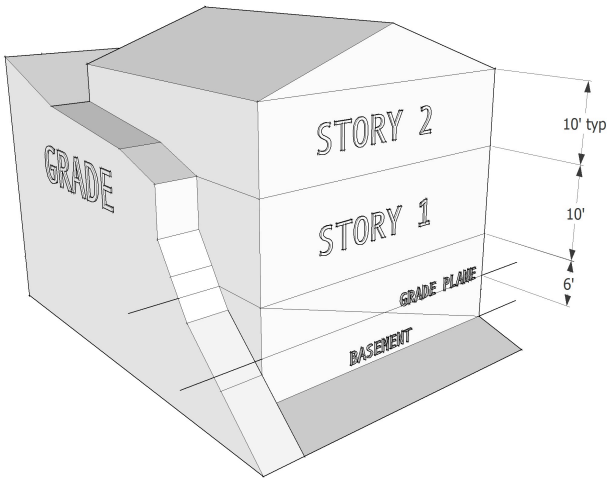
Chapter

3

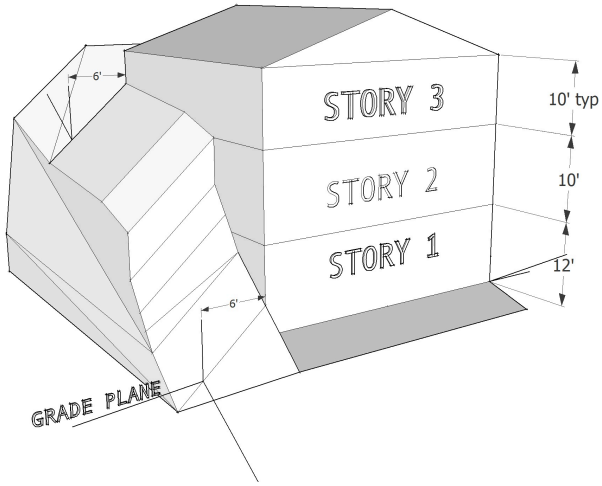
SITE TOPOGRAPHY

Based on the 2010 California Building Code

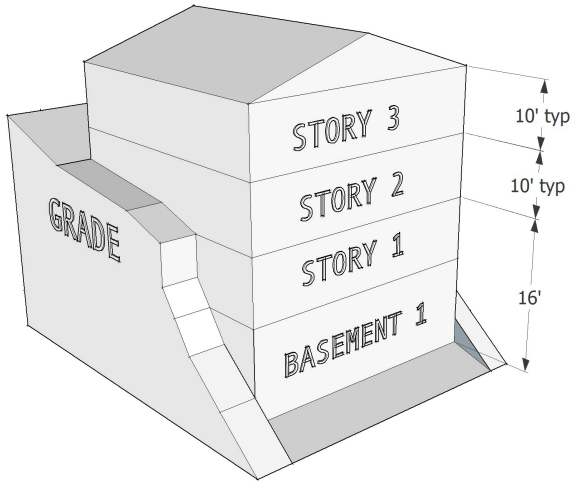
<table>
<tr><th colspan="3">GRADE PLANE AND BUILDING STORY</th></tr>
<tr><td>Grade Plane reference elevation</td><td colspan="2">The reference elevation of the Grade Plane is the average of the lowest and highest finished ground elevations around the perimeter of the building's exterior walls measured horizontally to the closer of the of the property line or a point 6 feet from the exterior wall.</td></tr>
<tr><td>finished grade slopes down from the exterior wall</td><td>For the illustration at the right, the finished grade elevation is 487.5 feet.

The Grade Plane reference elevation is the average between the lowest and highest finished grade elevations around the building perimeter.</td><td> 
</td></tr>
<tr><td>1st Story above Grade Plane</td><td colspan="2">The first story is the finished floor surface which is entirely above the Grade Plane, or which is either:
o more than 6 feet above the Grade Plane for more than 50% of the perimeter of the exterior walls, or
o more than 12 feet above the Grade Plane at any point</td></tr>
<tr><td>finished grade slopes up from the exterior wall</td><td>For the illustration at the right, the ground floor is more 6 feet above the Grade Plane for more than 50% of the building perimeter, and therefore, it is defined as a basement.</td><td> 
</td></tr>
</table>

Story	A story is the portion of a building between two adjoining floor surfaces or the floor surface and roof above. It is measured vertically between the tops of two successive tiers of beams or finished floor surfaces or between the top of the finished floor surface and either the top of the ceiling joist or combined ceiling/rafter.
Basement	A floor (or floors) that is not a story above the Grade Plane



Site conditions may define all floor levels as Stories, regardless of how much of the building is below-ground.



Story 1is more than 12 feet above the Grade Plane at any point, but the basement is not.

ROOF, STORY, AND CEILING HEIGHT

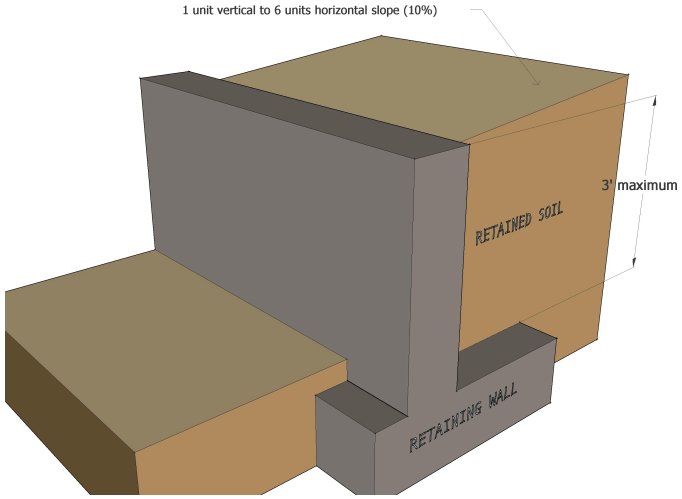
R305.1.1	Portions of basements that do not contain habitable space, hallways, bathrooms, toilet rooms, or laundry rooms shall have a ceiling height of not less than 6 feet 8 inches (*see OMC amendment*). **Exception:** Beams, girders, ducts or other obstructions may project to within 6 feet 4 inches of the finished floor.
OMC amendment	15.04.1030 - Section R303.1 amended. Replace 7 feet with "7 feet 6 inches in habitable spaces, 7 feet in non-habitable spaces,"
Story Height R301.3	For wood wall framing, the laterally unsupported bearing wall stud height permitted by Table R602.3 (5) **(=10'**) plus a height of floor framing not to exceed 16 inches. **Exception:** For wood framed wall buildings with bracing in accordance with Tables R602.10.1.2 (1) and R602. 10. 1.2(2), the wall stud clear height used to determine the maximum permitted *story height* may be increased to 12 feet without requiring an engineered design for the building wind and seismic force resisting systems provided that the length of bracing required by Table R602.10.1.2 (1) is increased by multiplying by a factor of 1.10 and the length of bracing required by Table R602.10.1.2 (2) is increased by multiplying by a factor of 1.20. Wall studs are still subject to the requirements of this section.
Building Height	The vertical distance measured from the Grade Plane to the average height of the highest roof surface.
Height Limitations	Wood framed buildings shall be limited to three stories above the Grade Plane or the limits in Table R602.10.1.2(2).
Mezzanine	A *mezzanine* shall be considered a portion of the *story* in which it is contained. Such *mezzanines* shall not contribute to either the *building area* or number of *stories* as regulated by Section 503.1. The clear height above and below the *mezzanine* floor construction shall not be less than 7 feet. CBC 505.2 Area limitation. The aggregate area of a *mezzanine* or *mezzanines* within a room shall not exceed one-third of the floor area of that room or space in which they are located. The enclosed portion of a room shall not be included in a determination of the floor area of the room in which the *mezzanine* is located. In determining the allowable *mezzanine* area, the area of the *mezzanine* shall not be included in the floor area of the room.

<table>
<tr><th colspan="6">Emergency Egress (not required if fire sprinklered)</th></tr>
<tr><th>STORY</th><th>TYPE</th><th>LOCATION</th><th colspan="3">ACCESS</th></tr>
<tr><td>1st</td><td rowspan="2">window
(or exterior door)</td><td>sleeping rooms</td><td>5.7 sq ft opening</td><td rowspan="2">44 inch max. sill height</td><td rowspan="2">Opening min. height or width</td></tr>
<tr><td>2nd to 4th</td><td>sleeping rooms</td><td>5.0 sq ft opening</td></tr>
<tr><td rowspan="3">basement</td><td rowspan="3">window
(or exterior door)</td><td>If over 200 sq ft and not used for mechanical equipment R310.1</td><td>5.7 sq ft opening</td><td>44 inch max. sill height</td><td>Opening min. height or width</td></tr>
<tr><td>window well required if sill is below grade</td><td colspan="3" rowspan="2">well 9 sq ft & 36 inch clear projection from building & interior steps to sill if more than 44 inches high</td></tr>
<tr><td>ships ladder or steps to-grade if well more than 44 inches below grade</td></tr>
</table>

RETAINING WALL

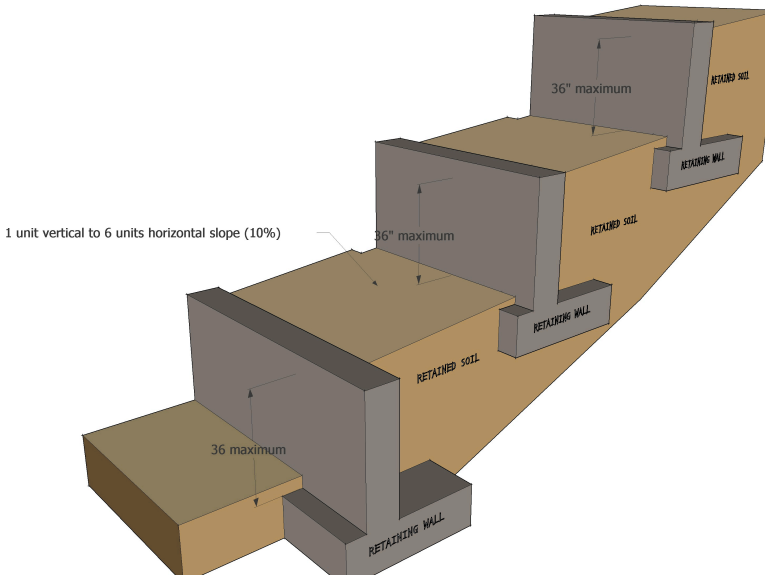
A. Walls with 3 feet maximum retained earth and a back-slope of not more than 1 unit vertical to 6 units horizontal (15% slope) and not surcharged by an attached fence or adjoining foundation do not require a building permit.

Retaining walls requiring a permit require engineering calculations



B. Terraced walls are allowed where the slope set-back constraints for a single wall are used.

Retaining walls requiring a permit require engineering calculations



Chapter 4

SPECIALIZED INSPECTIONS

UNDOCUMENTED RESIDENTIAL CONSTRUCTION

Buildings are a complex group of systems. This checklist identifies common procedures to verify that construction completed without inspection approvals conforms to current codes and approved plans. Additional deficiencies, testing, and/or exploratory removal may be identified during inspections. Undocumented construction shall be tested or adequately exposed as follows:

- **Foundation**
  1. Non-destructive testing report from an approved firm (licensed engineer certification required) establishing the following:
     a. concrete compressive strength
     b. reinforcing steel size, concrete cover, and locations
     c. anchor bolt and hold-down locations and embedment (pull-test)
  2. Foundation exposed at sample locations to verify dimensions (height, width, length) and depth below original and finished grade.

- **Framing**
  1. Removal of interior wall covering at sample locations to verify the following:
     a. Connections
        - roof to wall
        - post to beam
        - exterior wall corner
        - existing wall to new wall
        - window and door header
        - wall and cripple wall to foundation
        - hold-down to foundation and framing
     b. framing member sizes
     c. insulation and sound attenuation
  2. Removal of exterior wall covering at sample locations to verify the Lateral Force-Resisting System (prescriptive or performance):
     a. nailing
     b. blocking

c. plywood
d. window flashing
e. metal connectors
f. lath (wire lap, fastening, weep screed, etc.)
g. water intrusion and air infiltration membranes

- **Interior Finish**

  Removal of tub/shower surround and back-of-wall covering at sample locations to verify wet-wall material and installation.

- **Electrical System**

  1. Removal of all covers for electrical panels, wall switches, receptacles, and fixtures.
  2. Removal of interior wall covering at sample locations to verify conductor sizes, fastening, connections, protection etc.

- **Plumbing System**

  1. Removal of interior wall and floor covering at sample locations to verify the following:
     a. sewer lateral connection
     b. gas piping size and material
     c. tub/shower thermostatic valve
     d. sink/tub/shower trap connection
     e. DWV piping size, material, and connections
  2. gas piping air test
  3. DWV piping water test

- **Mechanical System**

  1. Removal of interior wall covering at sample locations to verify the following:
     a. water heater flue
     b. range hood duct
     c. bathroom fan duct
     d. furnace/hydronic boiler flue
  2. radiant heating pressure test
  3. mechanical room make-up air

- **General**

  1. Insulation, windows (location, size, etc.), heating/cooling equipment (BTU, efficiency, controls), duct sealing, room ventilation, etc. shall comply with approved energy calculations.
  2. General lighting shall comply with 2008 Energy Efficiency Standards (high efficiency luminaries, dimmers, motion/photoelectric sensors).
  3. Smoke/carbon monoxide detector (power supply, interconnection, locations).

RESIDENTIAL ZONING INSPECTIONS

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the Oakland Planning Code

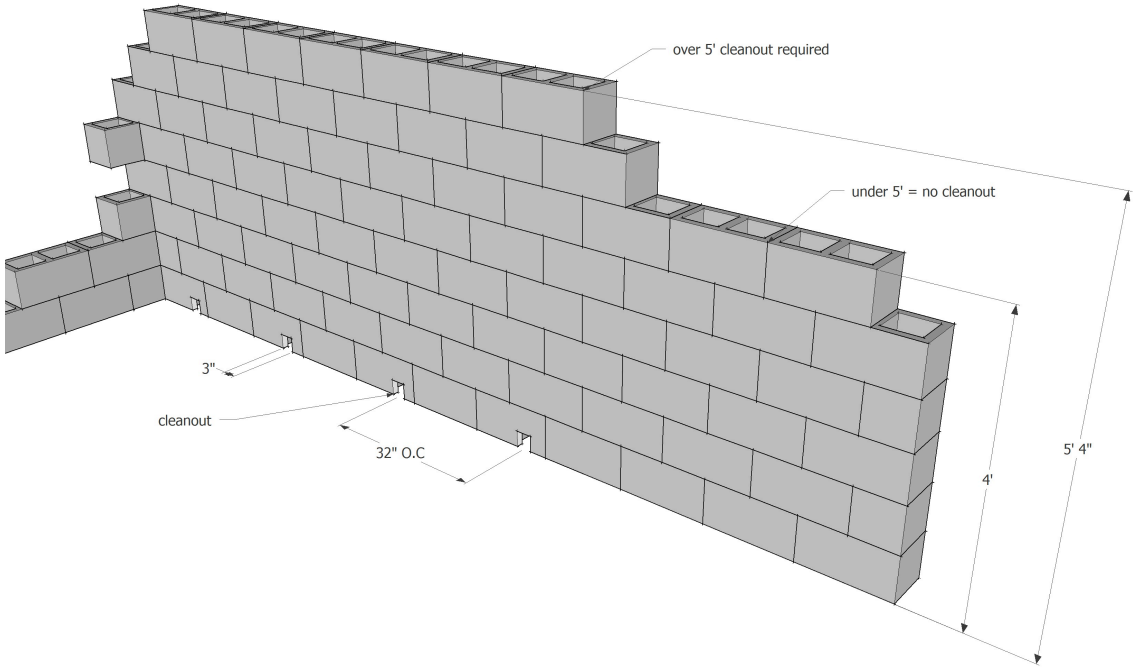
PRIOR TO "OK TO POUR", verify the following:	
☐	SETBACKS from property lines per plan (see Zoning Setbacks)
☐	DISTANCE from EDGE of PAVEMENT OK (DW depth 18'min.)
☐	FINISHED GRADE at footprint per plot plan or survey.
☐	GARAGE PAD elevation per plan.
☐	RETAINING WALLS per plan (max. height, location).
PRIOR TO "ROOF FRAMING & NAILING, verify the following:	
☐	FINISHED GRADE at footprint per plot plan or survey.
☐	ROOF PEAK/RIDGE elevations & eave elevations per plan.
☐	FLOOR-to-CEILING heights per plan.
☐	ROOF FORM per plan (pitch, hip vs. gable, dormers, chimneys, etc.)
PRIOR TO "OK TO COVER", verify the following	
☐	WINDOWS AND DOORS per plan (type, location, trim/sill detailing, #, size, gridding).
☐	BUILDING PROJECTIONS, bays, recesses, terrace forms (etc.) that divide blocky forms, interrupt flat wall planes and/or step building bulk up hillsides are per plan.
☐	EAVE DEPTH is per plan.
☐	# of KITCHENS per plan (wet bars, laundry rooms, in-law units, au pair studios).
☐	INTERNAL ACCESS to all habitable floor areas & levels is OK.
PRIOR TO "OK TO OCCUPY", verify the following:	
☐	PORCHES, DECKS, STAIRS-LANDINGS in setbacks per plan.
☐	FINISHED GRADE at footprint per plot plan or survey.
☐	ROOF PEAK/RIDGE elevations & eave elevations per plan.
☐	ROOF FORM per plan (pitch, hip vs. gable, dormers, chimneys, etc.)
☐	PARKING per plan (min. #, size, maneuvering aisles, access).
☐	LARGE FLAT WALLS are SCREENED with landscaping.
☐	Exterior MATERIALS per plan (stucco vs. siding, combination).
☐	Architectural DETAILING per plan (corner & horizontal trim bands, corbels, columns, etc).
☐	EXTERIOR LIGHTING (shielded 1" below the bulb, no flooding)
☐	BALCONY/STAIR RAILING per plan (open vs. closed, material).
☐	RETAINING WALLS per plan (max. height, location, finish and screening).
☐	DRIVEWAY per plan (19' max. curb cut, 9' min. width, location, slope, paving, railing design).
☐	WALKWAYS/STAIRS per plan (location, decorative treatment).
☐	PAVEMENT AREA LIMITED per plan (location, decorative treatment).
☐	TRELLIS/ARBORS per plan (max. height, location).
☐	EROSION CONTROL on all disturbed slopes (jute, hydro-seed, terracing, ground cover).
☐	TREE & SHRUB ETC, PLANTING per plan approved landscape & irrigation plan. (Min #, type, size, location).
☐	IRRIGATION provided.
☐	SCREENING (high building walls, parking, utilities, no visual blockage of street).
☐	FENCING AND ENTRY GATES per plan (design, height, location)
☐	TRASH ENCLOSURE per plan (location, recycling area, design, screening).
☐	HISTORICAL PROPERTIES EXTERIOR CHANGES exactly per pan.
☐	Confirm compliance with all "ZONING CONDITIONS OF APPROVAL" (see Zoning Approval Letter attached to Bldg Plans).

RESIDENTIAL MASONARY WALL (CMU) INSPECTION

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the 2010 California Building Code and ACI 530.1-05/ASCE 6-05/TMS 602-05

☐	Reinforcement is clean and free of mud, oil, grout or other materials that could reduce bond 3.2A
☐	Prior to placing masonry all dust, aggregate and debris are removed. 3.2B
☐	Except for wet cutting do not wet concrete masonry before laying. 3.2C
☐	Grout spaces are free of mortar droppings, debris and loose aggregates. 3.2D
☐	All reinforcement is installed before grout placement 3.2E
☐	Cleanouts are provided for each grout pours over 5'high. Cleanouts are located @ 32" o.c and a minimum of 3sqin. Must be closed to prevent blowouts 3.2F
☐	Grouted joints are treated ("rubbed") with round jointer 3.3B.b
☐	Masonry protrusions over 1/2in or more into the cells to be grouted must be removed 3.3B.c
☐	Aluminum conduits, pipes or accessories are not allowed to be embedded in masonry 3.3E.7
☐	1/4in clearance for fine grout of 1/2in for course grout is maintained between steel and masonry. 3.4B.4
☐	Grout pours 12in or less may be consolidated by mechanical vibration or puddling 3.5E
☐	Grout pours over 12in may be consolidated by mechanical vibration and reconsolidated after initial water loss and settlement. 3.5E



RESIDENTIAL THIRD-PARTY SPECIAL INSPECTIONS

If Special Inspections are required, the Special Inspector shall a Final Report (see below for a sample report). In addition, the following conditions are applicable:

1. Within ten (10) days of submitting the permit application, the contractor/owner must have the Special Inspector submit a letter to Building Services stating that (s)he will be the inspector of record and including the following information:
    a. Name of job
    b. Address of job
    c. Property owner and address
    d. Name and address of owner's agent (if applicable)
    e. Special Inspector's name, address, and telephone number
    f. Special Inspector's license number (if a California licensed architect or engineer)
    g. Special Inspector's resume of qualifications (if other than a California licensed architect or engineer) to include education, training, employment and experience.
    h. Special Inspector's statement of understanding and compliance with CBC Section 1704.

    Providing this information is a condition for issuing the permit.

2. Special Inspections are <u>not</u> a substitute for inspections by Building Services. .

3. The Special Inspector may not authorize concrete placement until the Building Inspector has approved the form work and signed the Job Card accordingly.

4. The property owner shall hire the Special Inspector, If the Special Inspector is relieved or discharged, the property owner shall immediately notify Building Services.

CITY OF OAKLAND
BUILDING SERVICES

SPECIAL INSPECTIONS

If special inspections are required for your project, the Special Inspector must provide. the City of Oalkand, Office of Planning and Building with a final report (See page 2 for sample report). In addition, the following conditions must be met:

1. Within (10) days of submitting the application, the contractor/owner must have the Special Inspector submit a letter to the City of Oakland, stating that (s)he will be the inspector of record and include the following information:
   - ✓ Name of job
   - ✓ Address of job
   - ✓ Property owner's name and address
   - ✓ Name and address of owner's agent (if applicable)
   - ✓ Special Inspector's name, address, and telephone number
   - ✓ Special Inspector's license. number (if a California licensed architect or California registered civil or structural engineer)
   - ✓ Special Inspector's resume of qualifications (if other than a California licensed architect or a California registered civil or strucrural engineer) to include education, training, employment, and experience
   - ✓ Special Inspector's statement of understanding and compliance with Oaldand Building Code, Section 1704.1

   Failure to provide this verification will result in the suspension of permit(s).

2. Projects MUST still have any and all foundation work, including piers, inspected by the Office of Planning and Building prior to the placement of concrete.

3. The Special Inspector may not authorize concrete placement until a City of Oakland Building Inspector has approved the form work and signed the permit card accordingly.

4. If the Special Inspector is relieved or discharged, (s)he andlor their employer must notify the Building Official immediarely.

BUILDING SERVICES DEPARTMENT
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612
Inspection Services: 510.238.3443 FAX: 510.238.2263

CITY OF OAKLAND
BUILDING SERVICES

SPECIAL INSPECTOR'S FINAL REPORT
SAMPLE

Project: _____

Project Address: _____

Building Permit #(s): _____

Sir:

This is to certify that in accordance with Section 1704.1 of the Oakland Building Code, we have provided a special inspection of:

- ☐ (01) Concrete _____
- ☐ (02) Bolts Installed in Concrete _____
- ☐ (03) Dectile Moment-Resisting Concrete Frame _____
- ☐ (04) Reinforcing Steel and Presrressing Steel _____
- ☐ (05) Field Welding _____
- ☐ (06) High-Strength Bolting _____
- ☐ (07) Structural Masonry _____
- ☐ (08) Reinforced Gypsum Concrete _____
- ☐ (09) Plywood/Particleboard Shear Wall Nailing with Nail Spacing < 4 in. O. C. _____
- ☐ (10) Spray-Applied Fireproofing _____
- ☐ (11) Piling, Drilled Piers and Caissons _____
- ☐ (12) Shotcrete _____
- ☐ (13) Special Grading, Excavation and Fillmg _____
- ☐ (14) Special Cases/Other _____
- ☐ (15) Gypsum Board Shear Wall Nailing _____

This inspection was performed by the undersigned Special Inspector (or by personnel under his supervision). To the best of our Imow ledge, the work was in conformance with the approved plans and specifications and the requirements of the Oakland Building Code.

Sincerely,

_____ ____/_____/_____

John Doe — Date

Special Inspector

License Seal

BUILDING SERVICES DEPARTMENT
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612
Inspection Services: 510.238.3443 FAX: 510.238.2263

RESIDENTIAL INSPECTION - VOLUNTARY SEISMIC STRENGTHENING

Plan Set A is a prescriptive method for seismically upgrading (not earthquake "proofing") select residential homes. The standard was developed by the Association of Bay Area Governments (ABAG) and is limited to buildings classified as Group R, Division 3 occupancy (one and two-family dwellings) with or without an attached Group U, Division 1 occupancy (residential garage) of wood frame construction (construction type VB) and not more than 2 stories high. Oakland Municipal Code chapter 15.30 contains all applicable adoptions, rules and regulation for the program.

The following checklist is used to qualify or disqualify buildings (structural weaknesses) before applicants file an application to use Plan Set A. Because Plan Set A is not intended to overcome critical seismic-response irregularities (foundation, aspect ratio, sloping ground, etc.), homeowners should consult an experienced engineer to design a strengthening system for disqualified buildings. A field check is required prior to issuing the permit to verify that the building qualifies for a Plan Set A strengthening.

Based on the ABAG 2008 edition of the Standard Plan Set A

If an answer is YES to any of the following, the seismic-response of the residence does not qualify it for strengthening using Plan Set A, and an experienced engineer should be consulted for a strengthening design.			
YES	**NO**	**Non-Qualifying Buildings**	
☐	☐	1	Lateral force resistive system using or containing poles or columns embedded in the ground.
☐	☐	2	Cripple wall height exceeding four (4) feet, as measured vertically at any point.
☐	☐	3	Building exceeds two (2) stories in height or exceeding 3,000 square feet of combined floor area for a two (2) story building or exceeds 2,000 square feet of floor area for a one (1) story building, as defined in the California Building Code.
☐	☐	4	Building erected on a slab-on-grade.
☐	☐	5	Building erected on or into sloping ground with a surface gradient steeper than 3-units horizontally to 1-unit vertically, as measured at any point.
☐	☐	6	Clay or concrete roof tiles with mortared edges.
☐	☐	7	Building frame other than wood.
☐	☐	8	Brick or stone veneer exceeding four (4) feet, as measured vertically at any point.
☐	☐	9	Sill plates or floor framing supported directly on the ground without an approved foundation system.
☐	☐	10	Perimeter foundation constructed of wood posts supported by isolated footings.
☐	☐	11	Perimeter foundation that is not continuous. Exception: existing porches, storage rooms, and similar spaces that do not contain fuel-burning appliances.
☐	☐	12	Perimeter foundation constructed of un-reinforced concrete, or assembled masonry, or with cracks and differential settlement.
☐	☐	13	Sill plates not connected to the foundation in accordance with OMC chapter 15.30.
☐	☐	14	Cripple walls not braced in accordance with OMC chapter 15.30.

RESIDENTIAL INSPECTION - VOLUNTARY SEISMIC STRENGTHENING

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following Plan Set A and Oakland Municipal Code chapter 15.30.

Based on the ABAG 2008 edition of the Standard Plan Set A

- ☐ 1 Anchor bolt holes 5" min depth, clean and dry before epoxy
- ☐ 2 Mechanical anchor specimen on site
- ☐ 3 Simpson UPF10 holes clean and dry before epoxy. All connectors on site.
- ☐ 4 Mudsill blocking: 4 –10d common (.148") nails only –do not split wood.
- ☐ 5 3"x3"x1/4" plate washers for all new ½" and 5/8" anchor bolts. (2"x2"x3/16" plate washers may be allowed where installation of 3"x3"x1/4" plate washers are determined to be impracticable by the Building Inspector.
- ☐ 6 Anchor bolt nut and washer installed over blocking.
- ☐ 7 Contact with pressure treated wood: use hot-dipped nails and G185 sheet ('Z-Max') connectors minimum.
- ☐ 8 If no continuous rim joist, end joist or solid blocking above perimeter cripple walls or mudsill: New blocking and or supplemental connectors shall be provided (to connect top of braced wall panel or mudsill to construction above).
- ☐ 9 Panel cutouts for piping, conduit, wiring, vents, etc. must be blocked and edge-nailed and 1-1/4" to 1-1/2" radius cut provided at inside corners of panel cutouts. (Exception: holes up to 3" diameter).
- ☐ 10 At cutouts increase plywood panel length a distance equal to length of cutout(s) or one stud space minimum.
- ☐ 11 Joints at abutting shear panels: Install new cripple stud nailed to existing with 16d common nails (3-1/2" x .162") @ 8"o.c. (3 nails minimum) to allow proper edge-nailing for abutting panels.
- ☐ 12 Aspect ratio: Panel length minimum 48" and twice the height.
- ☐ 13 Panel type: 5-ply plywood 15/32" (1/2") CDX only.
- ☐ 14 Panel nailing: 8d common (.131") nails at minimum 3-1/2"o.c. and maximum 4"o.c. for edges and 12"o.c. at intermediate supports. Do not overdrive nails - maximum 1/32" from panel face to top of nail head or 1 ply broken by bottom of nail head.
- ☐ 15 If splices in top plates do not have a minimum 48" lap, provide 16 GA. X 4' metal strap placed over the plywood with 28 –8d common nails.
- ☐ 16 Notches in top plates maximum 2" long x ¾" deep must have 16 GA. nail stop - larger notches are considered splices (see #12).
- ☐ 17 L70's and L90's: use 10d common (.148") x 1-1/2" nails.

SAMPLE PLAN
STANDARD PLAN A (2008)
RESIDENTIAL SEISMIC STRENGTHENING PLAN
PRESCRIPTIVE SEISMIC STRENGTHENING PLAN FOR CRIPPLE WALL BRACING
AND FOUNDATION SILL PLATE ANCHORAGE OF LIGHT WOOD FRAMED
RESIDENTIAL STRUCTURES.
S1

STANDARD PLAN A (2008)

RESIDENTIAL SEISMIC STRENGTHENING PLAN

PRESCRIPTIVE SEISMIC STRENGTHENING PLAN FOR CRIPPLE WALL BRACING AND FOUNDATION SILL PLATE ANCHORAGE OF LIGHT WOOD FRAMED RESIDENTIAL STRUCTURES.

S2

APPLICANT INFORMATION

RESIDENTIAL FIRE DAMAGE

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the adopted codes, and applicable regulations and ordinances.

A field check inspector is required before a building permit can be processed to repair a fire-damaged structure. The purpose is to verify the extent of damage and to determine what plans, approvals, and related permits (electrical, mechanical, and plumbing) may be required. The field check is done before the permit is issued.

All portions of the structure that need to be repaired must meet current Oakland Building and Fire Code requirements for load bearing support, seismic resistance, sound and energy insulation, fire protection, egress, etc.

A separate permit either to remove or legalize all unapproved additions, conversions or alterations to the building which are not fire damaged must be filed before the fire damage repair permits will be issued. No permits to repair unapproved additions, conversions or alterations which are fire damaged may be issued unless and until all approvals to legalize are granted.

Zoning approval is required for all exterior repairs to the building, including in-kind replacement. If the damage is minor, such as window replacement or minor siding repair, then only exterior photographs of all sides of the building need to be submitted to Zoning for review. If damage is extensive, such as rebuilding an exterior wall, then complete plans (site plan, floor plan, and exterior elevations) must be submitted along with the photographs for Zoning approval.

All fire-damaged materials, including charred wood, must be removed and all smoke-damaged areas must be cleaned and sealed with an approved smoke encapsulating product.

All wood structural members fire-damaged to a depth greater than 1/8 inch must be either replaced or a new full length member must be attached to this damaged member. These two members must be face nailed along the top and bottom edges with minimum 10d nails spaced a maximum of 16" apart and staggered on opposite sides. All new framing shall be sized per the Oakland Building Construction Code and span between supports. All partial length "sistering" must be engineered. The field check will determine if plans are needed for repairs to the framing.

When portions of walls and/or ceiling finishes separating dwelling units, public areas, or service areas such as interior corridors, garages, and mechanical spaces are replaced, the new finishes must be 5/8" type "X" gypsum wall board attached to resilient channels with minimum 3 ½ inch thick insulation batts to achieve the required 1-hour fire separation and STC 50 sound ratings. Other construction methods can be approved if they are listed and tested to meet these ratings.

Current code requires that bedrooms have an emergency egress window (or exterior door). If a non egress compliant bedroom window is damaged, it may be replaced only with windows that do not modify the existing structure or framing opening per CBC Section 3403.1. Windows that do not comply with current codes should not increase the level of non-compliance (such as reducing the glazing area) and efforts must be made to increase the level of compliance (such as replacing a double-hung unit with a casement window) whenever possible. All safety glazing, where required must be replaced per current code.

Smoke detectors must be installed at all locations per 2010 California Building Code. All damaged wiring must be replaced. All replacement wiring and circuits must meet the current electrical code requirements. Additional circuits and a service upgrade (under a separate permit) may be required.

DEPARTMENT OF PLANNING & BUILDING
250 FRANK H. OWAGA PLAZA. SECOND FLOOR. OAKLAND CA. 94612

BASED ON THE 2010 CALIFORNIA RESIDENTIAL CODE

SMOKE AND CARBON MONOXIDE DETECTORS

CRC R314 SMOKE ALARMS		
☐	A smoke detector, approved and listed by the State Fire Marshal pursuant to Section 13114, shall be installed, in accordance with the manufacturer's instructions in each dwelling intended for human occupancy within the earliest applicable time period as follows: **R314.6**.	
	1	For all dwelling units intended for human occupancy, upon the owner's application on or after January 1, 1985, for a permit for alterations, repairs, or additions, exceeding one thousand dollars ($1,000).
NOTE	*All homes in the state are REQUIRED to comply. The building permit is the trigger for inspection.*	
☐	Where a household fire warning system is installed using a combination of smoke detector and audible notification device (s), it shall become a permanent fixture of the occupancy and owned by the homeowner. **R314.2**	
	Smoke alarms shall be installed in the following locations:**R314.3**	
	1	In each sleeping room.
	2	Outside each separate sleeping area in the immediate vicinity of the bedrooms.
	3	On each additional story of the dwelling, including basements and habitable attics but not including crawl spaces and uninhabitable attics. In dwellings with split levels and without an intervening door between the adjacent levels, a smok alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than on story below the upper level.
☐	When more than one smoke alarm is required to be installed within an individual dwelling unit the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. **R314.3**	
☐	Alterations, repairs and additions. When alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings. **R314.3.1**	
☐	Smoke alarms shall receive their primary **power** from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for over-current protection. **R314.4** Exceptions:	
	1	Smoke alarms are permitted to be solely battery operated in existing buildings where no construction is taking place.
	2	Smoke alarms are permitted to be solely battery operated in buildings that are not served from a commercial power source.
	3	Smoke alarms are permitted to be solely battery operated in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for building wiring without the removal of interior finishes.
☐	Where more than one smoke alarm is required to be installed within an individual dwelling or sleeping unit, the smoke alarms shall be **interconnected** in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed. **R314.5** Exceptions:	
	1	Interconnection is not required in buildings that are not undergoing alterations, repairs or construction of any kind.
	2	Smoke alarms in existing areas are not required to be interconnected where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes.
CRC R315 CARBON MONOXIDE ALARMS		

☐	For new construction an approved carbon monoxide alarm shall be installed in dwelling units and sleeping units within which fuel-burning appliances are installed and in dwelling units that have attached garages. Carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions **R315.1**	
☐	Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery back-up. Alarm wiring shall be directly connected to the permanent building wiring without a disconnecting switch other than as required for over-current protection. **R315.1.2** **Exceptions:**	
	1	In dwelling units where there is no commercial power supply carbon monoxide alarms may be solely battery operated
	2	Other power sources recognized for use by NFPA 720
☐	Where more than one carbon monoxide alarm is required to be installed within the dwelling unit or within a sleeping unit the alarm shall be interconnected in a manner that activation of one alarm shall activate all of the alarms in the individual unit. **R315.1.3**	
☐	Carbon monoxide alarms required by Section R315.1 shall be installed in the following locations: **R315.1.4**	
	1	Outside of each separate dwelling unit sleeping area in the immediate vicinity of the bedroom(s).
	2	On every level of a dwelling unit including basements
☐	Where a permit is required for alterations, repairs or additions with a total cost or calculated valuation exceeding one thousand dollars ($1,000), existing dwellings or sleeping units with a fossil burning heater or appliance, fireplace or an attached garage shall have a carbon monoxide alarm in accordance with Section R315.2. Carbon monoxide alarms shall only be required in the specific dwelling unit or sleeping unit for which the permit was obtained. **R315.2.2**	
☐	**R315.2.3.1 Carbon monoxide alarms on or after July 1 2011.** Carbon monoxide alarms shall be installed in accordance with section R315.2 in **existing detached single-family dwelling or sleeping units** intended for human occupancy that have a fossil fuel-burning heater or appliance, fireplace or an attached garage. Carbon monoxide alarms in existing buildings are permitted to be solely battery operated or plug-in type with battery back-up in areas where no construction, is taking place.	
NOTE	*All homes in the state are REQUIRED to comply. The building permit is the trigger for inspection.*	
☐	**R315.2.3.2 Carbon monoxide alarms on or after January 1 2013.** Carbon monoxide alarms shall be installed in accordance with section R315.2 in all **other existing dwelling or sleeping units** intended for human occupancy that have a fossil fuel-burning heater or appliance, fireplace or an attached garage. Carbon monoxide alarms in existing buildings are permitted to be solely battery operated or plug-in type with battery back-up in areas where no construction, is taking place.	
NOTE	*All sleeping units (hotels etc) in the state are REQUIRED to comply. The building permit is the trigger for inspection.*	
☐	**Power supply**. **R315.2.4** same as smoke detector	
☐	**Interconnection**. **R315.2. 5** same as smoke detector	

RESIDENTIAL CHIMNEY REPAIR

To facilitate the repair of chimneys the following approved procedures and details may be used. Damaged masonry in reinforced chimneys shall be removed and replaced. Existing reinforcing steel may be used if it can be straightened without heating.

MASONRY CHIMNEYS

Masonry chimneys may be rebuilt using one of the following methods:

1. For chimneys damaged at or above the roof line, use Section "A" together with detail "A-1", "A-2 ", "A-3", or "B-1".
2. For chimneys damaged below the roof line and above the firebox, use Section "B" together with detail "B-1".

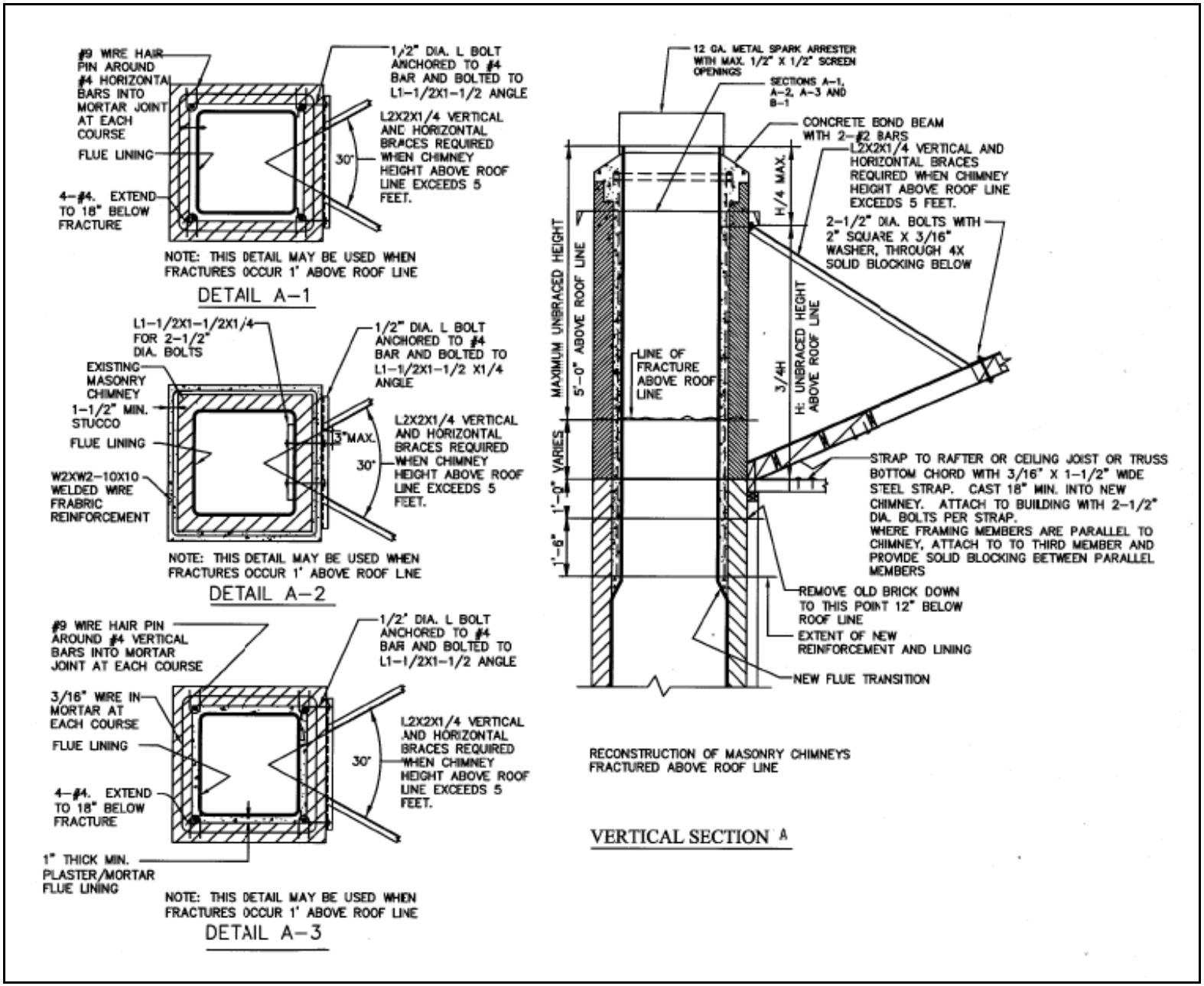
GENERAL NOTES

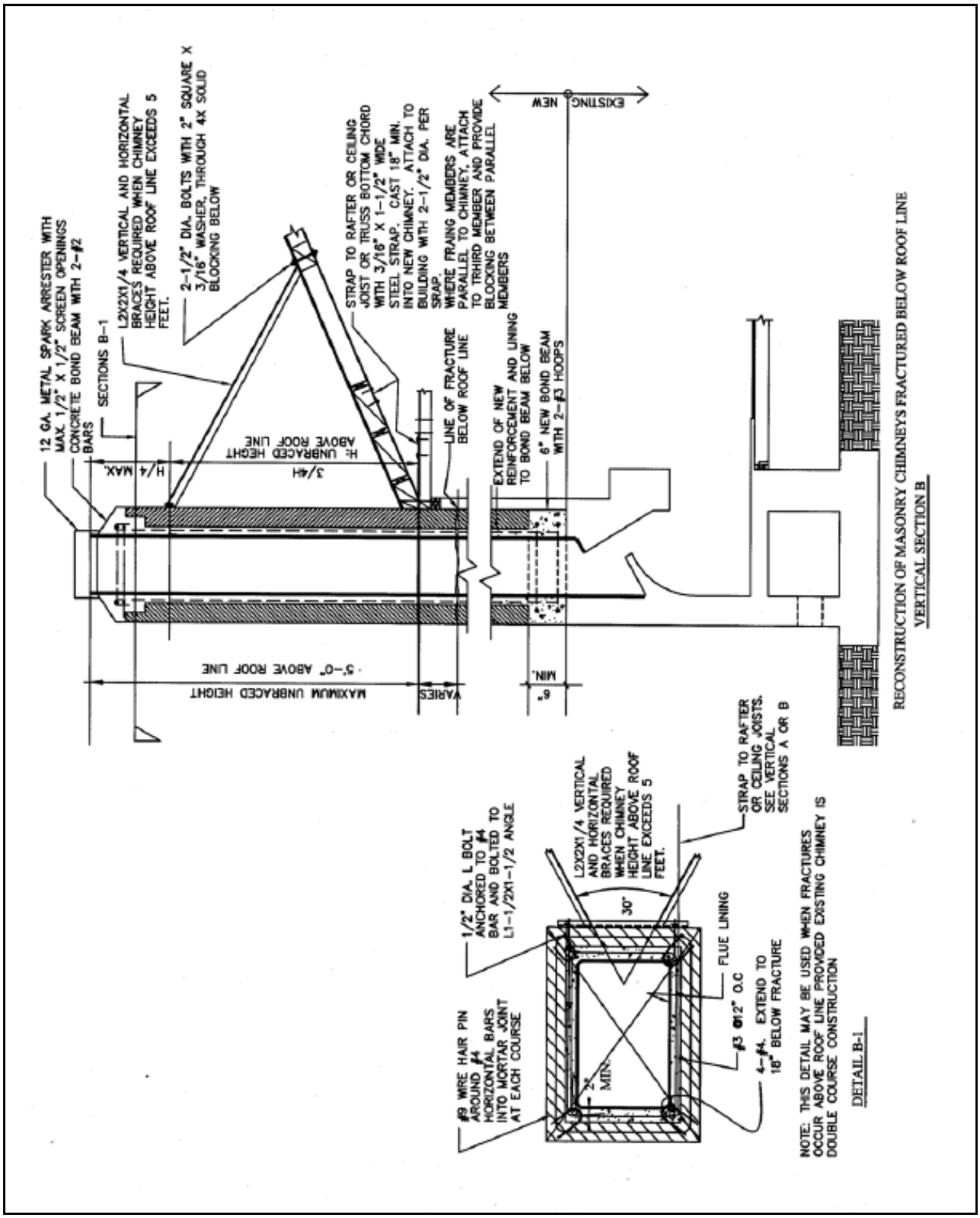
The firebox and undamaged areas of all chimneys to be rebuilt shall be carefully inspected to determine that no cracks or voids are present that would permit the access of flames to the surrounding wood frame. Anchorage ("FHA") straps shall be inspected and, if loose, shall be bolted to joists or rafters.

Permits are required for all chimney repairs.

