How to

Manage Your Home Remodel Like a Pro

You Don't Have to Live a Nightmare with Your Contractor to Get Your Dream Home

The Kitchen & Bath Co.

OF PALO ALTO

License #556166

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650-888-4745

This pages Belongs to:

Homeowner: _____

For the Remodel Project at:

Address: _____

_____

City: _____ STATE: _____ ZIP CODE: _____

Phone: _____

Assessor's Parcel Number (APN): _____

My Building Department Information

Address: _____

		From	To
Hours:	M	_____	_____
	T	_____	_____
	W	_____	_____
	Th	_____	_____
	F	_____	_____

Phone: _____

Website: _____

Inspection Phone: _____

Permit #: _____

Warning: Any and all legal, accounting or financial advice provided her in is general in nature and not intended to apply to your particular situation. You should seek the advice of an attorney or accountant licensed to practice in the site or country where you reside.

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BY TIM HMELAR

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GETTING STARTED

THE EXISTING HOUSE CHECK UP

Just as a doctor examine a patient's overall health before performing elective surgery, you should examine the overall health of your home before remodeling it. Older homes that have not been remodeled recently often have many areas/issues that need to be updated as part of your remodel. Before remodeling your home, conduct an Existing House Check-Up.
Investigate the following items:

1) Condition of Roof: It makes NO SENSE to remodel a home that has a leaky roof repair/replacement is part of the remodel.
Before remodeling you should look for:

- Damaged or missing shingles
- Wrapped shingles that no longer sit flat or that bend upwards
- Roofing materials that are worn and missing their outer granular protective surface
- Deteriorated pieces of shingle in the gutter
- Tile roofs that have cracked tiles or cracks in the mortar
- Gaps in the flashing or roofing mastic where vents, skylights or chimneys penetrate the roof
- Branches that may be touching or sweeping your roof

2) Condition of Pumping: Many older homes were built with cast iron water and sewer lines which have a life expectancy of approximately 50-55 years. If your house is over 50 years old you should inspect the water and sewer lined before remodeling your home. Re-piping or changing your sewer line can incur significant cost. Three signs that your plumbing system may be at the end of its useful life include:

- Low water pressure
- Rust color water when you turn on your taps

- Repeated call to a plumber to clear your sewer lines

3) Gas Lines: Older home remodels often include installation of new gas appliances (furnaces, water heaters, fireplace units, etc.) that require modifications to the gas line system. Having the right gas line in place to maintain pressure and safety is of paramount importance. An aging system may also require repair/replacement if any of these key indicators are detected:

   - Leaks - detectable odor or underperformance
   - Inappropriate (size of existing gas lines)
   - Missing shut-off valve at cook top or range
   - Exposed plastic piping above ground

Appendix A is the sample of Gas Line Calculator (City of Vacaville, CA). This work is routinely performed by a licensed plumber who will know building code requirements and safety measures to take avoid leaks and explosions.

For a downloadable worksheet on Gas Lines, and other useful information, visit my website at www.masterurl.com and click on the Helpful Downloads tab.

4) Electrical Capacity: If you live in an older home you may need to upgrade the electricity as part of your remodel. In some cases, you may be upgrading the main electrical panel or sub-panel on your home, adding new circuits or even replacing old wiring. Before remodeling your home you will want to determine what the capacity and distributions is of your existing electrical system and calculate the needs of your future remodeled home to see if an upgrade to your electrical system is necessary.

   New consumer products, like home theaters or electric cars, can also drive the need for more electrical capacity. Planning for these installations will help you save money while the walls are open. Appendices B & C are sample worksheets for Calculating Electrical Load (City of Sacramento) and accommodating an Electrical Vehicle Car Charge (City of Palo Alto).

For downloadable worksheets on Calculating Electrical Load, Electric Vehicle Considerations, and other helpful downloads, visit my website at www.masterurl.com and click on the Helpful Downloads tab.

5) Solar: Many homeowners are adopting a "green" approach to powering their homes where solar panels make sense. Additionally, starting in 2020, some states like California will require that most new homes have solar panels. (Homes with excessive shade factors may be exempted.).There are unique safety requirements to retrofitting an existing power system with solar.

6) Water Damage/Dry Rot: Leaky roofs and leaky bathtub and shower surrounds can cause thousands of dollars to your home in a relatively short period of time. Examine all accessible areas where water damage may have occurred. Key signs of water damage include:

   - Light brown water stains on ceilings or walls
   - Soft or punky flooring adjacent to bathtubs and shower enclosures
   - Soft or deteriorating drywall and/or damaged tiled walls adjacent to tubs and showers
   - Peeled-back sheet vinyl flooring near your shower and tub areas.

   If you see a grayish color where the flooring is peeling, you most likely have a mold issue.

7) Termites, Powder-post Beetles and Carpenter Ants: Dogs and cats can be a great addition to your home; termites, beetles and ants may destroy it. Wood Destroying Insects (WDI) may silently be eating your home without you even knowing it. Subterranean termites are responsible for over 90% all termite damage in the United States.
   Signs of WDI damage include:

   - "Mud tubes" on the interior or exterior of your home on the foundation or wood framing. Mud tubes are raceways that termites build to move around your home.

- Small holes bored into the wood framing of your home. Often grayish brown sandy looking debris is left where the termites have eaten the wood or paper backed construction material in your home.

8) Mold: Mold is naturally present indoors and outdoors and needs a damp environment for mold spores to reproduce and grow. If extensive mold is growing in your home it may be cause major damage as well as result in allergic reactions for the people or pets in your home. Check these common areas where mold is found:

   - Leaky water fixtures (tubs, shower stalls, faucets) or vinyl flooring adjacent to tubs and showers
   - Leaky places where roofs, exterior siding, windows or doors are damaged or poorly installed
   - Behind furniture or drapes where moist air is trapped
   - Vinyl flooring adjacent to tubs and showers (mold may show up as a grayish discoloration) in vinyl flooring.

For a downloadable pamphlet on Mold and other helpful downloads, visit my website at www.masterurl.com and click on the Helpful Downloads tab.

9) Asbestos: Asbestos was a commonly used building material in the United States up to 1978. Asbestos is often found in older homes as part of the heating duct system, siding, "popcorn" or textured ceilings, in flooring and even in joint compound (a compound used to tape and finish drywall.) In California all general contractors must have passed an Asbestos examination as part of their licensing process. The EPA requires that whenever 100 square feet or more of asbestos is to be removed from a home a specially licensed contractor must remove the asbestos.

For a downloadable pamphlet on Asbestos and other helpful downloads visit my website at www.masterurl.com and click on the Helpful Downloads tab.

10) Lead Paint: Lead paint was commonly used in the United States until 1978 and can be harmful if ingested, especially by children. If your remodel requires disrupting or removing more than 6 square feet of lead-based covered material, your contractor must have passed the EPA's Renovation, Repair and Painting exam (RRP) and must take necessary precautions when removing lead-based covered materials.

The EPA has a Lead Paint Guide for Homeowners. Verify that Contractor is EPA Certified to work on homes with lead paint by Visiting the EPA Certified to work on the homes with lead paint By visiting the EPA's website at www.epa.goe/getleadsafe.

For a downloadable pamphlet on Lead Paint and other helpful downloads visit my website at www.masterurl.com and click on the Helpful Downloads tab.

PROJECT **NOTES**

KEY PROFESSIONALS

DO I NEED A DESIGNER

Potential clients often ask "Do I need to hire a designer for my project?" If you are remodeling an existing space; are happy with the current layout; feel that the space just needs to be updated; and have time to research different materials and fixtures, then you probably don't need a designer; However, if your existing space doesn't work well; you don't have the time to educate yourself about different layouts; and want help in selecting different materials and fixtures, then hiring an expert designer is a good idea.

Whether you work with a designer or not, the website www.Houzz.com is a great starting point for getting ideas for your proposed project. This portal is the remodeling industry's number one resource for project ideas. You'll find millions of photos and thousands of great articles to spur your imagination.

Hiring a Designer

The following questions will help you vet potential designers:

1. **Does Your Designer Listen to You?** The top complaint I hear from my clients about their designer is the feeling that the designer does not listen to them. If you don't feel a positive connection with your designer gets a new one.

2. **Does your Designer Understand Your Design Likes and Dislikes?** Since you will be the one living in the remodeled home long after you and your designer have parted ways, make sure they design the project to your tastes, not theirs.

3. **Is Your Designer Certified by the National Kitchen & Bath Association (NKBA)?** For kitchen and bath remodels, I have found that the designers who have credentials for their craft are invaluable. There are three levels of NKBA designers:

Level	Title	Experience
One	Associate Kitchen Bath Designer	Entry,1-4 years
Two	Certified Kitchen Bath Designer	5-6 years
Three	Certified Master Kitchen Bath Designer	7 years

Check out www.NKBA.org to find a certified designer in your area

4. **Budget**: Be upfront with your designer on your project budget. Unless you are independently wealthy and don't care what your project costs, you need to share with your designer how much money you are willing to invest in your remodel. You will be deeply disappointed with your designer if after months of planning your remodel you solicit three estimates for your project and find out all three estimates are higher than your budget.

5. **Does the Designer Have References for Projects Similar to Yours?** Always ask for a designer's references. Good questions to ask when checking references include:

    * Was the client happy with the designer's communication style?
    * Did they receive deliverable on time?
    * Was the project built within the project budget?
    * Would they use the designer again?

The majority of designers will often bring a contractor early on a project in before making drawings and specifying products. Early collaboration helps to raise potential issues and identify costs. Your contractor plays a key role in examining the condition of the roof, heating and cooling system, sewer and water supply system, capacity of electrical system, defects in the foundation or drainage system, and finally any structural issues should your remodel involves modifying the roof, ceiling, floor or walls.

Appendix D includes samples of kitchen, bath and home addition plans to help you visualize what to expect from your designer

PROJECT **NOTES**

SELECTING A CONTRACTOR

Think of selecting a general contractor as a hired gun whose sole purpose is to remodel your home using industry best practices and quality levels, in the least stressful manner, on time and on budget.

Your Contractor Should Be: An individual who can communicate well, is detailed oriented, writes things down, is a master at coordinating work flow, leads others well, can build a quality, product, meets milestones and goals, can finish your project on time, manages cash flow well and can finish your project at budget.

Your Contractor Should NOT Be: A nice, friendly person who is NOT detail oriented, does NOT put things in writing, does NOT use a schedule, does NOT set milestones and goals, does NOT manage people well, does NOT manage time well, does NOT manage cash flow well and is someone you feel sorry for or want to help with their personal problems.

Key guidelines in selecting your contractor include:

- Hire only licensed contractors
- Get at least three bids and check references on recent projects
- Check your state's contractor license board for possible complaints against a contractor
- Ask to see the contractor's pocket license and a current photo ID
- Ask if the contractor carries workers' compensation insurance for employees and general liability insurance
- Try searching your contractor's name online for additional reviews, and always consider the source (YELP, List, BBB etc.)
- Make sure the contractor gives you an estimate in writing and that the contract lists his/her name, contractor license number, address, and phone number
- Pay no more than 10 percent down or $1,000, whichever is less, to initiate the contract

- Make sure your contractor does a thorough inspection of your home before preparing the contract to look for unexpected problems such as dry rot, pest damage, faulty plumbing or electrical work they may need to be updated. Without this pre-inspection you may be getting some unexpected change orders early in your project.

Contractor Comparison & Score Card

A quick ranking score card can help you analyze contractor candidates for your remodel job. I recommend you collect a couple of bids. Rate the candidates using the point system in the Chart below. Tally the scores whichever contractor scores highest may be a good fit for your project.

	Points/Scoring	*Contractor 1*	*Contractor 2*
Name			
Years in Business	1 Point/year		
Licensed	Yes-25 points No- 0 points		
Project Experience	1-10 Referrals =10 points 11-25 Referrals=20 points 26+referrals=40 points		
Bounded	Yes=15 points No=0 points		
Worker's Comp Insurance	Yes=15 points No=0 points		
General Liability Insurance	Yes=15 points No=0 points		
Referrals – Paper	1-10 Referrals =10 points 11-25 Referrals=20 points 26+referrals=40 point		
Positive Online Referrals (Angie's List, Yelp, BBB, Rating, etc.)	1-10 Referrals =10 points 11-25 Referrals=20 points 26+referrals=40 points		
S C O R E			

CONSTRUCTION CONTRACTS
8 HELPFUL TIPS

Writing clear contracts is important for setting expectations between the homeowner and the contractor. In entering into a construction contract with a re-modeler, I suggest that you keep in mind the following areas:

1) Compatibility - The first site visit with a possible client is a great opportunity to learn more about their project, and, more importantly, to see if I can see myself working with them. Both the Contractor and the Owner should be able to see themselves working together on a short-term collaborative basis. If your stomach tells you this isn't a good match - LISTEN and don't sign the contract!