GENERAL SPECIFICATIONS

Masonry:
Brick (HW Grade) ASTM – designation C73
Concrete: Grade "C" Concrete
Steel Reinforcing: ASTM design A615
Mortar: 1 – 4-1/2 – ½ part lime putty or hydrated lime
1 (Plastic Cement) – 3 max. 1/10 part lime
Grout: 1 – 3 max. 1/10 part lime
Flue Lining: Terra cotta, fire clay or other UL rated flue liners.


#9 WIRE HAIR PIN AROUND #4 HORIZONTAL BARS INTO MORTAR JOINT AT EACH COURSE
FLUE LINING
4–#4. EXTEND TO 18" BELOW FRACTURE
1/2" DIA. L BOLT ANCHORED TO #4 BAR AND BOLTED TO L1–1/2X1–1/2 ANGLE
L2X2X1/4 VERTICAL AND HORIZONTAL BRACES REQUIRED WHEN CHIMNEY HEIGHT ABOVE ROOF LINE EXCEEDS 5 FEET.
30°
NOTE: THIS DETAIL MAY BE USED WHEN FRACTURES OCCUR 1" ABOVE ROOF LINE
DETAIL A–1
L1–1/2X1–1/2X1/4 FOR 2–1/2" DIA. BOLTS
EXISTING MASONRY CHIMNEY
1–1/2" MIN. STUCCO
FLUE LINING
W2XW2–10X10 WELDED WIRE FRABRIC REINFORCEMENT
1/2" DIA. L BOLT ANCHORED TO #4 BAR AND BOLTED TO L1–1/2X1–1/2 X1/4 ANGLE
L2X2X1/4 VERTICAL AND HORIZONTAL BRACES REQUIRED WHEN CHIMNEY HEIGHT ABOVE ROOF LINE EXCEEDS 5 FEET.
3" MAX.
30°
NOTE: THIS DETAIL MAY BE USED WHEN FRACTURES OCCUR 1" ABOVE ROOF LINE
DETAIL A–2
#9 WIRE HAIR PIN AROUND #4 VERTICAL BARS INTO MORTAR JOINT AT EACH COURSE
3/16" WIRE IN MORTAR AT EACH COURSE
FLUE LINING
4–#4. EXTEND TO 18" BELOW FRACTURE
1" THICK MIN. PLASTER/MORTAR FLUE LINING
1/2" DIA. L BOLT ANCHORED TO #4 BAR AND BOLTED TO L1–1/2X1–1/2 ANGLE
L2X2X1/4 VERTICAL AND HORIZONTAL BRACES REQUIRED WHEN CHIMNEY HEIGHT ABOVE ROOF LINE EXCEEDS 5 FEET.
30°
NOTE: THIS DETAIL MAY BE USED WHEN FRACTURES OCCUR 1" ABOVE ROOF LINE
DETAIL A–3
12 GA. METAL SPARK ARRESTER WITH MAX. 1/2" X 1/2" SCREEN OPENINGS
SECTIONS A–1, A–2, A–3 AND B–1
CONCRETE BOND BEAM WITH 2–#2 BARS
L2X2X1/4 VERTICAL AND HORIZONTAL BRACES REQUIRED WHEN CHIMNEY HEIGHT ABOVE ROOF LINE EXCEEDS 5 FEET.
2–1/2" DIA. BOLTS WITH 2" SQUARE X 3/16" WASHER, THROUGH 4X SOLID BLOCKING BELOW
H/4 MAX.
MAXIMUM UNBRACED HEIGHT
5'–0" ABOVE ROOF LINE
LINE OF FRACTURE ABOVE ROOF LINE
3/4H
H: UNBRACED HEIGHT ABOVE ROOF LINE
VARIES
1'–0"
1'–6"
STRAP TO RAFTER OR CEILING JOIST OR TRUSS BOTTOM CHORD WITH 3/16" X 1–1/2" WIDE STEEL STRAP. CAST 18" MIN. INTO NEW CHIMNEY. ATTACH TO BUILDING WITH 2–1/2" DIA. BOLTS PER STRAP.
WHERE FRAMING MEMBERS ARE PARALLEL TO CHIMNEY, ATTACH TO TO THIRD MEMBER AND PROVIDE SOLID BLOCKING BETWEEN PARALLEL MEMBERS
REMOVE OLD BRICK DOWN TO THIS POINT 12" BELOW ROOF LINE
EXTENT OF NEW REINFORCEMENT AND LINING
NEW FLUE TRANSITION
RECONSTRUCTION OF MASONRY CHIMNEYS FRACTURED ABOVE ROOF LINE
VERTICAL SECTION A


12 GA. METAL SPARK ARRESTER WITH MAX. 1/2" X 1/2" SCREEN OPENINGS
CONCRETE BOND BEAM WITH 2-#2 BARS
SECTIONS B-1
L2X2X1/4 VERTICAL AND HORIZONTAL BRACES REQUIRED WHEN CHIMNEY HEIGHT ABOVE ROOF LINE EXCEEDS 5 FEET.
2-1/2" DIA. BOLTS WITH 2" SQUARE X 3/16" WASHER, THROUGH 4X SOLID BLOCKING BELOW
STRAP TO RAFTER OR CEILING JOIST OR TRUSS BOTTOM CHORD WITH 3/16" X 1-1/2" WIDE STEEL STRAP. CAST 18" MIN. INTO NEW CHIMNEY. ATTACH TO BUILDING WITH 2-1/2" DIA. PER SRAP.
WHERE FRAING MEMBERS ARE PARALLEL TO CHIMNEY, ATTACH TO TRHIRD MEMBER AND PROVIDE BLOCKING BETWEEN PARALLEL MEMBERS
EXISTING
NEW
H/4 MAX.
3/4H
H= UNBRACED HEIGHT ABOVE ROOF LINE
LINE OF FRACTURE BELOW ROOF LINE
EXTEND OF NEW REINFORCEMENT AND LINING TO BOND BEAM BELOW
6" NEW BOND BEAM WITH 2-#3 HOOPS
MAXIMUM UNBRACED HEIGHT - 5'-0" ABOVE ROOF LINE
VARIES
6" MIN.
RECONSTRUCTION OF MASONRY CHIMNEYS FRACTURED BELOW ROOF LINE
VERTICAL SECTION B
1/2" DIA. L BOLT ANCHORED TO #4 BAR AND BOLTED TO L1-1/2X1-1/2 ANGLE
L2X2X1/4 VERTICAL AND HORIZONTAL BRACES REQUIRED WHEN CHIMNEY HEIGHT ABOVE ROOF LINE EXCEEDS 5 FEET.
30°
STRAP TO RAFTER OR CEILING JOISTS. SEE VERTICAL SECTIONS A OR B
FLUE LINING
#3 @12" O.C
4-#4, EXTEND TO 18" BELOW FRACTURE
2" MIN.
#9 WIRE HAIR PIN AROUND #4 HORIZONTAL BARS INTO MORTAR JOINT AT EACH COURSE
NOTE: THIS DETAIL MAY BE USED WHEN FRACTURES OCCUR ABOVE ROOF LINE PROVIDED EXISTING CHIMNEY IS DOUBLE COURSE CONSTRUCTION
DETAIL B-1

CHIMNEY REPAIR

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the adopted codes, and applicable regulations and ordinances.

Based on the 2010 California Residential Building Code

☐	Permit Card available on job site and access to the roof provided.
☐	2010 CRC, Chapter 10 Section R1003
☐	A minimum of 4-#4 vertical steel rebars are required. Set 18" min below fracture.
☐	Two additional #4 vertical steel rebars are required if any chimney dimension is greater than 40"wide.
☐	Minimum ¼" stirrup must be placed at a maximum of 18" on center.
☐	Stirrups must be one piece and have lapped extensions of not less than 8".
☐	Two stirrups must be placed at each bend in vertical rebar.
☐	Two ¼" stirrups are required at the top of the chimney
☐	Two 3/16" by 1" steel straps (lateral ties) must be placed at each floor and roof line.
☐	Straps must be cast at least 12" into chimney with a 180-degree bend with a 6" extension around the vertical rebar.
	Progress Inspection
☐	Construction must be completed up to the first lateral tie. If multiple lateral ties are required, multiple progress inspections are required
☐	Vertical rebar must be installed, fully grouted with a minimum of 20" of steel reinforcing bars exposed.
☐	The steel straps to rafter or ceiling joist must be completely installed and visible for inspection. 3/16"x 1" wide with 2-1/2" dia. bolts per strap.
☐	Where framing members run parallel to chimney blocking for straps is provided.
☐	L2x2x1/4" vertical braces installed (for height over 5'above roof line) ½" dia. Bolts on L1-1/2"x1"-1/2" angle anchored to reinforcing steel in chimney an to rafters using 1/2" dia. Bolts w/2x2x3/16" washers
☐	Top bond beam steel in place 2-#2 Stirrups.
	Final Inspection
☐	Final inspection includes spark arrester and flashing around chimney.
☐	Each strap must be bolted with two ½" bolts (lag screws are not acceptable) to the structural members of the building, such as floor joists or rafters, or a 2X4 cross tie nailed to a minimum of 4 joists with 2-16d nails to each joist.
☐	The chimney must extend 2' above any part of the building within 10' of the chimney
☐	Access to the roof must be provided. Inspectors DO NOT carry ladders.
☐	Verify smoke and carbon monoxide detector installation CRC R314, R315

Chapter

5

RESIDENTIAL STAIRWAY

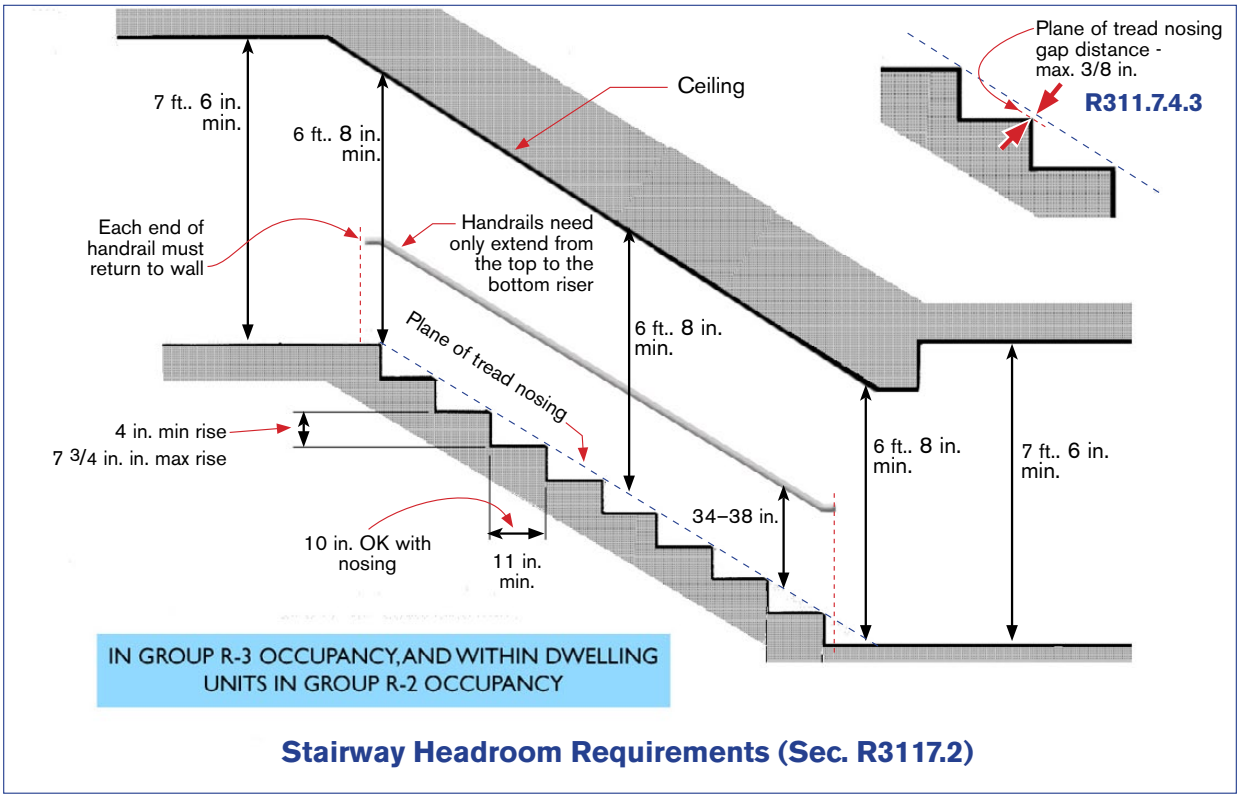
STAIRWAY INSPECTION

Based on the 2010 California Building Code and OMC Section 15.04.685

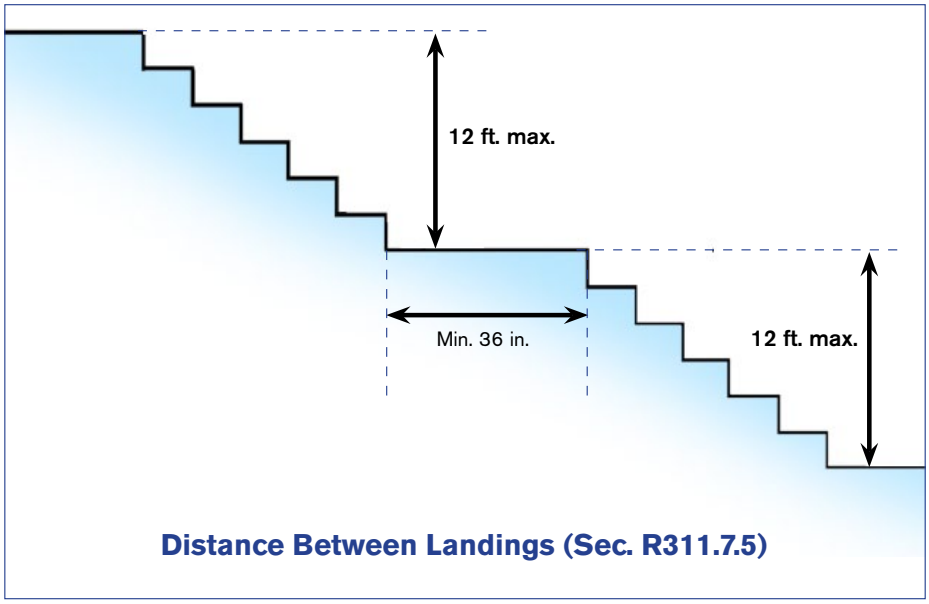
In Section 3404.1 of the California Building Code, replace Exception 1 in its entirety with the following: "Where the partial repair of a stairway, guardrail, or handrail does not exceed 33% of the existing section of repaired elements, and the existing section is in accordance with the code that was current at the time of original construction, and the existing section does not continue or exacerbate an unsafe condition, then the repair may match the existing construction. Repairs to existing stairways with masonry or concrete surfacing exceeding four inches in thickness and supported by wood framing may conform with the provisions of this section. If the repair of the wood framing does not exceed 33% of the existing wood frame section being repaired, and the masonry or concrete surfacing is in sound condition with nothing more than shrinkage cracks, and the rise and run of the stairway are in accordance with the code that was current at the time of original construction, and the stairway has positive drainage and has not settled excessively towards or away from the building; and the existing section does not continue or exacerbate an existing condition, the repair may match the existing construction. All replacement of the wood framing supporting the masonry or concrete surfacing shall be factory pressure preservative treated. All replacement wood framing within six inches of the ground shall be pressure preservative treated approved for direct ground contact. All end field cuts of pressure preservative treated wood shall be properly treated with preservative."

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the 2010 California Building Code



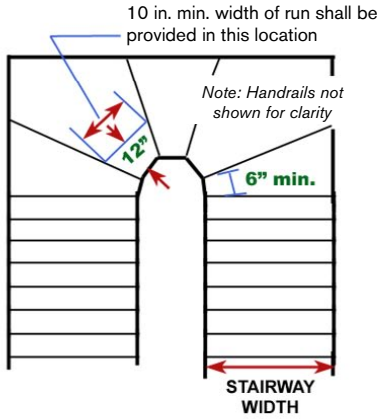
Stairway Headroom Requirements (Sec. R3117.2)



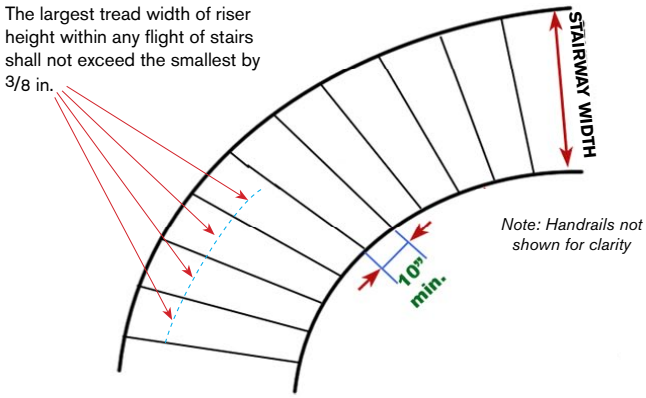
Distance Between Landings (Sec. R311.7.5)

STAIRWAY WIDTH: (Sec. R311.7.1)

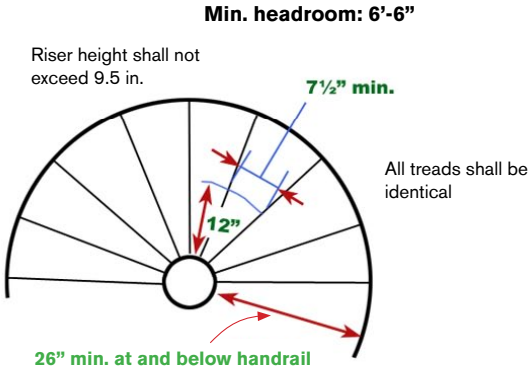
- **36 in. min. above handrails**
- **31 in. min. below handrails if only one handrail & 27 in. min. if two handrails**



Plan View: Winding Stairway

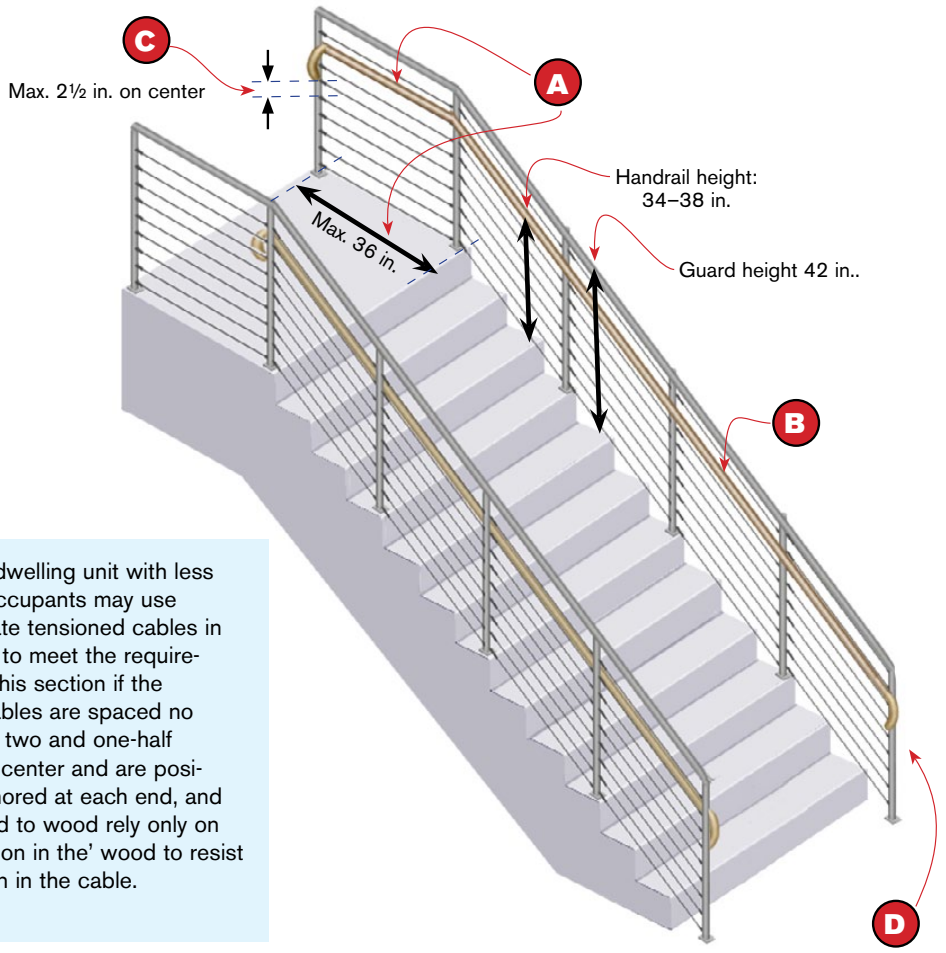


Plan View: Curved/Circular Stairway



Plan View: Winding Stairway (R311.7.9.1)

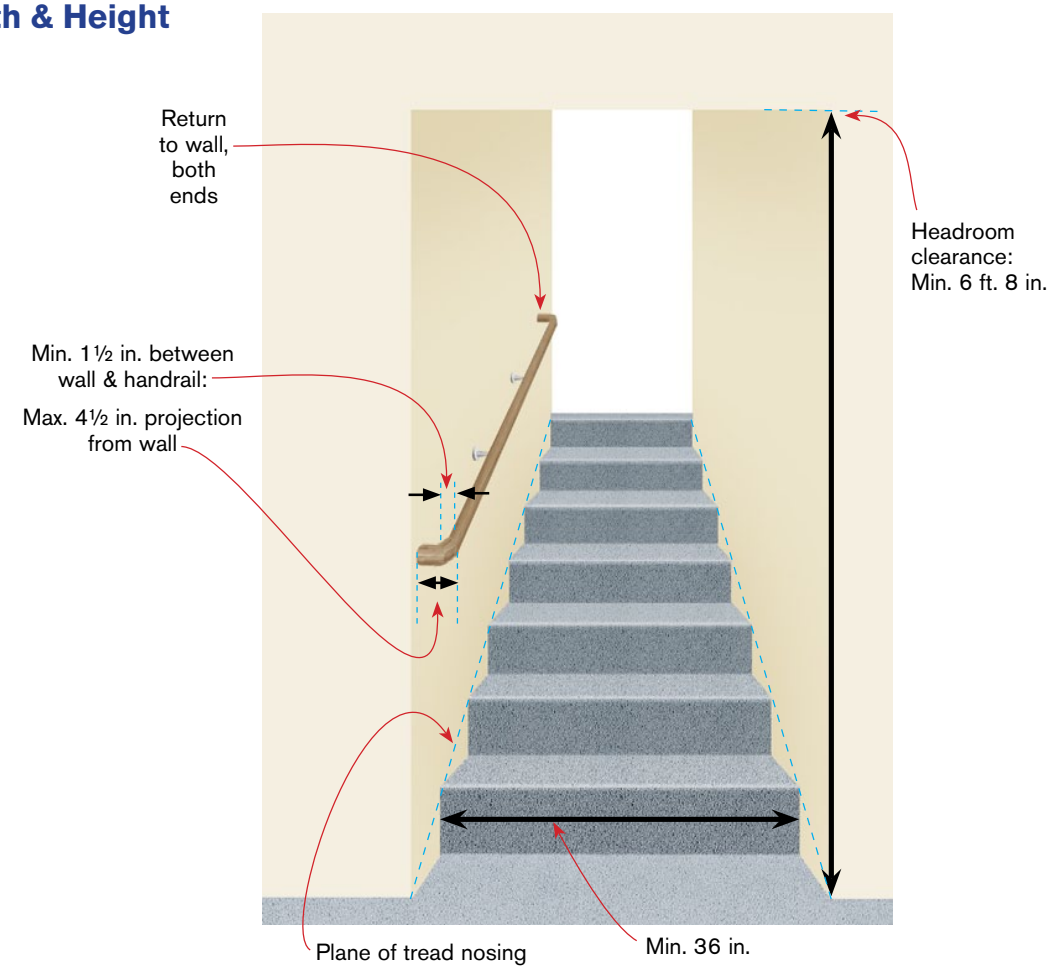
Tension Cable Guardrails (OMC 15.04.632 Section 1013 amended)



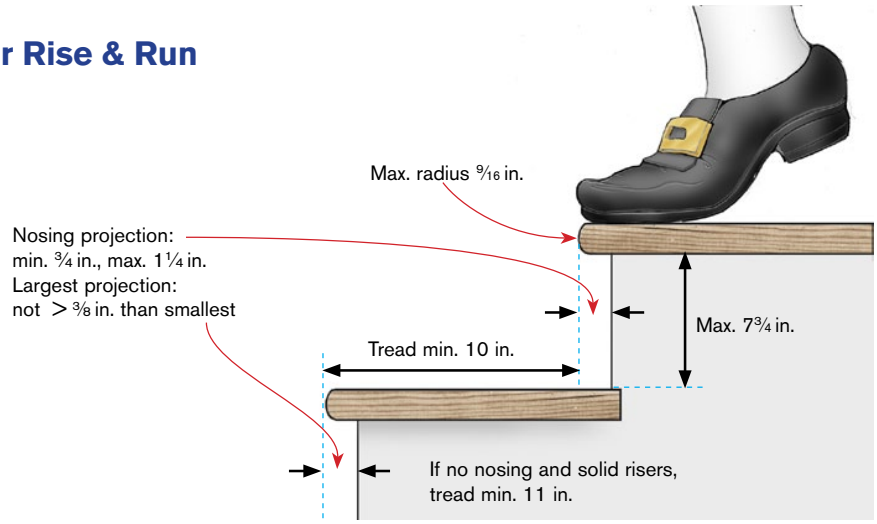
A private dwelling unit with less than 10 occupants may use intermediate tensioned cables in guardrails to meet the requirements of this section if the tension cables are spaced no more than two and one-half inches on center and are positively anchored at each end, and if anchored to wood rely only on compression in the' wood to resist the tension in the cable.

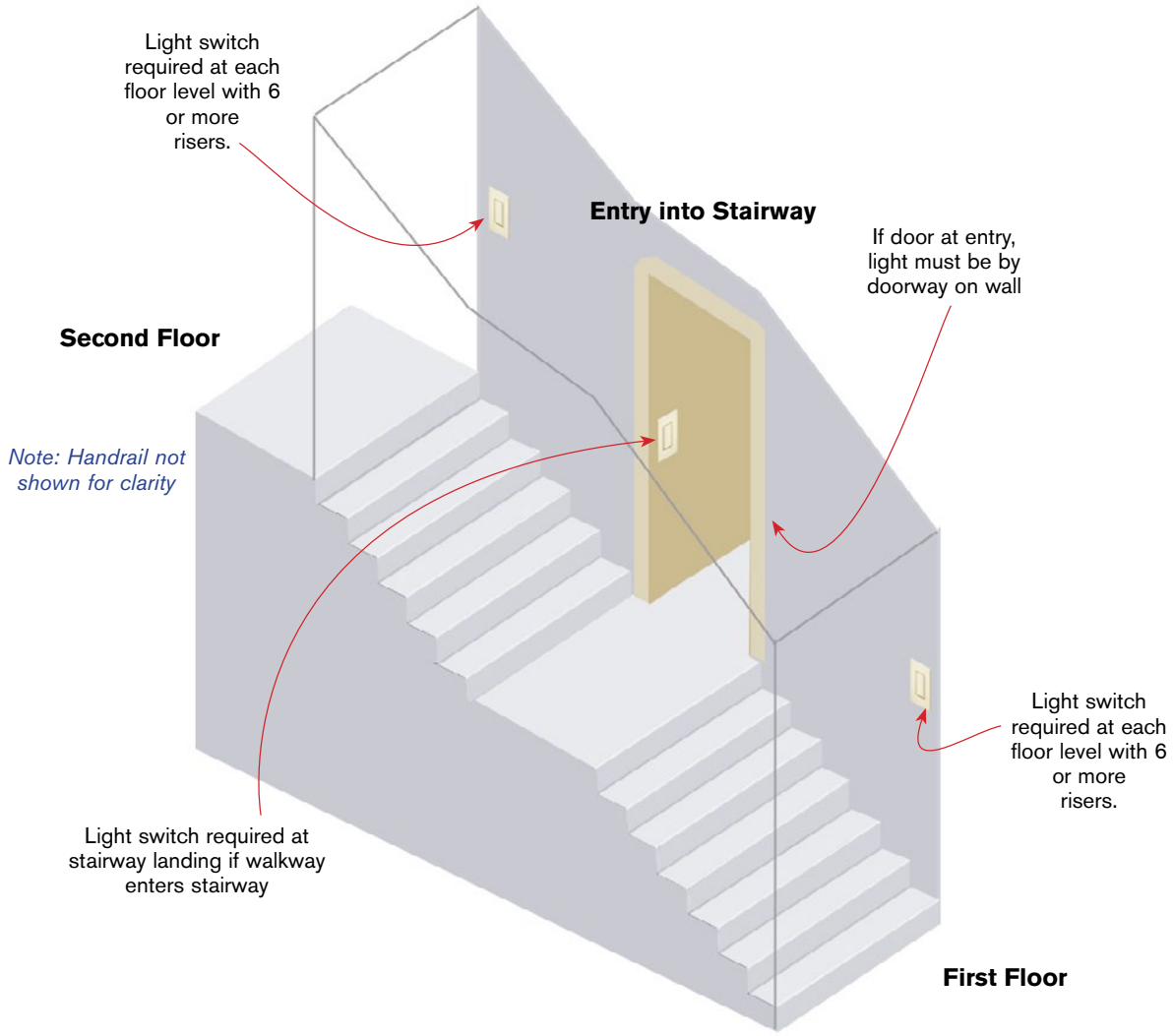
A	Handrail provided in at least one side of stair, must be continuous over entire stair at a height no less than 34 in. and not more than 38 in. ORC R317.7.7 * Handrail extension permitted over landing maximum 36" in length at handrail height.
B	Handrail must meet graspability type 1 or 2 per ORC 311.7.7.3
C	Tensioned cables spaced not more than 2-1/2" on center. Exterior applications require corrosion-resistant cables and hardware OMC 15.04.632
D	Handrails shall be returned to newel posts or safety terminals~ R311.7.7.3

Stair Width & Height

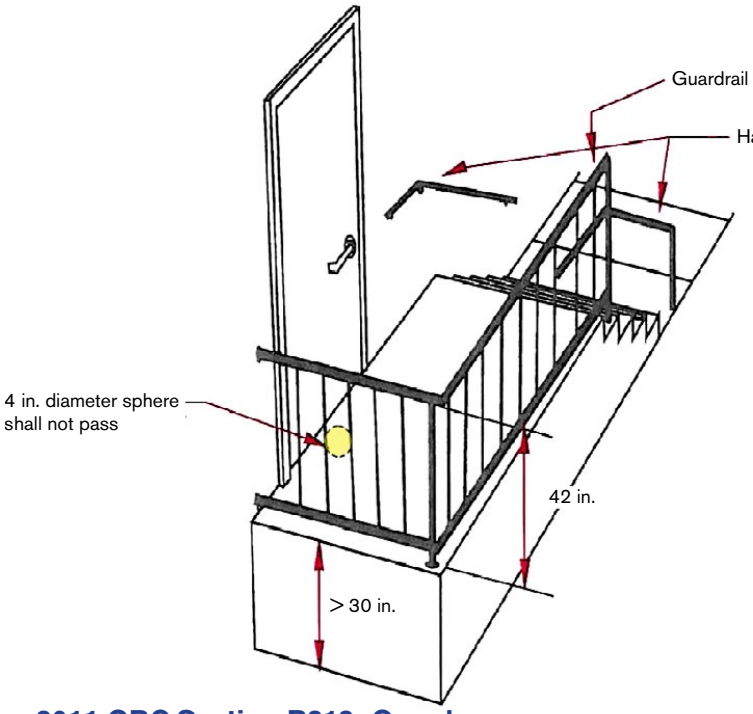


Stair Rise & Run

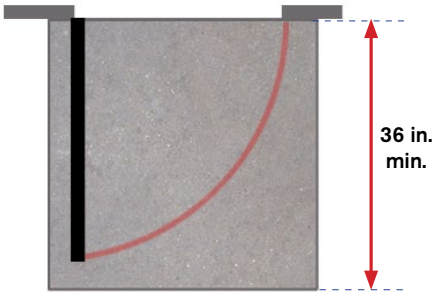




Stairway Lighting (Section R303.6.1)



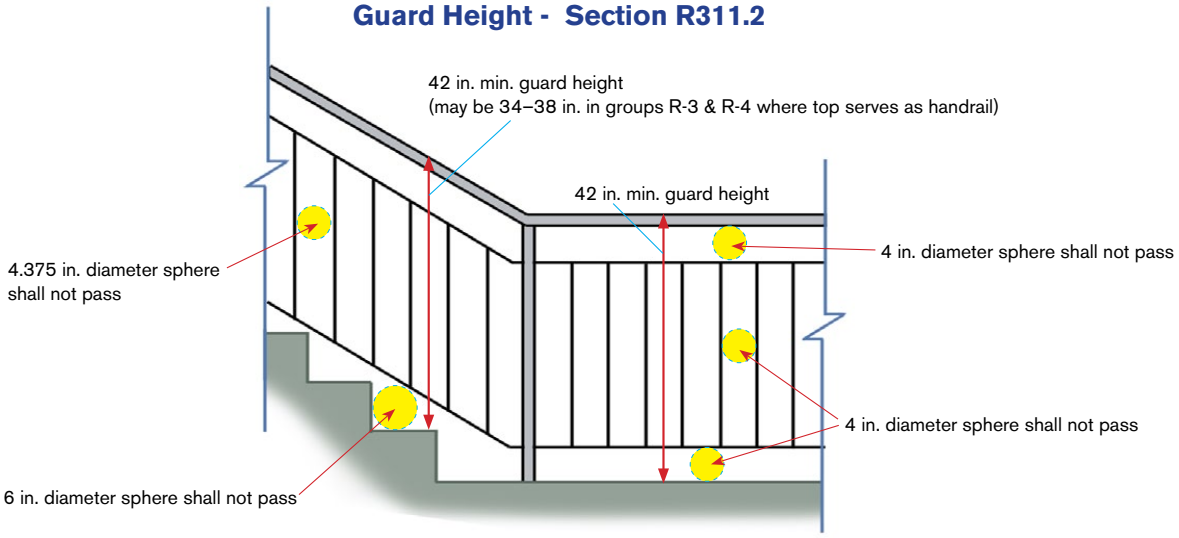
2011 ORC Section R312–Guards

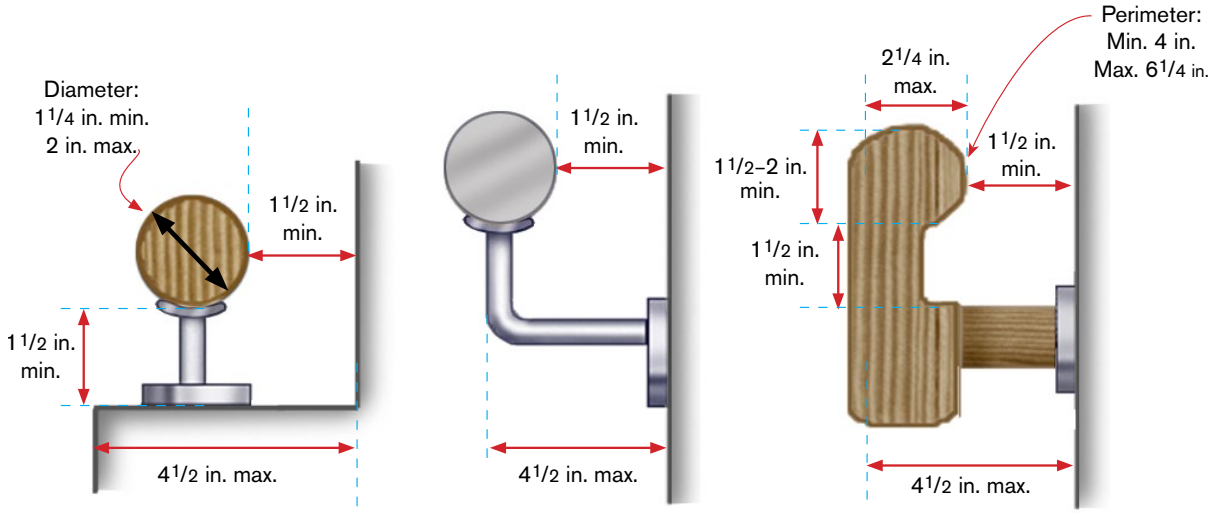


R-3, U, & within individual dwelling units of R-2

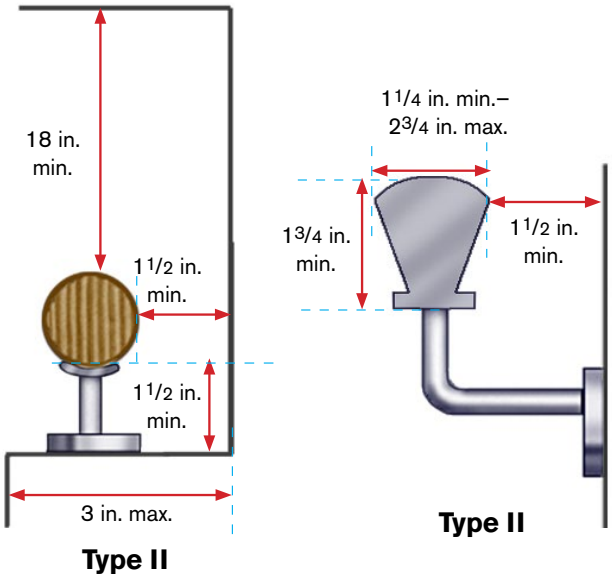
Landing at Doors

Guard Height - Section R311.2



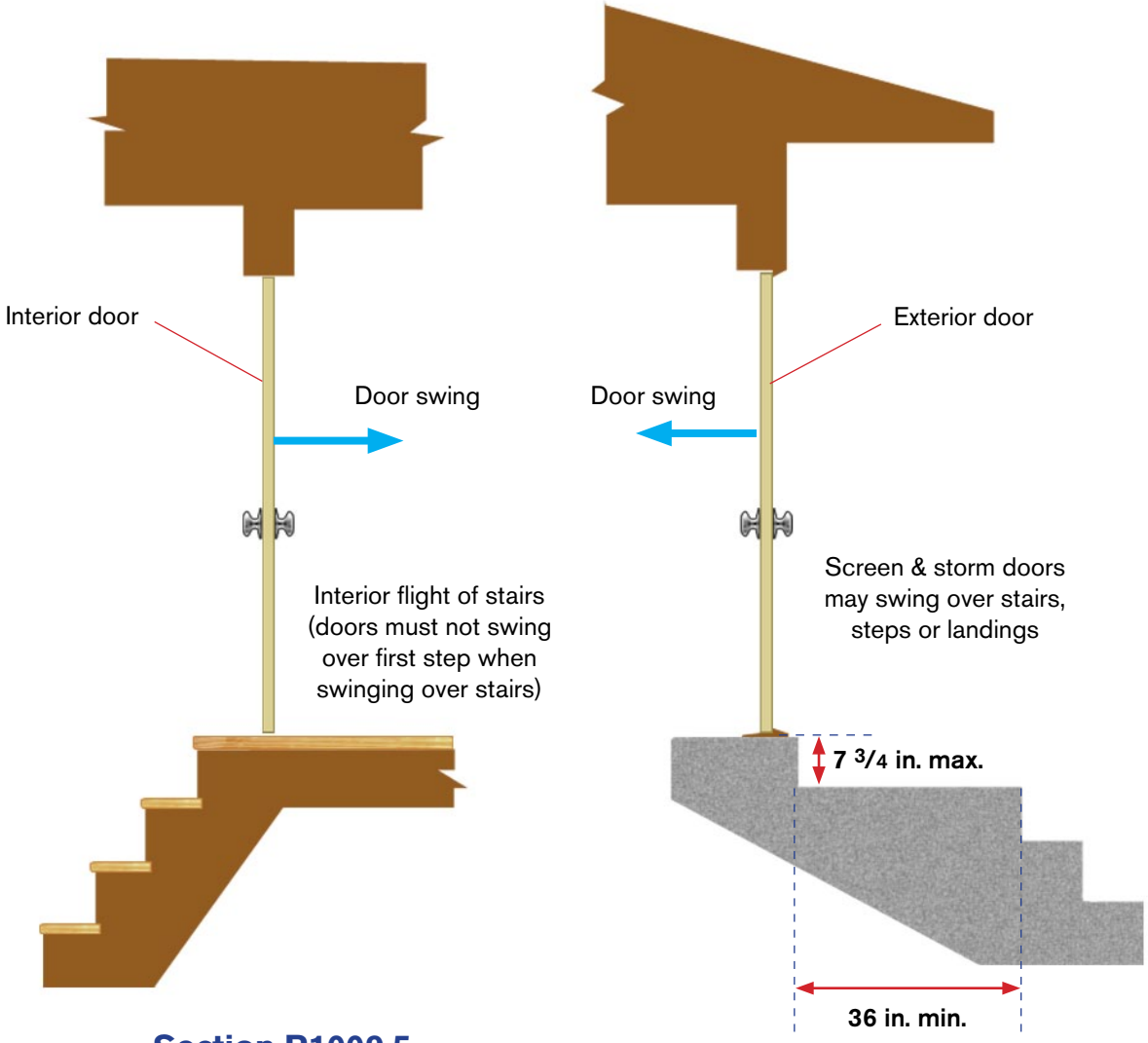


Acceptable Handrail Details (Sec. R311.7.7.3)
For Single-Family R-2 & Individual Unit R-3



- Perimeter over 6 1/4 in.
- Graspable finger recess both sides
- Edges min. radius .01 in.

Floor Level at Doors

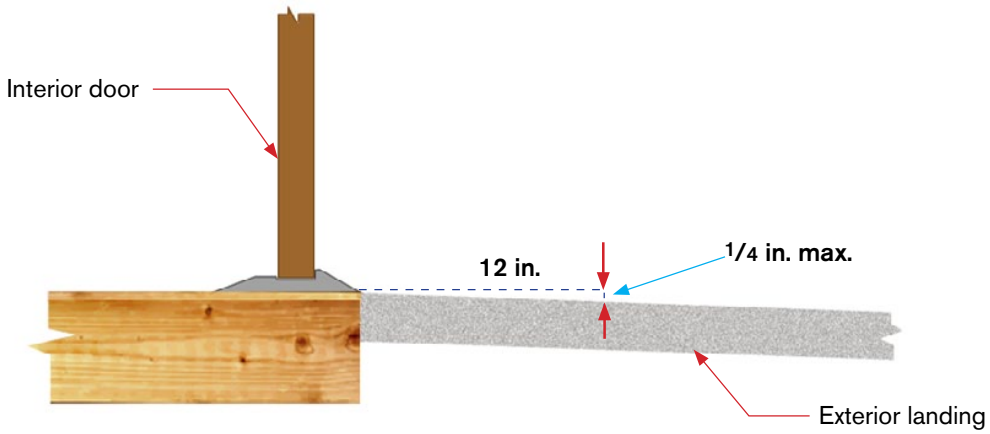


Section R1009.5
Exception 2

Section R311.3
Exception

Notes:

A landing is not required where a stairway of 2 or fewer riser is located on the exterior side of the door, provided the door does not swing over the stairway per 2010 CRC, exception to R311.2

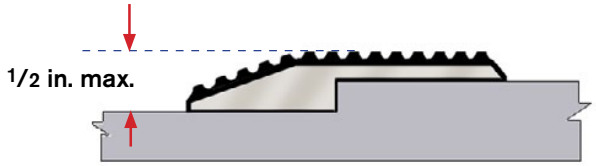


Floor Level at Doors (Sec. 1008.1.5)

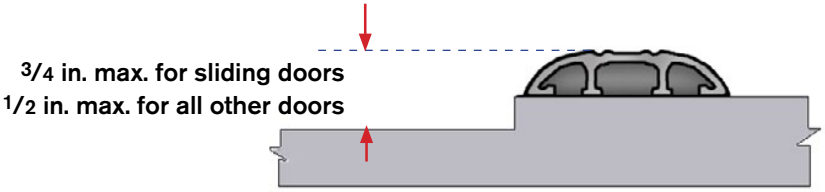
Applies to all occupant loads

Threshold Height

For access when persons with disabilities is required



Accessible Threshold (Sec. 1026A.2 & 1133B.2.4)



Non Accessible Threshold (Sec. 1008.1.7)

Chapter 6

RESIDENTIAL FOUNDATION

PRESCRIPTIVE FOUNDATION

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

PLANS AND PERMITS

- ☐ Address is posted and visible from road. CRC §R319
- ☐ Toilet facilities are on-site. CPC §412.6 OMC 15.04.070
- ☐ Jobsite is safe for inspection. Boards with nails and excessive debris removed. (Litter-Free job sites handout)
- ☐ Best Management Practices (C6) are installed for rainwater, tire tracking, and wash-down control.
- ☐ Permit documents (approved plans & revisions, job card, equipment installation instructions, special inspection reports, etc.) are readily available on the job-site. CRC §R106.3.1 & R105.7
- ☐ Creek and tree protection permit controls are installed.
- ☐ Special Inspection reports (pier holes, soil compaction, concrete compressive strength, structural observation, etc.) are readily available on the job-site. Refer to approved plans. CBC §1803, CBC §1704, CBC §1710

FORMS AND SETBACKS

- ☐ Property corners identified and property lines identified with string lines. Survey may be required
- ☐ Footings including interior pier footings are constructed per the approved plans. CRC Chap. 4
- ☐ All forms completed and adequately braced. CRC §R404.1.2.3.6
- ☐ The bottoms of footings are stepped on slopes over 10%. CRC §R403.1.5
- ☐ The footings/piers are keyed into undisturbed soil a minimum of 12" for 1 story, 18" for 2 and 24" for 3. CRC §R403.1.4
- ☐ The top of the stem wall supporting wood sheathing is min. 8" above finished grade. CRC §R317
- ☐ Stumps and roots have been removed to a depth of 12". CRC §R408.5
- ☐ Water, mud, loose dirt, rocks, and debris are removed from trenches. CRC §R403

HARDWARE & STEEL

- ☐ All reinforcing steel is tied in place, including dowels. CRC §R403
- ☐ Size and grade of rebar is per plans. Reinforcement is adequately supported Minimum 3" clearance to earth on all sides. Minimum 1½" clearance to outside forms and ¾" to inside forms. Splices are a minimum 40 bar diameters or per approved plans. Reinforcing is free of scale and rust, & oil.