2) Details - Get as much detailed info in your contract as possible. I have a list of 5,000 specifications that I use to create the scope of work. Also, I often describe what is NOT in the scope of work

3) Templates - I use a template spreadsheet to determine the price of each project.

4) Initial Payments - In California, by law, the initial payment for a construction project cannot be greater than 10% of the project or $1000 or whichever is less.

5) Right of Rescission - California law states that homeowners have 72 hours to change their mind if they feel any "buyer's remorse".

6) Legibility - California law instructs that contracts must be written in at least 12 point font.

7) Change Orders - Unexpected items outside the contracted scope of work do occur. Change orders are common. Your contractor may require that any change orders are paid in full the week the change order is incurred.

8) Final Payment - Do not make the final payment until you have a copy of the final building permit and the contractor has finished punch list.

The following Checklist describes the essential sections of a construction contract. An in-depth contract is shown in Exhibit E.

CONSTRUCTION CONTRACT CHECKLIST

GENERAL CONTRACTOR NAME

123 Main Street Anytown, USA
Telephone #: & Email, License ##########

CONSTRUCTION CONTRACT

This Construction contract ("Contract") is entered into by and between Contractor's Name ("Contractor") and Mr. and Mrs. John Smith ("Owner"), whose residence address is 24 Main Street, Anytown, USA, ########## And project address of 123 Main Street, Anytown, USA, ######

- DESCRIPTION OF WORK (Full detail of project)
- DESCRIPTION OF MATERIALS AND EQUIPMENT (Include material
- Descriptions, quantities, etc., and equipment and appliances
- CONTRACT AMOUNT
- PAYMENT SCHEDULE (Identifies payments to be made as specific milestones are completed)
- START AND COMPLETION OF WORK (Identifies start and end dates)
- PERMITS AND SPECIAL INSPECTIONS (States who will pull permits and/or schedule special inspections)
- PERMISSABLE DELAYS (identifies potential delays that are acceptable)
- EXTRA WORK (Additional work requires change orders that must be written and signed by all parties)
- NOTICE OF MECHANICS LIEN
- RELEASE OF MECHANICS LIENS (Conditional and unconditional release forms available on CSLB website)

- ATTORNEY FEES (Outlines expectations in the event of a dispute)
- CONTRACTORS REQUIRED TO BE LICENSED (Identifies state law requirement for contracting)
- COMPLETE AGREEMENT (Describes the overall contract of obligations of each party)
- OWNER'S RIGHT CANCELLATION (Explains parameters of canceling the contract)

BY: _____ BY: _____

Contractor Name
Contractor Company Name

Property Owner's signature

Dated: _____ Dated: _____

As a part of my contract process, I also provide homeowners with a Gant Chart of the proposed project schedule and a detailed estimate for the project. I find them useful for setting homeowner expectations and clarifying project details.

For more details downloadable pamphlet on writing a Construction Contract and other helpful downloads visit my website at www.masterurl.com and click on the Helpful Downloads tab.

PAYING YOUR CONTRACTOR

To keep your project on track, pay your contractor in a timely fashion for successfully meeting project milestones. Payments should be tied to events being successfully completed not to arbitrary dates.

I find it is in the best interest of both the owner and the contractor to have frequent small payments. Why? Since the contractor will be coming to you often to ask for money, you will have the opportunity to get project updates, voice your concerns, and get your questions answered. Simply put, frequent payments lower the Owner's financial exposure and force communication between the owner and contractor and also provide the contractor with cash flow to pay for materials and labor as costs are incurred.

Large, infrequent payments put both the owner and contractor at risk. Some contractors "front load" the contract. Front loading occurs when the contractor asks upfront for a disproportionate amount of money in relation to completed project events. My experience shows that many contractors who front load their contracts are having financial problem or are cash flow managers.

In certain circumstance, it may be reasonable for your contractor to ask for large payment before construction starts. If your contractor is paying for the ordering of cabinets, custom tile, plumbing fixtures, slab counter top materials or custom lighting, the request may be valid. I suggest you have an understanding of what these items will cost and define your payment schedule appropriately.

PAYMENT SCHEDULES

In addition for a project timeline, I include a simple spreadsheet with my contracts that clearly communicate when progress and final payment are to be made. The following is a sample payment schedule for a bathroom remodel with a contract price of $28,002. The schedule reflects common work/ installation/inspection milestones.

Sample Payment Schedule Tracker

Payment#	Payment Description	Payment Amount	Remaining Balance
	Contract Amount		**$28,002**
1	Good Faith Deposit	$1,000	$27,002
2	Permit &Building Materials (after contractor has purchased building materials)	$5,000	$22,002
3	Passing of Rough Inspection	$7,000	$15,002
4	Installation of Insulation & passing Screw Inspection	$3,000	$12,002
5	Installation of Tile	$5,000	$7,002
6	Installation of Cabinets, Doors, Mouldings	$3,000	$4,002
7	Installation of Plumbing Fixtures	$2,000	$2,002
8 (FINAL)	Completion of Job, issuance of final building permit, and completed punch list	$2,002	$0

CHANGE ORDERS

Most jobs will have some kind of change activity that requires the owner to pay the contractor for something that was not included in the original contract. These changes are called "Change Orders." It is in both the owner's and the contractor's best interest to put change orders in writing and that the change order be paid the week the change is made. By putting the Change Order in writing everyone knows the scope of the change and hopefully the cost of the change. Paying the Change Order in the week in which the work is performed allows the owner to be on top of the project's overall cost while helping the contractor with their cash flow. Whatever you do, do not verbally agree to changes, and do not wait to pay for any changes until the project's completion.

For a sample downloadable Change Orders, and other helpful articles, visit my website at www.masterurl.com and click on the Helpful Downloads tab.

Sample Change Order

General Contractor Company Name
123 Main St
Anytown, USA ######
Telephone :(###) -#####-####
License #####

CHANGE ORDER FORM

This change order is executed pursuant to contract between Contractor's Company Name "Contractor" and Homeowner's Name "Owner,"
Dated: _____ for work to be performed at Project Address.

Contractor is hereby authorized to perform the following work which is not included in Contractor's basic contract, and is considered "extra" work:

Change Order Description Goes Her

Change Order work to commence on Commencement Date

And be completed by Completion Date

Cost of Change Order: $

It is understood that payment for their extra work will be due the week the change order is completed.

Homeowner's Signature Contractor's Signature

Estimate, Materials Worksheet & Gant Chart

After signing a construction contract, I like to provide my clients with project estimate, including worksheets that outlining all custom materials to be used in the project and a proposed project schedule.

The project estimate outlines all the costs (permit, labor, a summary of materials) and the profit associated with the job. Other contractors may roll their profit into the cost of each item. My preference is to be transparent with the profitability of the job. If, due to an unexpected event (i.e., a change in the homeowner's design choice, a structural issue revealed once walls are open) a change order is required, those costs are above the project estimate.

The materials list compiles the physical supplies to be used on the various project components (fixtures, flooring, counter-tops, cabinetry, electrical fixtures, windows, doors and lighting.) I find it a useful prompt when ordering from suppliers on my client's behalf. My clients find it extremely helpful because they know exactly which custom items need to be purchased.

The project schedule gives my homeowners a proposed calendar of the work days needed to complete the various project tasks. This calendaring tool helps set expectations on what is happening which days, targeted time-frames for inspections, and agreed upon progress payments. I choose to include slack days in the schedule in the event we have a project hiccup. I'd rather delight you with a project built on schedule versus have you disappointed that extra days were added. It's also important to identify which days are work days and if weekends are included.

Samples of a bathroom estimate, materials list and project schedule follow.

> *To print an 11" x 17" copy of the Sample Estimate, Detailed Materials Listing and Gant Chart, and other helpful articles, visit my website at www.masterurl.com and click on the Helpful Downloads tab.*

SAMPLE ESTIMATE

Contractor's Business Name
345 Main Street
Any-town, USA
xxx-456-7890
License # 123456

UPSTAIRS HALL BATHROOM

Client: The Smith's
Address: 123 Main Street
City: Any-town, USA
Phone: XXX-123-4567
Proposal Date: mm/dd/Year

PERMIT

PERMITS	S600
LABOR	
Fee to Pull Permit	200
Oust Protection	35
Demolition 0	
Appliance Disposal	520
Frame Wall & Window	75
Install New Window	450
Patch Exterior Siding	100
Shower Curb Framing	300
Frame New Doorway to Bath	170
HVAC Heating	300
HVAC Ventilation Fan	300
Rough Plumbing	240
Shower Pan	2200
Rough Electrical	300
Recessed Lighting	600
Sheetrock Shower Surround	350
Patch Drywall	250
Tile Shower Walls	400
Tile Shower Floor	1925
Tile Recessed Niche	375
Tile Feature Strip	200
	200
Tile Bathroom Floor	990
Tile Baseboard	170
Tile Backs plash	130
Seal Grout	100
Install Door Casing	150
Install Vanity	100
Finish Plumbing	180
Finish Electrical	150
Finish HVAC	100
Install Medicine Cabinet	85
Closet Shelving	400
Painting	450
Towel Ba,s, Grab Bars	170
Smoke and Co Detectors	75
Patch Roof	300
Misc Labor	500
Material Pickup	250
Debris Removal	500
	$15,205

TOTAL LABOR

BUILDING MATERIALS

Dust Protection	125
Demolition	65
Concrete Work	0
Leveling Floor	0
Framing Lumber	175
Nails & Fasteners	75
HVAG Supplies	100
Rough Plumbing	500
Siding Patch	150
Rough Electrical	300
Recessed Lights	130
Insulation	105
Drywall	275
Expansion Foam/Sealants	25
Mouldings/Trim	75
Paint	155
Clean Up	50
Misc. Supplies	300
PLUMPBING FIXTURES	731
BATH FIXTURES - MISC	592
FLOORING	0
SLAB COUNTERTOP	1000
ELECTRIACAL FIXTURE	224
CABINETRY	450
TILE	754
WNDOW/DOORS/SKYLGHTS	200
TUB CLOSURE	1400
	$7956

TOTAL MATERIALS

TOTAL LABOR	$15,205
TOTAL MATERIALS	S7,956
SUB-TOTAL	$23,161
PROFIT/OVERHEAD (20%)	4 632
TOTAL ESTIMATE	$27,793

CUSTOM MATERIALS WORKSHEET

PLUMBING FIXTURE	
Bath Tub	0
Waste & Overflow	0
Diverter Valve	0
Diverter Valve Trim	0
Shower Valve	78
Shower Valve Trim	150
Fixed Rain Shower Head	0
Slide Bar Assembly	0
Hand Held 8hr Head	0
Toilet (1.28 gallon)	300
Toilet Seat	35
Sink(s)	68
Pedestal Sink	0
Pedestal Sink Ptrap	0
Faucet(s)	75
Pop Up Drain(s)	25
Bidet	0
TOTAL PLUMBING FIXTURES	731

BATH FIXTURES - MISC.	
Mirror Allowance	302
Medicine Cabinets	75
Grab Bar(s)	0
Towel(s) Bar	150
Toilet Paper Holder	35
Towel Hook(s)	0
Passage Door Lock-sets	0
Passage Door Hinges	0
Passage Door Handles/Pulls	30
Door Stops	0
TOTAL BATH FIXTURES	592

FLOORING	
Sheet Vinyl	0
Hardwood	0
Free Floating	0
TILE FLOORING	0

SLAB COUNTERTAPS ENCLOSURE	
Granite	0
Marble Countertop Allowance	250
Marble Shelves in water closet	0
Quartz	0
Concrete	0
Wood Block	0
Fabricate Countertop	750
TOTAL SLAB CTOPS	1000