- ☐ Hold-down bolts and hold-down straps are secured in place. Bolts have sufficient projection for 2x or 3x sill plate. CRC §R403
- ☐ Size, spacing and locations are per the approved plans, min. 4' spacing. Anchor bolts secured on form. ***Wet set bolts are not allowed.***
- ☐ 5/8" diameter galvanized anchor bolts spaced a max. 4'o.c. with galvanized 3"x3"x.229" plate washer. If slotted washer is used an additional standard washer is required
- ☐ Min. 2 bolts per sill piece. Edge bolts no more than 12"from edge or closer than 7 bolt diameters.
- ☐ Anchor bolts and washers in contact with pressure-treated wood are galvanized. CRC §R317.3 Exception: 1 ½" diameter or greater steel bolts
- ☐ All fasteners into pressure treated lumber are galvanized
- ☐ New to existing connecting dowels min 7" embedment and equal size to reinforcement bars
- ☐ Post bases are set in place (Verify min. 3" concrete side cover per manufacture's instructions).
- ☐ Required pre-manufacture shear wall templates and bolts in place.
- ☐ Provisions for an 18"x24" under-floor access are provided. CRC §R408.4
- ☐ Verify required crawl space ventilation = 1sqft per 150sqft of area.
- ☐ Bottom of Joists and beams within building to be maintained 18" and 12" from grade respectively above grade.

SLAB

Non-structural on-grade concrete "flatwork" (patio slab, driveway, etc.) does not require inspection.

- ☐ Slab on-grade has 4" gravel, 6 mil polyethylene moisture barrier if required. CRC §R506
- ☐ Vehicle bollard provisions for gas utilization equipment CPC §508.14
- ☐ Reinforcement per approved plans.
- ☐ Top of interior footings are cleared of sand and gravel. CRC §R401
- ☐ String lines are pulled across forms to verify slab thickness. Minimum 3½". CRC §R506.1

PLUMBING

- ☐ Waste and water piping systems completed and on test. CPC §712/609.4
- ☐ Sleeve for waste piping is installed through foundation. CPC §313.10
- ☐ Piping shall be protected against direct contact with concrete and shall not be directly embedded in concrete CPC §313.2
- ☐ Waste plumbing laying on ground is adequately bedded for the entire length; not supported on rebar or stakes. CPC §314.3
- ☐ Gas lines are not allowed under ground, beneath structure or slabs unless installed to comply with CPC §1211.1.6 (Provide approved details for gas pipe sleeving and venting)

ELECTRICAL

- ☐ Grounding electrode (UFER) is installed. CEC §250.52 ½" rebar or #4 copper wire within 2" of bottom of footing for 200 amp. Service. (whenever possible)
- ☐ Underground service entrance conduit is in place for recessed service panels. CEC §230.32
- ☐ Reconnect grounding electrode within the first 5' of water supply as it enters the building. CEC 250.52 (A) (I).

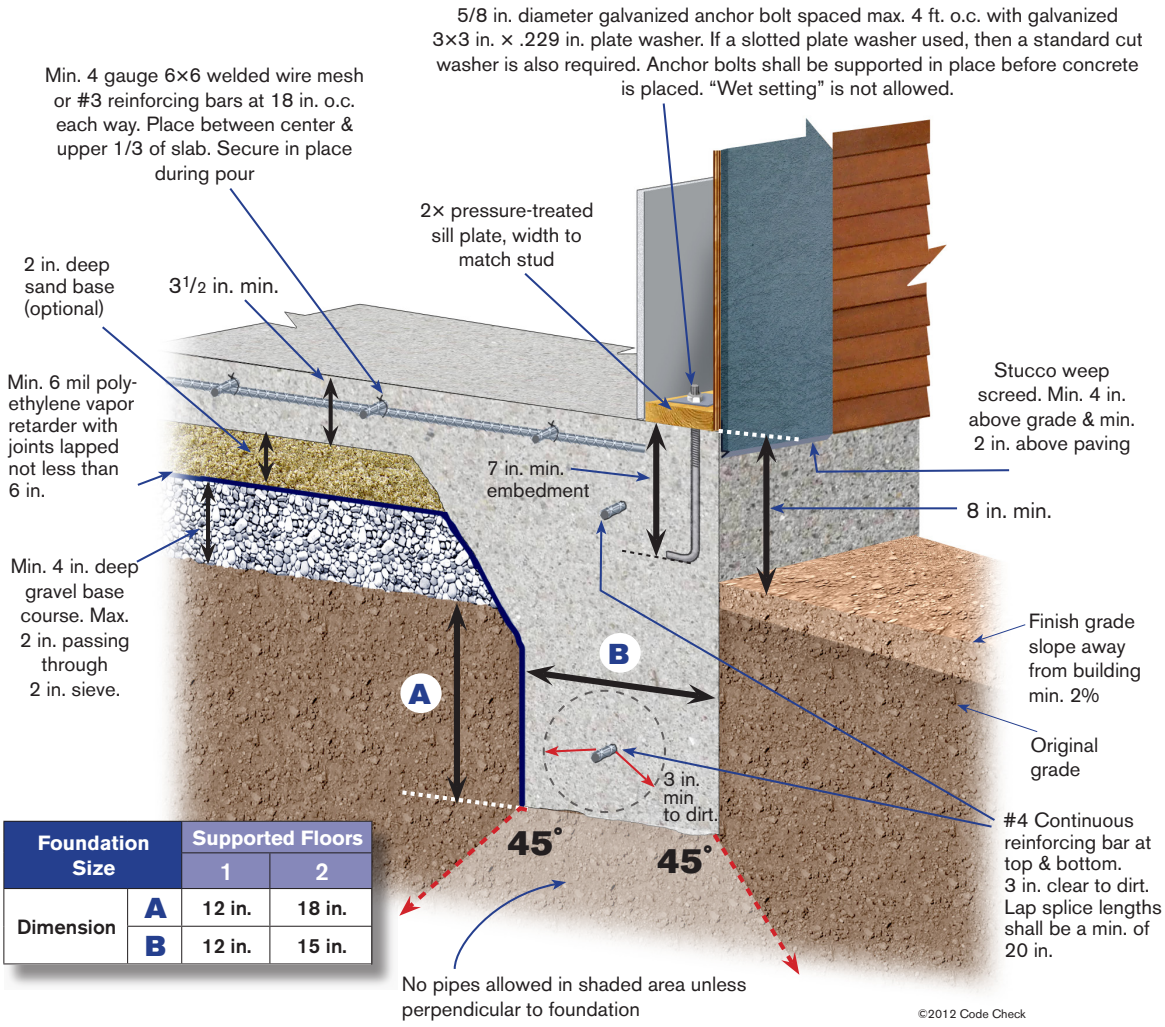
CITY OF OAKLAND
BUILDING SERVICES

Perimeter Monolithic Foundation for Exterior Walls

(Adopted from ORC Section R403)

NOTES:

1. **Sill plate anchorage & foundations for 3-story structures shall be designed by a licensed engineer.**
2. **All fasteners, anchor bolts, washers, clips or other fasteners installed in pressure-treated lumber shall be hot-dipped galvanized or equal.**
3. **The bottom of foundations shall not slope more than 1:10. Foundations shall be stepped where necessary in order to meet these requirements.**
4. **Concrete shall have a compressive strength of not less than 2500 lbs. per sq. ft.**
5. **No aluminum shall be in contact with concrete.**
6. **All pipes penetrating concrete shall be sleeved or wrapped.**



Foundation Size		Supported Floors	
		1	2
Dimension	A	12 in.	18 in.
	B	12 in.	15 in.

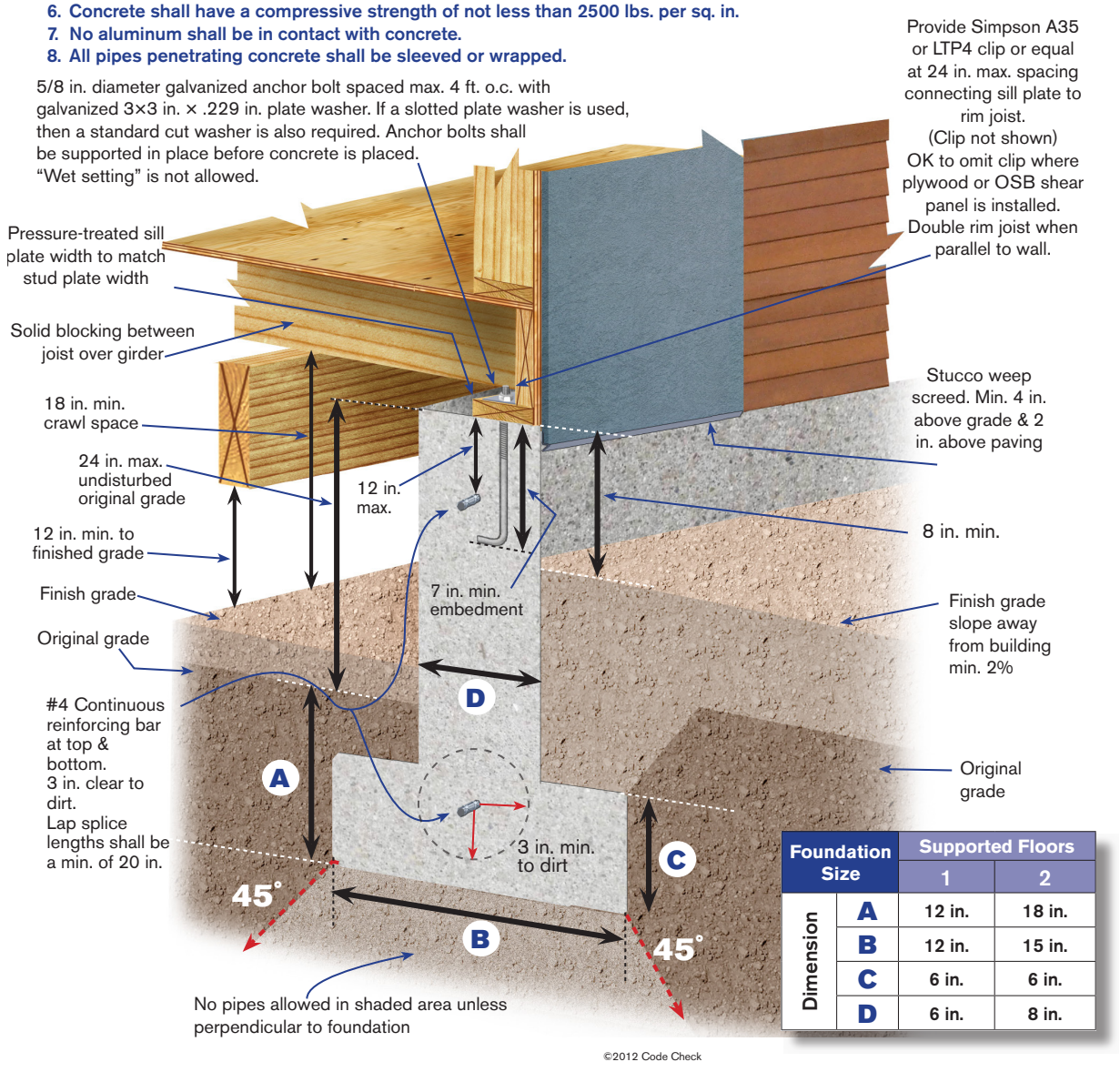
CITY OF OAKLAND
BUILDING SERVICES

Perimeter T Foundation for Exterior Walls with Girder

(Adopted from ORC Section R403)

NOTES:

1. **Sill plate anchorage & foundation for 3-story structures shall be designed by a licensed engineer.**
2. **Provide under floor venting of 1 sq. in. for every 150 sq. ft. of under floor area. Vent locations shall provide cross ventilation.**
3. **Provide min. 18 × 24 in. access to all under floor areas. Access to all mechanical equipment shall be sufficiently sized for removal of the unit.**
4. **All fasteners, anchor bolts, washers, clips or other fasteners installed in pressure-treated lumber shall be hot-dipped galvanized or equal.**
5. **The top of foundations shall be level. The bottom of foundations shall not slope more than 1:10. Foundations shall be stepped where necessary in order to meet these requirements.**
6. **Concrete shall have a compressive strength of not less than 2500 lbs. per sq. in.**
7. **No aluminum shall be in contact with concrete.**
8. **All pipes penetrating concrete shall be sleeved or wrapped.**



Foundation Size		Supported Floors	
		1	2
Dimension	A	12 in.	18 in.
	B	12 in.	15 in.
	C	6 in.	6 in.
	D	6 in.	8 in.

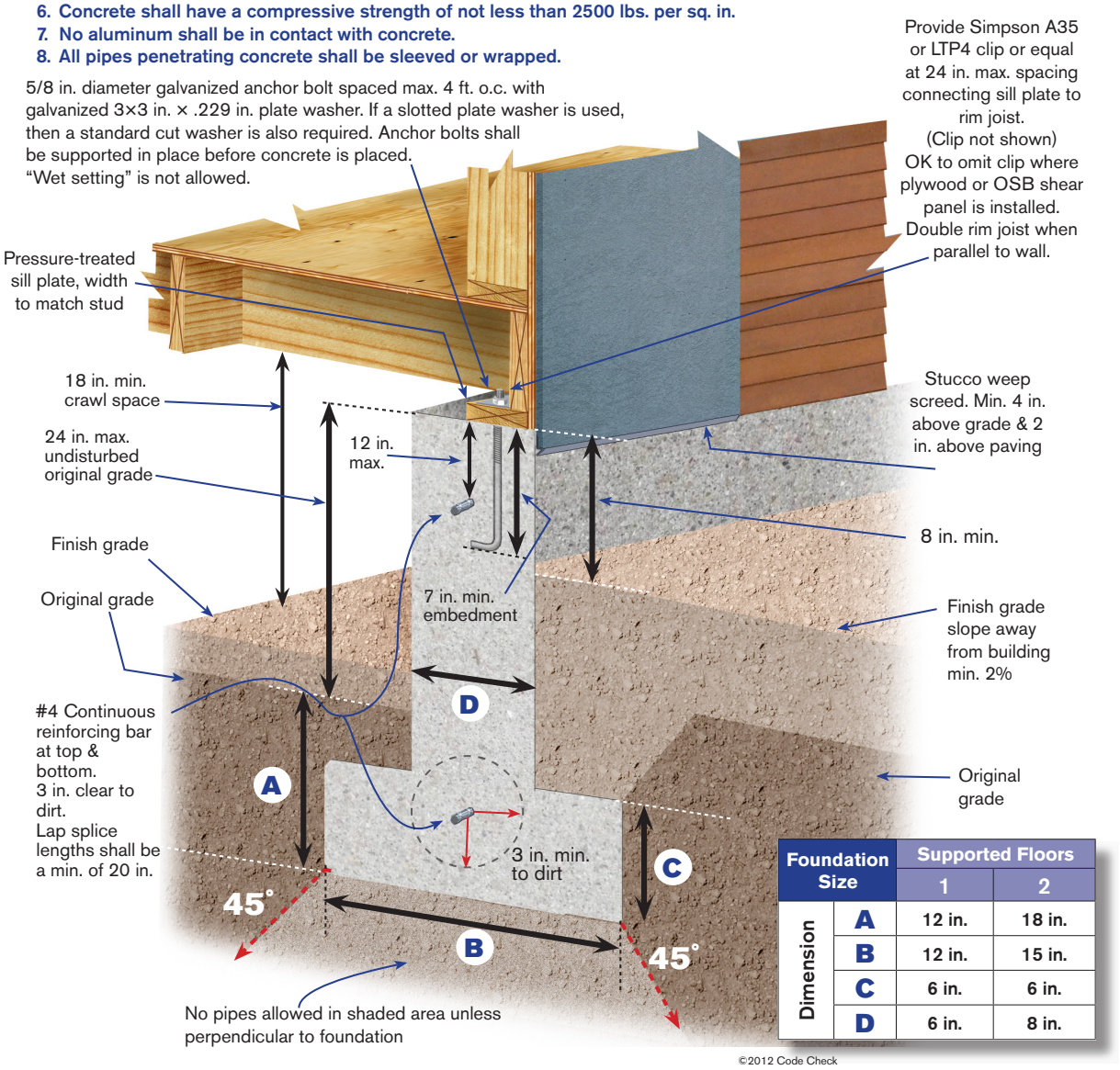
CITY OF OAKLAND
BUILDING SERVICES

Perimeter T Foundation for Exterior Walls

(Adopted from ORC Section R403)

NOTES:

1. **Sill plate anchorage & foundations for 3-story structures shall be designed by a licensed engineer.**
2. **Provide under floor venting of 1 sq. in. for every 150 sq. ft. of under floor area. Vent locations shall provide cross ventilation.**
3. **Provide min. 18 × 24 in. access to all under floor areas. Access to all mechanical equipment shall be sufficiently sized for removal of the unit.**
4. **All fasteners, anchor bolts, washers, clips or other fasteners installed in pressure-treated lumber shall be hot-dipped galvanized or equal.**
5. **The top of foundations shall be level. The bottom of foundations shall not slope more than 1:10. Foundations shall be stepped where necessary in order to meet these requirements.**
6. **Concrete shall have a compressive strength of not less than 2500 lbs. per sq. in.**
7. **No aluminum shall be in contact with concrete.**
8. **All pipes penetrating concrete shall be sleeved or wrapped.**



Foundation Size		Supported Floors	
		1	2
Dimension	A	12 in.	18 in.
	B	12 in.	15 in.
	C	6 in.	6 in.
	D	6 in.	8 in.

PRESCRIPTIVE NOTCHING AND BORING

The table below summarizes the limitations on the amount of material that may be removed from any framing member, and is applicable to prescriptive construction, including Lateral Braced Panels (LBP). The table cannot be used for performance (engineered) construction. Plumbing walls (bathroom, kitchen, laundry) may have to be "over built" (increased from 2x4 to 2x6) or "furred out" (wall widened with additional studs) to accommodate piping. A 2 inch kitchen or laundry sink drain pipe (2.38 inch outside diameter) may not be installed in a 2x4 stud wall. Approved metal reinforcements may be used to strengthen drilled studs, but holes must precisely aligned and are limited to 2 inch inside diameter pipes.

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Based on the 2010 California Residential Building Code

Prescriptive Framing				
CRC	**Member**	**Non-Load Bearing**	**Load Bearing**	**Metal Reinforcement**
R602.6	Stud	60% max 5/8 inch to edge	40% max 5/8 inch to edge	
Hole	2x4	2 -1/16 inch o.d.	1-3/8 inch o.d.	HSS2-SDS up to 3 studs
	2x6	3-3/8 inch o.d.	2-1/4 inch o.d.	
Notch	Stud	40% max	25% max	
	2x4	1-3/8 inch depth	7/8 inch depth	not approved
	2x6	2-1/4 inch depth	1-3/8 inch depth	
Illustration		Figure A	Figure B	Figure D
R602.6.1	Top Plate		50% maximum	
Hole or Notch	2x4		1-3/4 in	16 ga x 1-1/2 inch galvanized strap (8 - 16d each side)
	2x6		2-3/4 in	
Illustration			Figure C	Figure C

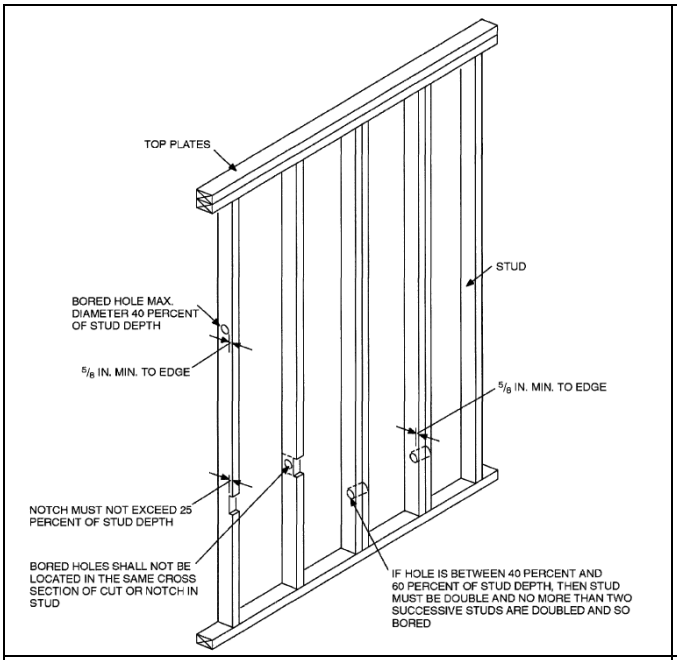


Figure A

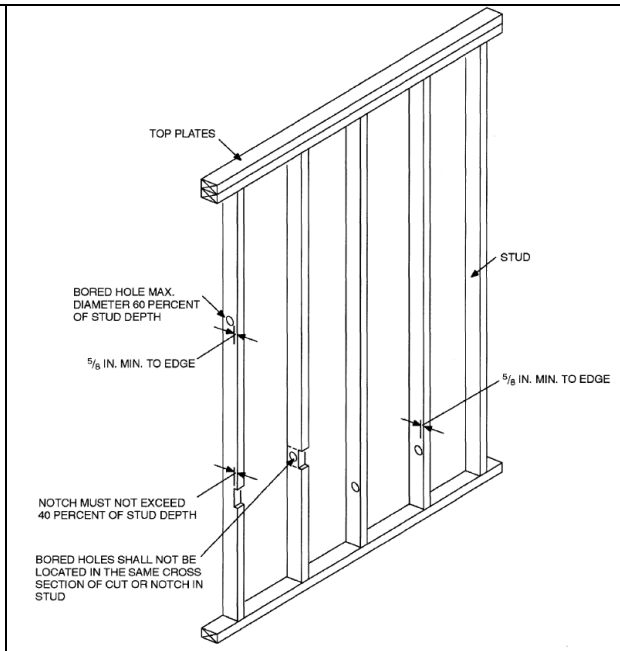


Figure B

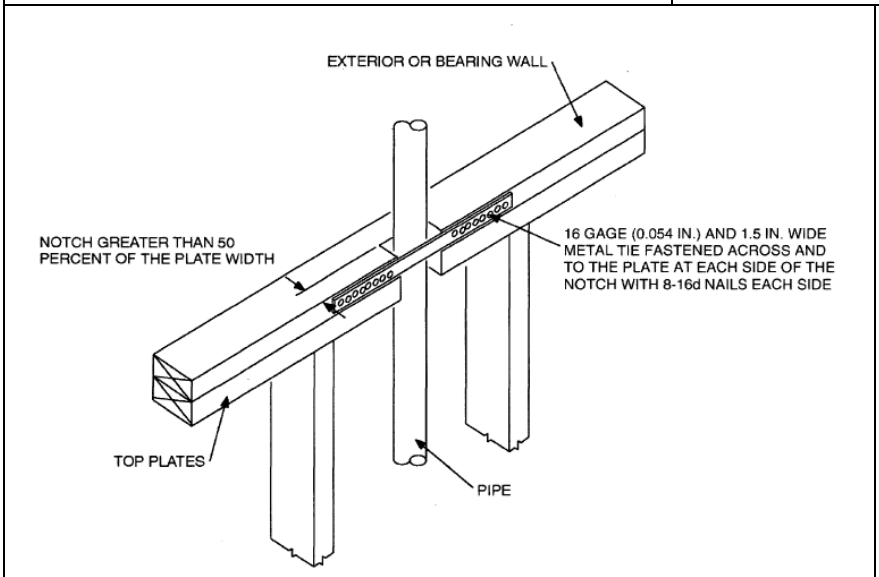


Figure C

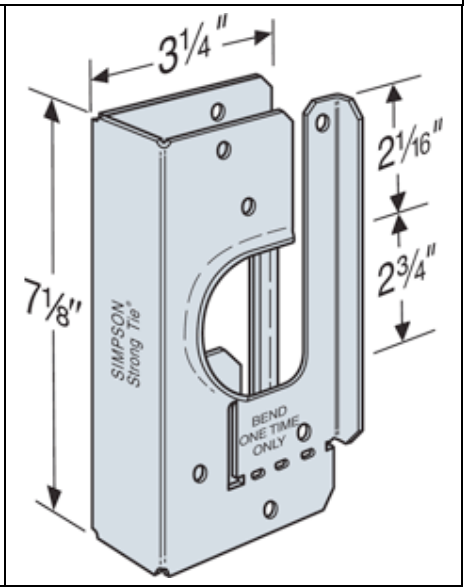
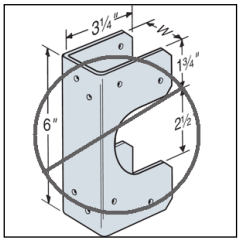


Figure D



PRESCRIPTIVE FLOOR FRAMING

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the 2010 California Residential Building Code

☐	1	Address to be posted, visible from road. CRC §R319
☐	2	Toilet facilities are on-site. OMC 15.04.070
☐	3	Construction site is safe for inspection. Boards with nails and excessive debris removed. Ladders and scaffold properly secured.
☐	4	Best Management Practices (BMP) are in place for storm-water control.
☐	5	Approved plans and permit card are on the job-site. CRC §R106.3.1 & R105.7
☐	6	Engineer's structural observation report is on-site, if applicable. Refer to plans. CBC §1710
☐	7	Nails, anchor bolts and washers in contact with pressure-treated wood are galvanized. CRC §R317.3
☐	8	The top of the stem wall which supports wood sheathing is at least 8" above finished grade. CRC §R317.1
☐	9	Joists and girders are installed per the approved plans. CRC §R407
☐	10	Joists have at least 18" clearance to exposed ground and girders have at least 12" clearance. CRC §R317.1
☐	11	Joist hangers are used at head-outs. CRC §R502.6
☐	12	Untreated posts are at least 8" above exposed ground. CRC §R317
☐	13	A positive connection (post cap or gusset) between the post and girder is provided. CRC §R502.9
☐	14	Sill plates are pressure-treated wood and the size specified on the approved plans. CRC §R317.1
☐	15	Anchor bolts are installed per the approved plans. Retrofit anchor bolts are installed where needed. An anchor bolt is installed between 4" and 12" from plates ends. CRC §R403.1.6
☐	16	3"x3" square washers are installed with anchor bolts. CRC §R602.11.1
☐	17	Hold-down bolts are extended through floor framing.
☐	18	Vertical loads are blocked through floor when required by Engineer.
☐	19	I joist; blocking, web stiffeners, crush blocks, hangers, cutting, and notching, etc. per manufacturer. CRC §R502
☐	20	Shear walls are completed below floor framing.
☐	21	All metal hardware specified on the approved plans is installed.
☐	22	Joists are nailed to beams and plates. CRC Table 602.3 (1)
☐	23	Rim joists are toe-nailed to plates. CRC Table 602.3 (1)
☐	24	Exterior deck attachment provisions in place see figure 502.2.2.3

☐	24	Under-floor ventilation is provided. Insulation baffles are installed as needed. CRC §408
☐	25	An 18”x24” under-floor access is provided. CRC §R408.4 Waste and water piping systems completed and on test. CPC §712/609.4
☐	26	Plumbing cleanouts are extended to outside the building, above the floor or within 20’ of an under-floor access. CPC §707.10
☐	27	Gas pipe installed and tested, CALCULATIONS. CPC §1201 Note: Test inspected at drywall.
☐	28	All piping systems are adequately supported. CPC §314
☐	29	Ducting is installed. CMC §601
☐	a	-Supported every 4’ with 1½” straps. CMC §604.5
☐	b	-Has 4” clearance to ground. CMC §604.3
☐	c	-Allows for 18” under-floor access throughout. CMC §604.1
☐	d	-Radius of bends do not exceed the duct diameter. Per duct manufacturer specs.
☐	30	HVAC registers are blocked on all sides. CRC §R502.10
☐	31	HVAC registers are insulated. CMC §604
☐	32	HVAC registers and ducts sealed from construction dust. 2010 CGBSC 4.504
☐	33	Under-floor furnace, if applicable
☐	a	-Is suspended or mounted above exposed ground. CMC §932.3 / 932.4
☐	b	-Has 30”x30” access and passageway, within 20’. CMC §932.2
☐	c	-A switched light and GFCI receptacle are provided. CMC §932.5
☐	d	-Has 30” high unobstructed passage from access to equipment CMC §304
☐	34	Non-metallic sheathed electrical cable is **protected** (covered) if installed less than 3’ above grade (crawl space) or **concealed** (within the building framing) in areas up to 8’ from grade (basement /storage). OMC 15.04.740
☐	35	Floor insulation R-value matches the CF-1R form shall be verified prior to floor sheathing. (SEPARATE INSPECTION)
☐	a	-HERS verification for quality insulation installation required
☐	b	-HERS verification for sealed ducts required

Typical Floor Framing Detail

Numbered callout details next page.

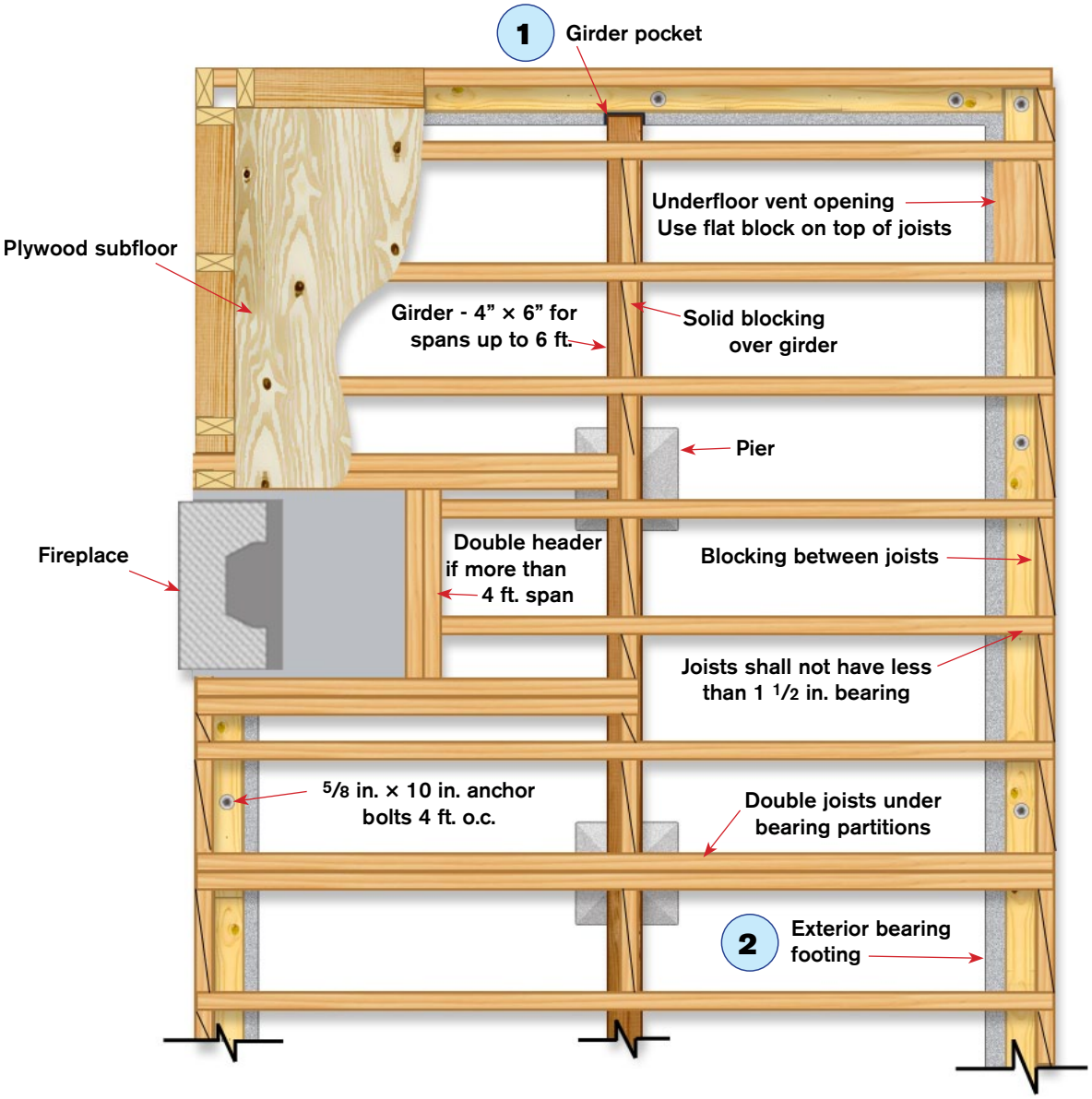
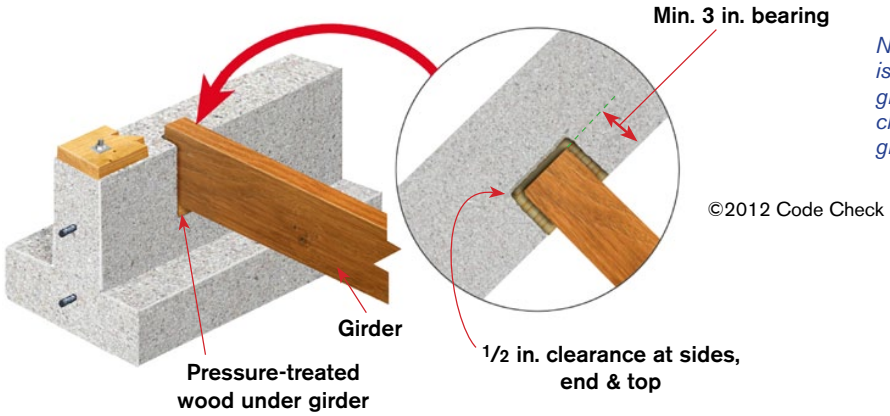
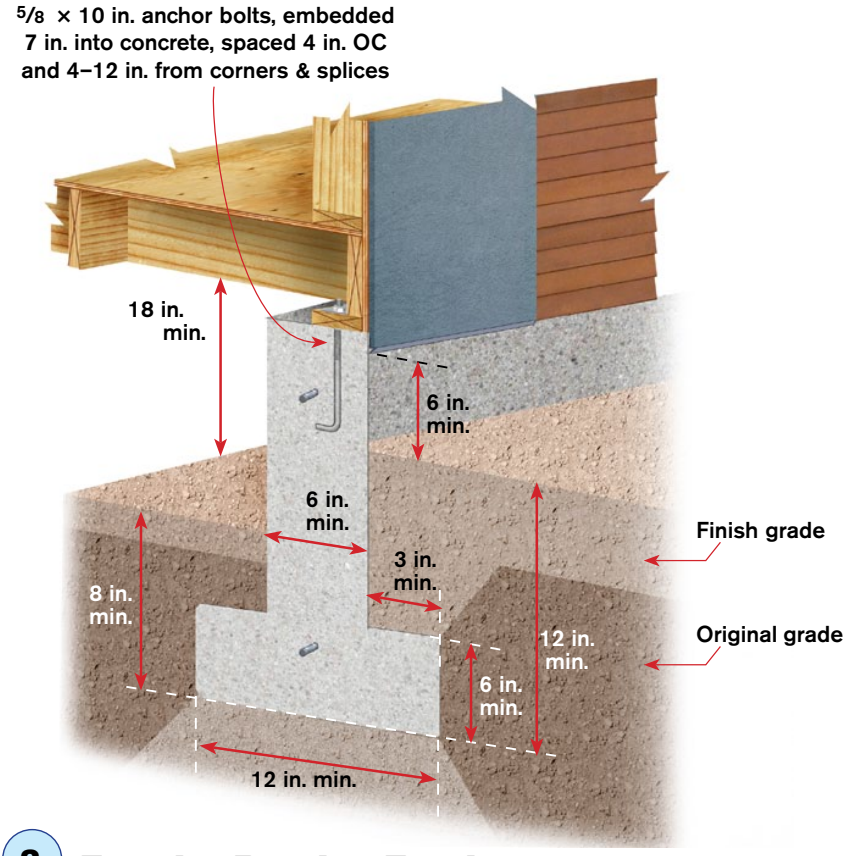


Illustration by Paddy Morrissey, courtesy of Code Check ©2013



Note: Pockets only where girder is attatched to stem wall above grade, high enough to allow 12 in. clearance from bottom of girder to grade.

1 Typical Girder Pocket



2 Exterior Bearing Footing

Illustration by Paddy Morrissey, courtesy of Code Check ©2012

PRESCRIPTIVE DECK FRAMING

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the 2010 California Residential Building Code

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☐	2	Toilet facilities are on-site. OMC 15.04.070
☐	3	Construction site is safe for inspection. Boards with nails and excessive debris removed. Ladders and scaffold properly secured
☐	4	Best Management Practices (BMP) are in place for storm-water control.
☐	5	Approved plans and permit card are on the job-site. CRC §R106.3.1 & 105.7
☐	6	Engineer's structural observation report is on-site, if applicable. Refer to plans. CBC §1710
☐	8	Naturally durable wood or wood that is preservative-treated used for structural members supporting moisture-permeable floors or roofs that are exposed to the weather. R317.1
☐	9	Framing members sized and installed per plan.
☐	10	Field-cut ends, notches and drilled holes of preservative-treated wood shall be treated in the field in accordance with AWPA M4. R317.1.1
☐	11	Decks supported by attachment to an exterior wall, are positively anchored to the primary structure.(no nailing allowed). R502.2.2
☐	12	Deck ledger of incised pressure-preservative-treated Hem-Fir or *approved* decay- resistant species, and a 2-inch nominal band joist bearing on a sill plate or wall plate is connected with 1/2-inch lag screws or bolts with washers in accordance with Table R 502.2.2.1. R502.2.2.1

TABLE R 502.2.2.1
FASTENER SPACING FOR A HEM-FIR DECK LEDGER
& 2" NOMINAL SOLID-SAWN FIR BAND JOIST [c,f,g]
(deck live load = 40 psf, deck dead load = 10 psf)

JOIST SPAN	6' and less	6'1"to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16' 1" to 18'
Connection details	**On-center spacing of fasteners [d,e]**						
1/2 inch diameter lag screw with 15/32 inch maximum sheathing [a]	30	23	18	15	13	11	10
1/2 inch diameter bolt with 15/32 inch maximum sheathing	36	36	34	29	24	21	19
1/2 inch diameter bolt with 15/32 inch maximum sheathing and 1/2 inch stacked washers [b,h]	36	36	29	24	21	18	16

a	The tip of the lag screw shall fully extend beyond the inside face of the band joist.
b	The maximum gap between the face of the ledger board and face of the wall sheathing shall be 1/2".
c	Ledgers shall be flashed to prevent water from contacting the house band joist.
d	Lag screws and bolts shall be staggered in accordance with Section R502.2.2.1.1.
e	Deck ledger shall be minimum 2 x 8 pressure-preservative-treated No.2 grade lumber, or other

			approved materials as established by standard engineering practice.
		f	When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum I inch thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.
		g	A minimum 1 x 9-1/2 inch Douglas-Fir laminated veneer lumber rim-board shall be permitted in lieu of the 2-inch nominal band joist.
		h	Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1 inch in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1 inch .
			Table R502.2.2.1
☐	13	Deck ledger connections not conforming to Table R502.2.2.1 shall be designed in accordance with accepted engineering practice. Girders supporting deck joists shall not be supported on deck ledgers or band joists. Deck ledgers shall not be supported on stone or masonry veneer. R502.2.2.2	
☐	14	Lag screws, bolts and washers are hot -dipped galvanized or stainless steel. R502.2.2.1	
☐	15	Lag screws or bolts are placed 2 inches in from the bottom or top of the deck ledgers and between 2 and 5 inches in from the ends. Lag screws or bolts are staggered from the top to the bottom along the horizontal run of the deck ledger. R502.2.2.1.1	
☐	16	Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self- supporting. R502.2.2	
☐	17	Floor cantilever spans shall not exceed the nominal depth of the wood floor joist. Floor cantilevers constructed in accordance with Table R502.3.3 (1) shall be permitted when supporting a light-frame bearing wall and roof only. Floor cantilevers supporting an exterior balcony are permitted to be constructed in accordance with Table R502.3.3 (2). R502.3.3	

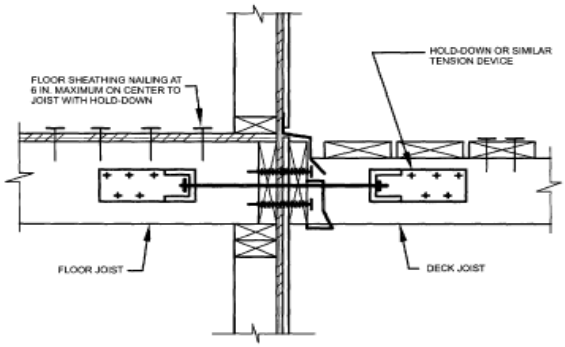
TABLE R502.3.3.2 (adapted)
CANTILEVER SPANS FOR FLOOR JOISTS SUPPORTING EXTERIOR BALCONY [a,b,e.]

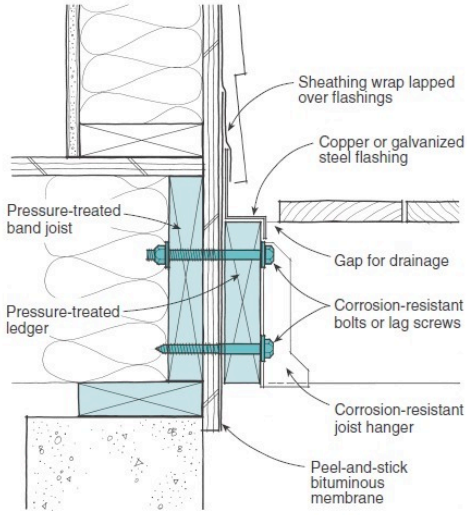
		Maximum Cantilever Span
MEMBER SIZE	**SPACING (inches)**	**LIVE LOAD 50 psf. [c,d]**
2X8	12	39”
2X8	16	34”
2X10	12	57”
2X10	16	49”
2X10	24	40”
2X12	16	67”
2X12	24	54”

a	Spans are based on No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir for repetitive (3 or more) members.
b	Ratio of backspan to cantilever span shall be at least 2:1
c	Connections capable of resisting the indicated uplift force shall be provided at the backspan support.
d	Uplift force is for a backspan to cantilever ratio of 2:1. Tabulated uplift values are permitted to be reduced by multiplying by a factor equal to 2 divided by the actual backspan ratio (2/backspan ratio).
e	A full-depth rim joist shall be provided at the unsupported end of the cantilever joists. Solid blocking shall be provided at the support end.

Table R502.3.3(2)

☐	18	Lateral load connections required by Section R502.2.2 shall be permitted to be in accordance with Figure R502.2.2.3. Hold-down tension devices shall be installed in not less than two locations per deck, and each device shall

		have an allowable stress design capacity of not less than 1500 pounds. R502.2.2.3	
	 FIGURE 502.2.2.3 DECK ATTACHMENT FOR LATERAL LOADS		
	Figure 502.2.2.3		
☐	19	Exterior wood/plastic composite deck boards. Wood/plastic composite deck boards shall be installed in accordance with the manufacturer's instructions. R502.2.2.4	
☐	20	*Approved* corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. R703.8	
		1	Continuously above all projecting wood trim.
		2	Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.



PRESCRIPTIVE WALL AND ROOF FRAMING

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Based on the 2010 California Residential Building Code

☐	1	Address to be posted, visible from road. CRC §R319
☐	2	Toilet facilities are on-site. OMC 15.04.070
☐	3	Construction site is safe for inspection. Boards with nails and excessive debris removed. Ladders and scaffold properly secured.
☐	4	Best Management Practices (BMP) are in place for storm-water control.
☐	5	Approved plans and permit card are on the job-site. CRC §R106.3.1 & R105.7
☐	6	Roof framing: Rafter and ceiling joist size, spacing and design per approved plans.
☐	7	Min. attic ventilation no less than 1/150 the of the attic area. Openings w/wire galvanized wire mesh 1/16" min. and 1/4" max. CRC §R806
☐	8	Roof Height per approved plan. OPC
☐	9	Braced Wall Panel location and size per approved plans.
☐	10	Sheathing materials shall be per plan. Example: if plans call for plywood, OSB may not be used, except when approved by the Plan Check Engineer.
☐	11	Nailing pattern per approved plans. OR.
☐	12	Sheathing to be nailed between 3/8" and 3/4" from joint edges.
☐	12	Sheathing edges, for walls, occur over framing.
☐	13	Nail heads do not break the sheathing veneer.
☐	14	All "shiners" have been removed and re-nailed.
☐	15	Nails, anchor bolts and washers in contact with pressure-treated wood are galvanized. CRC§R317.3
☐	16	Roof sheathing has been completed and nailed per the approved plans.
☐	17	Minimum 2 anchor bolts/straps per piece of sill plate. CRC §R403.1.6
☐	18	3"x3" square washers are installed with anchor bolts. CRC §R403.1.6
☐	19	Minimum 4" distance from end of sill, Max 12" from end of sill CRC §R403.1.6
☐	20	All hardware (straps, clips, etc.) is installed per the approved plans. All required nail holes are filled.
☐	21	Paper, window flashing and/or trim has not been installed. All nailing is to be visible for inspection.
☐	22	Sole plate nailing has been completed, per the approved plan.
☐	23	**ENGINEERED SHEAR WALLS**
☐	24	Engineer's structural observation report is on-site, if applicable. Refer to plans. CBC §1710

☐	25	Special Inspection field reports, such as shop and field welding, installation of epoxy and expansion anchors, etc. shall be onsite at time of inspection. CBC §1704	
☐	26	Any deviations from the approved plans shall be reviewed by the registered design professional and a revised detail and/or letter is on-site.	
☐	27	Shear wall (exterior and interior) has been completed and nailed per the approved plans.	
☐		A	-The nailing schedule shall be painted on each shear wall.
☐		B	-Complete all shear walls and transfers per details.
☐	28	Verify that all anchor bolts and hold-downs are sized and spaced per shear wall schedule.	
☐	29	Sill plate and framing sizes at shear walls are per the shear wall schedule. CRC §R602.11.1	
☐	30	Double stud hold-down posts are stitch nailed per approved plan/engineering.	
☐	31	Spalling of 1”-4” at hold-downs is addressed by the engineer.	
☐	32	Ladder on-site for access to roof.	