TUB/SHOWER ENCLOSURE	
Glass Enclosure	1400
Partial Glass Wall	0
Shower Curtain	0
TOTAL TUB ENCLOSURE	1400

ELECTRICAL FIXTURES	
Ventilation Fan	125
Ceiling Surface Mounted Light(s)	0
Wall Mounted Light(s)	0
GFI Outlet(s)	14
Dimmer(s)	35
Timer(s)	0
Switch(es)/Outlets	50
Humidistat	0
CO Detectors	0
Smoke Detectors	0
Heated Floor Mat	0
TOTAL ELECTRICAL FIXTURES	224

CABINETRY	
Vanity Door Allowance	0
Cabinetry	450
Doors	0
Drawer Fronts	0
Pull Outs	0
Hinges	0
TOTAL CABINETRY	450

TILE	
Floor Tile ($/Sq.ft)	250
Baseboard Tile	55
Wainscoat Tile	0
Countertop Tile ($4/Sq.ft)	0
Backsplash Tile	0
Shwr Surround Tile ($8/Sq.ft)	400
Tub Deck Tile($6/Sq.ft)	0
Featured Strip Tile	0
Platform Tub Tile	0
Grout Sealer	35
Soap Dish 4" x 6"	0
Corner Dish 9"	14
Schluter Metal	0
TOTAL TILE	754

WINDOWS/DOORS/SKYLIGHTS	
Window(s)	200
Interior Passage Door(s)	0
Interior Closest Door(s)	0
Exterior Door(s)	0
Skylight(s)	0
TOTAL WINDOWS,DOORS,SKYLIGTHS	200

PROJECT **NOTES**

Do I Need a Permit?

I'm often asked "Do I need a permit for my project?" or hear a homeowner say "I talked to another contractor and they told me I don't need a permit." Before trying to clarify whether you need a permit or not, it's important that you understand that permits are in place to ensure your safety by requiring:

- Structural elements be correctly built;
- Safety features are built into your project (i.e., kids don't get scalded by hot water in the bath tub).
- Fire protections in case your home catches on fire.

What is an Over-The- Counter-Permit?

Permit requirements vary from state to state and by jurisdiction within states. Some states may require a permit for a simple installation of a hot water heater. In other states no permit is required. Certain jurisdictions may take another approach TO look at the total cost of a remodel and make permitting requirements based on a minimum value (i.e., projects under $30,000 do not require a permit.) If your project does not involve making structural changes to the home, you may be able to walk into the Building Department and walk out with your permit at the same visit. These projects are called Over-The-Counter or "like for like".

The key to getting an Over-The-counter permit is to come prepared with 3 copies of a nicely drawn plan that is properly notated. I suggest using 11" x 17" paper for simple kitchen or bath remodels as this is the minimum size that some building departments require. It also has space for the building department official to add their comments to the drawing. These plans can be hand-drawn if drawn to scale and if clearly written, or done with a computer program. The city building official will be following guidelines for safe construction. They will NOT be looking at the aesthetic features such as good cabinet layout or color of tile or paint.

An Over-The-Counter Permit is unlikely in events where your plans involve altering structural items such as the roof, framing of ceiling, walls, flooring, changing the foundation, or changing the sizes of exterior doors and windows.

Although there are subtle differences in how building departments interpret whether a construction permit is needed or not, most local building departments require a permit for the following projects:

Kitchens:

- Removing/replace the cabinetry
- Moving the location of any of the following: sink and ventilation fan
- Moving a wall, changing the framing of the roof, ceiling or floor, adding a skylight or changing the size and/or location of a window or door
- The remodel changes the square footage of the house
- Replacing the sewer line or re-piping the house
- Replacing the hot water heater

Bathrooms:

- Replacing all of the following in one remodel: the toilet, sink, tub and/or shower surround.
- Moving the location of any of the following: toilet, sink and tub or shower surround
- Moving a wall, changing the framing of the roof, ceiling or floor, adding a skylight or changing the size and/or location of a window or door
- Replacing the sewer line or re-piping the house
- Re-piping the hot water heater

Building a New Home/Additions:

- Modifying square footage
- Replacing/Adding a garage
- Installing solar
- Car charger

The following two pages include a sample permit application for your reference.

SAMPLE PERMIT APPLICATION

CITY OF PALO ALTO
DEVELOPMENT SERVICES
285 Hamilton Ave.
Palo Alto, CA 94301
(650) 329-2496

(OFFICE USE ONLY)	PERMIT #:
REC'D DATE:	REC'D BY:
ISSUED DATE:	ISSUED BY:

BUILDING PERMIT APPLICATION

PLEASE PRINT CLEARLY

PROJECT ADDRESS:

PROPERTY OWNER ☐ **APPLICANT**	**ARCHITECT/DESIGNER/ENGINEER** ☐ **APPLICANT**
NAME:	NAME:
ADDRESS:	ADDRESS:
CITY: ST: ZIP:	CITY: ST: ZIP:
PHONE:	PHONE:
EMAIL:	EMAIL:
CONTRACTOR **LICENSE #:**_____ ☐ **APPLICANT**	**TENANT** ☐ **APPLICANT**
NAME:	NAME:
ADDRESS:	ADDRESS:
CITY: ST: ZIP:	CITY: ST: ZIP:
PHONE:	PHONE:
EMAIL:	EMAIL:

CONSTRUCTION COST (LABOR AND MATERIALS ONLY):

DESCRIPTION OF WORK:

PLEASE FILL IN THE SQUARE FOOTAGES OF AREAS THAT APPLY:

ADDITION (SF):	AREA OF REMODEL (SF):	(N) STRUCTURE (SF):	(N) GARAGE (SF):	(N) BASEMENT (SF):

CHECK ALL THAT APPLY:

☐ (N) RES. STRUCTURE	☐ (N) COMM. STRUCTURE	☐ RE-ROOF (ONE STRUCTURE)	☐ DEMO OF ENTIRE STRUCTURE
☐ RES. ADDITION	☐ COMM. ADDITION	☐ MECH/ELEC/PLUMB ONLY	☐ COMM. INT. NON-STRUCT. DEMO
☐ RES. REMODEL	☐ COMM. REMODEL	☐ PV/ELEC. CAR CHARGER	☐ POOL/SPA [NEW OR DEMO]