PRESCRIPTIVE SHEATHING NAILING

TABLE R602.3(1)—continued
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER[b, c, e]	SPACING OF FASTENERS	
			Edges (inches)[i]	Intermediate supports[c, e] (inches)
Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing				
30	$^{3}/_{8}$″ - $^{1}/_{2}$″	6d common (2″ × 0.113″) nail (subfloor wall)[j] 8d common (2$^{1}/_{2}$″ × 0.131″) nail (roof)	6	12[g]
31	$^{5}/_{16}$″ - $^{1}/_{2}$″	6d common (2″ × 0.113″) nail (subfloor, wall) 8d common (2$^{1}/_{2}$″ × 0.131″) nail (roof)[f]	6	12[g]
32	$^{19}/_{32}$″ - 1″	8d common nail (2$^{1}/_{2}$″ × 0.131″)	6	12[g]
33	1$^{1}/_{8}$″ - 1$^{1}/_{4}$″	10d common (3″ × 0.148″) nail or 8d (2$^{1}/_{2}$″ × 0.131″) deformed nail	6	12

PRESCRITPTIVE RAFTER AND CEILING JOIST NAILING

TABLE R602.3(1)
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

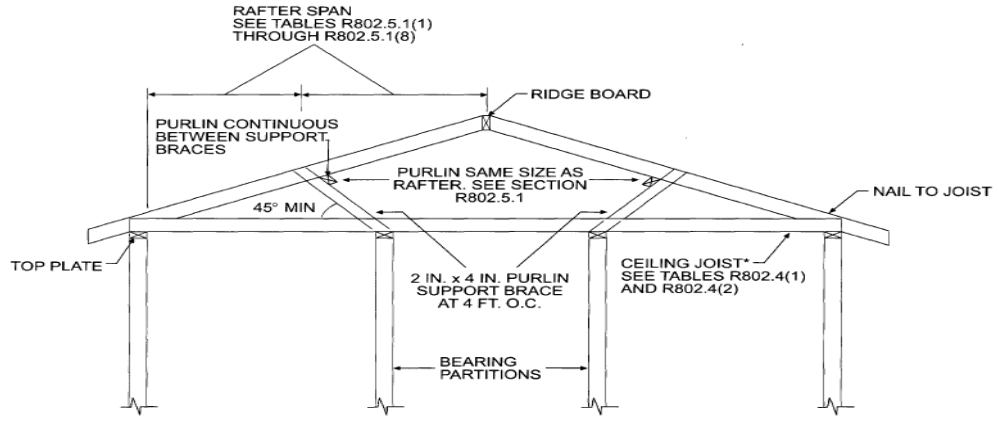
ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING OF FASTENERS
Roof			
1	Blocking between joists or rafters to top plate, toe nail	3-8d (2$^{1}/_{2}$″ × 0.113″)	—
2	Ceiling joists to plate, toe nail	3-8d (2$^{1}/_{2}$″ × 0.113″)	—
3	Ceiling joists not attached to parallel rafter, laps over partitions, face nail	3-10d	—
4	Collar tie rafter, face nail or 1$^{1}/_{4}$″ × 20 gage ridge strap	3-10d (3″ × 0.128″)	—
5	Rafter to plate, toe nail	2-16d (3$^{1}/_{2}$″ × 0.135″)	—
6	Roof rafters to ridge, valley or hip rafters: toe nail face nail	 4-16d (3$^{1}/_{2}$″ × 0.135″) 3-16d (3$^{1}/_{2}$″ × 0.135″)	 — —

PRESCRIPTIVE ROOF SHEATHING SPAN

TABLE R803.1
MINIMUM THICKNESS OF LUMBER ROOF SHEATHING

RAFTER OR BEAM SPACING (inches)	MINIMUM NET THICKNESS (inches)
24	$^5/_8$
48[a]	$1^1/_2$ T & G
60[b]	
72[c]	

PRESCRIPTIVE RAFTER AND CEILING JOIST SPAN



For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 degree = 0.018 rad.
Note: Where ceiling joints run perpendicular to the rafters, rafter ties shall be nailed to each rafter near the top of the ceiling joist.

TABLE R802.4(1)
CEILING JOIST SPANS FOR COMMON LUMBER SPECIES
(Uninhabitable attics without storage, live load = 10 psf, L/Δ = 240)

CEILING JOIST SPACING (inches)	SPECIES AND GRADE		DEAD LOAD = 5 psf			
			2 × 4	2 × 6	2 × 8	2 × 10
			Maximum ceiling joist spans			
			(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)
12	Douglas fir-larch	SS	13-2	20-8	Note a	Note a
	Douglas fir-larch	#1	12-8	19-11	Note a	Note a
	Douglas fir-larch	#2	12-5	19-6	25-8	Note a
	Douglas fir-larch	#3	10-10	15-10	20-1	24-6
	Hem-fir	SS	12-5	19-6	25-8	Note a
	Hem-fir	#1	12-2	19-1	25-2	Note a
	Hem-fir	#2	11-7	18-2	24-0	Note a
	Hem-fir	#3	10-10	15-10	20-1	24-6
	Southern pine	SS	12-11	20-3	Note a	Note a
	Southern pine	#1	12-8	19-11	Note a	Note a
	Southern pine	#2	12-5	19-6	25-8	Note a
	Southern pine	#3	11-6	17-0	21-8	25-7
	Spruce-pine-fir	SS	12-2	19-1	25-2	Note a
	Spruce-pine-fir	#1	11-10	18-8	24-7	Note a
	Spruce-pine-fir	#2	11-10	18-8	24-7	Note a
	Spruce-pine-fir	#3	10-10	15-10	20-1	24-6
16	Douglas fir-larch	SS	11-11	18-9	24-8	Note a
	Douglas fir-larch	#1	11-6	18-1	23-10	Note a
	Douglas fir-larch	#2	11-3	17-8	23-0	Note a
	Douglas fir-larch	#3	9-5	13-9	17-5	21-3
	Hem-fir	SS	11-3	17-8	23-4	Note a
	Hem-fir	#1	11-0	17-4	22-10	Note a
	Hem-fir	#2	10-6	16-6	21-9	Note a
	Hem-fir	#3	9-5	13-9	17-5	21-3
	Southern pine	SS	11-9	18-5	24-3	Note a
	Southern pine	#1	11-6	18-1	23-1	Note a
	Southern pine	#2	11-3	17-8	23-4	Note a
	Southern pine	#3	10-0	14-9	18-9	22-2
	Spruce-pine-fir	SS	11-0	17-4	22-10	Note a
	Spruce-pine-fir	#1	10-9	16-11	22-4	Note a
	Spruce-pine-fir	#2	10-9	16-11	22-4	Note a
	Spruce-pine-fir	#3	9-5	13-9	17-5	21-3

TABLE R802.5.1(2)
RAFTER SPANS FOR COMMON LUMBER SPECIES
(Roof live load=20 psf, ceiling attached to rafters, L/Δ = 240)

RAFTER SPACING (inches)	SPECIES AND GRADE		DEAD LOAD = 10 psf					DEAD LOAD = 20 psf				
			2 × 4	2 × 6	2 × 8	2 × 10	2 × 12	2 × 4	2 × 6	2 × 8	2 × 10	2 × 12
			Maximum rafter spans[a]									
			(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)	(feet - inches)
12	Douglas fir-larch	SS	10-5	16-4	21-7	Note b	Note b	10-5	16-4	21-7	Note b	Note b
	Douglas fir-larch	#1	10-0	15-9	20-10	Note b	Note b	10-0	15-4	19-5	23-9	Note b
	Douglas fir-larch	#2	9-10	15-6	20-5	25-8	Note b	9-10	14-4	18-2	22-3	25-9
	Douglas fir-larch	#3	8-7	12-6	15-10	19-5	22-6	7-5	10-10	13-9	16-9	19-6
	Hem-fir	SS	9-10	15-6	20-5	Note b	Note b	9-10	15-6	20-5	Note b	Note b
	Hem-fir	#1	9-8	15-2	19-11	25-5	Note b	9-8	14-11	18-11	23-2	Note b
	Hem-fir	#2	9-2	14-5	19-0	24-3	Note b	9-2	14-2	17-11	21-11	25-5
	Hem-fir	#3	8-7	12-6	15-10	19-5	22-6	7-5	10-10	13-9	16-9	19-6
	Southern pine	SS	10-3	16-1	21-2	Note b	Note b	10-3	16-1	21-2	Note b	Note b
	Southern pine	#1	10-0	15-9	20-10	Note b	Note b	10-0	15-9	20-10	25-10	Note b
	Southern pine	#2	9-10	15-6	20-5	Note b	Note b	9-10	15-1	19-5	23-2	Note b
	Southern pine	#3	9-1	13-6	17-2	20-3	24-1	7-11	11-8	14-10	17-6	20-11
	Spruce-pine-fir	SS	9-8	15-2	19-11	25-5	Note b	9-8	15-2	19-11	25-5	Note b
	Spruce-pine-fir	#1	9-5	14-9	19-6	24-10	Note b	9-5	14-4	18-2	22-3	25-9
	Spruce-pine-fir	#2	9-5	14-9	19-6	24-10	Note b	9-5	14-4	18-2	22-3	25-9
	Spruce-pine-fir	#3	8-7	12-6	15-10	19-5	22-6	7-5	10-10	13-9	16-9	19-6
16	Douglas fir-larch	SS	9-6	14-11	19-7	25-0	Note b	9-6	14-11	19-7	24-9	Note b
	Douglas fir-larch	#1	9-1	14-4	18-11	23-9	Note b	9-1	13-3	16-10	20-7	23-10
	Douglas fir-larch	#2	8-11	14-1	18-2	22-3	25-9	8-6	12-5	15-9	19-3	22-4
	Douglas fir-larch	#3	7-5	10-10	13-9	16-9	19-6	6-5	9-5	11-11	14-6	16-10
	Hem-fir	SS	8-11	14-1	18-6	23-8	Note b	8-11	14-1	18-6	23-8	Note b
	Hem-fir	#1	8-9	13-9	18-1	23-1	Note b	8-9	12-11	16-5	20-0	23-3
	Hem-fir	#2	8-4	13-1	17-3	21-11	25-5	8-4	12-3	15-6	18-11	22-0
	Hem-fir	#3	7-5	10-10	13-9	16-9	19-6	6-5	9-5	11-11	14-6	16-10
	Southern pine	SS	9-4	14-7	19-3	24-7	Note b	9-4	14-7	19-3	24-7	Note b
	Southern pine	#1	9-1	14-4	18-11	24-1	Note b	9-1	14-4	18-10	22-4	Note b
	Southern pine	#2	8-11	14-1	18-6	23-2	Note b	8-11	13-0	16-10	20-1	23-7
	Southern pine	#3	7-11	11-8	14-10	17-6	20-11	6-10	10-1	12-10	15-2	18-1
	Spruce-pine-fir	SS	8-9	13-9	18-1	23-1	Note b	8-9	13-9	18-1	23-0	Note b
	Spruce-pine-fir	#1	8-7	13-5	17-9	22-3	25-9	8-6	12-5	15-9	19-3	22-4
	Spruce-pine-fir	#2	8-7	13-5	17-9	22-3	25-9	8-6	12-5	15-9	19-3	22-4
	Spruce-pine-fir	#3	7-5	10-10	13-9	16-9	19-6	6-5	9-5	11-11	14-6	16-10

PRESCRIPTIVE WALL BRACING

TABLE R602.3(5)
SIZE, HEIGHT AND SPACING OF WOOD STUDS[a]

STUD SIZE (inches)	BEARING WALLS					NONBEARING WALLS	
	Laterally unsupported stud height[a] (feet)	Maximum spacing when supporting a roof-ceiling assembly or a habitable attic assembly, only (inches)	Maximum spacing when supporting one floor, plus a roof-ceiling assembly or a habitable attic assembly (inches)	Maximum spacing when supporting two floors, plus a roof-ceiling assembly or a habitable attic assembly (inches)	Maximum spacing when supporting one floor height[a] (feet)	Laterally unsupported stud height[a] (feet)	Maximum spacing (inches)
							
2 × 3[b]	—	—	—	—	—	10	16
2 × 4	10	24[c]	16[c]	—	24	14	24
3 × 4	10	24	24	16	24	14	24
2 × 5	10	24	24	—	24	16	24
2 × 6	10	24	24	16	24	20	24

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square foot = 0.093 m^2.

a. Listed heights are distances between points of lateral support placed perpendicular to the plane of the wall. Increases in unsupported height are permitted where justified by analysis.

b. Shall not be used in exterior walls.

c. A habitable attic assembly supported by 2 × 4 studs is limited to a roof span of 32 feet. Where the roof span exceeds 32 feet, the wall studs shall be increased to 2 × 6 or the studs shall be designed in accordance with accepted engineering practice.

TABLE R602.10.1.2(2)[a, b, c]
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY
(AS A FUNCTION OF BRACED WALL LINE LENGTH)

SOIL CLASS D[a] WALL HEIGHT = 10 FT 10 PSF FLOOR DEAD LOAD 15 PSF ROOF/CEILING DEAD LOAD BRACED WALL LINE SPACING ≤ 25 FT			MINIMUM TOTAL LENGTH (feet) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE			
Seismic Design Category (SDC)	Story Location	Braced Wall Line Length	Method LIB	Methods DWB, SFB, GB, PBS, PCP, HPS	Method WSP	Continuous Sheathing
SDC A and B and Detached Dwellings in C		Exempt from Seismic Requirements Use Table R602.10.1.2(1) for Bracing Requirements				
SDC C		10	2.5	2.5	1.6	1.4
		20	5.0	5.0	3.2	2.7
		30	7.5	7.5	4.8	4.1
		40	10.0	10.0	6.4	5.4
		50	12.5	12.5	8.0	6.8
		10	NP	4.5	3.0	2.6
		20	NP	9.0	6.0	5.1
		30	NP	13.5	9.0	7.7
		40	NP	18.0	12.0	10.2
		50	NP	22.5	15.0	12.8
		10	NP	6.0	4.5	3.8
		20	NP	12.0	9.0	7.7
		30	NP	18.0	13.5	11.5
		40	NP	24.0	18.0	15.3
		50	NP	30.0	22.5	19.1
SDC D_0 or D_1		10	NP	3.0	2.0	1.7
		20	NP	6.0	4.0	3.4
		30	NP	9.0	6.0	5.1
		40	NP	12.0	8.0	6.8
		50	NP	15.0	10.0	8.5
		10	NP	6.0	4.5	3.8
		20	NP	12.0	9.0	7.7
		30	NP	18.0	13.5	11.5
		40	NP	24.0	18.0	15.3
		50	NP	30.0	22.5	19.1
		10	NP	8.5	6.0	5.1
		20	NP	17.0	12.0	10.2
		30	NP	25.5	18.0	15.3
		40	NP	34.0	24.0	20.4
		50	NP	42.5	30.0	25.5

PRESCRIPTIVE WALL HEADER

EXTERIOR BEARING WALLS HEADERS OR GIRDERS MUST BE PER TABLE R502.5(1)

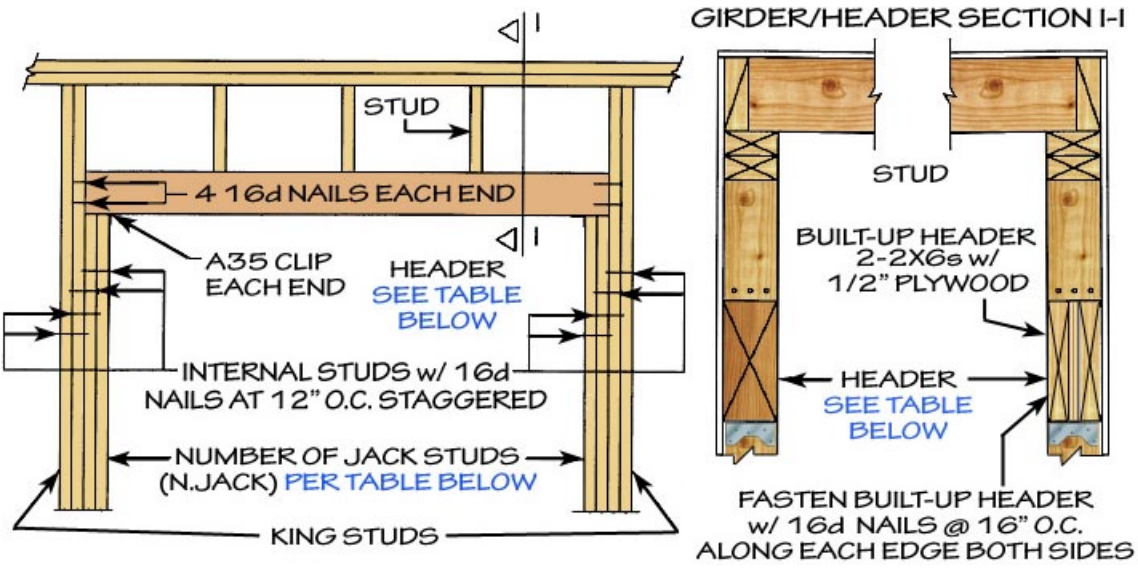


TABLE R502.5(1) HEADER & GIRDER SPANS FOR EXTERIOR BEARING WALLS

HEADERS & GIRDERS	SIZE	BUILDING WIDTH (Feet)					
		20'-0"		28'-0"		36'-0"	
		SPAN	N.JACK	SPAN	N.JACK	SPAN	N.JACK
ROOF, CEILING & 1 CLEAR SPAN FLOOR	2-2X4	2'-8"	1	2'-4"	1	2'-1"	1
	2-2X6	3'-1"	1	3'-5"	2	3'-0"	2
	2-2X8	5'-0"	2	4'-4"	2	3'-10"	2
	2-2X10	6'-1"	2	5'-3"	2	4'-8"	2
	2-2X12	7'-1"	2	6'-1"	3	5'-5"	3
	3-2X8	6'-3"	2	5'-5"	2	4'-10"	2
	3-2X10	7'-7"	2	6'-7"	2	5'-11"	2
	3-2X12	8'-10"	2	7'-8"	2	6'-10"	2
	4-2X8	7'-2"	1	6'-3"	2	5'-7"	2
	4-2X10	8'-9"	2	7'-7"	2	6'-10"	2
	4-2X12	10'-2"	2	8'-10"	2	7'-11"	2
ROOF, CEILING & 2 CLEAR SPAN FLOORS	2-2X4	2'-1"	1	1'-8"	1	1'-6"	2
	2-2X6	3'-1"	2	2'-8"	2	2'-4"	2
	2-2X8	3'-10"	2	3'-4"	2	3'-0"	3
	2-2X10	4'-9"	2	4'-1"	3	3'-8"	3
	2-2X12	5'-6"	3	4'-9"	3	4'-3"	3
	3-2X8	4'-10"	2	4'-2"	2	3'-9"	2
	3-2X10	5'-11"	2	5'-1"	2	4'-7"	3
	3-2X12	6'-10"	2	5'-11"	3	5'-4"	3
	4-2X8	5'-7"	2	4'-10"	2	4'-4"	2
	4-2X10	6'-10"	2	5'-11"	2	5'-3"	2
	4-2X12	7'-11"	2	6'-10"	2	6'-2"	3

Chapter 8

ROUGH INSPECTION

RB/ RE/ RM/ RP INSPECTIONS

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the 2010 California Residential Building Code

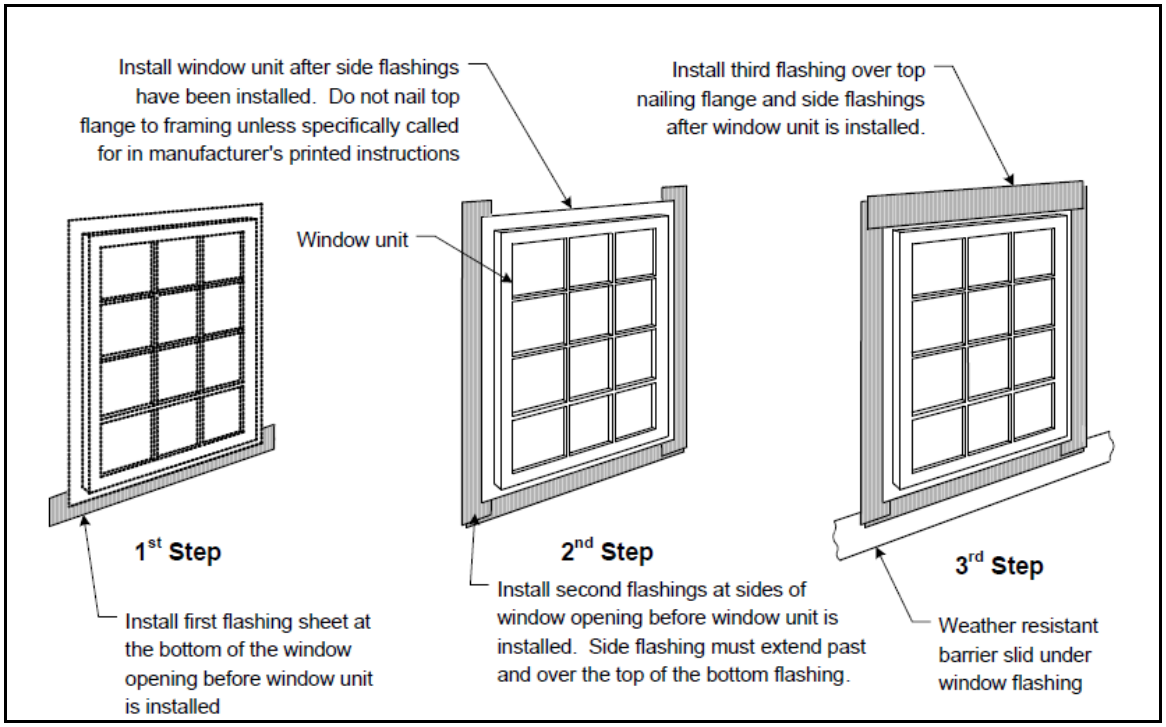
	BUILDING
☐	Address to be posted, visible from road. CRC §R319
☐	Toilet facilities are on-site. CPC §412.6
☐	Construction site is safe for inspection. Boards with nails and excessive debris removed. Ladders and scaffold properly secured
☐	Best Management Practices (BMP) are in place for storm-water control.
☐	New Fire Sprinklers: Automatic fire sprinkler systems are required for all new one and two family dwellings. Exception: additions and alterations. Sprinkler systems must be installed and approved by the local fire jurisdiction having authority. CRC §R313
☐	Approved plans and permit card are on the job-site. CRC §R106.3.1 & 105.7
☐	Engineer's structural observation report is on-site, if applicable. Refer to plans. CBC §1710
☐	Roofing is complete, including flashings at all penetrations. CRC §R109
☐	Verify installation of radiant barrier and cool roof products per the approved Title 24 Report and 2008 Residential Compliance Manual. (§3.7 & App D)
☐	Building shall be weather tight (paper or TYVEK or similar product on the walls and windows installed). The installation of the exterior finishes should immediately follow this inspection as not to void the weather-resistive barrier UV exposure rating.
☐	Exterior lath and paper complete, CRC §R109
	Verify all penetrations are caulked and sealed.
☐	Weep screeds in place minimum 4" above earth and 2" above paved, concrete areas. CRC §R703.6.2.1
☐	Any deviations from the approved plans have been reviewed by the design engineer and a revised detail and/or letter is on-site.
☐	All framing specified on the plans or engineer's revisions have been completed.
☐	All deferred submittals shall be approved stamped and on site at time of inspection.
☐	The correct truss calculations, including the layout, are on-site.
☐	Multiple trusses are attached per the calculations.
☐	Bracing of the trusses per the calculations has been completed
☐	Attic draft stop has been installed, when required, including attic access to both sides. PCC §15.04.175.1 (B)
☐	Trusses/rafters/floor/deck and ceiling joists are blocked at bearing points. CRC §R502.7 & 802.8
☐	Cathedral ceiling ventilation CRC §R806. Enclosed rafter spaces shall have cross ventilation for each separate space. Provide 50% of the required ventilating area at the upper portion of the space and the balance at the eave/lower area of the space. A minimum 1" airspace is required between insulation and roof sheathing. Net free ventilating area shall not be less than 1/150 of the space ventilated.

☐	Unvented cathedral ceilings and non vented attic assemblies must be installed per CRC §R806.4
☐	Bedrooms / Basements / Habitable attics window egress min. clear height 24", min. clear width 20", min. 5.7 sq. ft. operable area except at grade floor may be 5.0 sq. ft. Max. sill height 44" clear space to floor or requires ladder. CRC §R310
☐	Safety glass required when edge of glass is less than 24" from door edge and less than 60" above ground. CRC §R308.4
☐	Safety glass required when glass is more than 9 sq. ft .and edge of glass is less than 18" above floor/ground and top edge is more than 36" above ground and within 36" of walking surfaces. CRC §R308.4
☐	Safety glass required when glass is within 60" of the waters edge at swimming pool, hot tub, or spa. CRC §R308.4
☐	Safety glass required in walls enclosing stairway landings or within 5" of the bottom and top of stairway where the bottom edge of the glass is less than 60" above a walking surface. CRC §R308.4
☐	Width: Stairway and hall width shall not be less than 36" finish CRC §R311.7
☐	Headroom: Min. 6"-8" (Spiral 6"-6") CRC §R311.7.2 & 311.7.9.1
☐	Treads and risers: Maximum riser height shall be 7-3/4" and a minimum of 4" Minimum tread depth shall be 10" with a ¾" nosing or 11" depth. CRC §R311.7.4.1 & 311.7.4.2
☐	Dimensional uniformity at stairs shall be determined from landing to landing from the tallest riser not more than 3/8" to the shortest riser and greatest tread depth not more than 3/8" more than the smallest. CRC §R311.7
☐	Winders: Min. 6" tread depth at inner edge and min. 10" tread depth within 12" of inner edge. CRC §R311.7.4.2
☐	Nosing: max. radius of curvature or beveling of nosing ½". Risers shall be solid and require nosing min. 3/4" max. 1-1/4" except when tread depth is 11" nosing is not required. CRC §R311.7.4.3
☐	Stairway Landings: There shall be a landing at the top and bottom of each stairway. The width of landings shall not be less than the width of stairways they serve. Every landing shall have a minimum dimension measured in the direction of travel equal to the width of the stairway. Such dimension need not exceed 48" where the stairway has straight run. CRC §R311.7.5 R-3 occupancies, a floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs.
☐	Vertical rise: Max. 12" between floor levels or landings. CRC §R311.7.5
☐	Insulation baffles are installed at eave vents. CRC §R806.3. Attic vents meet the requirements of CRC §R327 (where applicable).
☐	Insulation baffles are installed at "B" vents and flues. CMC §802.10.2.4
☐	Attic access is framed to allow opening at least as large as the largest component of the appliance and not less than 22"x30". CRC §R807.1 & CMC §904.11
☐	Fire blocking at the top and bottom of concealed spaces and every 10" in horizontal spaces has been completed. CRC §R302.11
☐	End joints in double top plates are offset 48" with 8-16d nails each side, or per engineer's requirements for engineered structures. Top plates notched for piping, A/C line-sets, continuous posts, etc. have been spliced with a structural strap with 8-16d nails each side, or per engineer's requirements for engineered structures. CRC Table R602.3(1) & R602.6.1
☐	Floor sheathing at tub drain is fire blocked. CRC §R302.11
☐	Pocket door frames are in place.
	ELECTRICAL
☐	All rough electrical is complete. Wiring is terminated in the electrical panels. CEC §110.3
☐	Verify electrical outlet requirements and spacing. CEC §210.52
☐	Sub-panel is not located in a bathroom or clothes closet. CEC §240.24
☐	Arc Fault protection required for outlets in family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas. CEC §210.12

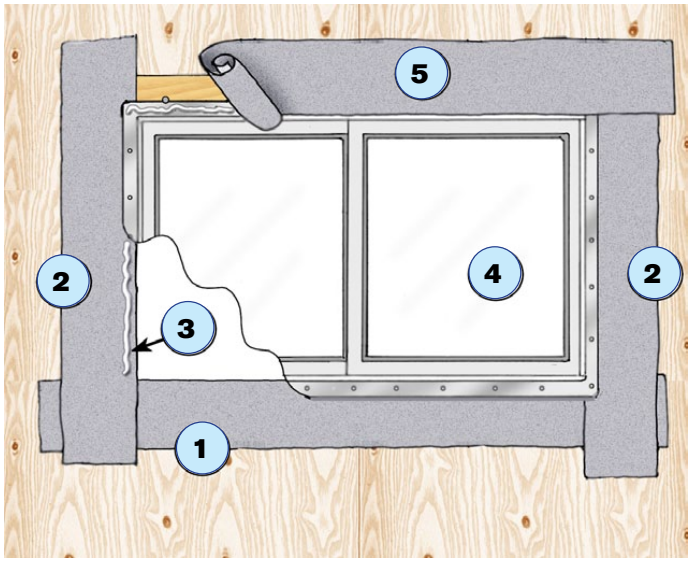
☐	Guest rooms and guest suites that are provided with permanent provisions for cooking shall have arc fault branch circuits installed. CEC §210.18
☐	Overcurrent devices shall be readily accessible, therefore in areas at or above 5,000 ft. elevation, the sub-panel is located at the interior or where not subject to snow build-up. CEC § 240-24
☐	Smoke alarms shall be interconnected, hardwired with battery backup, are required on ceiling or wall at each floor level, in each sleeping room and outside each sleeping area. Including basements and habitable attics. CRC §R314
☐	Carbon Monoxide Alarms shall be installed in dwellings with fuel burning appliances and with attached garages. Detectors shall be interconnected. Detectors shall be installed in each sleeping room and outside each sleeping room area and every floor level including basements, multiple purpose smoke and carbon monoxide alarms are acceptable. CRC §R315
☐	Electrical boxes are made-up; grounds and neutrals spliced, ground screws, bushings, etc. CEC §110.3
☐	Romex is secured within 12" of boxes and every 4½ '. CEC §334.30
☐	The grounding electrode conductor to the UFER is complete, with access panel. CEC §250.66 & 250.68
☐	Bonding to water and gas piping is complete. Connections are in an accessible location. CEC §250.104
☐	Any electrical panel or disconnect, such as the A/C unit, has the required working clearance. 30" wide by 36" deep. CEC §110.26
☐	A switched light and receptacle are provided in the attic for HVAC equipment. CEC §210.70.A.3
☐	Romex within 6‟ of the attic access is to be protected. CEC §320.23
☐	A receptacle is provided within 25‟ of outdoor, roof top or ground mounted, equipment. CEC §210.63
☐	Nail protector plates are provided at wiring within 1¼" from the edge of the stud or framing member. CEC §300.4
	PLUMBING
☐	Plumbing (waste, water, gas, hydronic) systems are on test. Floors are to be dry. CPC §609.4, 712 & 1214 Exception: Hydronic heat piping inspection can occur at the insulation inspection, but not later than the drywall inspection.
☐	Site built shower pans are filled to the top of dam for test. CPC §411.8.1 Exception: This inspection can be completed at insulation inspection but not later than the drywall nail inspection.
☐	Plumbing vents extend through the roof with flashings. CPC §906.3
☐	All piping is supported. Copper every 6‟, ABS every 4‟. CPC Table 3-2 70.□□ Nail protector plates are provided at piping within 1" from the edge of the stud or framing member. CPC §313.9
☐	Water heater relief pipe is terminated outside the building. CPC §608.5
☐	Water heater vent is installed through the roof, with flashing. CPC §510.0
☐	Gas water heater located in garage shall be elevated 18" above floor unless listed as flammable vapor ignition resistant. CPC §508.14 (2), [NFPA 54:9.1.10.1]
☐	Water heaters located in the attic or on a subfloor need a water-tight drip pan with a ¾" drain to the exterior of the building. (CPC §508.4)
☐	Copy of Plumbers certification card for the installation of flexible gas piping. (Per Manufacture)
☐	Verify that the water heating distribution system is installed and insulated per the minimum requirements of the approved Title 24 Report and 2008 Residential Compliance Manual.
	MECHANICAL
☐	Indoor Air Quality and Mechanical Ventilation for all new dwellings and additions larger than 1,000sq.ft. All

	bathrooms require a minimum 50cfm 3-sone. Kitchen requires minimum 100cfm. 3-sone. 2008 California Energy Code Chapter 4
☐	All ducting is complete. CMC §601.0
☐	Supported every 4" with 1½" straps. CMC §604.5 Radius of bends are at least equal to the duct diameter. Per manufacture specifications
☐	All supply and return cans are installed and blocked on all sides. CRC §R502.10
☐	The mechanical ducting system shall be installed and insulated per the minimum requirements of the approved Title 24 Report and 2008 Residential Compliance Manual. (§4.4)
☐	A/C line-set is installed and supported. CMC §1111.0
☐	Thermostat wire is installed.
☐	B-vents for all appliances are set in place. "Single wall pipe is no longer allowed" CMC §802.5 & 802.7.4.1
☐	Bathroom exhaust fans and ducts are installed. Ducts to terminate at wall or roof jacks. CMC §504
☐	Condensate drains installed per CMC §309.2
☐	Propane drain provisions are installed. Refer to County handout; Propane Appliance
☐	Furnaces installed within attic or crawl space areas shall be installed and meet the minimum efficiency and installation requirements of the approved Title 24 Report and 2008 Residential Compliance Manual. (§4.2)
☐	Verify installation of Indoor Air Quality and Mechanical Ventilation system per approved plan and 2008 Residential Compliance Manual. (§4.6)

WINDOW FLASHING



Exterior openings exposed to the weather shall be flashed in such a manner as to make them weatherproof. This illustration will help you achieve flashing of penetrations to include windows, doors, attic vents, recessed electrical service enclosures and other exterior penetrations.



To flash penetrations, a strip of approved flashing material at least six inches wide must be applied in weatherboard fashion around all openings.

1. Apply the first strip horizontally immediately underneath the sill, cut it sufficiently long to extend past each side of the window, door, or vent, so that it projects beyond the vertical flashing to be applied.

Fasten the top edge of the first segment to the wall, but do not secure the body and lower edge of the first horizontal strip, so the weather resistant building paper applied later may be slipped up and underneath the bottom flashing in weatherboard fashion.In the case of low-set windows, apply approved paper the full height from the bottom of the plate line to the bottom of the window sill when the window is flashed.

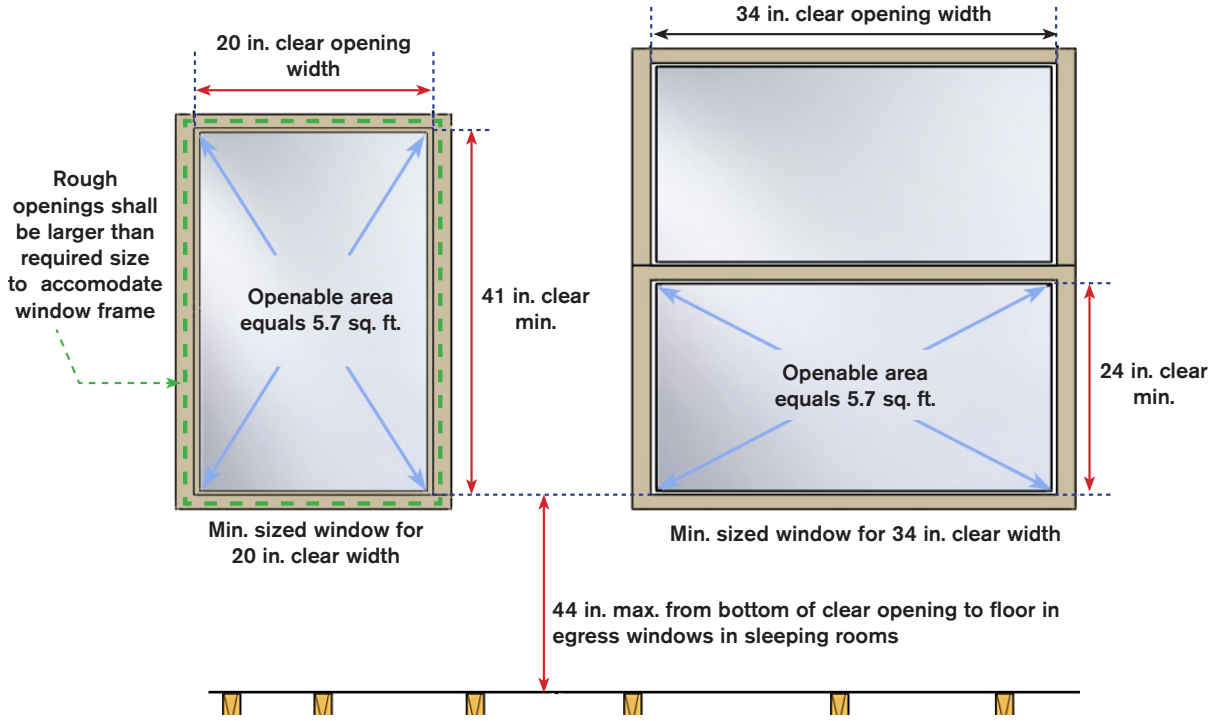
2. Next, apply the two vertical side sections of flashing. Cut the side sections sufficiently long to extend the width of the flashing above the top of the window and the same distance below the window.Apply the side sections over the bottom strip of flashing.

3. Apply caulking on the edges of the window opening over flashings 1 & 2, and along edge of window header.

4. Place window in opening, secure by nailing and apply caulking along the top edge of the window frame.

5. Apply the top horizontal section of flashing last. Cut the top piece of flashing sufficiently long so that it will extend to the outer edge of both vertical strips of side flashing.

SLEEPING ROOM EGRESS WINDOWS



Because so many fire deaths occur when occupants of residential buildings are asleep at the time of a fire, the 2010 California Building Code (CBC), Section 1029 requires that:

- Basements in dwelling units and
- Every sleeping room below the fourth story

Shall have at least one operable window or exterior door opening approved for emergency escape and rescue. Such openings shall open directly into a public way or to a yard or court that opens to a public way.

- The net clear openable area shall be no less than 5.7 square feet (5 square feet for grade floor openings and basement window wells).
- In addition to the above requirement, the net clear openable height dimension shall be a minimum of 24 inches. The net clear openable width dimension shall be a minimum of 20 inches (Note: using both minimum figures will not obtain the required 5.7 square feet.)

The chart below summarizes the minimum window dimensions that will achieve a 5.7 square-foot opening:

WINDOW EGRESS: MIN. HEIGHT & WIDTH REQUIREMENTS TO MEET REQ'D 5.7 SQ. FT. OPENING SIZE (IN INCHES)															
Width	20	20½	21	21½	22	22½	23	23½	24	24½	25	25½	26	26½	27
Height	41	40	39½	38½	37½	36½	35½	35	34½	33½	33	32½	31	31	30½
Width	27½	28	28½	29	29½	30	30½	31	31½	32	32½	33	33½	34	
Height	30	29½	29	28½	28	27½	27	26½	26½	25½	25½	25	24½	24	

STUCCO INSTALLATION

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the 2010 California Residential Building Code

☐	1	Address to be posted, visible from road. CRC §R319
☐	2	Toilet facilities are on-site. OMC 15.04.070
☐	3	Construction site is safe for inspection. Ladders and scaffold properly secured.
☐	4	Best Management Practices (BMP) are in place for storm-water control.
☐	5	Approved plans and permit card are on the job-site. CRC §R106.3.1 & R105.7
☐	6	All penetrations must be caulked/ waterproofed.
☐	7	Weep screed placed a minimum of 4" above the earth or 2" above paved areas or similar surfaces. CRC R703.6.2.1 SEE FIGURE A
☐	8	Weather resistive barrier includes two layers of grade "D" paper and is applied horizontally with the upper layer lapped over the lower layer no less than 2". Where vertical joints occur, paper is lapped not less than 6". CRC R7.3.3
☐	9	Lath attachments and fasteners shall be corrosion resistant materials. CRC R703.6.1
☐	10	Attachments shall be made at framing members. ASTM C926, C1063
☐	11	Metal or wire lath shall be applied with the long dimension of the sheets perpendicular to supports. ASTM C926, C1063
☐	12	Metal lath shall be lapped not less than 1/2" at sides and 1" at the ends. Wire lath shall be lapped not less than one mesh at sides and ends, but not less than 1". Overlap round corners 12".
☐	13	Fasteners to wood shall be spaced no less than 6" vertically and 16" horizontally. Staples 8" O.C. when used with self-furring lath only.
☐	14	Metal and wire lath shall be furred out away form vertical supports at least 1/4". Self-furring lath shall meet furring requirements. ASTM C926, C1063
☐	15	External corner reinforcement required. ASTM C926, C1063
☐	16	All flashings including foundation vents at building perimeter must be in place, having exterior lath over vent flange resulting in weather tight construction.
☐	17	All lath paper damaged or torn shall be replaced with new or sealed as required including being free from holes and breaks other than those created by fasteners.
☐	18	Control joints separate areas greater than 144sqft (100sqft horizontal surfaces) ASTM C926, C1063
		STUCCO REPAIRS AND PATCHING
☐	R1	The new lath and backing paper overlap the existing lath and backing paper two inches. SEE FIGURE B
☐	R2	Approximately three inches of existing plaster at the new joint be broken out leaving the lath and backing paper intact and exposed. SEE FIGURE B
☐	R3	Old concrete joint line is jagged (no straight saw cuts)
☐	R4	The new and existing backing papers are lapped and the new and existing lath is lapped (see Figure "B" for splicing detail).
☐	R5	Wire lath shall be installed over at least one layer of a weather resistant barrier
☐	R6	When stucco is installed on solid plywood sheathing, two layers of weather resistant barrier material are installed.

WEEP SCREED INSTALLATION

WIRE BACKING

Over open wood frame construction, attach wire of not less than No. 18 gage to vertical surfaces, stretched taut horizontally and spaced at not more than 6 inch intervals. Approved self furring paper backed lath may be used in lieu of wire backing.

WEATHER PROTECTION

Over open or solid wood backing frame construction to which metal lath is to be applied, apply water resistant paper to exterior vertical surfaces. Apply paper to supports and lap upper courses over lower courses not less than 2"; lap foundation at least 2"; lap vertical joints at least 6". Double paper should be installed over solid wood backing.

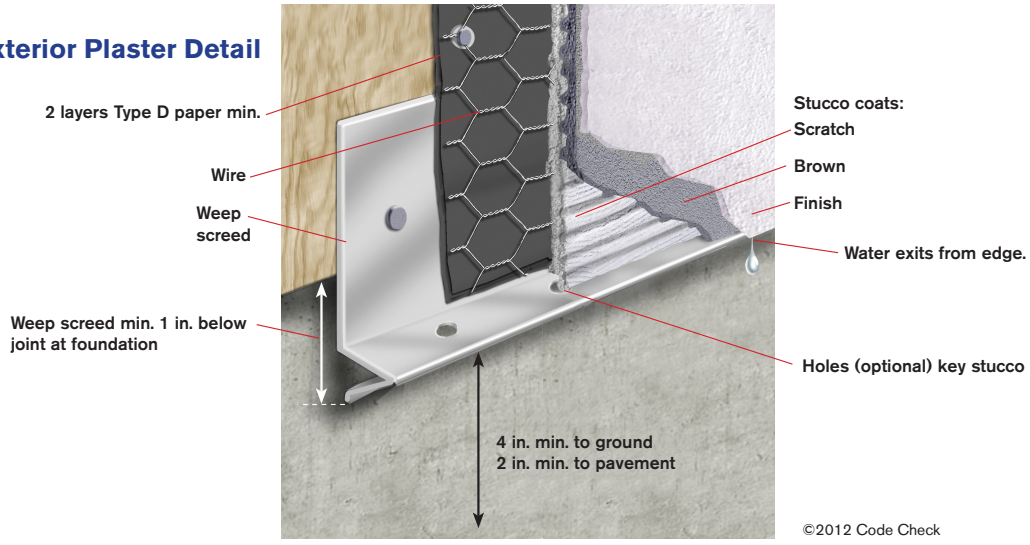
WEEP SCREED

A minimum No. 26 galvanized sheet gage, corrosion-resistant weep screed with a minimum vertical attachment flange of 3 ½ inches shall be provided at or below the foundation plate line on all exterior stud walls. The screed shall be placed a minimum of 4 inches above the earth or 2 inches above paved areas and shall be of a type which will allow trapped water to drain to the exterior of the building. The weather-resistive barrier shall lap the attachment flange, and the exterior lath shall cover and terminate on the attachment flange of the screed.

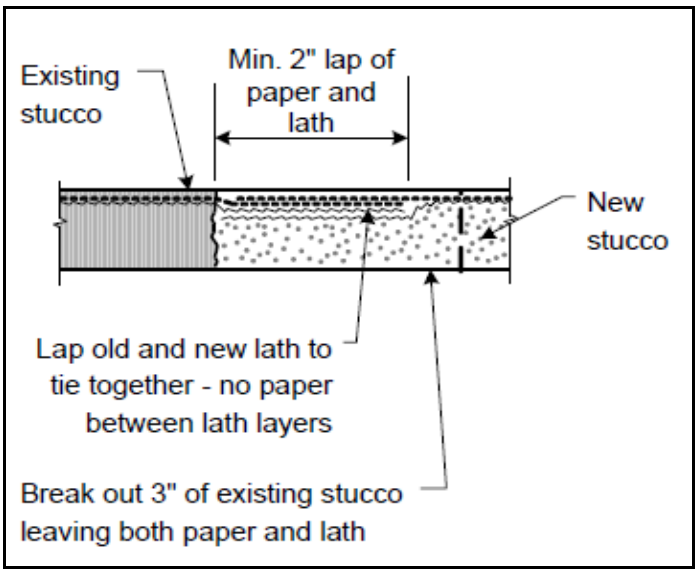
EXTERIOR PLASTER

Plastering with cement plaster shall not be less than three coats when applied over metal lath or wire fabric lath. The first coat shall be applied with sufficient material and pressure to fill solidly all openings in the lath. The surface shall be scored horizontally sufficiently rough to provide adequate bond to receive the second coat. The first coat is commonly known as the scratch coat. The first coat shall not be less than 3/8" in thickness. The second coat shall be brought out to proper thickness of 3/8", rodded and floated sufficiently rough to provided adequate bond for the finish coat. The second coat shall have no variation greater than ¼ inch in any direction under a 5 foot straight edge. Minimum time interval between brown coat and color coat is 7 days. The third or color coat shall be applied with sufficient material and pressure to bond to and to cover the brown coat and shall be of sufficient thickness to conceal the brown coat but not less than 1/8".