- PLEASE COMPLETE BOTH SIDES -

PROPERTY INFORMATION:

IS PROPERTY IN THE FLOOD ZONE? ☐ YES ☐ NO DESIGNATION_____

IS PROPERTY HISTORIC? ☐ YES ☐ NO CATEGORY ☐1 ☐2 ☐3 ☐4

TOTAL NO. OF STRUCTURES ON PROPERTY_____ LIVING UNITS _____

IS THERE AN EXISTING BASEMENT? ☐YES ☐NO CONDITIONED? ☐YES ☐NO

EXISTING GARAGE OR CARPORT: ☐ATTACHED ☐DETACHED ☐NONE

RE-ROOF PERMIT INFORMATION:

NO. OF SQUARES _____ FIRE CLASSIFICATION: ☐A ☐B ☐C ☐NONE

NEW ROOFING MATERIAL:_____

APPLIED WEIGHT OF ROOFING MATERIAL PER SQUARE FOOT _____

WILL ALL EXISTING ROOF COVERING BE REMOVED? ☐YES ☐ NO

WILL NEW SHEATHING BE ADDED? ☐ YES ☐ NO

COMMERCIAL REQUIREMENTS:

TENANT NAME: _____

IS THIS A NEW TENANT? ☐ YES ☐ NO FLOOR/SUITE # _____

CO. HEALTH DEPARTMENT APPROVAL REQUIRED? ☐ YES ☐ NO

ELECTRICAL WORK:

AREA OF ELECTRIC WORK (SF) _____

SERVICE UPGRADE? AMPS_____ RELOCATED? ☐ YES ☐ NO

OTHER: _____

PLUMBING WORK:

AREA OF PLUMBING WORK (SF) _____

WATER/GAS METER RELOCATION OR UPGRADE? ☐YES ☐ NO

WATER HEATER REPLACEMENT? ☐ YES ☐ NO TANKLESS? ☐ YES ☐ NO

WATER/SEWER REPLACEMENT? ☐ YES ☐ NO TRENCHLESS? ☐ YES ☐ NO

NEW GAS APPLIANCES? ☐ YES ☐NO GAS LEAK REPAIR? ☐ YES ☐ NO

OTHER: _____

MECHANICAL WORK:

AREA OF MECHANICAL WORK (SF) _____

HVAC EQUIPMENT? ☐ YES ☐ NO ROOF TOP? ☐ YES ☐ NO

FURNACE REPLACE/RELOCATE? ☐ YES ☐ NO NO. OF DUCTS _____

OTHER: _____

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.

License Class _____ License Number _____

Date _____ Contractor_____

OWNER-BUILDER DECLARATION

_____I hereby affirm under penalty of perjury that I am exempt from the Contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 703.1.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).)

_____I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professions code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his or her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he or she did not build or improve for the purpose of sale).

_____ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code. The contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law),

_____I am exempt under Sec._____, B&P C for this reason:

_____ _____

Date Owner

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. My workers' compensation insurance carrier and policy number are:

Carrier _____

Policy Number_____

(This section need not be completed if the permit is for one hundred dollars ($100) or less).

_____ 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 just to the workers compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date_____ Applicant_____

CONSTRUCTION LENDING AGENCY

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 (Sec. 3097, Civ. C).

Lender's Name_____

Lender's Address_____

I certify that I have read this application and state that the above information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this county to enter upon the above mentioned property for inspection purposes.

_____

Signature of Applicant or Agent

_____

Date

PROJECT **NOTES**

Your Local Building Department

What most people refer to as their local building department is technically their local Development Center. The role of your local development center is to make sure that construction in the town, city or county where you live conforms to local zoning ordinances and meets minimal construction codes.

Development centers typically have two departments - Planning and Building. The Planning Department looks at your proposed project before plans are turned over to building department; The Building Department looks at your project's structural and safety components.

The Planning Department will look at your project for zoning issues such as: How much of the lot does the project cover? Does the project fit within setbacks? What is the height of your project? Do you have the required parking? Is your project zoned for the type of construction you're proposing? Is your project in a flood plain? And Are there any easements that might restrict the construction of your project?

The Building Department looks at your project tor structural elements and safety issues. Just some of the items they'll be confirming on your project:

- Meets minimum engineering requirements
- Project plans show construction details on how the project is to be framed
- Electrical work meets minimum code requirements and d sign requirements
- Minimum shower size has been met
- Smoke and CO detectors
- Title 24 Energy Conservation requirements are met

In some cases, you made need to have your local fire department involved in the plan approval process for your project. Commercial projects, apartment buildings and condos may need to get approval from your local fire department before starting construction and may need to have an inspection from the fire department before your project can receive its final

inspection. Fire Department officials look for things such as sprinkler systems (if required), smoke and CO detectors, are fire extinguishers sufficiently operational and serviced, and for the street number of the building to be easily read from the street.

Title 24

(California Only)

Title 24 is a California building code, implemented in 1978, with the goal of reducing the state's energy consumption. If you are building a new home, changing the size of your existing home or changing the size and/or location of windows and exterior doors, you will most likely need a Title 24 report. The process involves hiring a Title 24 specialist to conduct an audit of the energy efficiency of your project by examining the windows and exterior doors for energy efficiency, an audit of the insulation (where applicable) in the ceiling, walls and crawl space and may include the type of lighting in your project.

A Title 24 audit may be unnecessary if you're remodel does not involve changing the size of the home, changing any exterior framing elements, or changing any exterior doors or Windows. You will however, need to clearly identify on your plans what kind of lighting will be used in your project.

Your Title 24 audit may suggest that the windows, exterior doors and home's insulation have minimum R-values and that the lighting meet certain guidelines. The R-value of a material is the capacity of the material to resist heat flow. The higher the R-value the greater the insulating ability.

For a downloadable pamphlet on Title 24 and other helpful downloads visit my website at www.masterurl.com and click on the Helpful Download tab.

Do I Need an Engineer?

Based on the scope of your project you may need an engineering specialist. This type of work may also require special inspections. Your local Development Center will have staff to advise you if special I inspections are required.

Structural Engineer:

If your project is a new home, an addition, or involves moving load bearing walls, you will need to demonstrate to your building department that the proposed project is structurally sound and meets minimum industry standards. In most of these cases, the project requires the use of a licensed structural-engineer.

A licensed structural engineer has passed industry tests allowing him/her to make engineering drawings and make calculations substantiating that the changes are structurally sound. Once the drawings and calculations are made, the engineer will "wet stamp" the drawings using a stamp showing their engineering credentials. The stamp is embossed to the drawings with red ink. The drawings are attached to your project plans and submitted as part of the drawings.

If your project does not involve making any structural changes you shouldn't need engineering work.

Soils Engineer:

If your project does not involve any structural changes you shouldn't need a Soils Engineer for your project; However, if your project involves structural changes and is situated in certain zones (i.e. seismic zones, flooding or on hillside) you may need the services of a Soils Engineer. Your local Development Center the Planning department should be able to tell you if a Soils Engineer is required for your project.

Special Inspections:

Some projects, like trying a new foundation to an existing foundation or where holes have been drilled into an existing foundation, or drilling holes

into an existing foundation to install bolts or hold downs, will need to have a special inspection(s) to ensure that the project is built properly. Your local Development Center will have staff to advise you if special inspections are required.

Building Department Inspections

All projects, whether remodels or additions, will require inspections. Most minor remodels will require between four to eight inspections. A major remodel/new home may require more than 15 inspections dependent upon scope of work. If you're project does not involve an addition you will most likely need the following inspections:

Inspection 1: "All Trades" or "Rough Inspection": During this inspection the framing, HVAC, rough plumbing and rough electrical are normally inspected.

If you're doing any work on the gas line to your home, the inspector will most likely require that you pressure test the gas line to make sure the gas line is not leaking.

If you're moving the location of plumbing fixtures you will be asked to stack the drain and vent lines. This involves putting a test plug in the sewer line and filling the vent and drain lines that you have work done to make sure there are no leaks in the sewer or vent lines.

If your project involves installing a new bath tub, some inspectors ask that the tub be filed to the top of the waste and over flow to make sure the connection between the tub and overflow is not leaking.

If your project involves shear wall(s), the inspector will be looking at two items:
1) That you've used the proper nails; and 2) at the nailing pattern on the shear wall to make sure it has been installed properly. It is very important when nailing shear wall that you don't install too many nails and that the nails sit flush with the surface of the ply wood. Be careful if you're using a nail gun that you don't drive the nails too deeply into the plywood.

In some cases, if you've drilled into the foundation and are adding hold downs you may need a **special inspection** where the inspector verifies you have installed the hold downs properly.

Other areas many inspectors check include the nail plates wherever you have electrical wire or plumbing lines passing through framing material; and, that electrical boxes are grounded properly and that windows have been flashed properly.

If your project is in a wood-framed, multifamily unit and you're installing recessed lights in the ceiling, the inspector will require that you build a fire-proof box around the recessed light. Under most cases the fire-proofing is a wood-framed box lined with 5/8" drywall.

Inspection 2: Shower Pan: If your project involves installing a new shower pan the inspector will want to make insure the shower pan is not leaking by filling the pan with water to the top of the shower curb and having it sit for 24 hours, making sure the water level doesn't drop. Some building departments require that a test plug be installed in the drain line of the shower to ensure that the plumbing in the drain line is not leaking.

Inspection 3: Insulation: The most common R ratings for insulation in California are R30 for the ceiling, R13 for walls and R19 for crawl spaces and floor areas. Insulation may also have a paper or foil backing on one side of the insulation. Some building departments do not want paperback insulation used because the backing may burn during a fire or attract mold if it becomes wet. Check with your local building department as to what kind of insulation they mandate.

If your project is in a multifamily building and you've penetrated any common walls between your unit and neighboring unit, inspectors will be looking to make sure. You've installed the **proper fire retardant spray foam** at any holes you've drilled; and may require that the electrical boxes have fire retardant putty on the electrical box to prevent smoke from passing between the units.

Homes located in extreme cold/hot weather conditions may have more stringent insulation requirements.

Inspection 4: Drywall "Sheetrock" Screw Inspection: Inspectors will be looking to make sure you have the proper drywall arid screws, and that you have the drywall nailed/screwed off properly.

Most homes use 1/2" drywall for interior walls. If your home has an attached garage you will need to install 5/8 drywall on one side of the common wall between the home and the garage. If you live in a multifamily home the common walls normally have 5/8" fire-rated drywall between the units. Some building departments require that the common wall in the attic space be dry walled with 5/8" drywall.

Drywall is normally attached using 1 5/8" drywall screws. The screws are attached every 6" on the outside edges (perimeter) of the drywall and every 12" in the interior (the field) of the sheet or drywall.

Your local home improvement store may sell purple rock or green rock that is specially made to inhibit mold, mildew or water damage. Most building departments have their own interpretation of where the drywall may be used. Check out what your local building department requires before installing your drywall.

Inspection 5: Lath "Chicken Wire": There are two remodel locations where you may have lath. If you're having your tub or shower surround tiled using a mud job (concrete floated on the wall) you will need to install a water proof paper and a wire netting installed on top of the water proof paper. Inspectors will be looking to make sure you have used the proper paper; that it is installed correctly; that the wire lathe is installed using the proper firring nails; and that the nails are secured into the framing members in the walls.

If you're installing stucco on the exterior you will need to install lathe on the walls using the proper paper backing and wire netting.

Inspection 6: Electrical Service Upgrade: If you've installed a new main electrical panel or electrical sub-panel the inspector will be looking to make sure the panel is installed correctly, grounded properly and that the wires have been properly torqued down. The inspector will also look to make sure all the circuits have been properly labeled.

Inspection 7: Fire Department Inspection: Some building departments require remodels/new builds to have a sprinkler system. Inspectors will verify that the system has been installed properly. If you live in a

multifamily building you may have to have the fire department inspect for sprinklers, smoke and CO detectors, current fire extinguishers in common areas, and that the building has visible street numbers on the exterior of the building.