Exterior Plaster Detail



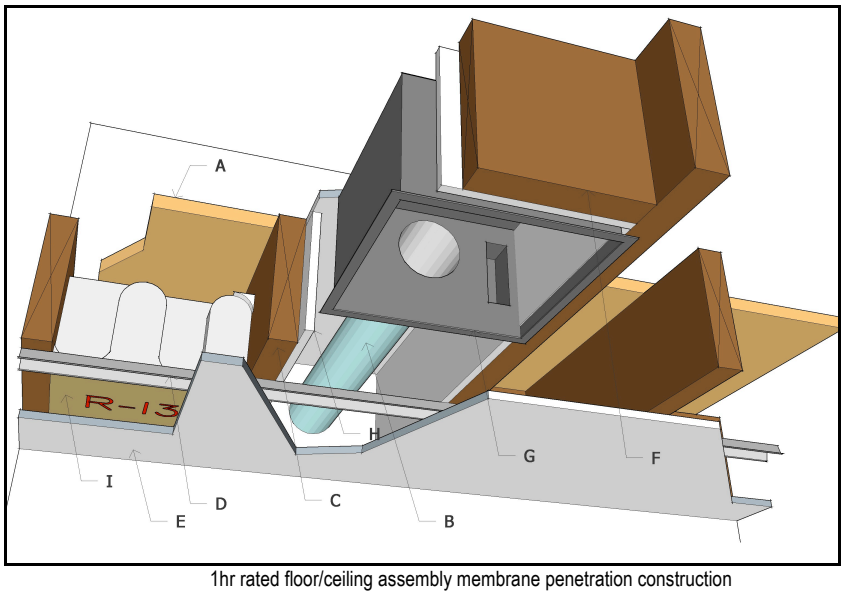
NEW TO OLD STUCCO JOINT



1 Hour FLOOR/CEILING - BATHROOM FAN PENETRATION

APPROVED ALTERNATE DETAIL TO 2010 CRC SECTION R302.4.2

This detail applies only to environmental air ducts which penetrate a fire rated floor/ceiling assembly between residential units. The horizontal shaft is treated with the required protection to meet the 1hr rating from the point of penetration into the ceiling membrane extending to the exterior of the building. The duct must exit the shaft directly to a location where opening protection is not required per CRC R302.4 (5' form PL) and where not prohibited by the CMC Section 504.5 (3' form openings into the building)



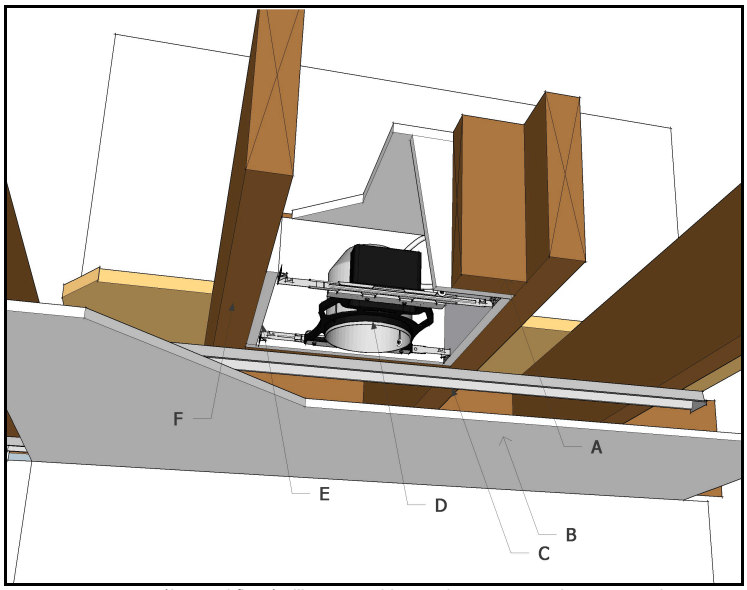
1hr rated floor/ceiling assembly membrane penetration construction

legend	Description
A	Sub floor (per plan) Floor/ceiling assembly construction shall be designed to meet the required 1hr fire/STC 50 sound ratings of CRC R302.3 which includes extending rate of protection to include all supporting structural members of the assembly.
B	26 gage galvanized duct
C	Existing floor joist @ 16" oc.
D	Resilient furring channels (per plan)
E	5/8" type X drywall.
F	New 2x blocking @ fan
G	New non-rated Fan
H	5/8" type X drywall. Apply to all exposed faces within the floor joist bay, include new block and exposed rim joist and under sub floor. All joints and penetrations to be sealed with Fire-Caulk
I	R-13 insulation TYP.
NOTE	**The installation of a rated 1hr fan eliminates the need to shaft the joist bay** (maintain manuals on site)

1 Hour FLOOR/CEILING - RECESSED LIGHTING PENETRATION

APPROVED ALTERNATE DETAIL TO 2010 CRC SECTION R302.4.2

This detail applies only to recessed light fixtures that penetrate a fire rated floor/ceiling assembly between residential units. The affected area crated by the membrane penetration (limited to a max of 16sqin) is protected by a 5 sided enclosure to achieve the required protection of 1hr rating from at the point of penetration.



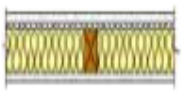
1hr rated floor/ceiling assembly membrane penetration construction

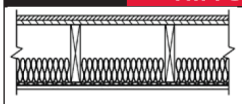
legend	description
A	New 2x blocks @each side of fixture
B	Ceiling 5/8" type X drywall.
C	Resilient furring channels (per plan)
D	IC RATED RECESSED LIGHT FIXTURE. NOTE: Membrane penetration area shall be limited to an area not to exceed 100sqin in any 100sqft. Annular area in the membrane shall not exceed 1/8" CRC R302.4.2
E	5/8" type X drywall. Apply to all exposed faces within the floor joist bay, include new blocks (each side of fixture) and under sub floor. All joints and penetrations to be sealed with Fire-Caulk
F	Existing 2x floor joist Sub floor (per plan) Floor/ceiling assembly construction shall be designed to meet the required 1hr fire/STC 50 sound ratings of CRC R302.3 which includes extending rate of protection to include all supporting structural members of the assembly.

FIRE RATED SEPARATIONS

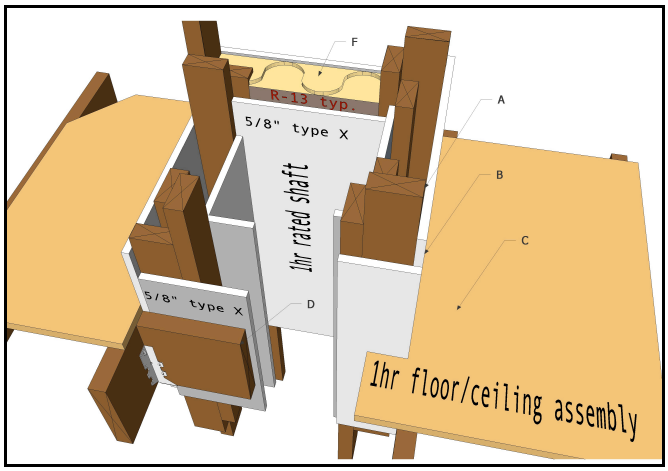
This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

BASED ON THE 2010 CALIFORNIA RESIDENTIAL CODE, 2010 CALIFORNIA BUILDNIG CODE, AND THE 19TH EDITION OF THE GYPSUM ASSOCIATION FIRE RESISTANCE MANUAL

Group U private Garage Separation OMC 15.04.602	
☐	5/8 type X gypsum wallboard on garage side
☐	No window openings on separation wall
☐	Door is a minimum 1⅜ inches thick solid core wood or solid or honey comb core steel door or (20-minute fire-rated door) R302.5.1
☐	Doors are tight-fitting, self-closing, and self latching
☐	Door does not connect with a sleeping room
☐	Ducts in the garage and ducts penetrating the walls or ceilings separating the *dwelling* from the garage are constructed of a minimum No. 26 gage sheet steel or other *approved* material and shall have no openings into the garage. R302.5.2
Group U private carport OMC 15.04.602	
☐	Separation not required if carport is entirely open on two or more sides and there are no enclosed areas above.
☐	Door is a minimum 1⅜ inches thick solid core wood or solid or honey comb core steel door
☐	Doors shall be tight-fitting, self-closing, and self latching
☐	Window openings are fixed (non-operable) and dual-pane tempered glazing.
☐	Door and window openings do not connect with a sleeping room.
Under-stair protection OMC 5.04.1015	
☐	Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with ½-inch Type-X gypsum board.
Walls and Horizontal Separations CBC section 709, 712	
☐	Walls separating dwelling units within the same building require a fire-resistance rating of not less than 1hr. CBC 709.2
☐	Walls separating dwelling units within the same building require a sound transmission control rating (STC) of not less than 50. CBC 1207.6.1, 1207.7
	Example of approved wall:  1 hr. WHI GA 694-0200 Based on WP 3230 — 5/8" (15.9 mm) Fire-Shield C Gypsum Wallboard, screw applied to Resilient Furring Channel spaced 24" o.c. (610 mm) one side only, on 2 x 4 (38 mm x 89 mm) studs spaced 24" o.c. (610 mm). Other side 5/8" (15.9 mm) Fire-Shield C Gypsum Wallboard screw attached direct to studs. 3" (76 mm) mineral wool (3 pcf) in stud cavity. — 50 — Based on TL 77-138
☐	Fire separations extend from the top of the foundation to the underside of the roof sheathing CBC 709.4
☐	Floor/ceiling assemblies separating dwelling units within the same building require a fire-resistance rating of not less than 1hr. CBC 712.3, 713.3.1.2
☐	Floor/ceiling assemblies separating dwelling units within the same building require a sound transmission control rating

	(STC) of not less than 50. CBC 1207.6.1, 1207.7	
	Example of approved assembly.	**Floor/Ceiling Assemblies - Wood Framing** 1 Hour | Design # FM FC-181 | GA File # FC 5120 | STC - 50-54 (Sound Test # G&H QC-3MT) | IIC - 73 (Test # G&H QC-3MT)  Link to .PDF file Link to .DWG file Link to .DWG/Text file 1/2"(12.7 mm) Fire-Shield C Gypsum Board applied at right angles to resilient furring channels 24"o.c. with 1" type S drywall screws 8"o.c. at ends and 12"o.c. at intermediate furring channels. Gypsum board end joints located midway between continuous channels and attached to additional pieces of channels 64" inches long with screws 8"o.c. Resilient furring channels applied at right angles to 2x10 wood joists 16"o.c. with 6d coated nails, 1-7/8" long, .085" shank, 1/4" heads, per joist. Wood joists supporting 5/8" plywood with exterior glue subfloor and 3/8" particle board. 3-1/2" fiberglass insulation friction fit in joist cavities supported alternately every 12" by wire rods and resilient furring channels. Sound and IIC tested with Carpet and pad.
	Penetrations of fire rated assemblies CBC 713	
	WALLS	
☐	For through penetrations of steel, ferrous, copper pipes, tubes or conduits; annular space is filled with listed firestop system CBC 713.3.1	
☐	Membrane penetrations for electrical steel boxes (or other listed) that do not exceed 16sq in. total penetration area does not exceed 100sq in. in any 100sq ft. of wall. CBC 713.3.2	
☐	Annular space between the membrane and box is not over 1/8 inch. CBC 713.3.2	
☐	Boxes in opposite side of wall are separated horizontally at least 24 inches	
☐	Boxes not separated 24 inches have listed fire putty pads installed (or other approved method)	
	FLOOR/ CEILING ASSEMBLIES	
☐	For through penetrations of steel, ferrous, copper pipes, tubes or conduits; annular space is filled with listed firestop system CBC 713.4.1.1	
☐	Through penetrations of steel, ferrous, copper pipes, tubes or vents; annular space is filled with listed firestop system and the aggregate area does not exceed 144sq in. in any 100sq ft. of floor area. CBC 713.4.2	
☐	Membrane penetrations of steel, ferrous, copper pipes, tubes or vents; annular space is filled with listed firestop system and the aggregate area does not exceed 100sq in. in any 100sq ft. of floor area. CBC 713.4.1.1	
☐	Membrane penetrations for electrical steel boxes (or other listed) that do not exceed 16sq in. total penetration area does not exceed 100sq in. in any 100sq ft. of ceiling area. CBC 713.4.1.2	
	Shaft Enclosures CBC 708	
☐	For other penetrations of a floor/ceiling assembly than those allowed by CBC 713 Shafts or approved alternatives are provided. CBC 708, OAK	
☐	Shafts are constructed to *continuously* extend from the protected assembly, through the adjacent residential unit and terminate underside of the roof sheathing. CBC 708.5, 707.5	
	1 HR RATED SHAFT	

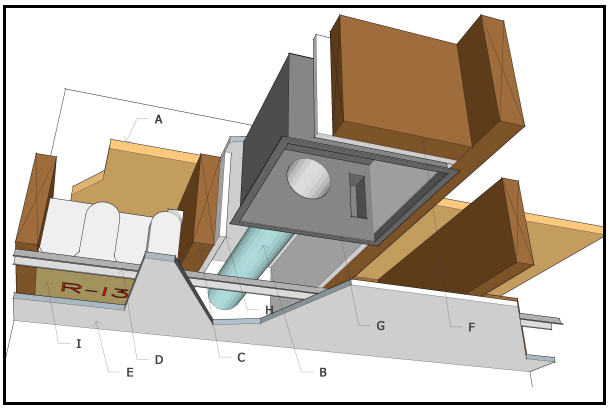
legend	description
A	Shaft frame- 2x4 DF, (*sample represents a 16 inch exterior dimension shaft*). Or, if other is used (i.e. steel studs) the construction, must meet approved design per Gypsum Association Fire Resistive Manual.
B	5/8 inch type X gypsum on both side of shaft. Gypsum is installed uninterrupted along the entire length of the shaft, joints and screws are fire taped or fire caulked. Fastening per approved design per Gypsum Association Fire Resistive Manual.
C	Floor side of assembly
D	Floor framing (note: gypsum is not broken by framing
F	R-13 insulation typical



☐ Bathroom fans and environmental ducts installed within the a protected floor ceiling assembly use City Approved alternative for fire protection (Recommend protecting separation and dropping ceiling or installation of a 1hr rate fan instead of alternative)

BATHROOM FAN IN A 1HR FIRE RATED ASSEMBLY

legend	description
A	Sub floor (per plan) Floor/ceiling assembly construction shall be designed to meet the required 1hr fire/STC 50 sound ratings of CRC R302.3 which includes extending rate of protection to include all supporting structural members of the assembly.
B	26 gage galvanized duct
C	Existing floor joist @ 16" oc.
D	Resilient furring channels (per plan)
E	5/8" type X drywall.
F	New 2x blocking @ fan
G	New non-rated Fan
H	5/8" type X drywall. Apply to all exposed faces within the floor joist bay, include new block and exposed rim joist and under sub floor. All joints and penetrations to be sealed with Fire-Caulk
I	R-13 insulation TYP.

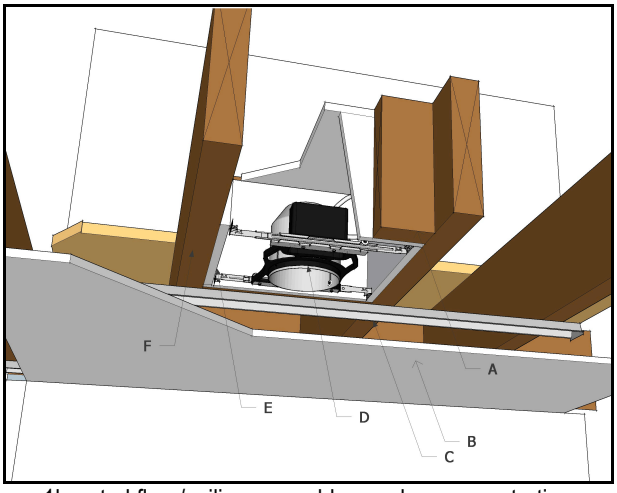


1hr rated floor/ceiling assembly membrane penetration construction

RECESSED CEILING LIGHT IN A 1HR FIRE RATED ASSEMBLY

☐ For electrical recessed fixtures installed in a protected floor/ ceiling assembly use the approved City alternative for fire protection (or other listed method)

legend	description
A	New 2x blocks @each side of fixture
B	Ceiling 5/8” type X drywall.
C	Resilient furring channels (per plan)
D	IC RATED RECESSED LIGHT FIXTURE. NOTE: Membrane penetration area shall be limited to an area not to exceed 100sqin in any 100sqft. Annular area in the membrane shall not exceed 1/8” CRC R302.4.2
E	5/8” type X drywall. Apply to all exposed faces within the floor joist bay, include new blocks (each side of fixture) and under sub floor. All joints and penetrations to be sealed with Fire-Caulk
F	Existing 2x floor joist Sub floor (per plan) Floor/ceiling assembly construction shall be designed to meet the required 1hr fire/STC 50 sound ratings of CRC R302.3 which includes extending rate of protection to include all supporting structural members of the assembly.

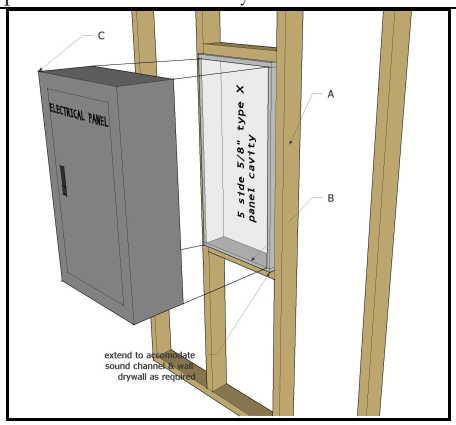


1hr rated floor/ceiling assembly membrane penetration construction

ELECTRICAL PANEL A 1HR FIRE RATED ASSEMBLY

☐ Electrical panels recessed within the rated wall cavity require 5 side protection of non rated panel. (Recommend installing panel over fire membrane within a furring wall to avoid fire protection discontinuity.

legend	description
A	Typical wall framing
B	5/8 inch type X drywall on all sides and back of cavity. Joints and screws fire taped or fire caulked. NOTE: spacing must be framed over 16” o.c. in order to accommodate thickness of drywall.
C	Typical electrical panel



Exterior Walls R302.1

☐ Construction, projections, openings and penetrations of *exterior walls* of *dwellings* and accessory buildings shall comply with Table R302.1(1)

EXTERIOR WALL ELEMENT		*MINIMUM FIRE-RESISTANCE RATING*	*MINIMUM FIRE SEPARATION DISTANCE*
Walls	(Fire-resistance rated)	1 hour-tested in accordance with ASTM E119 or UL263 with exposure from both sides	< 3 *feet*
	(Not fire-resistance rated)	0 hours	> or equal 3 feet
Projections	(Fire-resistance rated)	1 hour on the underside	> or equal 2feet to 3 feet
	(Not fire-resistance rated)	0 hours	3 *feet*
Opening in walls	Not allowed	N/A	< 3 *feet*
	Unlimited	0 hours	3 *feet*
Penetrations	All	Comply with Section R302.4	< 3 *feet*
		None required	3 *feet*

Chapter 10

RESIDENTIAL KITCHEN

LIGHTING

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

BASED ON THE 2008 CALIFORNIA T/24 ENERGY EFFICIENCY STANDARDS

☐	All high-efficacy lighting is controlled separately from low-efficacy lighting.		
☐	Lighting provided is High Efficacy OR At least 50% of the total wattage is high efficacy (Additional low efficacy wattage may be installed according to unit floor area)		
	a	≤ 2,500 ft2 Up to 50 additional watts	
	b	> 2,500 ft2 Up to 100 additional watts	
	IF	1	*All low efficacy luminaries in kitchens must be controlled by a manual-on occupancy sensor, dimmer, EMCS, or multi-scene programmable control,* **AND**
		2	*All luminaries in garages, laundries, closets > 70 ft², utility rooms must be high efficacy and controlled by manual-on occupancy sensors.*
☐	Lighting Installed **inside cabinets** only for the purpose of illuminating the **inside** of cabinets is NOT considered part of the kitchen lighting for calculating the 50% high to low efficacy ratio. Lighting internal to cabinets is limited to 20 watts per linear foot of cabinet.		
☐	Blank electrical boxes in kitchens shall be calculated and treated as 180 watts of low efficacy lighting.		
	Recessed fixtures in applications between conditioned & unconditioned spaces shall meet these requirements:		
	a	Approved for IC (insulation contact) & label certifying AT (air tight) according to ASTM E283.	
	b	All air leak paths through luminaire assembly or ceiling must be sealed.	
☐	If a fixture can accept various lamp wattages, its wattage for the sake of code compliance is the highest relamping rated wattage designated by the manufacturer on a permanent, factory installed Underwriters Laboratory (UL) label (peel-off labels are not permitted).		
☐	A GU-24 lamp, in order to be considered High efficacy, MUST be rated for use only with high efficacy lamps or a high efficacy LED lighting source system. It does not contain any other type of line-voltage socket or lamp holder, and it cannot have an adaptor.		
☐	A compact fluorescent bulb on a medium screw-base socket fixture is NOT high efficacy.		
☐	In order for an LED luminaire to be considered High-efficacy, its must be certified to the Energy Commission.		
☐	Nook lighting must be on a separate switch in order to be counted as an "other space" and not part of the kitchen.		
	note	Pantries less than 70 square feet have no lighting or control requirements.	

CITY OF OAKLAND
BUILDING SERVICES

Residential Kitchen Lighting Requirements
(2010 California Electrical Code)

Kitchen Lighting

1) High Efficacy OR At least 50% of the total wattage MUST be high efficacy

(Additional low efficacy wattage may be allowed under certain conditions) - *New in 2008 T24*

2) All high-efficacy lighting must be controlled separately from low-efficacy lighting.

3) Each & every permanently installed fixture must be included in the total wattage & must comply with the standards.

4) Lighting internal to cabinet is NOT considered part of the kitchen lighting for calculating the 50% high to low efficacy ratio. - *New*

NEW in 2008 T24 Energy Code

1) Additional low efficacy wattage can be used in the kitchen under certain conditions:

✓ Up to 50 watts per dwelling unit < 2,500 ft^2
✓ Up to 100 watts per dwelling unit ≥ 2,500 ft^2

Conditions:

1. All low efficacy luminaires in kitchens must be controlled by a manual-on occupancy sensor, dimmer, EMCS, or multi-scene programmable control, &
2. All luminaires in garages, laundries, closets > 70 ft^2, utility rooms must be high efficacy & controlled by manual-on occupancy sensors.

2) Lighting Installed inside cabinets only for the purpose of illuminating the inside of cabinets is NOT considered part of the kitchen lighting for calculating the 50% high to low efficacy ratio. Lighting internal to cabinets is limited to 20 watts per linear foot of cabinet.

3) Blank electrical boxes in kitchens shall be calculated & treated as 180 watts of low efficacy lighting.

4) Recessed fixtures in applications between conditioned & unconditioned spaces shall meet these requirements:

1. Approved for IC (insulation contact) & label certifying AT (air tight) according to ASTM E283.
2. All air leak paths through luminaire assembly or ceiling must be sealed.

Additional Code Explanation:

1) 50% of permanently installed lighting in kitchens MUST be high efficacy, typically fluorescent; this can include down lights, under-cabinets, over-cabinets, pendants, wall sconces, etc.

2) Lighting that is part of an appliance is not regulated by 2010 California Energy Code.

3) The quantity of light fixtures is not regulated by the code, just the wattage.

4) If a fixture can accept various lamp wattages, its wattage for the sake of code compliance is the highest relamping rated wattage designated by the manufacturer on a permanent, factory installed Underwriters Laboratory (UL) label (peel-off labels are not permitted).

5) High-efficacy & low-efficacy light fixtures MUST be controlled separately.

6) Nook lighting must be on a separate switch in order to be counted as an "other space" & not part of the kitchen.

7) In order for an LED luminaire to be considered High-efficacy, its must be certified to the Energy Commission.

8) A GU-24 lamp, in order to be considered Highefficacy, MUST be rated for use only with high efficacy lamps or a high efficacy LED lighting source system. It does not contain any other type of line-voltage socket or lamp holder, & it cannot have an adaptor.

Kitchens: Example #1

The Information used in this example originated from the *"2008 Residential Lighting Design Guide"*

Guidelines used for the lighting design shown below:

- ✔ Use 26-watt compact fluorescent recessed cans on 4' - 5' centers for even illumination.
- ✔ Supplement recessed cans with fluorescent under-cabinet &/or over-cabinet light fixtures, on separate switches.
- ✔ Nook lighting is on a separate switch.

Nook lighting on its own switch does not count as kitchen wattage.

Further code explanation as applied to the lighting plan below:

- ✔ Fluorescent & incandescent light fixtures MUST be controlled separately.
- ✔ The first switch no longer has to control a fluorescent light fixture.
- ✔ Pantries less than 70 square feet have no lighting or control requirements.

Minimize the number of fixtures that extend below the ceiling to help eliminate visual clutter.

26-watt CFL recessed can with electric ballast & white or aluminum reflector & trim

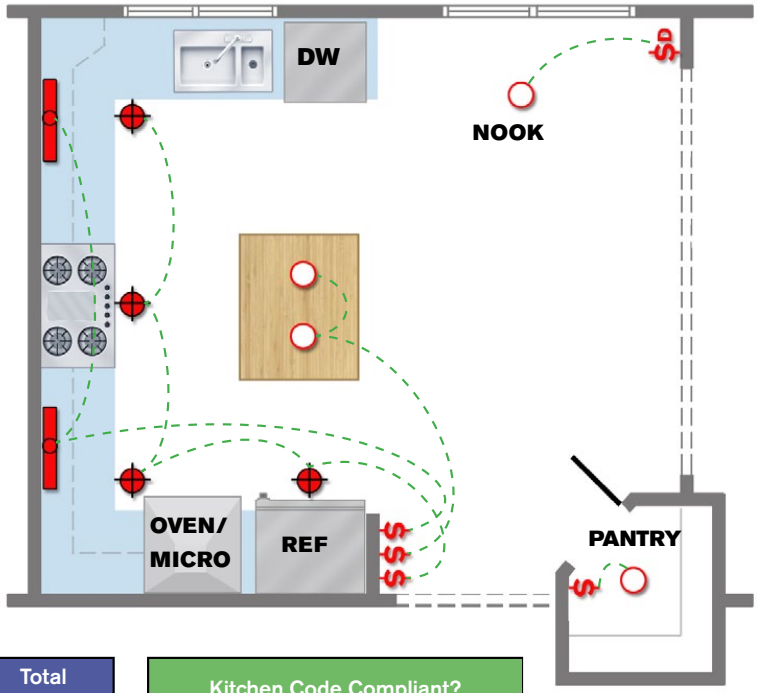
Surface- or pendant-mounted incandescent light fixture

Switch

Dimmer

Fluorescent under-cabinet &/ or over-cabinet light fixture with T8 or T5 lamps & electronic ballast

Note: Application fixtures must meet 2008 Title 24 high-efficiency standards



Kitchen Fixtures	Amount	Wattage	Total Wattage
Fluorescent downlights	5	26 Watts	130 Watts
Under-cabinet fluorescents	2	25 Watts	50 Watts
Indanscent downlights	2	60 Watts	120 Watts

Kitchen Code Compliant?
Fluorescent = 180 watts Incandescent = 120 watts
Low effacy less than half of total wattage = Code Compliant ☑

Kitchens: Example #2

Guidelines used for the lighting design shown below:

- ✔ Use 13-watt compact fluorescent recessed cans on 4' - 5' centers for even illumination..
- ✔ Space recessed cans evenly around the sink so that an additional light fixture over the sink is not needed..
- ✔ Use six 4-watt LED inside the pantry cabinet (interior cabinet lighting).

Light the countertops more than the walkway. Place the lighting where it is needed..

Further code explanation as applied to the lighting plan below:

- ✔ All recessed cans installed into insulated ceilings are required to be ICAT rated, i.e., rated for insulation contact (IC-rated) & airtight (AT-rated) to prevent conditioned air loss into the attic or ceiling. All air leaks must be sealed with gaskets & caulking.
- ✔ Lighting internal to cabinets is limited to 20 watts per linear foot of cabinet.

Lighting installed inside a cabinet (pantry) is NOT considered part of the kitchen lighting for calculating 50% high to low efficacy ratio.

13-watt recessed downlight compact flourescent

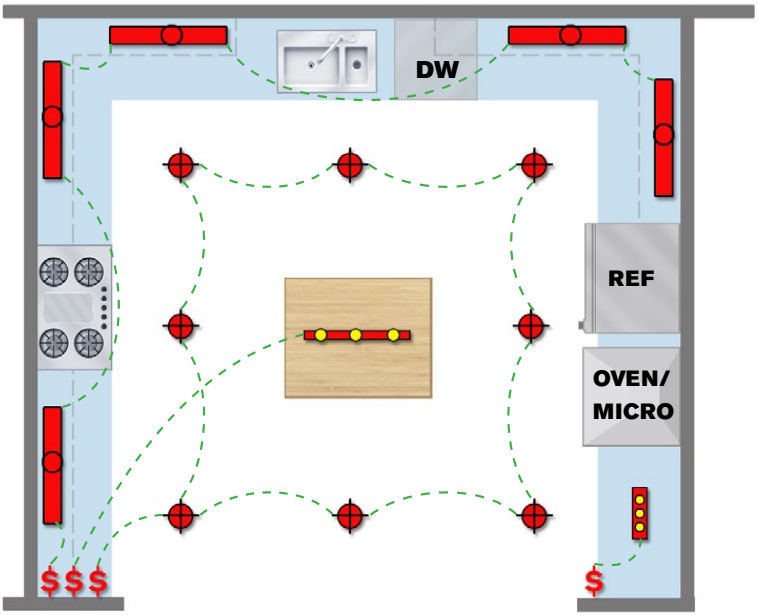
Switch

Pendant-mounted linear incandeacent fixture

Interior LED (high effacy) cabinet lighting

Fluorescent under-cabinet &/ or over-cabinet light fixture with T8 or T5 lamps & electronic ballast

Note: Application fixtures must meet 2008 Title 24 high-efficiency standards



Kitchen Fixtures	Amount	Wattage	Total Wattage
Fluorescent downlights	8	13 Watts	104 Watts
Under-cabinet fluorescents	5	13 Watts	65 Watts
Indanscent downlights	3	40 Watts	120 Watts

Kitchen Code Compliant?
High-effacy = 170 watts Low-effacy = 120 watts
Low effacy less than half of total wattage = Code Compliant ☑

CITY OF OAKLAND
BUILDING SERVICES

Residential Kitchen Receptacle Requirements
(2010 California Electrical Code)

GENERAL

1) At least two 20-ampere branch circuits shall supply kitchen countertop receptacles.

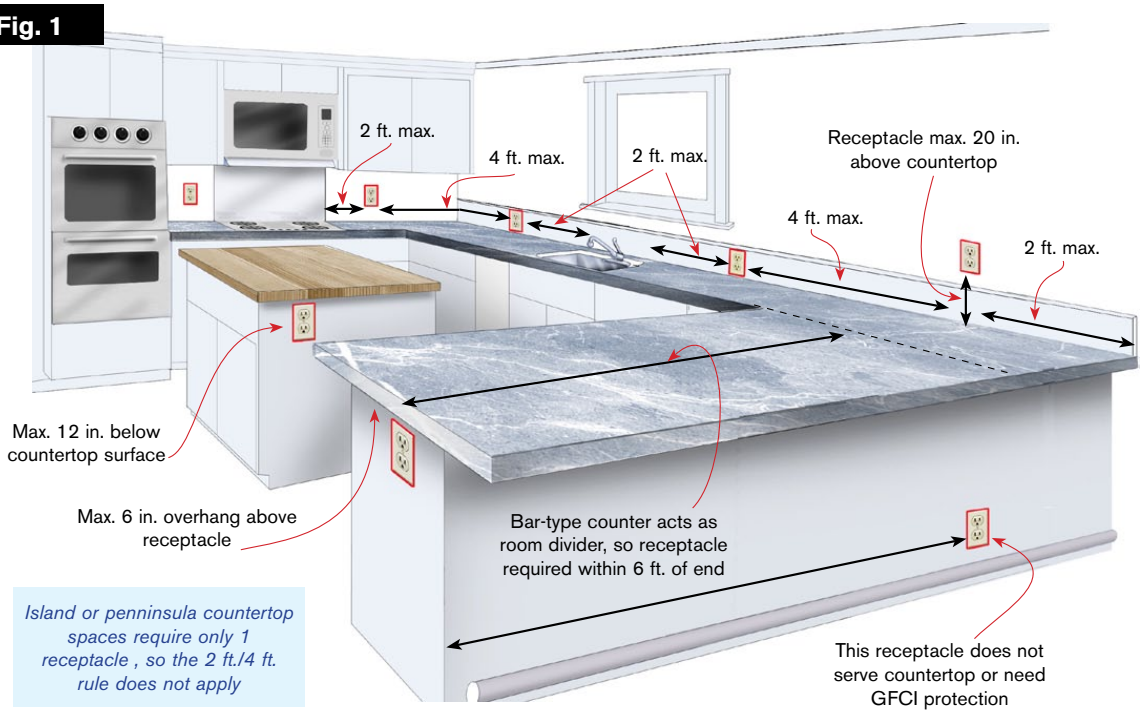
2) Wall Counter Spaces (See Figure 1):

a) A receptacle shall be installed for any counter that is 12 inches wide or greater; and,
b) No point on the kitchen counter, measured at the wall may be more that 24 inches away from a receptacle. *Also known as the 2ft. / 4ft. rule* (See Figure 2 for explanation).

3) Island and Peninsular Counter Spaces (See Figure 1):

a) At least one receptacle is required for an island or peninsular counters that are 24 inches by 12 inches or larger.
b) An island counter with a rangetop or sink installed where the dimension behind the rangetop or sink to the edge of the counter is less than 12 inches is considered as two separate island countertops.v
c) A peninsular countertop is measured from the connecting edge.

Fig. 1



Island or penninsula countertop spaces require only 1 receptacle , so the 2 ft./4 ft. rule does not apply

Fig. 2

Wall countertop recepteacles serve spaces for 2f ft. on each side of the receptacle. Therefore, the max. spacing between receptacles on the same countertop spaces is 4 ft.

4) Receptacle installation (See Figure 1):

a) Maximum of 20 inches above countertop;

b) Maximum of 12 below island or peninsular countertops;

c) Island or peninsular countertops may not extend more than 6 inches beyond the cabinet housing the receptacle; and,

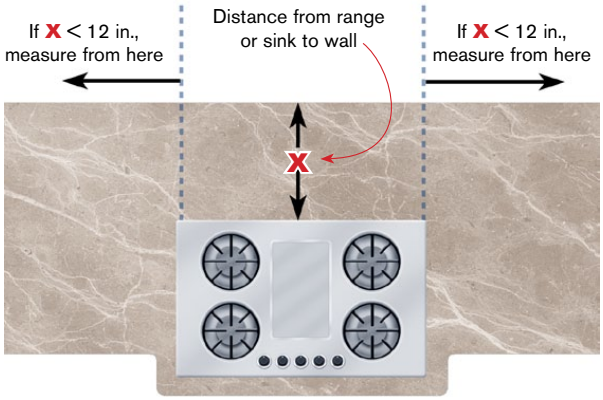
d) Receptacle may not be installed face-up in the countertop.

5) 20 amp branch circuit is required to supply receptacles in pantries, breakfast rooms, dining rooms and similar areas.

6) Ground-Fault Circuit-Interrupter (GFCI) protection is required for all receptacles serving kitchen countertops. CEC 210.8

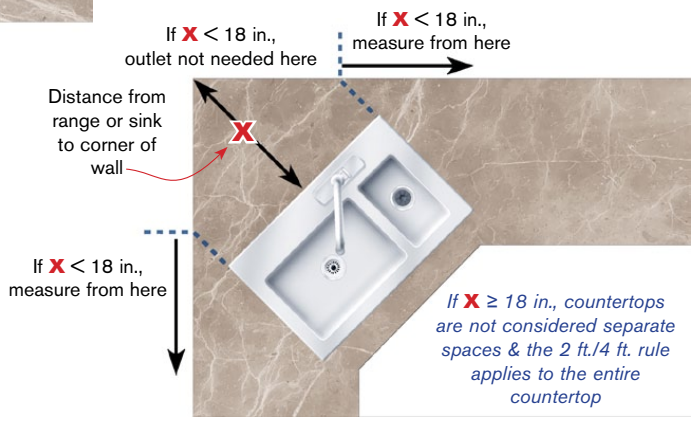
7) Countertops separated by sinks, ranges, or refrigerators shall be treated as separate spaces. The wall behind the sink or cook top is not to be treated as wall space unless the distance exceeds 12 inches to the wall or 18 inches to a corner (See Figures 3 and 4).

Fig. 3 **Extended Range or Sink**



If X ≥ 12 in., countertops are not considered separate spaces & the 2 ft./4 ft. rule applies to the entire countertop

Fig. 4 **Corner Range or Sink**



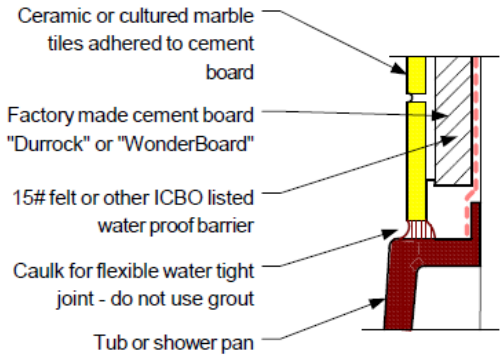
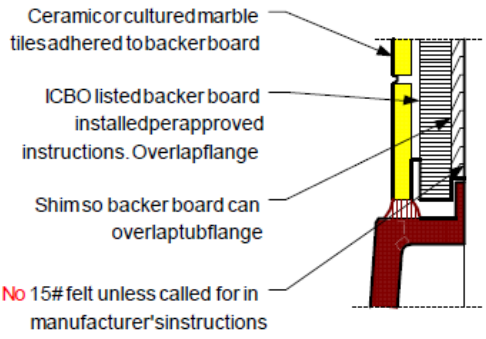
Chapter 11

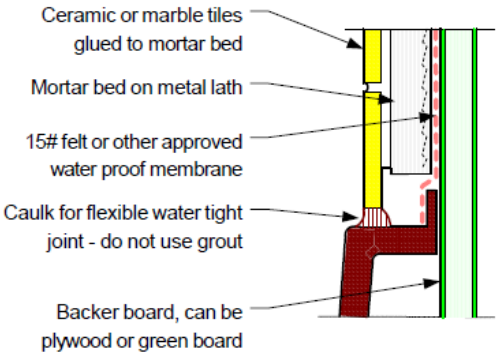
RESIDENTIAL BATHROOM

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Building

Based on the 2010 California Building Code

☐	**Gypsum Board in Showers and Water Closets CBC 2509.2**	
	Cement, fiber-cement or glass mat gypsum backers installed in accordance with manufacturer recommendations shall be used as a base for wall tile in tub and shower areas and wall and ceiling panels in shower areas.	
☐	**Gypsum Board in Water Closet Compartments CBC 2509.2**	
	Water-resistant gypsum backing board shall be used as a base for tile in water closet compartment walls, installed in accordance with manufacturers recommendations	

	Tile over mortar	
☐	**Water-resistant Gypsum Backing Board Limitations CBC 2509.3 NOT:**	
	a	Over a vapor retarder in shower or bathroom compartment
	b	Where there will be direct exposure to water or in areas subject to continuous high humidity such as steam room or sauna room.
	c	On ceilings where frame spacing exceeds 12 inches on center for ½" thick water-resistant gypsum board or more than 16 inches on center for 5/8" thick water resistant gypsum board.
☐	**Gypsum Board in Rest of Bathroom CBC 2509.2**	
☐	Regular gypsum board is permitted under tile or wall panel in other wall and ceiling areas.	
☐	Glass used in tub or shower enclosures (i.e. tub or shower door) or partitions must be tempered or an approved equal and must be permanently marked as such. CRC R 308.1	
☐	Any glazing (i.e. windows or doors) whose bottom edge is less than 18" above the floor must be tempered glass or approved equivalent. CRC R 308.4.7.2	
☐	In Section R308.4 of the California Residential Code, item 5, after the phrase". bathtubs and showers" insert "or within 3 feet measured horizontally of such fixtures or compartments." OMC 15.04.1035	
☐	Bathrooms and toilet compartments may have a ceiling height of not less than 7 feet measured to the lowest projection from the ceiling. OMC 15.08.210	
	5.04.678 - CBC Section 2509.3 amended	
☐	**Marble Finish**	
	a	No building paper on stud face
	b	Water-resistant gypsum backing board with nailing inspection required.
	c	Glued-on marble or marble equivalent
☐	**Thin set and Glue-on Tile**	
	a	Building paper on stud face
	b	Cementitious backer unit (CBU) installed in accordance with manufacturer's instructions. Instructions on jobsite at time of inspection.
	c	Tile (thinset or glue-on).
	d	Finish grout.
☐	**Tile**	
	a	No building paper on stud face.
	b	Water-resistant gypsum backer board (green board).
	c	Paper/lath with inspection required

	d	Scratch coat
	e	Tile installation
	d	Finish grout.
☐	**Fiberglass kits**	
	(Does not include solid one-piece units) which have been approved by I.A.P.M.O. (or other approved testing and listing agency) for use in tub/shower walls.	
	a	No building paper on stud face.
	b	Water-resistant gypsum backer board (green board) with inspection required.
	c	Fiberglass kit installation per manufacturer's instructions with instructions available to inspector on the jobsite

Chapter 12

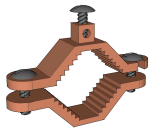
RESIDENTIAL ELECTRICAL

OVERHEAD ELECTRICAL SERVICE UPGRADE

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

BASED ON THE 2010 CALIFORNIA ELECTRICAL CODE AND PG&E GREEN BOOK

☐	Permit documents on site
☐	PG&E application number on site
☐	Verify correct permit description for service amperage.
PANEL LOCATION	
☐	30" wide x 36" deep level and unobstructed working space in front of panel (not in a "dog house". CEC 110.26.A
☐	Meter socket located between 48"min and 75" max from grade. PG&E
☐	Panel located in front of building requires Zoning approval. OAK
☐	May not encroach on a 9' wide or less driveway. OAK
☐	Where subject to vehicle damage: 2 -3" diameter concrete filled bollards are installed (min 9' wide driveway is maintained. PG&E (Exempted in recessed panel applications)
☐	Panel is located at least 3' form any property line when located on side of building. CEC 110.26
☐	Provides 6" min distance from where gas service enters the building. PG&E
☐	Maintains 18 min distance form gas riser. PG&E
☐	Located 8" min from building edge. PG&E
SERVICE ENTRANCE	
☐	Riser min. 1-1/4" diameter rigid steel or 2" rigid aluminum. PG&E
☐	Heavy duty Riser straps within 36" of service enclosure and every 36" after, using 3/8" x 3" min. lag screws directly attached to building framing. PG&E
WEATHERHEAD	
☐	Maximum 18" beyond eave strap (no couplings)
☐	Periscope 18" behind building wall facing the service line.
☐	Located a max 48" beyond any roof line (service drop conductors travel over roof limited to 48")
☐	Riser braced if over 30" from roof line OAK
METER MAIN AND SUB-PANELS	
☐	Suitable for use as service equipment CEC230.66
☐	Main Service Disconnecting means rated not less than 100 amps, 3 wire. CEC 230.79.C
☐	Main Service disconnects breaker max 6'-7" from level grade. CEC

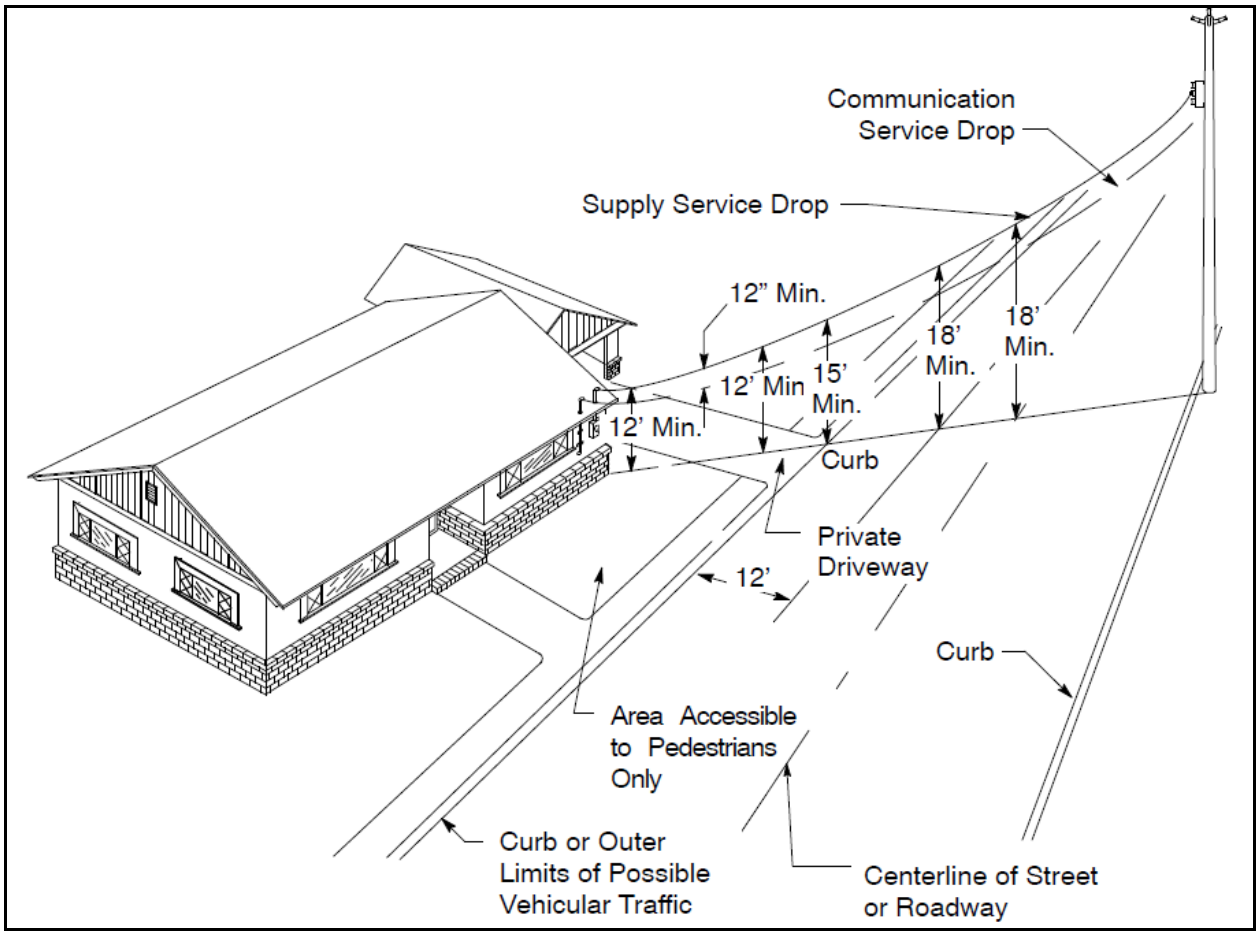
☐	All breakers permanently labeled.
☐	Knob and Tube wiring limited to 15amp CE 240.4
☐	Arc Fault breakers per CEC 210.12 includes family room, dining room and living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways or similar rooms or areas. CEC 210.12.B
☐	Feeders to existing sub-panels rated for required load
☐	Edison-Base fused sub-panels with new feeders are modified to comply with CEC 240.51 & 240.54. Retrofitted to accept S type fuses permanently.
☐	Working space area and headroom for new sub-panels per CEC 110.26
	GROUNDING
☐	1/2" grounding rod (under 200 amps) or 5/8" (for 200amps) installed near service equipment and driven a minimum of 8' into the ground.
☐	Single piece #6 (under 200 amps) or (#4 for 200 amps) copper conductor connecting Neutral Bus, Grounding rod and Metallic main water service within the first 5' after entering the building.
	"Acorn" clamp used for grounding electrode conductor to grounding bar 
	"Weaver" clamp used for connection to water main. 
☐	For grounding of non-metallic water services use secondary bar XXX
☐	Water heater bonding using a #6 copper wire between hot and cold water lines and gas supply line.
	SERVICE ENTRANCE CONDUCTORS
☐	Conductors identified at both ends.

Conductors sized for load and entrance riser for capacity.

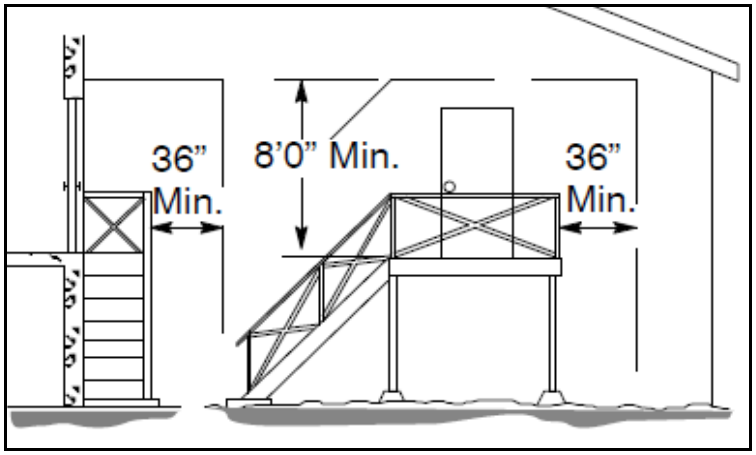
	CU	Rigid	AL	Rigid
100A	4	1-1/4"	2	1-1/4"
125A	2	1-1/4"	1/0	1-1/4"
150A	1	1-1/4"	2/0	1-1/2"
175A	1/0	1-1/4"	3/0	1-1/2"
200A	2/0	1-1/2"	4/0	2"

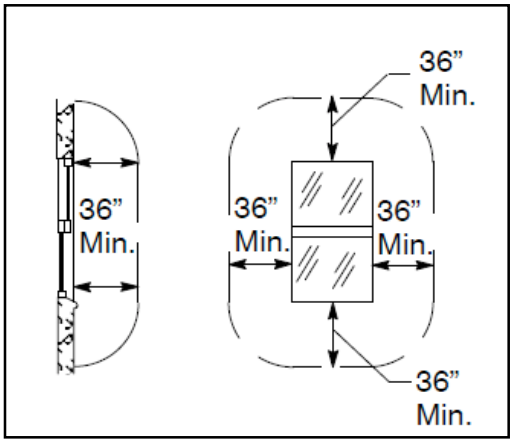
☐	Minimum 18" long conductor length beyond the weather head. PG&E
☐	Minimum 12" separation from communication lines. PG&E
☐	Minimum 36" distance from operable portions of windows, balconies and decks. PG&E
☐	Minimum 12" on top of operable windows. PG&E

SERVICE CONDUCTOR GROUND CLEARANCES



SERVICE DROP CLEARANCES





SERVICE DROP CLEARANCES TO BUILDINGS

	Minimum Clearance From Buildings
	Insulated Conductors (See Note 1) 0 Volts Through 750 Volts
Vertical Clearances Above:	
1. All portions of buildings including metallic or nonmetallic cornices, decorative appendages, eaves, roofs, or parapet walls of the building being served.	See Notes 2 and 3
2. Metallic or nonmetallic, "nonwalkable" overhang, patio cover, or other structure.	See Notes 2 and 3
3. Other buildings on the same premises.	2 Feet
4. Buildings on other premises.	8 Feet (See Note 4)
Horizontal and Radial Clearances:	
1. From fire escapes, exits, windows, and doors.	3 Feet

1 Weather-resistant, covered conductors are ***not*** used in new installations.

2 Not less than 1/2 inch.

3 An applicant must ensure that the service drop's point of attachment for industrial and commercial premises is no more than 18 inches. Take this measurement from ***behind*** the front face of the building wall facing the pole line from which the service drop originates.

4 Reduce to 2 feet for nonmetallic roofs when the roof slope exceeds 9 inches of rise per 12 inches of run. (See Figure 4-4, "Nonmetallic Roof," below.)

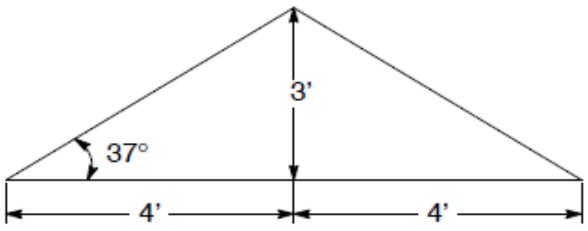
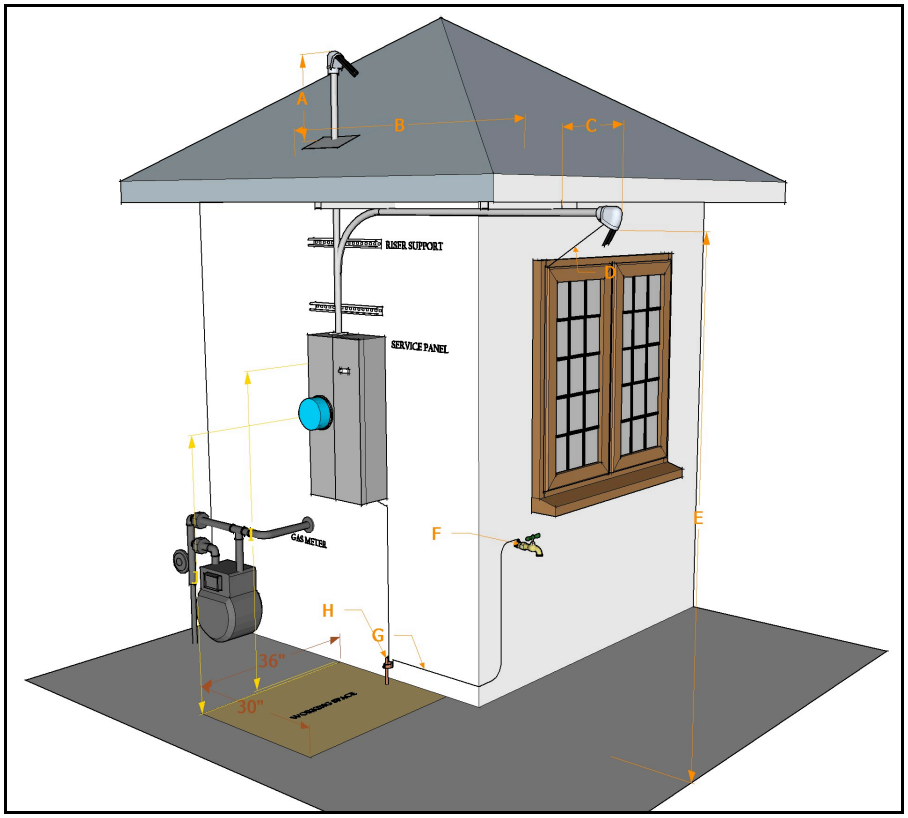


Figure 4-4
Nonmetallic Roof

OVERHEAD ELECTRICAL SERVICE UPGRADE

BASED ON THE 2010 CALIFORNIA ELECTRICAL CODE & PG&E GREEN BOOK

A	Riser max. 18" behind wall facing service line. Brace riser if over 30" high. Service knob 12 over roof
B	48" max service conductor run over roof
C	Maximum distance 18" beyond the last strap. (no couplings)
D	36" minimum distance from window openings (12" over window)
E	10' from walking surface, 12' over driveways and 18' over roadways
F	"Weaver style clamp" for grounding conductor connection to first 5 feet of water main.
G	Grounding Electrode (#6 copper conductor for services less than 200 amps, #4 for 200 amps)
H	"Acorn clamp" connection grounding electrode to 8' long grounding rod. 1/2"for services less than 200 amps, 5/8" for 200 amps)
I	6'-7" max height for service disconnect.
J	Meter socket located between 48"min and 75" max from grade.



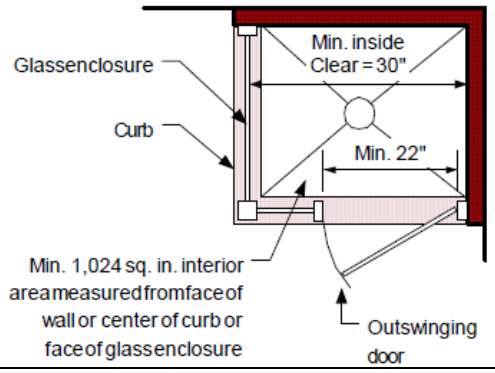
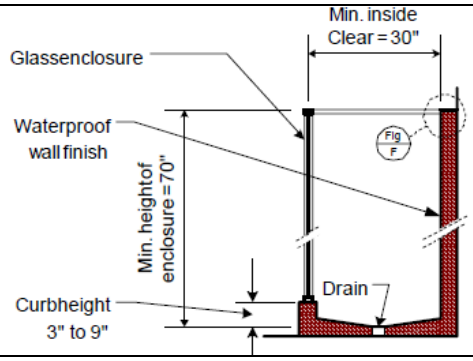
Chapter 13

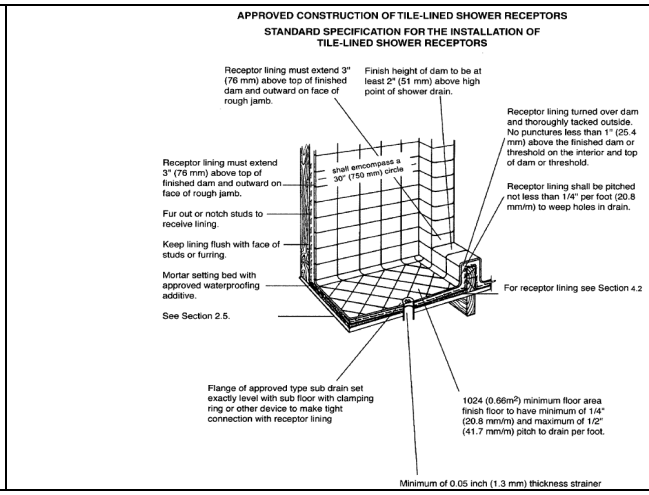
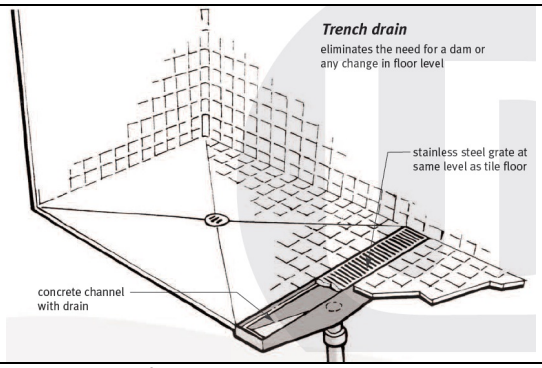
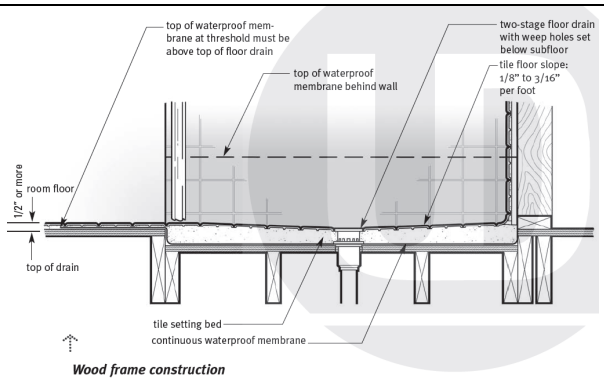
RESIDENTIAL BATHROOM

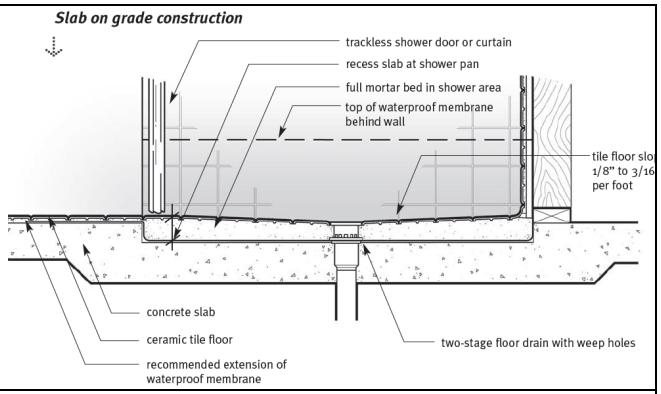
This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Plumbing

Based on the 2010 California Plumbing Code

☐	Shower Drain & Trap 2 inches minimum. CPC Table 7-3		
☐	Shower Compartments CPC 411.7		
☐	a	Minimum interior of 1024 square inches.	
☐	b	Minimum dimensions so a 30-inch circle will fit in the compartment.	
☐	c	Minimum height above floor drain is 70 inches.	
			Minimum shower dimensions
☐	d	Shower doors shall open to provide a minimum of 22 inches unobstructed egress opening	
☐	c	Neo-angle showers minimum 37 inch sides	
☐	A minimum space of at least 24" is provided in front of toilet or bidet. CPC 407.5		
☐	A minimum space of at least 15" is provided from the center to any side obstruction CPC 407.5		

		Site Built Shower Pan (Receptors)	
☐	a	Over slab, shall be water tight, constructed with approved materials, reinforced and with an approved flange floor drain. Lining to be pitched ¼" per foot to weep holes in drain. CPC 411.8 (1)	
☐	b	Over wood frame, water tight lining with minimum of 3 inches above finished dam, curb or threshold height. In no case shall any dam or threshold be less than 2 inches or more than 9 inches in depth when measured from the top of the dam or threshold to the top of the drain. CPC 411.5 and CPC 411.6	
		Site Built Shower Pan (Curb-less)	
☐	a	Shall be water tight, constructed with approved materials, adequately reinforced and with an approved flange floor drain and secondary linear drain installed directly at the point of the shower area for its total width.	
☐	b	Secondary drain shall be connected to the building sewer downstream of the main drain, separately vented and trap shall be equipped with an approved trap primer.	
☐	c	Floor slope in the direction of main drain shall be a minimum of 1/8 inch per foot and shall extend to provide a minimum of 1-1/2 inch drop from the top of the secondary to the top of the primary drain.	
☐	d	Shower pan liner shall extend to cover the entire floor area of the bathroom and shall extend 6 inches up the wall from the top of the highest drain inlet.	
☐	e	Blocking shall be installed along the wall perimeter at each stud bay for liner support.	
☐	f	Approved wall-hung toilets shall be used. Floor mounted toilets shall no be allowed in combination with curb-less shower installations.	
☐	g	Over wood floor: - Floor framing details shall be submitted for approval by City Engineer whenever is necessary to modify the floor framing in order to recess the shower pan into the floor	

☐	h	Over Slab: - Slab reinforcement details shall be submitted for approval by City Engineer whenever is necessary to recess a shower into a slab.	
☐	Control valves shall be pressure balance, thermostatic, or combination pressure balance/ thermostatic mixing valves. Handle position stops shall be provided on such valves and shall be adjusted per the manufacturer's instructions to deliver a maximum mixed water setting of 120 ° F. CPC 418.0		
☐	Dissimilar materials must have dielectric fittings. 2010 CPC Section 316.2.4		
☐	WATER TIGHTNESS TEST REQUIRED CPC 411.8.1		

Electrical

Based on the 2010 California Electrical Code

☐	At least one receptacle must be installed within a residential bathroom within 3 feet of the sink and (See Figure 1):	
	a	On the wall adjacent to the sink; or,
	b	On the side or face of the sink cabinet.
☐	Bathroom receptacles shall be installed on a 20-ampere branch circuit that is (See Figure 2):	
	a	Dedicated to only bathroom receptacles; or,
	b	Dedicated to the receptacles and lighting within a single bathroom only.
☐	Ground-Fault Circuit-Interrupter protection is required for all bathroom receptacles.	
☐	Receptacles may not be installed within or directly over a bathtub or shower stall (See Figure 3).	

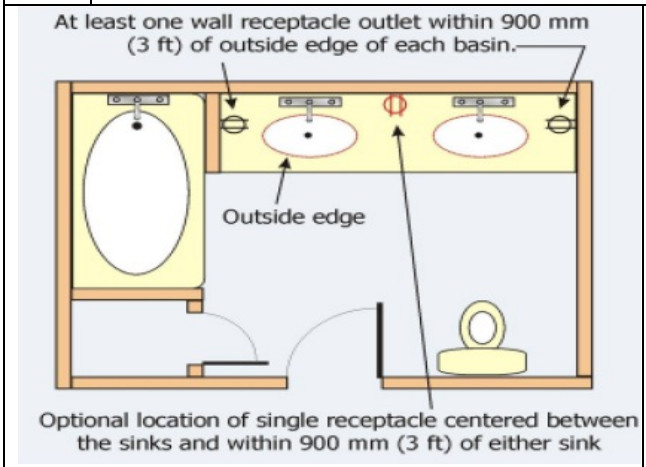


Figure 1

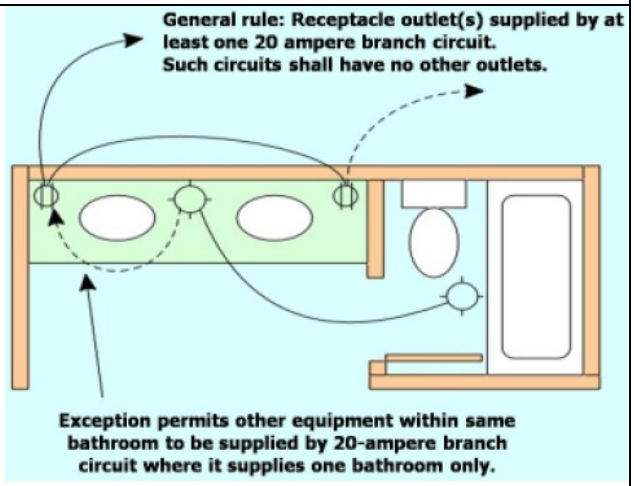


Figure 2

Ⓐ Recessed lights, surface-mounted lights, and exhaust fans are permitted within the bathtub zone. Exposed metal parts must be grounded in accordance with 250.110.

Ⓑ Chain-, cable-, or cord-suspended luminaires (lighting fixtures), cord-connected luminaires (lighting fixtures), lighting track, pendants, and ceiling-suspended (paddle) fans are permitted only *outside* the zone.

Ⓒ The bathtub zone measures 3 ft (900 mm) horizontally and 8 ft (2.5 m) vertically from the top of the bathtub rim or shower stall threshold. The zone is all encompassing and includes the area directly over the tub or shower stall »410.4(D)«.

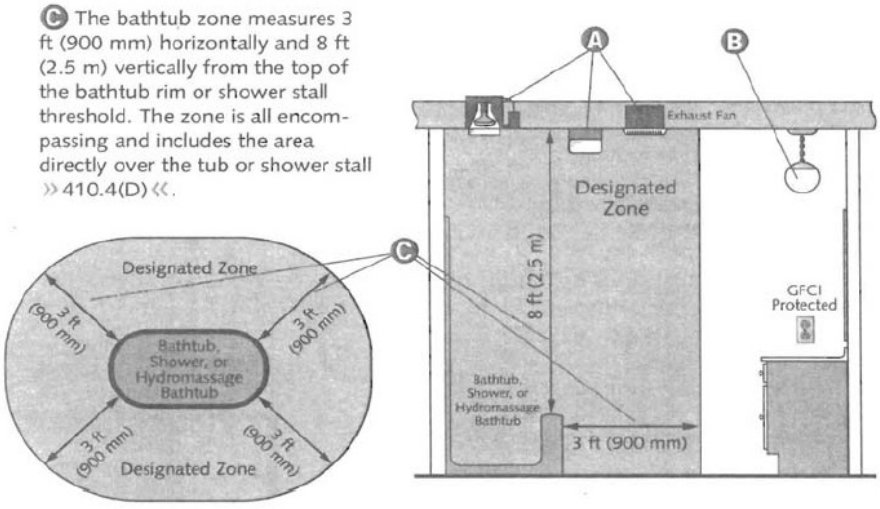


Figure 3

A)	Fixtures installed within the designated zone must be approved for wet locations.

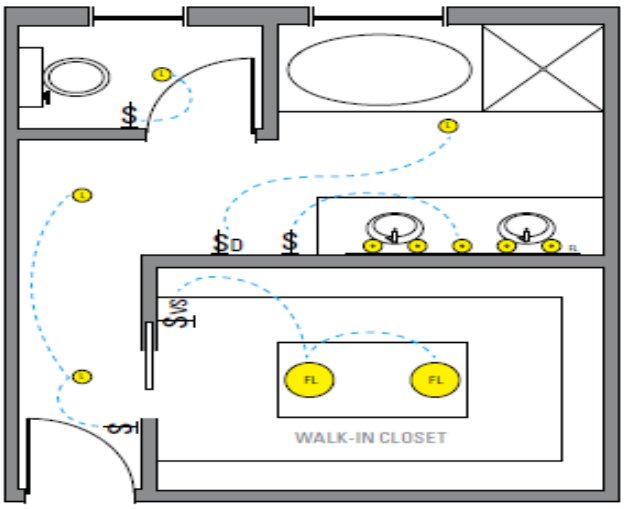
California Code of Regulations - Title 24 Energy

Based on the 2010 California Energy Code and ASHRAE 62.2

LIGHTING
Permanently installed light fixture in bathrooms shall be High-efficacy luminaires. Low-efficacy luminaires are allowed if they are controlled by a manual-on occupancy sensor
Occupancy sensor must be manual on/off and automatic off. The maximum time delay to turn off is 30 minutes after the last detected motion. Sensors cannot have an override allowing the light fixture to be continuously on.
High-efficacy and Low-efficacy light fixtures must be controlled separately.
Exhaust fans with integral lighting system shall be switches separately from lighting system OR have a lighting system that can be manually turned on and off while allowing the fan to continue to operate for an extended period of time. Lighting integral to an exhaust fan must be high-efficacy.
Permanently installed night light must be high efficacy lighting OR the night light is rated to consume no more than 5 watts of power and does not contain a medium screw-base socket.

MASTER BATHROOM LIGHTING PLAN

228 square feet



BATHROOM LIGHTING TIPS

1. Use fluorescent surface-mounted fixtures in closets to provide an even spread of light on shelving and throughout space.
2. Using multiple fixture types on separate switches provides a specific source of light for each function in the space and versatility in the lighting environment.
3. Use a decorative CFL bath bar fixture over the mirror.

MASTER BATHROOM LIGHTING FIXTURE LEGEND

Symbol	Description	Lamp Type	Qty.	Watts	Total Watts	Efficacy (lm / W)
L	Recessed downlight	GU-24 base LED	4	12	48	56
FL	5-light bath bar	Pin-base or GU-24 base CFLs with electronic ballasts	5	13	65	69
FL	Surface-mounted fixture	Pin-base or GU-24 base CFLs with electronic ballasts	2	13	26	69
$	Switch					
$D	Dimmer switch					
$VS	Vacancy sensor switch					

Sample bath layout

VENTILATION Section 150-(o)	
☐	Each bathroom has a 50 cfm minimum exhaust fan ducted to the outside. Bathroom is any room with a bathtub, shower, spa or similar sources of moisture. *Toilet room is not considered a bathroom.*
☐	The ducting for the exhaust fan shall be sized according to ASHRAE Standard 62.2, Table 7.1 (see item D). *Flex duct shall not be used in range hood.*
☐	Local exhaust fans are required to be rated for sound at a maximum of 3 sones, unless their maximum rated airflow exceeds 400 cfm.

PRESCRIPTIVE DUCT SIZING
ASHRAE 62.2 Table 7.1

Duct Type	Flex Duct				Smooth Duct			
Fan Rating (cfm @ 0.25 in w.c)	50	80	100	125	50	80	100	125
	Maximum Allowable Duct Length (ft)							
Diameter (in)	Flex Duct				Smooth Duct			
3	X	X	X	X	5	X	X	X
4	70	3	X	X	105	35	5	X
5	NL	70	35	20	NL	135	85	55
6	NL	NL	125	95	NL	NL	NL	145
7 & above	NL	NL	NL	NL	NL	NL	NL	NL
This table assumes no elbows. Deduct 15 ft. of allowable duct length for each turn, elbow or fitting.								
NL =	No limit on duct length of this diameter							
X =	Not allowed, any length of duct of this size with assumed turns, elbows, fittings will exceed the rated pressure drop.							
w.c =	Water column							

REQUIRED INFORMATION ON PLANS
Notes should be provided on the plans that identify the local exhaust and whole house ventilation

LOCAL EXHAUST VENTILATION

Bathroom ☐ Specify bathroom fan flow (cfm): _____
Duct type: ☐ Flex duct ☐ Smooth duct
☐ Duct diameter (in): _____
☐ Allowable Duct length (ft): _____
☐ Exhaust fan rated for sound at a maximum of 3 sones.

Chapter 14

RESIDENTIAL PLUMBING

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

BASED ON THE 2010 CALIFORNIA PLUMBING CODE AND PG&E REGULATIONS

GAS DELIVERY SYSTEM

☐	Plumbing permit must be obtained prior to the installation, alteration or repair of a gas piping system.
☐	All pipe used for the installation, extension, alteration, or repair of any gas piping shall be standard weight Schedule 40 wrought iron or steel (galvanized or black) CPC 1209.5.2.2
☐	Corrugated stainless steel tubing. Approved PE pipe may be used in exterior buried piping systems when installed by certified technicians. CPC 1209.5.3.4
☐	An exterior shutoff valve shall be installed before the line enters the building CPC 1211.11.3
☐	Sediment traps must be installed on furnaces, wall heaters, boilers and water heaters downstream of shutoff valves. CPC1212.7
☐	Corrugated stainless steel systems should be bonded to the electrical service grounding electrode system where it enters the building CPC 12.11.15.2
☐	Gas piping shall not be used as a grounding conductor or electrode but it may be bonded. CPC 1211.15.3
☐	Steel pipe installed outside and underground shall have no less than 12 inches of cover (where no damage is likely). And no less than 18 inches of cover in other areas. CPC 1211.1.2
☐	Where unions are necessary, right and left nipples and couplings shall be used. Ground joint unions may only be used at exposed fixtures, appliance, or equipment connections and in exposed exterior locations immediately on the discharge side of a building shutoff valve. OMC15.04.940 - CPC 1211.3.2
☐	An accessible shutoff valve shall be installed in the fuel supply piping outside of each appliance and ahead of the union connection thereto, in addition to any valve on the appliance. Shutoff valves shall be in the same room as the appliance and no further than 6 feet from the appliance. CPC1212.5
☐	INSPECTION 1: Underground exterior gas piping requires one inspection which will occur after the pipe has been installed in a trench and pressurized but before it is covered.
☐	INSPECTION 2: After the piping system has been installed but prior to it being covered or concealed, or any fixture or appliance has been attached thereto. This inspection will check for proper pipe size, material, and installation. Although not required, it is recommended that the piping system be pressurized.
☐	INSPECTION 3: consists of a pressure test and occurs after the building is completely enclosed but prior to connecting any equipment or appliances. *For projects in which the gas piping will remain exposed, both inspections would be combined into a single inspection.*
☐	Gas piping systems will be pressure tested at least once during the inspection process. The permit holder shall provide and install a temporary pressure gauge and to pressurize the piping system. All gas piping systems shall be pressurized using air, CO2, or nitrogen. For residential installations the gas piping system shall be pressurized to no less than ten (10) psi. and shall hold that pressure for no less than 15 minutes. The gauge used for the pressure test shall have a pressure range not greater than twice the test pressure applied and shall have 1/10 psi increments. OMC 15.04.950 - CPC 1214.3.2, OMC15.04.955 - CPC 1214.3.3
☐	Gas pipe needs to be sized correctly. You can size the gas pipe by following the example in this handout or you

	may request assistance from a Building Inspector. For the Building Inspector to help, you must provide a piping layout (similar to Figure "C") with the lengths of all piping and the input demand load of all appliances shown on the drawing. Sizing the pipe will depend on the type of pipe being used. CPC 1216.0

GAS PIPE SIZING

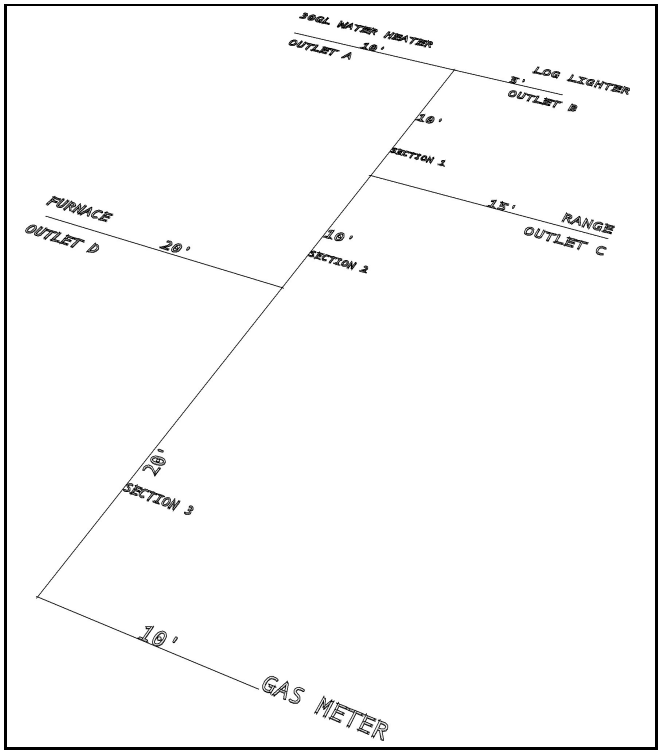


Figure 12-2

TABLE 12-1		
APPLIANCE		INPUT Bth/h
Furnace		100,000
Hydronic boiler		100,000
Water heater, storage 30-40gl		35,000
Water heater, storage 50gl		50,000
Tankless	2 gl/min	142,800
	4 gl/min	285,000
	6 gl/min	428,400
Free standing range		65,000
Built-in cooktop		40,000
Built-in oven or broiler		25,000
Clothes dryer domestic		35,000
Gas fireplace direct vent		40,000
Gas log lighter		80,000
Barbecue		40,000
Refrigerator		3,000

Note: The demand ratings of the appliances listed in this table are minimums. Demand ratings of the actual installed appliances may be higher. Refer to name plate rating on appliance - use the input Btu/Hr number. The tables used to size gas piping are based on Cubic Feet per Hour (CF/H). To convert Btu/Hr to CF/H divide the Btu/Hr by 1,000 (per PG&E delivery capacity), which is the number of Btu/Hr in a single cubic foot of natural gas

Solution:

(1) -Maximum gas demand of **outlet A**- 35 cubic feet per hour (actual input/1000) (from Table 12-1)
-Maximum gas demand of **outlet B**- 80 cubic feet per hour (actual input/1000) (from Table 12-1)
-Maximum gas demand of **outlet C**- 65 cubic feet per hour (actual input/1000) (from Table 12-1)
-Maximum gas demand of **outlet D**- 100 cubic feet per hour (actual input/1000) (from Table 12-1)

(2) The length of pipe from the gas meter to the **most remote outlet** (**outlet A**) is 60 feet.

(3) **Using the length in feet column row marked 60 feet in Table 12-8**:
Outlet A, supplying 35 cubic feet per hour, requires one-half (1/2) inch pipe.
Section 1, supplying **outlets A and B**, or 115 cubic feet per hour requires three-quarter (3/4) inch pipe.
Section 2, supplying **outlets A, B, and C**, or 180 cubic feet per hour requires one (1) inch pipe.
Section 3, supplying **outlets A, B, C, and D**, or 280 cubic feet per hour, requires one & one-quarter (1-1/4) inch pipe.

(4) Using the column marked 60 feet in Table 12-8 (no column for actual length of 55 feet).
Outlet B, supplying 80 cubic feet per hour, requires three-quarter (3/4) inch pipe.
Outlet C, supplying 65 cubic feet per hour, requires three-quarter (3/4) inch pipe.

(5) Using the column marked 60 feet in Table 12-8:
Outlet D, supplying 100 cubic feet per hour, requires three quarter (3/4) inch pipe.

STEEL PIPE - LONGEST LENGTH METHOD					
				Demand CF/Hr	
Outlet	Appliance	Length ft	Demand BTU table 12-1	/1000 BTU/CUFT	Pipe Size table 12-8

A	30gl water heater	**60** (use on 12-8)	35000	35	1/2
B	Gas log lighter	55	80000	80	3/4
C	Range	55	65000	65	1/2
D	Furnace	50	100000	100	3/4
Section					
1	A+B			115	3/4
2	A+B+C			180	1
3	A+B+C+D			280	1-1/4

TABLE 12-8
SCHEDULE 40 METALLIC PIPE [NFPA 54: TABLE 6.2(b)]

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

	PIPE SIZE (inch)													
NOMINAL:	½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12
ACTUAL ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938
LENGTH (ft)	CAPACITY IN CUBIC FEET OF GAS PER HOUR													
10	172	360	678	1,390	2,090	4,020	6,400	11,300	23,100	41,800	67,600	139,000	252,000	399,000
20	118	247	466	957	1,430	2,760	4,400	7,780	15,900	28,700	46,500	95,500	173,000	275,000
30	95	199	374	768	1,150	2,220	3,530	6,250	12,700	23,000	37,300	76,700	139,000	220,000
40	81	170	320	657	985	1,900	3,020	5,350	10,900	19,700	31,900	65,600	119,000	189,000
50	72	151	284	583	873	1,680	2,680	4,740	9,660	17,500	28,300	58,200	106,000	167,000
60	65	137	257	528	791	1,520	2,430	4,290	8,760	15,800	25,600	52,700	95,700	152,000
70	60	126	237	486	728	1,400	2,230	3,950	8,050	14,600	23,600	48,500	88,100	139,000
80	56	117	220	452	677	1,300	2,080	3,670	7,490	13,600	22,000	45,100	81,900	130,000
90	52	110	207	424	635	1,220	1,950	3,450	7,030	12,700	20,600	42,300	76,900	122,000
100	50	104	195	400	600	1,160	1,840	3,260	6,640	12,000	19,500	40,000	72,600	115,000

TABLE 12-19
CORRUGATED STAINLESS STEEL TUBING (CSST) [NFPA 54-09: TABLE 6.2(m)]

											GAS:	NATURAL		
											INLET PRESSURE:	LESS THAN 2 psi		
											PRESSURE DROP:	0.5 in. w.c.		
											SPECIFIC GRAVITY:	0.60		
	TUBE SIZE (EHD)*													
FLOW DESIGNATION:	13	15	18	19	23	25	30	31	37	39	46	48	60	62
LENGTH (ft)	CAPACITY IN CUBIC FEET OF GAS PER HOUR													
5	46	63	115	134	225	270	471	546	895	1,037	1,790	2,070	3,660	4,140
10	32	44	82	95	161	192	330	383	639	746	1,260	1,470	2,600	2,930
15	25	35	66	77	132	157	267	310	524	615	1,030	1,200	2,140	2,400
20	22	31	58	67	116	137	231	269	456	536	888	1,050	1,850	2,080
25	19	27	52	60	104	122	206	240	409	482	793	936	1,660	1,860
30	18	25	47	55	96	112	188	218	374	442	723	856	1,520	1,700
40	15	21	41	47	83	97	162	188	325	386	625	742	1,320	1,470
50	13	19	37	42	75	87	144	168	292	347	559	665	1,180	1,320
60	12	17	34	38	68	80	131	153	267	318	509	608	1,080	1,200
70	11	16	31	36	63	74	121	141	248	295	471	563	1,000	1,110
80	10	15	29	33	60	69	113	132	232	277	440	527	940	1,040
90	10	14	28	32	57	65	107	125	219	262	415	498	887	983
100	9	13	26	30	54	62	101	118	208	249	393	472	843	933
150	7	10	20	23	42	48	78	91	171	205	320	387	691	762
200	6	9	18	21	38	44	71	82	148	179	277	336	600	661
250	5	8	16	19	34	39	63	74	133	161	247	301	538	591
300	5	7	15	17	32	36	57	67	95	148	226	275	492	540

*EHD = Equivalent Hydraulic Diameter, which is a measure of the relative hydraulic efficiency between different tubing sizes. The greater the value of EHD, the greater the gas capacity of the tubing.

Notes:

(1) Table includes losses for four 90 degree bends and two end fittings. Tubing runs with larger numbers of bends and/or fittings shall be increased by an equivalent length of tubing to the following equation: $L = 1.3n$, where L is additional length (ft) of tubing and n is the number of additional fittings and/or bends.

(2) All table entries are rounded to 3 significant digits.

GAS DELIVERY SYSTEM SIZING EXERCISE

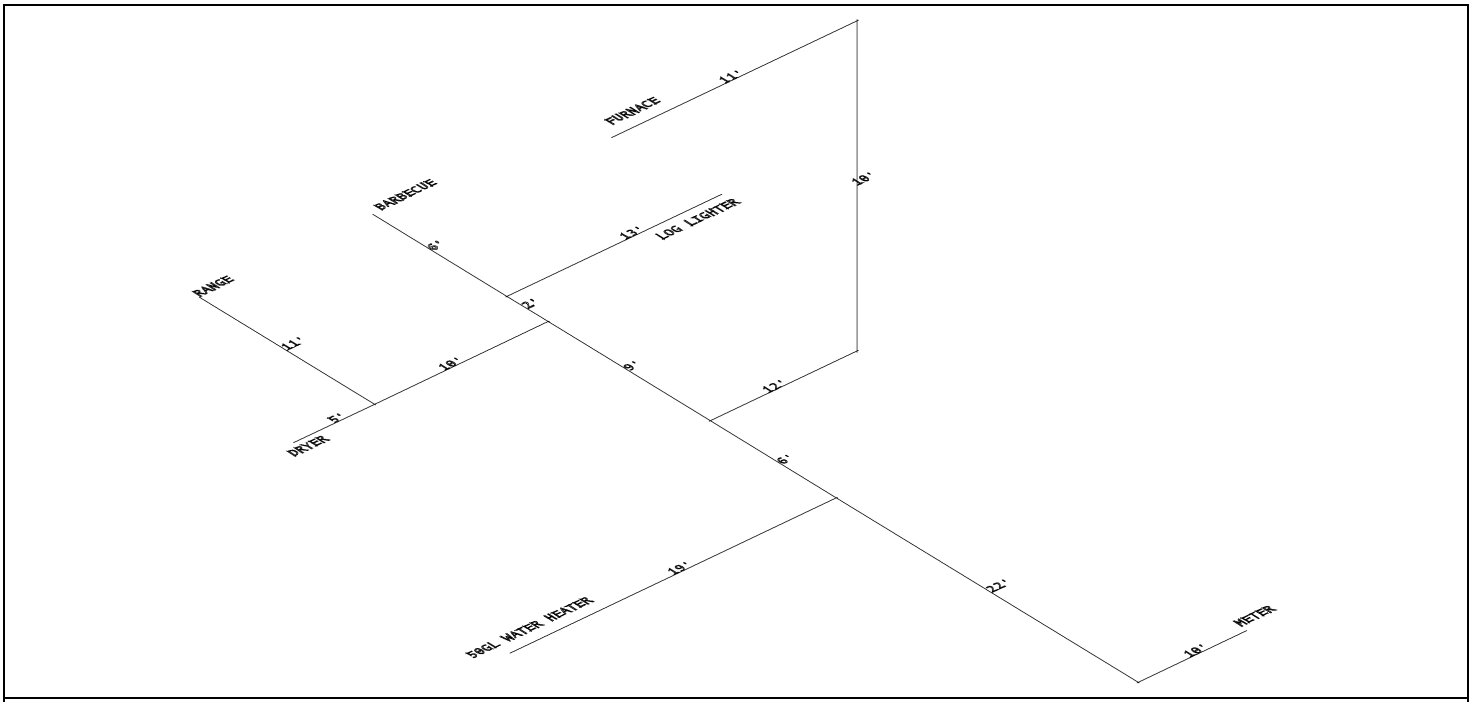


Figure 1-Gas Supply Layout

TABLE 12-1		
APPLIANCE		INPUT Bth/h
Furnace		100,000
Hydronic boiler		100,000
Water heater, storage 30-40gl		35,000
Water heater, storage 50gl		50,000
Tankless	2 gl/min	142,800
	4 gl/min	285,000
	6 gl/min	428,400
Free standing range		65,000
Built-in cooktop		40,000
Built-in oven or broiler		25,000
Clothes dryer domestic		35,000
Gas fireplace direct vent		40,000
Gas log lighter		80,000
Barbecue		40,000
Refrigerator		3,000

Note: The demand ratings of the appliances listed in this table are minimums. Demand ratings of the actual installed appliances may be higher. Refer to name plate rating on appliance - use the input Btu/Hr number. The tables used to size gas piping are based on Cubic Feet per Hour (CF/H). To convert Btu/Hr to CF/H divide the Btu/Hr by 1,000 (per PG&E delivery capacity), which is the number of Btu/Hr in a single cubic foot of natural gas

TABLE 12-8
SCHEDULE 40 METALLIC PIPE [NFPA 54: TABLE 6.2(b)]

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

	PIPE SIZE (inch)													
NOMINAL:	½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12
ACTUAL ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938
LENGTH (ft)	CAPACITY IN CUBIC FEET OF GAS PER HOUR													
10	172	360	678	1,390	2,090	4,020	6,400	11,300	23,100	41,800	67,600	139,000	252,000	399,000
20	118	247	466	957	1,430	2,760	4,400	7,780	15,900	28,700	46,500	95,500	173,000	275,000
30	95	199	374	768	1,150	2,220	3,530	6,250	12,700	23,000	37,300	76,700	139,000	220,000
40	81	170	320	657	985	1,900	3,020	5,350	10,900	19,700	31,900	65,600	119,000	189,000
50	72	151	284	583	873	1,680	2,680	4,740	9,660	17,500	28,300	58,200	106,000	167,000
60	65	137	257	528	791	1,520	2,430	4,290	8,760	15,800	25,600	52,700	95,700	152,000
70	60	126	237	486	728	1,400	2,230	3,950	8,050	14,600	23,600	48,500	88,100	139,000
80	56	117	220	452	677	1,300	2,080	3,670	7,490	13,600	22,000	45,100	81,900	130,000
90	52	110	207	424	635	1,220	1,950	3,450	7,030	12,700	20,600	42,300	76,900	122,000
100	50	104	195	400	600	1,160	1,840	3,260	6,640	12,000	19,500	40,000	72,600	115,000

OUTLET	LENGTH (from meter)	INPUT (12-1/1000)	PIPE SIZE (from 12-8)	LONGEST (use next higher in 12-8)

SECTION	INPUT (i.e. a+b)	INPUT (total)	PIPE SIZE (from 12-8)	

GENERAL WATER HEATER REQUIREMENTS

☐	Permits required CPC 503.0
☐	Permits and documents on site
☐	CF-6R-MECH-01 complete and on site
☐	Installation instructions available for inspection
☐	Gas-fired water heaters, which depend on the combustion of fuel for heat, shall not be installed in the following locations: CPC 505.0
	1. A room used or designed to be used for sleeping purposes,
	2. A bathroom,
	3. A clothes closet, or
	4. In a closet or other confined space opening into a bathroom or bedroom.
	Exception: Direct vent water heaters. CPC 505.1
☐	Closet shall be equipped with a listed, gasketed door assembly.
☐	Listed self closing device. (HOLD-OPEN FEATURE IS NOT ALLOWED)
☐	Door assembly shall be installed with a threshold and bottom door seal.
☐	Combustion air shall be only obtained from the outdoors.
☐	Closet shall be used for exclusive use of the furnace (NOT FOR STORAGE)
☐	Not installed in attic or other spaces where damage may result from a leaking water heater, without an approved safe pan beneath the water heater with a minimum ¾ inch drain to an approved, readily visible location. CPC 508.4
☐	Water heaters generating a glow, spark or flame capable of igniting flammable vapors may be installed in a garage, provided the pilots, burners or heating elements and switches are at least 18 inches above the floor. CPC 508.14
☐	Water heaters installed within a garage within an enclosed compartment having access only from outside of the garage, may be installed at floor level provided the required combustion air is also taken from the exterior.
☐	When water heaters are installed on a stand or platform base, the base shall be adequately anchored.
☐	Water heater Seismic Bracing located at points within the upper one-third and lower one-third of the water heaters vertical dimensions. At the lower point, a minimum distance of four inches is maintained above the controls with the strapping. The upper strap is installed nine inches below the top of the tank. CPC 508.2 &17958.5 CHSC
☐	A full bore shut off valve is required on cold water side
☐	Unions must be installed within 12 inch of water heater to facilitate removal
☐	Minimum ¾ inch T&P drain to terminate “outside” of the building no closer than 6 inches or further than 24 inches from grade. T&P line must be looking downward with no threads on the end. Water heaters located in the garage may terminate on the garage floor with the same distance requirements CPC 505.6 CPC §505.4, 508.5 & 608.5
☐	T&P does not discharge into a water heater drain pan. CPC508.5
☐	First five (5) feet of water line insulated (maintains min. 6” from flue). If reticulating pump in system; insulation is applied to the entire loop. 2008 RBEES
☐	Sediment trap (T, 3” nipple and cap) installed on gas supply CPC 1212.7
☐	Bonding electrode installed between hot, cold and gas metallic piping with a min. #8 bare copper CEC 250.104
☐	Gas connectors sized for the BTU input rating of appliance. Does not exceed 3 feet in length and is connected downstream of approve shut of valve.
☐	Thermal expansion tank installed to protect water delivery system per CPC 608.3 & CMC 1006.0 if a pressure regulator with an integral back flow preventer is installed on the main supply line

☐	Combustion air vents are unobstructed and located within 12" from top and bottom of any enclosure less than 50 c.f. per 1000 BTU per hour. Vent openings are sized to 1 sq-in per 4000 BTU of appliance(s) input capacity and protected with ¼" screen mesh CPC 507
☐	Venting system sized and constructed per manufacture's specifications CPC 510.10.3
☐	Single wall vent connectors maintain 6" clearance to combustible materials, secured with 3 fasteners per end.
☐	Type B double wall vent piping installed to maintain 1" clearance to combustibles. Direction markings correct and locking ends fully engaged. (no fasteners required, and please no tape) CPC 510.10.7. Type B vent piping is required when penetrating walls, floors or ceiling assemblies.
☐	Vent termination shall not terminate less than 2' above roof, additional height required if roof pitch is greater than 6:12 slope, nor shall a vent terminate less than 8 feet from any second story exterior wall. Vent termination in all other cases not to terminate any less than 2 feet above any structure within 10 feet. Other venting rules may apply see section (510.5.2 C.P.C. 2010)

SEISMIC STRAPPING	
Water Heater size	No. of straps
to -52 gallons	2
-75	3
-100	4

GENERAL TANKLESS WATER HEATER REQUIREMENTS

☐	Permits required CPC 503.0
☐	Permits and documents on site
☐	CF-6R-MECH-01 complete and on site
☐	Installation instructions available for inspection
☐	For exterior installations, equipment is located where approved by the Planning Division of the City of Oakland.
☐	Gas-fired water heaters, which depend on the combustion of fuel for heat, shall not be installed in the following locations: CPC 505.0
	1. A room used or designed to be used for sleeping purposes,
	2. A bathroom,
	3. A clothes closet, or
	4. In a closet or other confined space opening into a bathroom or bedroom.
	Exception: Direct vent water heaters. CPC 505.1
☐	Closet shall be equipped with a listed, gasketed door assembly.
☐	Listed self closing device. (HOLD-OPEN FEATURE IS NOT ALLOWED)
☐	Door assembly shall be installed with a threshold and bottom door seal.
☐	Combustion air shall be only obtained from the outdoors.
☐	Not installed in attic or other spaces where damage may result from a leaking water heater, without an approved safe pan beneath the water heater with a minimum ¾ inch drain to an approved, readily visible location. CPC 508.4
☐	Required access, clearances to combustibles and vent termination location per manufacturer's instructions.
☐	Combustion air vents are unobstructed and located within 12" from top and bottom of any enclosure less than 50 c.f. per 1000 BTU per hour. Vent openings are sized to 1 sq-in per 4000 BTU of appliance(s) input capacity and protected with ¼" screen mesh CPC 507
☐	Minimum ¾ inch T&P drain to terminate "outside" of the building no closer than 6 inches or further than 24

	inches from grade. T&P line must be looking downward with no threads on the end. Water heaters located in the garage may terminate on the garage floor with the same distance requirements CPC 505.6 CPC §505.4, 508.5 & 608.5
☐	T&P does not discharge into a water heater drain pan. CPC508.5
☐	Provide gas line sizing calculations and isometric riser diagram of the gas delivery piping system for the equipment with permit application. NOTE: waive calculations if a 3/4'" dedicated line is connected (split) at the main by up-sizing the meter tee. (up-seized tee example: install 1"x3/4"x3/4" tee for existing 3/4" building service) OAK
☐	Sediment trap (T, 3" nipple and cap) installed on gas supply CPC 1212.7
☐	Gas connectors sized for the BTU input rating of appliance. Does not exceed 3 feet in length and is connected downstream of approve shut of valve.
☐	Building gas piping test is under pressure not less than 15 lbs pressure for 10 minutes CPC 1214.3. 30 lbs gauge min. for new and altered portions of gas delivery system.
☐	A full bore shut off valve is required on cold water side
☐	Unions must be installed within 12 inch of water heater to facilitate removal
☐	First five (5) feet of water line insulated (maintains min. 6" from flue). If reticulating pump in system; insulation is applied to the entire loop. For exterior installations insulating material is listed and approve to be exposed to weather) 2008 RBEES
☐	Thermal expansion tank installed to protect water delivery system per CPC 608.3 & CMC 1006.0 if a pressure regulator with an integral back flow preventer is installed on the domestic main supply line.
☐	110/120V receptacle installed within 3 feet of equipment. When located outdoors such receptacle is of approved type and bubble type cover is installed. Equipment connector or conduit listed for sun exposure and wet locations. May be dedicated circuit.
☐	Attic or basement installations will require a 110/120 receptacle and switched luminary at or near the equipment. The switch for the luminary must be located adjacent to the attic or basement access.
☐	Bonding electrode installed between hot, cold and gas metallic piping with a min. #8 bare copper CEC 250.104
☐	All new electrical work requires an electric permit.
☐	Venting system sized and constructed per manufacture's specifications CPC 510.10.3
☐	Positive pressure (forced) vents comply with the vent manufacturer's installation instructions for Category III and IV appliances. Most are Stainless Steel due to the slightly acidic content of the condensate. Most do not allow common vent with other appliances. All positive pressure vent pipes shall be sealed air tight at each joint from flue collar to termination. Type B venting material is not acceptable for positive pressure vents.
☐	CPVC, PVC or ABS pipe vents installed per equipment manufacturer. Where required, primer should be of contrasting color. CPC 510.4.3
☐	Vent termination shall be per manufacturer's installation instructions. Distances to building openings, floors, overhangs etc. must be maintained. Wall vents shall not discharge trough walls located 5 feet or less from any property line.

Chapter 15

RESIDENTIAL MECHANICAL

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the 2010 Mechanical Code

GENERAL FURNACE REQUIREMENTS

☐	Manufacture's installation and operating instructions: The appliance installer shall leave the manufacturer's installation and operating instructions attached to the appliance. CMC §304.1	
☐	Required clearances from combustibles. CMC §903.3 & 904.2	
☐	Condensate/sediment trap/drip leg: Where required by manufacture, drip leg shall be installed in such locations so that it will be readily accessible to permit cleaning or emptying and shall not be located where the condensate is likely to freeze. The sediment trap shall be either a tee fitting with a capped nipple in the bottom outlet or other device recognized as an effective sediment trap. CPC 1211.7 & 1212.7	
☐	Combustion air to comply with CMC and manufacturer requirements regarding size, location, screening etc. Generally, two combustion air openings are required, one each in the upper and lower 12 inch of the furnace closet, sized at 1 square inch per 2000 BTU input rating of the furnace (horizontal comb air ducts) or 1 square inch per 4000 BTU (vertical comb air ducts). Direct vent appliances are exempt from the provisions of Chapter 7 in the CMC and shall be installed per the appliance listing. CMC §701.1	
☐	The reuse of existing venting systems may be allowed as long as the venting systems were originally code complying and remain safe to use. Transite (AC) vent material may not be relocated, altered or repaired to accommodate a furnace change-out.	
☐	Gas shutoff valve: CPC §1212.5	
	a)	Shall be in an accessible location and within 6' from the furnace. Connected to rigid piping upstream from the flexible connection in the same room as the furnace.
☐	Disconnect shall be adjacent to and within sight of furnace. CMC §308	
☐	Dedicated circuit shall be provided for furnace CEC §422.12	
☐	Access: Furnace shall be accessible for inspection, service, repair, & replacement without removing permanent construction. CMC §304	
☐	Anchorage: Furnace shall be securely fastened in place to sustain vertical and horizontal loads. CMC §304.4	
☐	Gas test required for new sections of gas pipe over 24" long or any new elbows or couplings. Test pressure 15 lbs per 10 min, using a rated 30lb max gauge per CPC 1214.3.3.	

FURNACE IN BEDROOM OR CLOSET CMC 904.1

☐	Closet shall be equipped with a listed, gasketed door assembly.
☐	Listed self closing device. (HOLD-OPEN FEATURE IS NOT ALLOWED)
☐	Door assembly shall be installed with a threshold and bottom door seal.
☐	Combustion air shall be only obtained from the outdoors.
☐	Closet shall be used for exclusive use of the furnace (NOT FOR STORAGE)

FURNACE IN ATTIC CMC 904.11

☐	Attic access min. 22"x30"net clear opening. (Appliance must fit through opening). CMC §904.11.1
☐	Electrical wiring shall be protected within 6' of attic access scuttle opening. CEC §320.23
☐	Passageway Min. 24" wide, unobstructed, solid flooring. CMC §904.11.3
☐	Max. 20' from access to appliance if passageway is less than 6' high. CMC §904.11.2
☐	Min. 30"x30" level working platform at front or service side of unit. CMC §904.11.4
☐	Light and GFCI receptacle outlet required. Timer type light switch shall be located at attic entry and receptacle outlet within 25' of furnace. CMC §904.11.5
☐	Properly support and secure unit, support to be independent and not obstruct the service panel. CMC §304.4

FURNACE UNDERFLOOR CMC 904.3.1

☐	Crawl space access opening in foundation min. 18"x24", or sized to provide removal of the largest piece of equipment to be removed from the opening. CRC §R408.4 & CMC §912.8
☐	Suspend from floor a Min. 6" above ground OR support on slab a min. of 3" above grade. CMC §932
☐	Excavations to provide clearances must be 6" below and 12" wider at sides and rear and 30" in front of the service side. If 12" is exceeded walls are lined with concrete or masonry 4" above ground level. CMC 904.3.1.3
☐	Min. 12" side clearance and min. 18" clearance on control side of unit. CMC §904.3.1
☐	Secure unit in place. CMC §304.4
☐	Light and receptacle outlet required near appliance. CMC §904.11

FURNACE IN GARAGE CMC 307.0

☐		Ignition min. 18" above floor. CMC §307.1
☐		Protection from moving vehicles. (install bollard(s) CMC §307.1
☐		Gas burning appliance venting shall comply with CMC §802.6
☐		High efficiency gas appliance: Vent termination per manufacture instructions
☐		Condensate pumps used to elevate fluid until it is possible to drain by gravity. OAK
☐		Condensate pump interconnected with furnace relay to stop equipment function if pump becomes non-operational. OAK
☐		Condensate drain constructed of ¾" PVC sloped no less than 1/8" per foot and terminates in a drainage system as an indirect waste pipe and not over public right of way CMC309.1 or:
	a)	to a landscaped area OAK
	b)	to 24"X24"X24" gravel pit OAK (SEE DET MECH01)

WALL FURNACES CMC 928.0

☐	Top plates must be cut flush with the adjacent studs.
☐	Solid header plate must be attached to attach vent pipe
☐	The first plate line must be open with spacer straps only
☐	Subsequent plate lines must have fire stop spacers installed.
☐	A sheet metal barrier must be installed against building paper or wood plaster lath. CMC 924.4
☐	Vent termination must be 12' min. above bottom of furnace.
☐	Vent must be protected in the attic by a metal sleeve (12" above ceiling and 2" below roof sheathing).
☐	Furnace shall not be closer than 6" to a room corner.
☐	Door swings must be 12" min. away from furnace.
☐	Projections above furnace shall be 18" min. away.
☐	Room must be at least 50 cu ft. in area per 1,000BTU

AIR CONDTIONING

☐	Condensing unit must be on a pad at least 3 inches above grade.
☐	Line sets properly insulated, supported and fire wall penetrations adequately sealed.
☐	AC condensing units designed to be anchored in place by manufacturer shall be so anchored.
☐	Manufacturer required clearances shall be maintained.
☐	A/C compressor(s) Shall be indicated and located per approved site plan.
☐	Disconnect shall be readily accessible and not more than 6'-7" above grade. (do not install disconnect behind unit.) CEC §440.14, Identification of equipment: For more than one unit permanent identification on A/C unit disconnect. CMC §304.5
☐	Secure A/C unit to platform. CMC §303.6
☐	Verify that circuit breaker &/or fuse are sized per name plate. CEC §440.4 (B)
☐	Verify that an accessible electrical receptacle is installed at the same level and within 25' of the A/C unit. The outlet shall not be connected to the load side of the A/C disconnect. CEC §210.63
☐	Refrigerant suction line with ¾" insulation, 1" if over 2" dia. ENR&150(j)
☐	Insulation protected from physical damage and UV resistant coating ENR $150(m)
☐	Manufacturer required clearances shall be maintained.
☐	Manufacturer's installation instructions for the AC system shall be left on site for the inspector.

ENERGY EFFICIENCY

☐	2008 Energy Efficiency Standards setback thermostat installed RCM 4.5.1
☐	2008 Energy Efficiency Standards Installation Certificate CF-6R-MECH-01 complete

CITY OF OAKLAND
BUILDING SERVICES

Condensate Disposal Requirements

The proceeding information pertains to condensate discharge requirements for air-conditioning units in residential, commercial and industrial buildings.

Condensate Disposal Requirements

Condensate discharge for residential air-conditioning units is typically terminated in drywells. Drywell specifications are as follows:

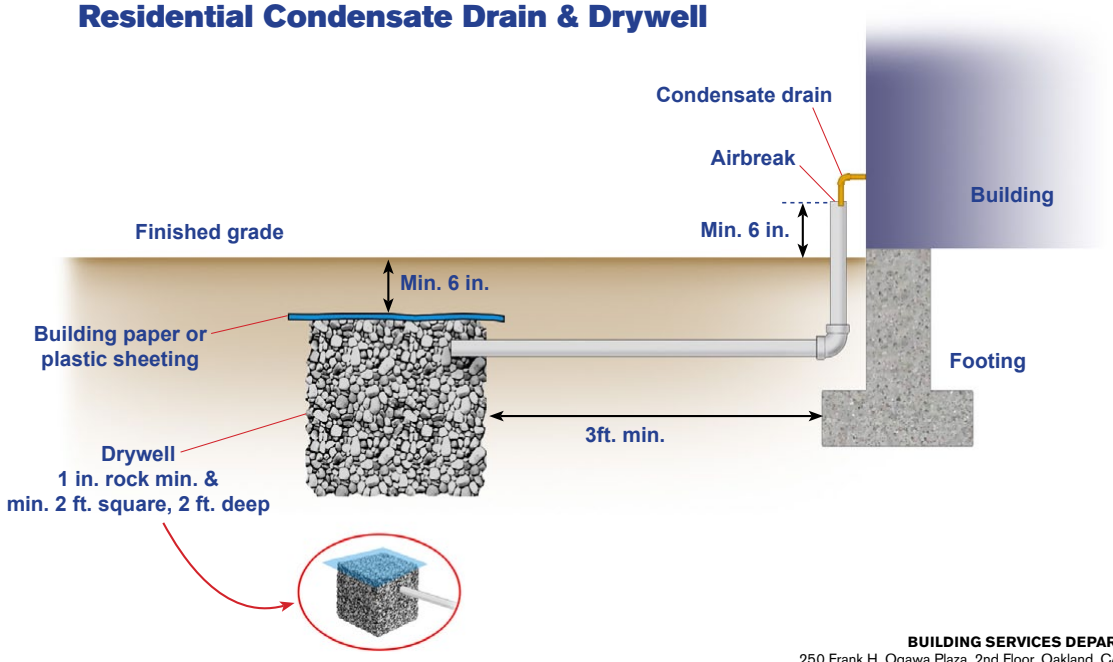
1. The minimum size of a residential drywell is 2 foot square by 2 foot deep.
2. The nearest edge of the drywell shall be at least 3 feet from any structure or building foundation.
3. The drywell shall be filled with min. 1" rock.
4. The top of the v shall be covered with building paper or plastic sheeting with 6" of earth or concrete over that.
5. The condensate pipe from the cooling coil (minimum 3/4") shall indirectly connect to a minimum 1 1/2" drainpipe.

Note: The indirect connection shall be made by an air break at the edge of the foundation.

Miscellaneous Information

When a cooling coil is located in an attic, a secondary condensate drainpipe shall be installed and shall terminate in a readily observable location such as, over a window or door.

Residential Condensate Drain & Drywell

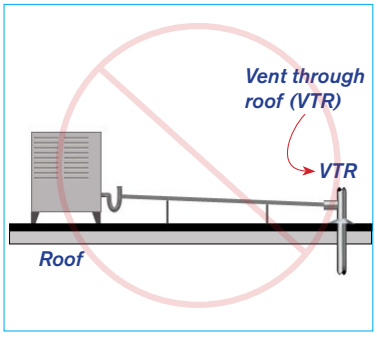


BUILDING SERVICES DEPARTMENT
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612
Inspection Services: 510.238.3443 FAX: 510.238.2263

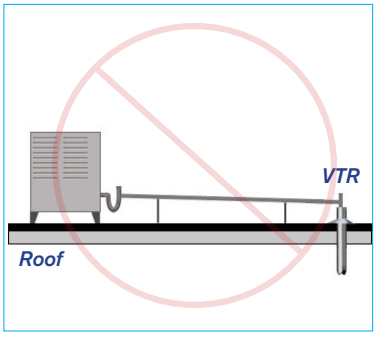
CITY OF OAKLAND
BUILDING SERVICES

Condensate Disposal Requirements

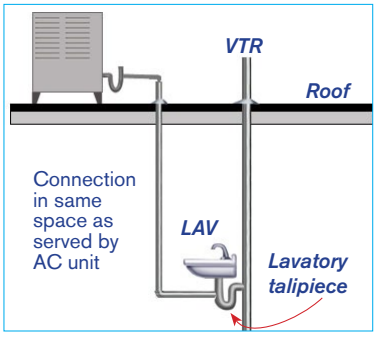
Condensate Drain Terminations



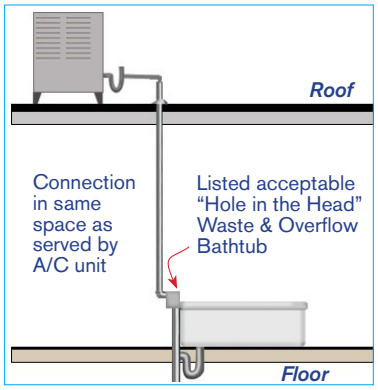
Prohibited by CPC Section 814



Prohibited by CPC Section 814



Acceptable



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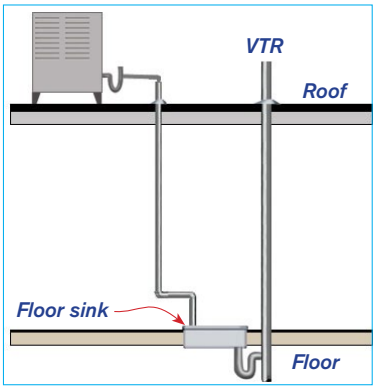
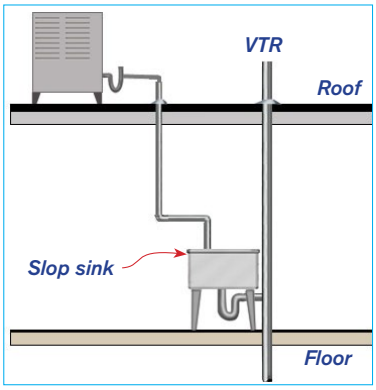
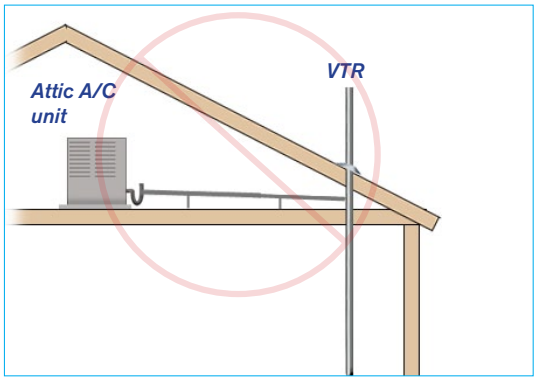


Acceptable



Acceptable with strainer only.
No plug or stopper



Prohibited by CPC Section 814

- Traps to be installed when required by manufacturer's instructions & UPC Section 803.0

BUILDING SERVICES DEPARTMENT
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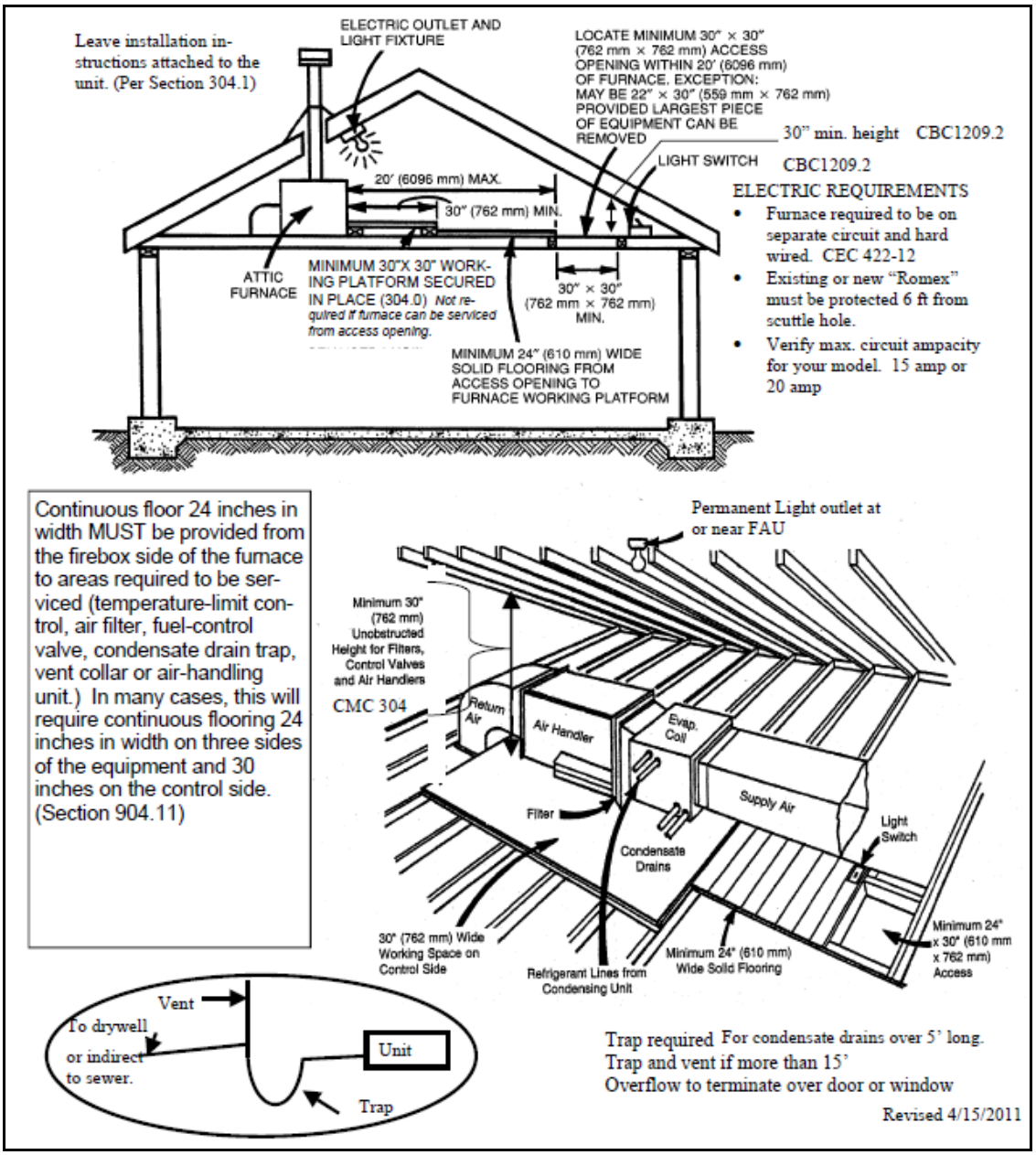
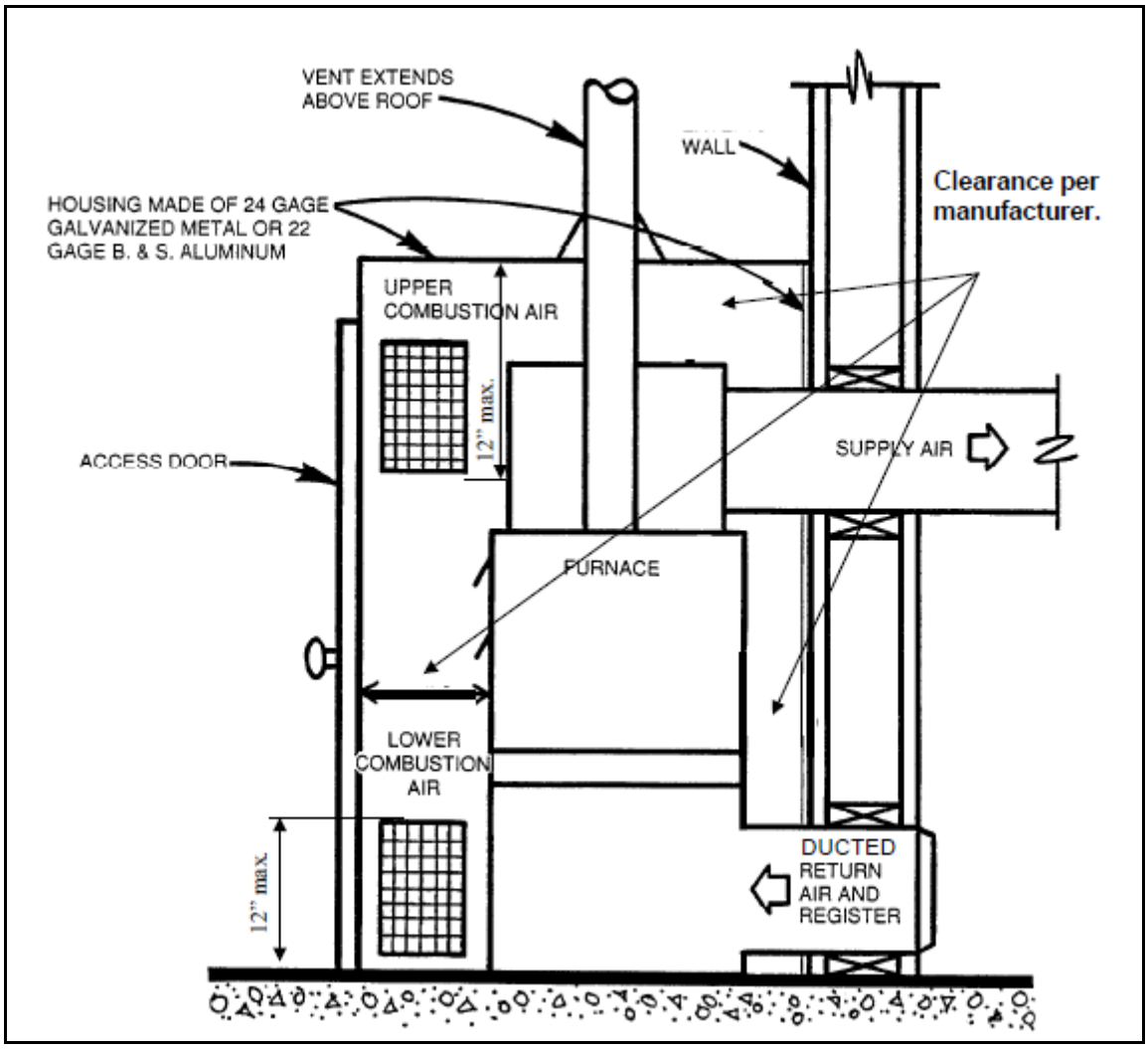
ATTIC FURNACE



MECH002

CLOSET FURNACE CLEARANCES

NOTE: EQUIPMENT MUST BE LISTED FOR ALCOVE OR CLOSET INSTALLATION

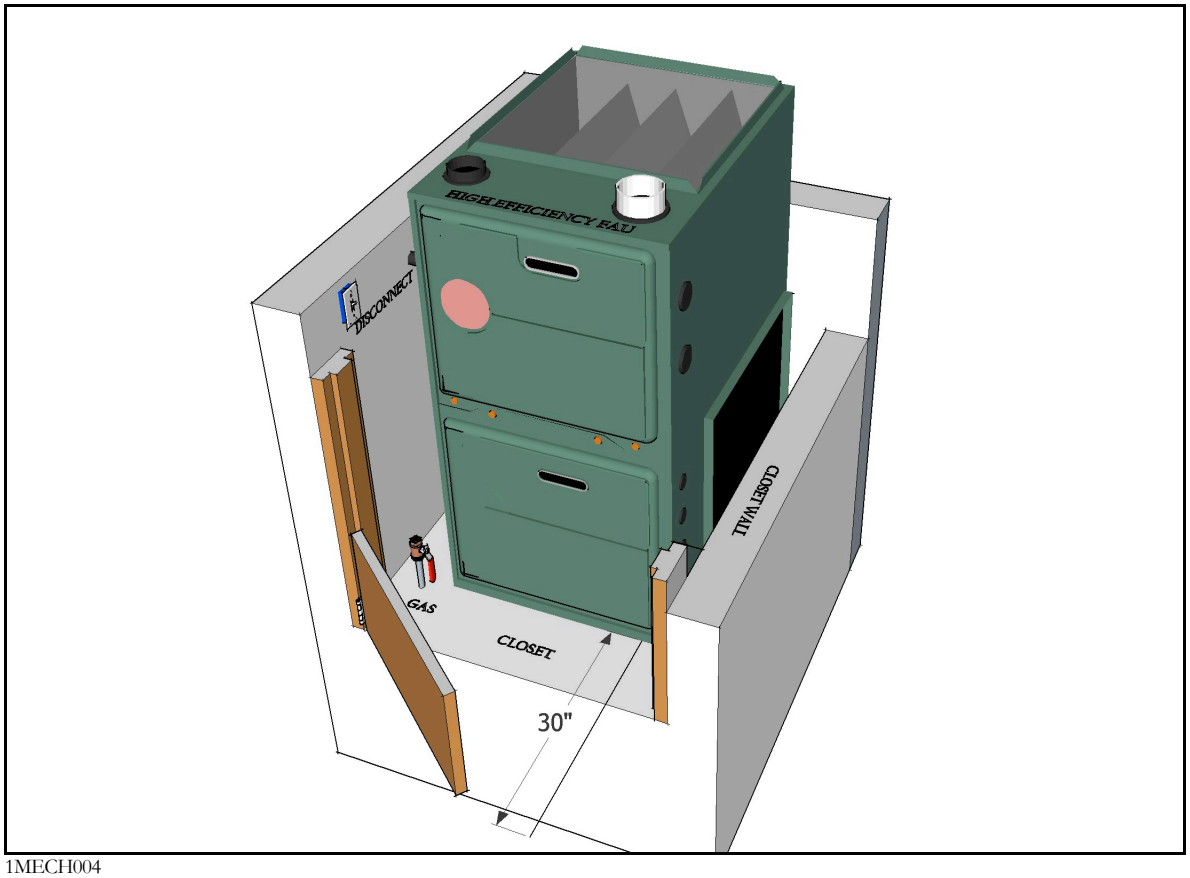


MECH003

CLOSET FURNACE CLEARANCES

NOTE: EQUIPMENT MUST BE LISTED FOR ALCOVE OR CLOSET INSTALLATION

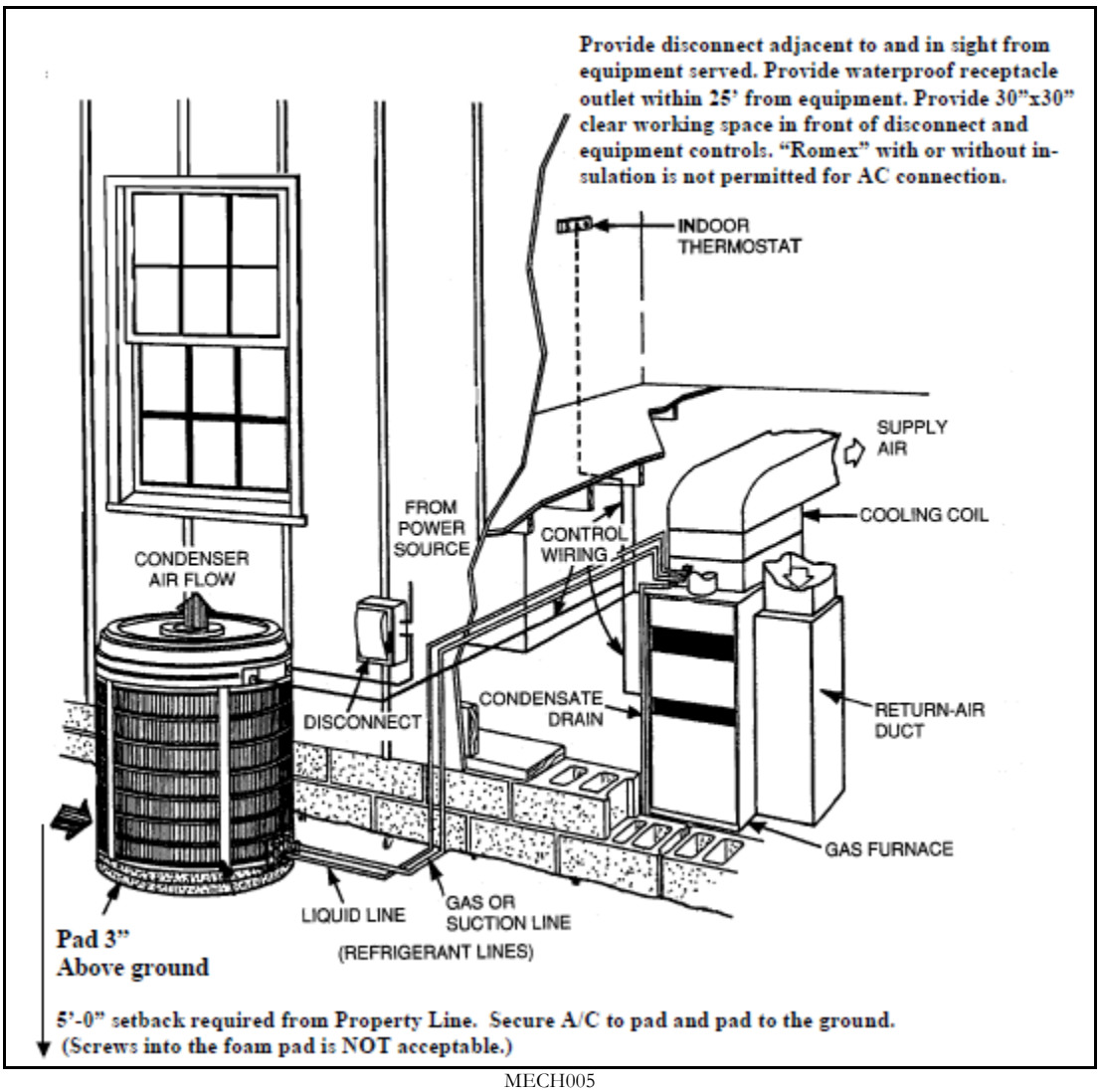
☐	Accessible secondary electrical disconnect rated for equipment load (no cords permitted)
☐	Accessible gas valve. Connector sized for equipment input rating
☐	Gasketed, self closing closet door must allow for removal of equipment CPC 505.1
☐	Side clearance per manufacturer's specifications and sufficiently sized for inspection repairs of vent connectors, duct and plenum seals, electrical connections, gas valves, flex connectors and any parts of the equipment that may require access. CMC 304.0
☐	30" minimum working space in front of equipment when door is open.



1MECH004

A/C SYSTEMS

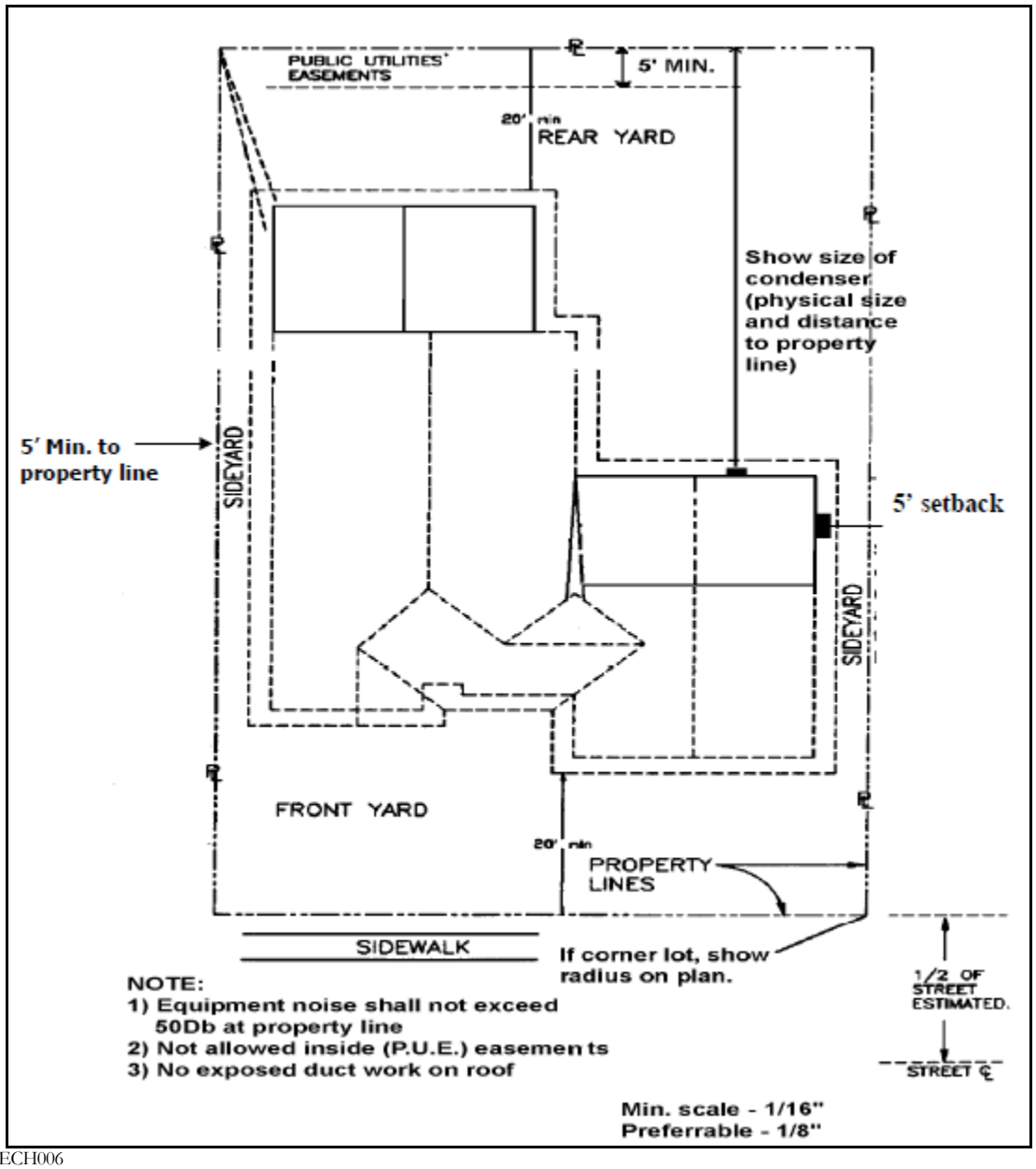
NOTE: A plot plan must be submitted showing the property lines and other buildings on the lot. Location of condensing unit, dimensions and distances from property lines.



MECH005

Typical "split system" air-conditioning system: upright gas furnace with integral cooling coil: condensing unit on the exterior of the building.

SAMPLE CONDENSER LOCATION PLOT PLAN



2MECH006

Chapter 16

OK TO COVER

This checklist contains many deficiencies commonly identified during inspections. It is not a comprehensive listing, nor is it a substitute for reading, understanding, and following the approved plans, adopted codes, and applicable regulations and ordinances.

Based on the 2010 Mechanical Code

INSULATION CHECKLIST

BASED ON THE 2008 BUILDING ENERGY EFFICIENCY STANDARDS MANUAL
Prior to this inspection, all required sequential inspections and correction notices must be completed.
This is not an all-inclusive list and additional items may be required as determined during the inspection.

In order for batt and blown in insulation to work correctly the insulation must fill the wall cavity and touch the air barrier with no gaps or voids. Ceiling and raised floor batt and blown in insulation must not be compressed and have no gaps or voids.

GENERAL	
☐	Permits and documents on site
☐	All previous inspections signed and approved
☐	Ladder provided and secured
FLOOR INSULATION	
☐	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☐	Insulation in full contact with the subfloor, *NO GAPS*.
☐	Insulation in contact with air barrier on all five sides. (ends, sides, back).
☐	Batts are cut to fit around wiring and plumbing.
☐	Batts have continuous support.
☐	Insulation R-value same or greater than listed on the CF-1R.
WALL INSULATION	
☐	Standard depth cavities insulation fills cavity and touches air barrier on all six sides.
☐	All double walls and bump-outs, the insulation fills the cavity or additional air barrier installed so that the insulation fills the cavity. Insulation touches all six sides.
☐	Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Cavity is required to be air tight.
☐	BATTS, not a single void/depression deeper than ¾" in ANY stud bay.
	NOTE: *Voids and depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay.*
☐	Foam insulate all penetrations at floor, floor to ceiling and ceiling to attic locations
☐	Any gaps between studs or insulation larger than 1/8" must be filled with insulation or foam.
☐	All Rim-joists to the outside insulated.
☐	Corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value.

☐	All skylight shafts and attic kneewalls insulated with minimum R-19. Insulation in full contact with drywall or wall finishes of skylight shafts and attic kneewalls.
☐	Wall insulation same or better than what is listed on the CF-1R
CEILING INSULATION	
☐	BATTS there must not be a single gap/void/depression deeper than ¾".
☐	Air space: Provide minimum 1" air space between insulation and roof sheathing CBC1203.2
☐	BATTS voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay.
☐	All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.
☐	Insulation in full contact with the ceiling, NO gaps.
☐	Insulation in contact with air barrier on all five sides.
☐	Batts cut to fit around wiring and plumbing, or split (delaminated).
☐	Batts taller than the trusses must expand so that they touch each other over the trusses. Insulation fully fills cavity below any plywood platform or cat-walk.
☐	Attic access gasketed.
☐	Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R
☐	Recessed light fixtures covered full depth with insulation. If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from ½-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☐	Roof insulation same or better than what is listed on the CF-1R
☐	Insulation installed at joists against the air barrier in the garage to house transition.
☐	All wall insulation requirements above must be met. (NA if conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES (no conditioned space over garage)	
☐	If insulation is to be installed at subfloor then the insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above must be met. (NA if no conditioned space over garage).
GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)	
☐	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met.
☐	If insulation is to be installed at ceiling of garage then the joists to the outside must be insulated and all the insulation requirements listed above must be met.
SLAB INSULATION	
☐	Verify slab-edge insulation R-Value.
☐	Verify below-grade wall insulation R-Value.
☐	Radiant heat slab, verify wall insulation and slab edge insulation, if required.
WINDOWS AND DOORS	
☐	All windows, skylights, and doors meet U-value per plans.
TUB TEST (fill tubs prior to inspection)	
☐	Tub test: Fill water above overflow.

CELULLOSE LOOSE-FILL INSULATION CHECKLIST

BASED ON THE 2010 CALIFORNIA ELECTRICAL CODE & 2008 RBEES MANUAL

Prior to this inspection, all required sequential inspections and correction notices must be completed.
This is not an all-inclusive list and additional items may be required as determined during the inspection.

☐	Permits and documents on site
☐	All previous inspections signed and approved
☐	Ladder provided and secured
☐	NO gaps or voids allowed for loose fill
☐	Attic access is gasketed
☐	Insulation fully fills cavity below any plywood platform or cat-walk
☐	Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fasteners.
☐	R-value same as ceiling R-value listed on CF-1R
☐	Recessed light fixtures covered full depth with insulation. (IC cans AT (air tight) and gasketed) If SPF used then other forms of insulation used to cover or enclosed in a box fabricated from ½-inch plywood, 18 ga. sheet metal, 1/4-inch hard board or drywall
☐	Roof insulation same or better than what is listed on the CF-1R
☐	Loose Fill Insulation at proper depth – insulation rulers visible and indicating proper depth and R-value for blown in insulation.
☐	Loose Fill Insulation uniformly covers the entire ceiling (or roof) area from outside of all exterior walls
☐	Loose-fill insulation meets or exceeds manufacturer's minimum weight and thickness requirements for the target R-value.
☐	Manufacturer's minimum required weight for the target R-value (pounds-per-square-foot). (HERS rater required for credit)
☐	Manufacturer's minimum required thickness at time of installation. (HERS rater required for credit)
☐	Manufacturer's minimum required settled thickness. (HERS rater required for credit)
	INSTALLATION OVER KNOB AND TUBE WIRING CEC ARTICLE 394
☐	*The wiring shall be surveyed by an electrical contractor licensed by the State of California. Certification shall be provided by the electrical contractor that the existing wiring is in good condition with no evidence of deterioration or improper over-current protection, and no improper connections or splices. Repairs, alterations, or extensions to the electrical system will require permits and inspections by the authority having jurisdiction for the enforcement of this code.*
☐	*The certification form shall be filed with the authority having jurisdiction for the enforcement of this code, and a copy furnished to the property owner.*
☐	*All accessible areas in the building where insulation has been installed around knob-and-tube wiring shall be posted by the insulation contractor with a notice, clearly visible, stating that caution is required when entering these areas. The notice shall be printed in both English and Spanish.*
☐	*The insulation shall be noncombustible as defined in Title 24,* A *Part* 2, *California Building Code.*
☐	*The insulation shall not have any electrical conductive material as part of or supporting the insulation material.*

DEPARTMENT OF PLANNING, BUILDING & NEIGHBORHOOD PRESERVATION

250 FRANK H. OWAGA PLAZA. SECOND FLOOR. OAKLAND CA. 94612

BASED ON THE 2010 CALIFORNIA RESIDENTIAL CODE

Prior to this inspection, all required sequential inspections and correction notices must be completed.
This is not an all-inclusive list and additional items may be required as determined during the inspection.

DRYWALL INSPECTION CHECKLIST

☐	Address to be posted, visible from road. CRC §R319
☐	Construction site is safe for inspection. Boards with nails and excessive debris removed. Ladders and scaffold properly secured.
☐	Best Management Practices (BMP) are in place for storm water control.
☐	Approved plans and permit card are on the job-site. CRC §R106.3.1 & 105.7
☐	Building gas piping test is under pressure not less than 15 lbs pressure for 10 minutes CPC §1214.3. 30 lbs gauge min.
☐	Gypsum products are not allowed in steam showers CRC §R702.4.2
☐	Green board no longer allowed in shower and tub compartments. CRC §R702.4.2
☐	Electrical boxes maximum setback ¼" from drywall face and no side gaps more than 1/8" to electrical outlet. CEC §314.20, 314.21
☐	Install ceiling drywall over edge of wall panel per gypsum association GA-21-2007

WET LOCATIONS

☐		Site built shower pans are filled to the top of dam for test. CPC §411.8.1
☐		Shower compartment min. 1024 sq. in. encompassing a 30" circle CPC §411.7
☐		The threshold/dam shall not be less than 2 inches and not more than 9 inches measured from the top of the drain. CPC §411.6
☐		Base for tile in shower and tub compartments: Cement, fiber-cement or glass mat gypsum backers shall be used as a base for wall and ceiling panels in shower and bathtub compartments and shall be installed per manufacturer's recommendations. CRC §R702.4.2
☐		Water resistant gypsum board (green board) shall not be used in the following locations: CRC §R702.3.8
	a)	In shower or bathtub compartments. Where there will be direct exposure to water or in areas subject to continuous high humidity.
	b)	On ceilings where frame spacing exceeds 12" on center for ½" wall board and more than 16" on center for 5/8" water-resistant drywall.

ATTACHED GARAGE R3-U PER OMC 15.04.602

☐		A group U private garage shall be separated from a dwelling unit and its attic area by not less than 5/8 type X gypsum wallboard or equivalent on the garage applied on the garage side. OMC 15.04.602.
	a)	Fasteners shall not be spaced less than 3/8" from edges and ends of wall board. Ducts penetrating occupancy separation rated wall to be 26 gage sheet metal CRC §R302.5.2

FASTENING TABLES CRC 702.3

Screw type and application table:

Type Screws	Application
Type G screws	For attaching gypsum to gypsum.
Type S screws	*For attaching gypsum to light gage steel framing. (Non-Load Bearing)
Type S-12 screws	For attaching gypsum to heavy gage steel framing. (Structural)
Type W screws	For attaching gypsum to wood framing.

* shall not be less than 25 gage steel

Fastener penetration: (wood) CRC table R702.3.5
Penetration shall be long enough to penetrate into wood framing members not less than:
Screws: 5/8" Nails: ¾"
Fastener penetration: (steel) CRC table R702.3.5
Screws into metal members not less than 3/8"
Fastener spacing table for single-layer gypsum wallboard: CRC table R702.3.5

GYPSUM WALLBOARD THICKNESS	DIRECTION OF FRAMING	MAXIMUM FRAMING MEMBER SPACING	MAXIMUM NAIL SPACING	MAXIMUM SCREW SPACING
½"	vertical	16	8	16
½"	horizontal	16	7	12
½"	vertical	24	7	12
½"	horizontal	24	8	12
5/8"	vertical	16	8	16
5/8"	horizontal	16	7	12
5/8"	vertical	24	8	12
5/8"	horizontal	24	8	12

DEPARTMENT OF PLANNING, BUILDING & NEIGHBORHOOD PRESERVATION

250 FRANK H. OWAGA PLAZA. SECOND FLOOR. OAKLAND CA. 94612

STUCCO LATH INSPECTION CHECKLIST

BASED ON THE 2010 CALIFORNIA RESIDENTIAL CODE

Prior to this inspection, all required sequential inspections and correction notices must be completed.
This is not an all-inclusive list and additional items may be required as determined during the inspection.

☐	1	Address to be posted, visible from road. CRC §R319
☐	2	Toilet facilities are on-site. OMC 15.04.070
☐	3	Construction site is safe for inspection. Boards with nails and excessive debris removed. Ladders and scaffold properly secured.
☐	4	Best Management Practices (BMP) are in place for storm-water control.
☐	5	Approved plans and permit card are on the job-site. CRC §R106.3.1 & R105.7
☐	6	All penetrations must be caulked/ waterproofed.
☐	7	Weep screed placed a minimum of 4" above the earth or 2" above paved areas or similar surfaces. CRC R703.6.2.1
☐	8	Weather resistive barrier includes two layers of grade "D" paper and is applied horizontally with the upper layer lapped over the lower layer no less than 2". Where vertical joints occur, paper is lapped not less than 6". CRC R7.3.3
☐	9	Lath attachments and fasteners shall be corrosion resistant materials. CRC R703.6.1
☐	10	Attachments shall be made at framing members. ASTM C926, C1063
☐	11	Metal or wire lath shall be applied with the long dimension of the sheets perpendicular to supports. ASTM C926, C1063
☐	12	Metal lath shall be lapped not less than 1/2" at sides and 1" at the ends. Wire lath shall be lapped not less than one mesh at sides and ends, but not less than 1". Overlap round corners 12".
☐	13	Fasteners to wood shall be spaced no less than 6" vertically and 16" horizontally. Staples 8" O.C. when used with self-furring lath only.
☐	14	Metal and wire lath shall be furred out away form vertical supports at least 1/4". Self-furring lath shall meet furring requirements. ASTM C926, C1063
☐	15	External corner reinforcement required. ASTM C926, C1063
☐	16	All flashings including foundation vents at building perimeter must be in place, having exterior lath over vent flange resulting in weather tight construction.
☐	17	All lath paper damaged or torn shall be replaced with new or sealed as required including being free from holes and breaks other than those created by fasteners.
☐	18	Control joints separate areas not greater than 144sqft (100sqft horizontal surfaces) ASTM C926, C1063

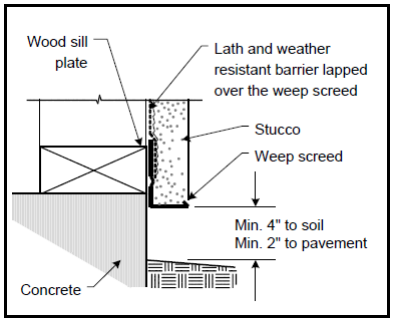


Figure 3

Chapter

17

FINAL INSPECTION

BASED ON THE 2010 CALIFORNIA RESIDENTIAL CODE
Prior to this inspection, all required sequential inspections and correction notices must be completed.
This is not an all-inclusive list and additional items may be required as determined during the inspection.

	GENERAL	
☐	Construction site is safe for inspection. All trash, debris are removed from site. If required, landscape work is complete per zoning.	
☐	Approved plans and permit card are on the job-site. CRC §R106.3.1 & 105.7	
☐	Building must have power for testing circuits and circuit tester.	
☐	Provide safe and adequate size ladder(s) for roof and attic inspection. Ladder shall extend a min. of 36" above roof edge and be full height to attic access scuttle.	
	PERMITS, PLANS AND DOCUMENTATION	
☐	All revisions submitted, approved and attached to plans & plan check fees paid.	
☐	Required sign-offs from other departments (Public Works, Planning, Engineering and Fire Department)	
☐	Fire Sprinklers final inspection completed by Fire Department.	
☐	Verify compliance with approved plans and required sequential inspections are signed off.	
☐	Provide original copies of correctly filled out CF-6R Installation Certificate forms for the field inspector at or prior to the final inspection.	
☐	Required Energy Efficiency Standards Compliance Forms (2008 EES):	
☐	a	Envelope-Insulation; Roofing; Fenestration CF-6R-ENV-01
☐	b	Residential Lighting CF-6R-LTG-01
☐	c	Domestic Hot Water (DHW) CF-6R-MECH-01
☐	d	Solar Domestic Hot Water Systems (SDHW) CF-6R-MECH-02
☐	e	Pool and Spa Heating Systems CF-6R-MECH-03
☐	f	Space Conditioning Systems, Ducts and Fans CF-6R-MECH-04
☐	g	Indoor Air Quality and Mechanical Ventilation CF-6R-MECH-05
☐	Provide completed HERS Certificates of Field Verification and Diagnostic Testing as required by the approved Title 24 Report or per the requirements outlined under the prescriptive methods in the 2008 Residential Compliance Manual.	
☐	Provide Pex / CPVC water piping certification that meet the flushing and tagging procedures listed in CPC §604	
☐	Collect required Special Inspection Final Reports	
	EXTERIOR	
☐	Address numbers shall be placed on house, plainly legible and visible from the street or road fronting the property, Numbers shall contrast with background. Numbers shall be Arabic numerals or alphabetical letters with a min. height of 4" and min. 1/2" stroke width and shall be contrasting with their background.	

	CRC §R319
☐	All exterior shall be complete and wood painted. CRC §R317
☐	All penetrations of exterior finish are to be sealed or properly screened for insects and weather protection including but not limited to electrical lines, cable, water and gas pipes, AC condenser lines. CRC §R703
☐	Backflow preventers or vacuum breakers shall be installed at hose bibs with the set screw tightened & broken off and pressure regulators. Vacuum breaker on irrigation system shall be 6" above highest head. CPC §603.2.3, 603.4.7
☐	Electrical outlets: Minimum of one accessible grade level GFI protected outlet in front and one in rear of the dwelling not more than 6 1/2' ft. above grade and shall be listed & gasketed. CEC §210.52 (E)
☐	Water pressure regulator required when water pressure exceeds 80 PSI. and shall be approved type with an adequate strainer. CPC §608.2
☐	Clean outs: install cleanouts within 2' feet of building and extended to grade with approved fittings. CPC §715.1 & 719
☐	Wood siding clearance between wood siding and earth shall not be less than 6" unless sheathing and wall framing are naturally durable or preservative-treated wood. CRC §R317 26. Exterior Stucco/plaster weep screed clearance shall be a min. of 4" above earth or 2" above paving. CRC §R703.6.2.1
☐	Lighting: All exterior lighting mounted to the building or to other buildings on the same lot shall be high efficacy luminaries OR shall be controlled by a photo control and motion sensor combination and shall be listed for damp or wet location. Caulked seal around light fixtures is required. CEC §210.70 A (2) (b) & Title 24 Energy code
☐	Receptacles in a wet location shall be GFCI and in an enclosure that is weatherproof whether or not the attachment plug cap is inserted.(Bubble cover) CEC §406.8
	SAFETY GLASS REQUIRED CRC §R308
☐	When edge of glass is less than 24" from door edge and less than 60" above ground.
☐	When glass is more than 9 sq. ft .and edge of glass is less than 18" above floor/ground and top edge is more than 36" above ground and within 36" of walking surfaces.
☐	When glass is within 60" of the waters edge at swimming pool, hot tub, or spa.
	VENT AND CHIMNEY TERMINATION
☐	Chimney(s) terminations must be 2' above any roof/structure within 10' and not less than 3' above the highest point were the chimney passes through the roof. See figure CRC §R1003.9
☐	Spark arrester shall be approved, screened, accessible and removable for cleaning. Architectural Shroud(s) are not allowed unless listed as part of the fireplace. CRC §R1003.9.1
☐	Dryer exhaust duct termination: Duct shall terminate independently to the outside and be equipped with an approved back-draft damper (no screens) shall be listed for roof (horizontal) or wall (vertical) termination. CMC §504.3
☐	Environmental air duct exhaust such as hoods, dryer and bathroom vents shall terminate a min. of 3' from property line and 3' from openings into a building. CMC §504.5
☐	Gas appliance vents 12" or smaller shall terminate a min. of 12" above any portion of a building within 10' horizontally when 6:12 or flatter, see CMC Figure 8-2 for other roof pitch requirements. Vents shall be at least 8' from a vertical wall. All other vents shall terminate a min. of 2' above the highest point where they pass. Exception: Direct-Vent CMC §802.6.2, 802.8.1
☐	Waste vents shall terminate vertically not less than 6" above roof, nor Less than 1' from any vertical surface and 10' from or 3' above any opening such as windows, doors, air intake, nor less than 3' from any lot line. Side wall vent may not terminate under a vented soffit. CPC §906.1

	ROOF
☐	All roofing materials have been properly installed per manufactures specifications, including step-flashings, counter flashings, and "crickets or splitters" behind chimneys as required. CRC Chapter 9
☐	Provide leaf guards at gutters as per CRC §R327
☐	Paint all ABS/Plastic vent pipes. IAPMO Installation standards section CPC §313.3
	FLAT ROOF/BALCONY DRAINS
☐	Primary drain(s) shall be properly sized per CPC Table 11-1
☐	Secondary drain(s) shall be the same size as the primary drain with the inlet flow line 2" above the low point of the roof and shall be an independent system OR overflow scupper(s) shall be installed with the inlet flow line located 2" above the low point of the roof and the scupper opening a min. of 4" high and have a width equal to the circumference of the primary drain. Overflow drains shall not be connected to the primary drain. CPC §1101.11.2.1, 2
☐	Min. ¼" per foot slope to drain
☐	Strainer(s) for flat deck primary drain(s) shall be level with the deck with the inlet area not less than 2 times the area of the drain pipe. CPC §1105.3
☐	Strainer(s) for all flat roof secondary drain(s) shall be a min. of 4" above with the inlet area not less than 1-1/2 times the size of the inlet pipe. CPC §1105.2
	GRADING AND DRAINAGE
☐	Site Grading and Drainage per approved plan. Drainage away from foundation shall be a min. slope of 5% for 10'. CRC §R401.3
	VENTILATION
☐	Indoor Air Quality and Mechanical Ventilation for all new dwellings and additions larger than 1,000sq.ft. All bathrooms require a minimum 50cfm 3-sone. Kitchen requires minimum 100cfm. 3-Sone. 2008 California Energy Code Chapter 4
☐	Roof/Attic: Min. net free ventilation 1/150 sq. ft. of area with 50% at upper portion a min. of 3' above eave or cornices vents and the balance ventilation provided by eave or cornice vents. Openings to attics shall be covered with corrosion-resistant wire mesh were mesh openings are a min. of 1/16" not to exceed 1/8". CRC §R327 & 806
☐	Under-floor: Min. net free ventilation 1/150 sq. ft. of area and placed to provide cross ventilation of under-floor space. Openings shall be covered with corrosion-resistant wire mesh with mesh openings not exceeding 1/8" openings. CRC §R327 & 408
	EXTERIOR GAS PIPING
☐	Gas pipe passing through outside wall is protected against corrosion by coating, wrapping or sleeve, caulk around sleeve. CPC §1211.2 and 1211.1.5
☐	Gas meters, valves, and equipment are protected from damage.
	GARAGE
☐	Receptacle outlet: A minimum of one receptacle outlet is required in garages with electrical power. CEC §210.52 (G)
☐	GFCI protection at all electrical receptacles. CEC §210.52
☐	Exposed electrical cable within 8' from the floor shall be protected with rigid metal conduit electrical metallic tubing, or schedule 80 PVC rigid nonmetallic conduit or other approved means. CEC §334.15 & 320.23 OMC 15.04.740, 15.04.745
☐	Gas appliances shall be protected from vehicular traffic with bollards (i.e. gas water heater, furnace, dryer) CPC §508.14 & CMC 307
☐	Attached and detached garage shall have at least (1) switch controlled light. Lighting shall be high

	efficacy OR occupant sensor CEC §210.70 (1) and Energy Code 150.K.10
☐	No openings are allowed between garage and sleeping rooms. CRC §R302
☐	Door between house and garage to be 1-3/8" solid or honeycomb-core steel or labeled as a 20-minute door with self-closing and self latching mechanism. CRC §R302
	ELECTRICAL
☐	Circuit breakers to match manufacture of panel requirements.
☐	Verify listed breakers. CEC §110
☐	Oxide inhibitor applied to aluminum conductor terminations in lugs/breakers. CEC §110.14
☐	No double lugging allowed unless specifically approved. CEC §110.14
☐	Verify wire size complies with CEC §310 & table 310.15 (b)
☐	Main panel grounds and neutrals shall be on the same bus bar, or if on separate bus bars, the bus bars must be connected by a bonding jumper the same size as GEC. CEC §250.142
☐	Sub panel grounds and neutrals shall be on a separate bus bar CEC §250.6
☐	Unused K/O and openings shall be sealed with listed plugs CEC §110.12
☐	Provide proper phasing for multi wire branch circuits.
☐	Panels with more than 6 disconnects req. main breaker unless specifically approved. CEC §230.71 & 250.32
☐	Panel boards at separate structures require a main disconnect and grounding electrode CEC §250.32
☐	Dedicated circuit for furnace CEC §422.12
☐	Dedicated circuit for (built- in) microwave
☐	Dedicated circuit for heated Hydro-Massage bathtub motors.
☐	Min. (2) 20 amp small appliance circuits @ kitchen & dining, pantry & breakfast areas CEC §210.11
☐	Min. (1) 20 amp circuit for laundry receptacle CEC §210.11
☐	Min. (1) 20 amp circuit for bathrooms receptacles CEC §210.11
☐	Bedrooms, Family Rooms, Dining Rooms, Living Rooms, Parlors, Libraries, Dens, Sunrooms, Recreation Rooms, Closets, Hallways or similar rooms or areas. Lighting, receptacle outlets and smoke/CO detector circuits shall be protected with a Combination type AFCI and shall be independently identified/labeled as such. CEC §210.12
☐	Verify labeling of circuits for main and Sub-panel. CEC §110.22
☐	Handle tie at garbage disposal and dishwasher for single yoke CEC §210.4
☐	Grounding electrode and GEC per CEC-table §250.66 & articles 250.64, 250.70.
☐	Supplemental ground to water gas metal piping service Table §250.66
☐	Main disconnect 6'-7" from top of handle to floor/grade and location is readily accessible clearance of 36" deep x 30" wide x 78" in height. CEC §404.8, 230.70
☐	Overcurrent devices shall be readily accessible. CEC § 240-24
☐	Internal parts/equipment shall not be damaged and free of contaminates. CEC §110.12
☐	Electrical panel shall be clean of debris.
	GUARDS AND HANDRAILS
☐	Guards are required along open-sided walking surfaces 30" above grade/floor. CRC §R312
☐	Guard height: Guards shall not be less than 42" high measured vertically above the leading edge of the tread except when stair handrail is the guard then min. height 34" and max. height 38". CRC §R312
☐	Hand rails shall have a height of not be less than 34" and not more than 38". CRC §R311
☐	Load: Handrail assemblies and guards shall resist a single concentrated load of 200 pounds. CRC Table R301.5

☐	Graspability: circular handrail shall be Min. 1-1/4" Max. 2" diameter. Non-circular handrails must have a perimeter of 4" min. and 6-1/4" max. with a max. cross dimension of 2-1/4". CRC §R311
☐	Handrails are required on one side with four or more risers. CRC §R311
☐	Clear space between hand rail and wall a min. of 1-1/2". CRC §R311
☐	Projection: Handrail projection into stairway a max. of 4-1/2". CRC §R311
☐	Openings: guards shall not allow a 4" sphere to pass through. CRC §R312
☐	Openings: guard rails on the side of stair treads shall not allow a 4-3/8" sphere to pass through and the triangular opening at bottom of tread & riser shall not allow a 6" sphere to pass through. CRC §R312
	STAIRWAYS
☐	Width: Stairway width shall not be less than 36" CRC §R311
☐	Headroom: Min. 6'-8" (Spiral 6'-6") CRC §R311
☐	Treads and risers: Maximum riser height shall be 7-3/4" and a minimum of 4" Minimum tread depth shall be 10" with a min. ¾" nosing or 11" depth. CRC §R311
☐	Nosing: max. radius of curvature or beveling of nosing ½". Risers shall be solid and require nosing min. 3/4" max. 1-1/4" except when tread depth is 11" nosing is not required. CRC §R311
☐	Dimensional uniformity at stairs shall be determined from landing to landing from the tallest riser not more than 3/8" to the shortest riser and greatest tread depth not more than 3/8" more than the smallest. CRC §R311
☐	Winders: Min. 6" tread depth at inner edge and min. 10" tread depth within 12" of inner edge. CRC §R311
☐	Doors are permitted to open at the top step of an interior flight of stairs, provide the door does not wing over the top. CRC §R311
☐	Stairway landing there shall be a landing at the top and bottom of each stairway. The width of landings shall not be less than the width of the stairway they serve. Every landing shall have a stairway dimension measured in the direction of travel with a min. 36" CRC §R311
☐	Vertical rise: Max. 12' between floor levels or landings. CRC §R311
☐	Lighting is required on tread runs not less than 1 foot-candle. Were one or more lights are installed for stairway provide a wall switch at each floor level and landing level that includes an entry (fluorescent or push button control occupant sensor) CRC §R303.6
☐	Safety glass required in walls enclosing stairway landings or within 5' of the bottom and 3'from the nose of the top of the stairway where the bottom edge of the glass is less than 60" above a walking surface. CRC §R308
	EXTERIOR STAIRWAY LOCATIONS
☐	Outdoor stairways and landings shall be designed to shed water. CRC §R311
☐	Lighting is required at all landings at exit doors and tread runs at stairways. (photo control / sensor combination) CRC §R303 Shielded 1" below the bulb. (no flood lighting) OAK
	THRESHOLD CLEARANCE TO LANDING
☐	Door swings out over landing: Max. threshold height above exterior landing 1½" CRC §R311
☐	Door swings in or slider: Max. threshold height above exterior landing 7¾" CRC §R311
	LANDINGS
☐	Exterior landings at doors: The width shall not be less than the width of the stairway or door, whichever is greater. Landing length in direction of travel shall be a min. of 36". Out door stairways and landings shall be designed to shed water a min ¼" per foot away from house. CRC §R311.3
☐	Landings at exterior doorways shall not be more than 7.75" below the top of the threshold, provided the door does not swing over the landing. CRC §R311.3.1
☐	Landings for other than the required egress door are not required where a stairway of two or fewer risers

	is located on the exterior side of the door, provided the door does not swing over the stairway. CRC §R311.3.2
	INTERIOR
☐	Ceiling height in all habitable spaces shall be no less than 7'. CRC §R305
☐	All receptacles and switches shall be complete with plates.
	UNDER-FLOOR CRAWL SPACE
☐	Under floor foundation access crawl hole openings min. 18"x24" (pipes, ducts and other nonstructural construction shall not interfere with the accessibility to or within under-floor areas.) CRC §R408
☐	Remove all debris from crawl space. CRC §R408
☐	Verify that all under-floor vents are clear (not blocked.) CRC §408
	KITCHEN
☐	Ceiling height shall be min. 7' in kitchen CRC §R305
☐	Listed air-gaps shall be provided for dishwasher on discharge side and be mounted on counter top. CPC §807.4
☐	Check that sink cleanout is accessible.
☐	All receptacles serving the countertop shall be GFCI protected CEC §210.8
☐	Wall counter top receptacles shall be spaced max. 48" on center and within 24" from edge of the sink and counters. CEC §210.52 (1)
☐	Counter tops 12" or more in width require a receptacle outlet. CEC §210.52 (C) (1)
☐	Islands and peninsulas shall be provided with a min. of (1) receptacle. CEC §210.52 (C)(1),(2)and(3)
☐	Outlets shall not be mounted over 20" above counter top nor more than 12" below counter. CEC §210.52 (C) (5)
☐	Provisions for range must be present either as a capped off gas line or a 220 volt outlet installed in wall. If stove is to be wired directly, it shall be hooked up for inspection.
☐	Kitchen range clearance to combustibles shall have a vertical clearance of 30" unless protected by ¼" insulating millboard or metal hood, then the clearance can be reduced to 24". Gas range must have approved anti-tip installed. CMC §916.1. B. 1&2.
☐	Range hood exhaust duct shall terminate outside, shall have a 3' clearance to windows and doors and other openings, shall be air tight and be equipped with a back draft damper. Ducting shall be galvanized steel, stainless steel, or copper, with a smooth interior finish. CMC §504.2 If the hood vent is used for indoor air quality, mechanical ventilation, required by 2008 CEC 150(o), it shall comply with section 4.6 of the Res. Manual.
☐	Shut-off valve shall be accessible rigid piping upstream from the flexible connector and within 6' of the gas appliance. CPC §1212.5
☐	Gas appliance connectors shall not extend from one room to another, through any wall, floor, partition or appliance housing. Verify that connector is the properly sized and listed for the appliance it serves. (See BTU rating on connector tag.) CPC §1212.1
☐	Junction boxes shall be accessible and have working clearance.
☐	Kitchen lighting shall be all high efficacy OR 50% of total wattage may be low efficacy, all low efficacy and high efficacy lighting shall be switched/controlled separately. Recessed can lights shall be IC and AT Rated. 2008 EES
	WET BARS
☐	GFCI protection required for receptacles located within 6' of wet bar sink edge. CEC §210.8 (A)(7)
	BEDROOMS
☐	Smoke alarms shall be interconnected, hardwired with battery backup, are required on ceiling or wall at

	each floor level, in each bedroom and outside each sleeping area. CRC §R314	
☐	Carbon Monoxide Alarms shall be installed in dwellings with fuel burning appliances and with attached garages. Detectors shall be interconnected. Detectors shall be installed in each sleeping room and outside each sleeping room area and every floor level including basements, multiple purpose smoke and carbon monoxide alarms are acceptable. CRC §R315	
☐	Bedrooms, Basements, and Habitable attics window egress min. clear height 24", min. clear width 20", min. 5.7 sq. ft. open able area except at grade floor may be 5.0 sq. ft. Max. net opening height 44" clear space to floor. CRC §R310	
☐	Switched Lighting shall be high efficacy (fluorescent OR occupant sensor OR dimmer). Closets that are less than 70 sq. ft. are exempt from this requirement. 2008 EES	
☐	Closet light clearances: Surface incandescent lights shall be fully enclosed and a min. of 12" clearance from storage/shelf area. Fluorescent lights shall be a min. 6" from storage/shelf. Recessed lights in wall or ceiling shall be a min. 6" from storage area. CEC §410.6 (D) (1) (2) (3) (4)	
☐	Switched lighting shall be high efficacy (fluorescent, occupancy sensor or dimmer)	
☐	The minimum ceiling height in a hallway is 7'. CRC §R305	
☐	The minimum width of the hallway 36" CRC §R311	
☐	Smoke alarms are required on ceiling or wall outside of each separate sleeping room in the immediate vicinity of the bedrooms. (min. 3' clearance from any air supply or per manufacture instructions) CRC §R314	
☐	Carbon Monoxide Alarms shall be installed in dwellings with fuel burning appliances and with attached garages. Detectors shall be interconnected. Detectors shall be installed in each sleeping room and outside each sleeping room area and every floor level including casements, multiple purpose smoke and carbon monoxide alarms are acceptable. CRC §R315	
☐	Hallways 10' or more in length require min. (1) electric receptacle. CEC §210.52(H) Min. of (1) switch controlled light in hallway. (dimmers or fluorescent) CEC §210.70(2)	
	LAUNDRY ROOMS	
☐	Switched lighting shall be high efficacy (fluorescent OR occupant sensor).	
☐	The minimum ceiling height in a laundry room is 7 feet. CRC §R305	
☐	Electric dryer requires 3-wire with ground (4 prong outlet). CEC §250.114	
☐	GFCI protection required for receptacles located within 6' of laundry sink edge. CEC §210.8 (A)(7)	
☐	Shut-off valve shall be accessible rigid piping upstream from the flexible connector and within 6' of the gas appliance. CPC §1212.5	
☐	Gas appliance connectors shall not extend from one room to another, through any wall, floor, partition or appliance housing. Verify that connector is the properly sized and listed for the appliance it serves. (See BTU rating on connector tag.) CPC §1212.1	
☐	Flexible transition ducts: Shall be listed and approved, not more than 6' long and shall not be concealed within construction. CMC §504.3.2.1	
☐	Dryer duct min. 4" dia. 26 gage metal, smooth interior (no screws), max. 14' long including (2) 90 degree elbows and shall terminate to the outside with a back draft damper. CMC §504.3	
OMC 15.04.640 The ventilation for a domestic clothes washer and/or dryer located in a closet in a dwelling unit may also comply with the following		
☐	1	Louvers shall be provided on doors to a closet containing a washer and/or dryer.
☐	2	Natural ventilation shall be not less than one twentieth of the total floor area, with a minimum of 1½ square feet. Mechanical ventilation of five air exchanges per hour may be used alternatively

☐	3	A dryer vent installed in accordance with the California Mechanical Code is necessary but is not considered as providing any ventilation required by this section.
	BATHROOMS	
☐	The minimum ceiling height in a bathroom is 7' feet. CRC §R305	
☐	All hardwired lighting shall be high efficacy OR controlled by a MANUAL-ON motion sensor. CES section 150(K)	
☐	Hanging light fixtures: are not allowed within 3' horizontal and 8' vertical from tub and shower. CEC §410.10	
☐	Bath room receptacles are to be supplied by at least one 20 amp circuit with no other outlets. Exception, if 20 amp circuit supplies only one bath room, other outlets within the same bath room are allowed on that circuit. CEC §210-11 (C) (3)	
☐	Light fixtures in shower shall suitable for damp locations CEC §410.10	
☐	GFCI protection shall be provided for all outlets in bathrooms, with at least one outlet 36" inches of the outside edge of each basin. CEC §210-8(a) (1) & 210-52 (d)	
☐	Hydromassage bathtubs motors shall be accessible, on a dedicated circuit with their own GFCI circuit and bonded with min. 8 AWG copper wire. CEC §680.72 and 74, CPC §414.1.	
☐	Water closet spaces shall be at least 30 inches wide; 15" min. from wall to center of W/C with at least 24 inches clear in front of the W/C. CPC §407.5	
☐	Water closet base caulked at floor. All new water closets shall be 1.6 gallon per flush maximum CPC §407.2	
☐	Safety glazing at all windows less than 60" above bottom of tub & shower floor and at tub and shower enclosures panels & door (check for bug) CRC §R308	
☐	Shower door or rod shall be installed.	
☐	Shower enclosure doors shall maintain an unobstructed opening of 22" clearance for egress CPC §411.6	
☐	Shower compartment min. 1024 sq. in. encompassing a 30" circle CPC §411.7	
☐	Bathrooms install mechanical ventilation that shall terminate outside and be equipped with a back draft damper. CRC §R303	
	OTHER WINDOWS CRC 612	
☐	Operable windows 72" inches or more above exterior grade must be at least 24" above the finished interior floor OR no opening to window that would allow 4" sphere OR install window guards complying with ASTM F 2006 OR F 2090. CRC §R612	
	WOOD FIRE PLACE (NO NEW ALLOWED, ONLY REPAIRS PER OMC 8.19.010**)**	
☐	Verify metal damper is located a min. of 8" above the top of the fireplace opening or at the top of the fire place opening and is operable from the room containing the fireplace. Damper controls are allowed in the fireplace. CRC §R1001	
☐	If the fireplace opening is less than 6 sq. ft, the hearth shall extend a min. of 16" from the front, and min. 8" beyond each side of the fireplace opening. If the opening exceeds 6 sq. ft, the hearth shall extend a min. of 20" from the front and 12" beyond sides. CRC Table 1001.11	
☐	Combustible materials, such as a wood mantel, shall have a min. 6" clearance from fire place opening and shall not project more than 1/8" for each 1" distance above opening.(Example: you may have a ¾" projection when 6" away from opening). CRC §R1001.11	
☐	Maintain a clearance to combustibles of 2" from masonry on front and sides and 4" on back. The air space shall not be filled. CRC §R1001. Trim, drywall, and sheathing edges are permitted to abut masonry provided they are 12" min. from inside surface of nearest firebox opening. CRC §R1001.11	
☐	Glass doors and screen shall be permanently attached to fireplace opening. CMC §907.3	

	GAS FIREPLACES
☐	Shut-off valve shall be accessible rigid piping upstream from the flexible connector and within 6' of the gas appliance CPC §1212.5
☐	Gas appliance connectors shall be used in accordance with the terms of their listing, shall not extend from one room to another, through any wall, floor, partition or appliance housing. Verify that connector is properly sized and listed for the appliance it serves. (See BTU rating on connector tag.) CPC §1212.1
☐	Glass doors shall be permanently attached to fireplace opening. CMC §907.3 Title 24 150 E 1 A Exception in line flue controller installed per CEC
	GARAGE
☐	GFCI protection is required at all receptacles in garages and unfinished basements. NOTE: Receptacles that are not readily accessible and for appliances not easily moved such as clothes washer, freezer, sump pump are exempt. CEC §210.8 (A)
☐	Attic access required in unoccupied spaces where the clear height is over 30". The access opening shall be a min. 20"x30". CRC §R807
	WATER HEATER
☐	R-4 Insulation first 5' hot and cold water pipe. 2008 EES 150(J) If a recirculation pump is installed the entire hot water system must be insulated. Exception: piping located in the attic that is continuously buried by at least 4" of insulation
☐	Shut-off valve shall be accessible, installed in rigid piping upstream from the flexible connector and within 6' of the gas appliance. CPC §1212.5
☐	Gas appliance connectors shall not extend from one room to another, through any wall, floor, partition or appliance housing. Verify that connector is the properly sized and listed for the appliance it serves. (See BTU rating on connector tag.) CPC §1212.1
☐	Gas water heater located in garage shall be elevated 18" above floor unless listed as flammable vapor ignition resistant. CPC §508.14 (2), [NFPA 54:9.1.10.1]
☐	Seismic strapping within upper 1/3 and lower 1/3 and min. 4" above controls. CPC §508.2
☐	Full-port shut off valve installed on the cold water supply pipe of the water heater CPC §605.2
☐	Combustion air: See "Water Heater" under illustrations in the index for acceptable methods for combustion air and venting. CPC §507, CMC §701
☐	Type B (double wall) vent may pass through floors and ceilings with a min. 1" clearance to combustibles or per manufacture listing. Type B vent shall terminate a min. 5' above water heater draft hood. Secure joints with min. 3 screws. CPC §510.6
☐	Single wall metal pipe vents no longer allowed CPC §510.7.4
☐	Water heater shall be protected from vehicular traffic (install bollard) CPC §508.14.2
☐	Water heater located at wood floor or attic shall be protected with watertight pan with ¾" drain to approved location. (i.e. attic, floor-ceiling, platform) CPC §508.4
☐	Water heater installed in a closet located in a bedroom or bathroom shall have a listed, gasketed door assembly and a listed self-closing device with no hold open mechanism. The door assembly shall be installed with a threshold and bottom door seal. All combustion air shall be obtained from the outdoors. CPC §505.1, 505.1.2, 507.4 Attic water heater CPC §509.4 (same access, lighting & receptacle as attic furnace)
☐	Temperature and pressure relief valve (TPRV) shall terminate to the outside or other approved location with ¾" discharge pipe pointing down, terminating a min. 6" and max. 24" above grade. Pressure relief valve piping to be hard drawn copper or galvanized steel or CPVC. PVC shall not be used, and drain is (not allowed to drain into water heater pan). CPC §505.4, 508.5 & 608.5

	TANKLESS WATER HEATER (Additional requirements)
☐	Tankless water heater shall be installed per manufacturer's installation instructions. Requires ¾" dedicated gas line (no other appliances on branch) (Manual shall be available for inspector during inspection). Gas calculations required.
☐	NOTE: waive calculations if a 3/4"' dedicated line is connected (split) at the main by up-sizing the meter tee. (up-seized tee example: install 1"x3/4"x3/4" tee for existing 3/4" building service) OAK
☐	Tankless water heater shall be independently vented with a category III (Stainless steel) venting system. Verify clearances to combustibles.
☐	Tankless water heater installed outside shall be listed for outside/exterior location.
	FURNACE GENERAL REQUIREMENTS
☐	Manufacturer's installation and operating instructions: The appliance installer shall leave the manufacturer's installation and operating instructions attached to the appliance. CMC §304.1
☐	Required clearances from combustibles. CMC §903.3 & 904.2
☐	Condensate sediment trap/drip leg shall be installed in such locations so that it will be readily accessible to permit cleaning or emptying. The sediment trap shall be either a tee fitting with a capped nipple in the bottom outlet or other device recognized as an effective sediment trap. CPC 1211.7 & 1212.7
☐	Combustion air: See "Water heater & Furnace" under illustrations in the index for approved methods of obtaining combustion air. Direct vent appliances are exempt from the provisions of Chapter 7 in the CMC and shall be installed per the appliance listing. CMC §701.1
☐	Gas shutoff valve: CPC §1212.5 Shall be in an accessible location and within 6' from the furnace. Connected to rigid piping upstream from the flexible connection in the same room as the furnace.
☐	Disconnect shall be adjacent to and within sight of furnace. CMC §308
☐	Dedicated circuit shall be provided for furnace CEC §422.12
☐	Access: Furnace shall be accessible for inspection, service, repair, and replacement without removing permanent construction. CMC §304
☐	Anchorage: Furnace shall be securely fastened in place to sustain vertical and horizontal loads. CMC §304.4
	FURNACE IN BEDROOM OR BATHROOM CLOSET CMC §904.1 (1) and (2)
☐	Closet shall be equipped with a listed, gasketed door assembly.
☐	Listed self closing device. (HOLD-OPEN FEATURE IS NOT ALLOWED)
☐	The door assembly shall be installed with a threshold and bottom door seal.
☐	All combustion air shall be obtained from the outdoors.
☐	The closet shall be used for exclusive use of the furnace (NOT FOR STORAGE)
☐	Exception: Furnace that are direct vent type.
	FURNACE IN ATTIC
☐	Attic access min. 22"x30"net clear opening. (appliance must fit through opening). CMC §904.11.1
☐	Electrical wiring shall be protected within 6' of attic access scuttle opening. CEC §320.23
☐	Passageway Min. 24" wide, unobstructed, solid flooring. CMC §904.11.3
☐	Max. 20' from access to appliance if passageway is less than 6' high. CMC §904.11.2
☐	Min. 30"x30" level working platform at front or service side of unit. CMC §904.11.4
☐	Light and receptacle outlet required. Timer type light switch shall be located at attic entry and receptacle outlet within 25' of furnace. CMC §904.11.5
☐	Properly support and secure unit. CMC §304.4
	FURNACE UNDERFLOOR
☐	Crawl space access opening in foundation min. 18"x24", or sized to provide removal of the largest piece

	of equipment to be removed from the opening. CRC §R408.4 & CMC §912.8
☐	Suspend from floor a Min. 6" above ground OR support on slab a min. of 3" above grade. CMC §932
☐	Min. 12" side clearance, and min. 18" clearance on control side of unit. CMC §904.3.1
☐	Where excavation exceeds 12" in depth or water seepage is likely to collect, a water tight copper pan or concrete pit 4" above grade is required, unless adequate drainage is provided. CMC §912.9
☐	Secure unit in place. CMC §304.4
☐	Light and receptacle outlet required near appliance. CMC §904.11
	FURNACE IN GARAGE
☐	Ignition min. 18" above floor. CMC §307.1
☐	Protection from moving vehicles. (install bollard(s) CMC §307.1
☐	Gas burning appliance venting shall comply with CMC §802.6 See "Gas Appliance Venting" under illustrations in index.
☐	High efficiency gas appliance: Vent termination per manufacture instructions.
	A/C COMPRESSOR
☐	A/C compressors shall be indicated and located per approved site plan.
☐	Disconnect shall be readily accessible and not more than 6'-7" above grade. (do not install disconnect behind unit.) CEC §440.14
☐	Identification of equipment: For more than one unit permanent identification on A/C unit disconnect. CMC §304.5
☐	Secure A/C unit to platform. CMC §303.6
☐	Verify that circuit breaker &/or fuse are sized per name plate. CEC §440.4 (B)
☐	Verify that an accessible electrical receptacle is installed at the same level and within 25' of the A/C unit. The outlet shall not be connected to the load side of the A/C disconnect. CEC §210.63
☐	Not within 5' from any property line. Verify approved location by zoning.
	BASEMENT
☐	Habitable basements shall have a min. of one exterior emergency escape and rescue opening. CRC §R310.1
☐	Egress opening shall not be less than 5.7 sq. ft. with a min. net height of 24" and net width of 20" and not more than 44" from floor to the bottom of clear opening (ladder req'd. if window well over 44" below grade. CRC §R310
☐	Window well egress: Window wells shall have a min. horizontal area of 9 sq. ft. with a min. dimension of 36". Window well with a vertical depth of more than 44" shall be equipped with an approved permanently affixed steps OR ladder that does not project more than 6" into a 36" egress area, Verify proper guardrails, ladders and drainage. CRC §R310
☐	Electrical outlets in unfinished basements require GFCI protection. CEC §210.8
	EJECTOR PUMP
☐	Approval for installation required on plan. OAK
☐	Each ejector or pump shall have a minimum 2" accessible approved swing check or backwater valve and full way Gate or ball valve. CPC §710.3.2
☐	Sump tank shall have a bolt-and-gasketed cover. CPC §710.10
☐	Ejector vent shall be run separately through roof, vent size per table 7-3 but never smaller than 1-1/2". CPC §710.10
☐	Ejector pump and valves shall be accessible for maintenance and replacement. Provide electrical outlet and lighting at or near the pump.
☐	Receptacle outlet shall not be located in pit. Install receptacle min. 12" above floor level.

Chapter

18

OAK GREEN

As of 2013 if a project involves:

- Completely new residential or commercial construction;
- 1,000 sf of addition or alteration work to a single family home or duplex, or
- more than 25,000 sf of addition or alteration to a commercial building,

then the project applicant must retain a green building certifier. For residential projects the applicant must hire a Green Point Rater but for commercial projects a LEED AP is required.

Furthermore, the project must be certified as a green building through Build it Green for residential projects or USGBC for LEED projects.

CITY OF OAKLAND
BUILDING SERVICES

2010 CalGreen Building Standard Code (CGC)
Residential Checklist

PLEASE NOTE:

If your residential project involves:

- ✓ Completely new residential construction or
- ✓ 1,000 sf of addition or alteration work to a single family home or duplex,

then the project applicant must retain a Green Building Certifier. For residential projects, the applicant must hire a GreenPoint Rater.

Furthermore, the project must be certified as a green building through **Build it Green** for residential projects.

For more information, visit:

The City of Oakland's Green Building Website
http://www2.oaklandnet.com/Government/o/PBN/OurServices/GreenBuilding/index.htm

CITY OF OAKLAND
BUILDING SERVICES

2010 CalGreen Building Standard Code (CGC) Residential Checklist

Building Permit No. _____

Address_____

MANDATORY MEASURES SPECIFIED *(Please Check Box Below)*

FEATURE OR MEASURE	YES
Site Development	
A plan has been developed and will be implemented to manage storm water drainage during construction per CGC 4.106.2 & 4.106.3	☐
Water Efficiency & Conservation	
Indoor water use will be reduced by at least 20% using one of the following methods per CGC 4.303.1	☐
(A) Water saving fixtures for flow restrictors are used and listing on plan per CGC Table 4.303.2	☐
(B) A 20% reduction in baseline water used has been calculated in accordance to "Baseline Water Use" worksheet. (Attached worksheet)	☐
Water closet(s), faucet(s) and showerhead(s) have all required standards listed on plans and are in accordance to CGC Table 4.303.3	☐
Automatic irrigation system controller, if provided, will be weather based per CGC 4.304.1	☐
Enhanced Durability & Reduced Maintenance	
Annular spaces around pipes, electric cables, conduits or other openings in plates at exterior walls will be rodent-proofed by closing such openings with cement mortar, or concrete masonry, per CGC 4.406.1	☐
Construction Waste Reduction, Disposal & Recycling	
A Minimum of 50% of the non-hazardous construction waste generated at the site will be diverted to an offsite recycle, diversion, or salvage facility	☐
Building Maintenance & Operation	
An operation and maintenance manual will be provided to the building occupant or owner per CGC 4.410.1	☐
Environmental Quality	
Any gas fireplaces will be a direct-vent sealed-combustible type.	☐
Any wood stove or pellet stove will comply with US EPA Phase II emission limits per CGC 4.503.1	☐
Polutant Control	
At the time of rough installation or during storage, duct components and plenum openings will be covered with tape, plastic, sheet metals, or other methods that will reduce the amount of dust or debris, which may collect in the system prior to final per CGC 4.504.1.	☐
Adhesive, sealants and caulking will be compliant with VOC or other toxic compound limits per CGC 4.504.2.1.	☐
Paints, stains and other coatings will be compliant with VOC limits per CGC 4.504.2.2.	☐
Aerosol paints and coatings will be compliant with product weighted MIR limits for ROC and other toxic compounds per CGC 4.504.2.3.	☐
Documentation will be provided, at the request of the building department, to verify compliant with VOC finish materials per CGC 4.504.2.4.	☐
Carpet and the carpet system will be compliant with VOC limits per CGC 4.504.3.	☐
Where resilient flooring is installed, at least 50% of the floor area receiving resilient flooring will comply with VOC emission limits per CGC 4.504.4.	☐
Hardwood plywood, particleboard and medium density fiberboard composite wood product used on the interior and exterior of the building will comply with the low formaldehyde emission standards per CGC 4.504.5.	☐

CITY OF OAKLAND
BUILDING SERVICES

2010 CalGreen Building Standard Code (CGC)
Residential Checklist

FEATURE OR MEASURE	YES
Interior Moisture Control	
A capillary break will be installed if a slab on grade foundation system is used. The use of a 4" thick base of ½" or larger clean aggregate under a 6 mil vapor retarder wit joint lapped not less than 6" will be provided per CGC 4.505.2 and CRC R506.2.3.	☐
Moisture content of building materials used in walls and flooring will be checked prior to finish material is applied per CGC 4.505.3.	☐
Indoor Air Quality & Exhaust	
Exhaust fans which terminate outside the building are provided in every bathroom per CGC 4.506.1.	☐
Environmental Comfort	
Installed whole house exhaust fans will have insulated louvers or covers with a minimum insulation value of 4.2, which will close when the fan is off.	☐
The duct system has been sized, designed and provided with equipment in accordance with one of the following: 1. Heat Loss/Heat Gain values in accordance with ACCA Manual J or equivalent; 2. Size the duct system in accordance to ACCA 29-D, Manual D or equivalent; 3. Select heating and cooling equipment in accordance with ACCA 36-S, Manual S.	☐
Installer & Special Inspector Qualification	
HVAC system installers are trained and certified in the proper installation of HVAC systems per CGC 702.1.	☐
Verification	
Upon request, verification of compliance with this code may include construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the building department which will show substantial conformance.	☐

Responsible Designer's Declaration Statement I hereby certify that this project has been designed to meet the requirements of the 2010 California Green Building Standards Code.
Name:
Signature:
Date:
Company:
Address:

Contractor Declaration Statement I hereby certify, as the builder or installer under permit listed herein, that this project will be constructed to meet the requirements of the California Green Building Standards Code.
Name:
Signature:
Date:
Company:
Address:

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