Inspection 8: Final Building Inspection: The Final Building Inspection has several components. Items to be checked include:

- Screws in electrical panel are torqued correctly
- Circuits been labeled correctly
- The hot water heater is grounded
- There is sufficient pressure for a sprinkler system

The majority of an inspector's time will be spent in the kitchen and bath spaces. They will inspect and confirm that:

Kitchen Final Inspection (Common Inspected Items):

- The lighting is low efficacy lighting
- All entrances into the kitchen have a light switch
- Outlets are GFIC protected. That there are at least 2 separate 20 amp small appliance circuits at the countertop. There must be an outlet at the Backsplash every 4' and within 2' of the sink.
- Appliances are on their own circuit. Many building departments require that the refrigerator, dishwasher, disposal, ventilation hood, trash compactor, wine refrigerators, etc., all be on separate circuits. Check with your local building department to make sure you have all the necessary circuits placed before drywall is put up.
- The anti-tip bracket is installed on any free standing ranges
- For gas cooktops and/or ranges the gas valve is accessible without having to move the cooktop or range (Normally placed in a cabinet adjacent to the cooktop or range).
- Fans rated greater than 400cfm have make-up-air to properly supply the fan with air.

- The inspector will be looking for the proper quantity, kind and placement of smoke and CO detectors. Read the chapter in this book on smoke and CO detectors.

Bathroom Final Inspection:

- Inspectors will check that windows or skylights in wet areas (tub or shower surrounds) have tempered glass. Tempered glass is specially treated glass that when it breaks into pieces like a broken windshield on a car - not shards of glass that are sharp. Tempered glass has a light gray label on the comer of the glass certifying to building officials the glass is tempered. Be careful if you're buying a bathroom window from your big box store as I've seen them selling bathroom windows that-are not tempered. (As of 2016, California requires that any windows within 5' of the tub/shower surround area are to be of tempered glass.)

- Pressure and temperature balanced valves that use no more than 1.28 gallons per minute

- Low flow toilets that use no more than 1.28 gallons/flush.

- Tub or shower doors have a minimum width of 24"

- The bath has a 20amp GFIC protected circuit at the vanity

- High efficacy lighting is in place. The lighting over the tub or shower is designed for wet locations. All new recessed LED lighting is designed for wet locations.

- The toilet is caulked at the toilet/floor transition

- The bathroom has a fan. Not all building departments are requiring that the fan have a humidistat to auto start the fan from off to on depending on the moisture level in the bathroom. Check with your local building department's guidelines.

- The proper quantity, kind and placement of smoke and CO detectors meet code. Read the chapter in this book on smoke and CO detectors.

Final Building Inspection Tips

1) Have inspection card and plans ready.
2) Keep the site clean,
3) Eliminate/Turn down any radios or equipment running that may disturb the inspector's concentration.
4) Make sure all appliance(Plumbing fixtures) manuals are available.
5) If your project involves a torque test, have a torque wrench available.
6) Ask the inspector if he/she would like a verbal explanation of the project. If they say no, stay quiet out of their way.

Planning/Building Department Etiquette

Below are suggestions on how to foster successful meetings with your Planning/Building Departments:

1) Shut off the ringer on your cell phone while in the Development Center staff and other contractors find ringing phones to be a distraction.

2) Fill out all paperwork neatly.

3) If necessary, buy a local business license before getting your permit issued

4) Bring your checkbook or bank card.

5) Be courteous.

6) Bring paper and pencil to take notes.

7) If you're unclear about what the counter person is instructing you to do, let them know you need more detail and appreciate their patience.

8) If pulling your own permit, you will be asked to show that you are the property owner and that you will make sure the work is being completed by you or by licensed individuals. If you're planning on pulling your own permit, go to the Helpful Downloads tab of my website at www.masterurl.com and you will find a pamphlet with tips for acting as your own contractor.

   If you have your contractor pull the permit, they will be required to show that they are licensed, bonded and have the proper insurance.

   If your project does not qualify for an Over-The-Counter permit and you're trying to get your permit as quickly as possible, ask if you can use an outside plan checker. Due to the trend of outsourcing, backlogs and workload management, some cities will allow a homeowner to use a third-party engineering firm to certify that the plans are up to code and meet the local building department's code requirements.

9) Ask approximately how long it will take to get your permit.

10) Say Thank You when you're done. Simple courtesies go a long way.

PROJECT **NOTES**

PROTECTING YOUR PROJECT

PROTECTING YOUR PROJECT

Let me be direct here. You don't want to get screwed and neither does your contractor. Home remodel projects can require significant budgets to build. They also require a level of trust and comfort that both the contractor and the homeowner are acting in good faith to complete the project as outlined. You deserve the assurance that your contractor has put into place appropriate insurances in the event that something happens on your project, either to the home, or to work staff. At the same time, a contractor has chosen to work on your project versus another homeowner's project and deserves protections for their business operations and payroll.

There are a variety of instruments that cover your project:

- General Liability Insurance
- Worker's Compensation
- Bonds
- Mechanics Liens and Releases

GENERAL LIABILITY INSURANCE

Commercial General Liability Insurance protects you against damage or loss to your building. It is not intended to cover the work the contractor performs. Contractors are not required to carry General Liability Insurance but most states strongly recommend that they carry it. Check with your state's contractor licensing board.

The value of the General Liability Insurance should be enough to cover the construction cost should the contractor destroy your home. To make sure you are insured under your contractor's General Liability Insurance policy, request a certificate from the contractor's insurance company to name you as an "additionally insured" on the policy. Request that the contractor's insurance company provide you with a copy of the insurance certificate.

A copy of a General Liability Insurance certificate and other useful downloads, go to www.KitchenBathPaloAlto.com and click on the Helpful Downloads tab.

WHAT YOU Need to Know About Bonds

A Contractor's Bond must be in place before a state's licensing board can issue an active license, reactivate an inactive license, or renew an active license. The bond is filed for the benefit of consumers who may be damaged as a result of defective construction or other license law violations, and for the benefit of employees who have not been paid wages that are due to them.

Effective January 1, 2016, In California, the required amount of contractor's bond or cash deposit with Contractors State Licensing Board (CSLB) in lieu of a contractor's bond is $15,000. This amount may vary from state to state. Check your state licensing board for specific contractor bond requirements.

Requirements for the Contractor's Bond:

1) The bond must be written by a surety company licensed through the California Department of Insurance.

2) The bond must be written in the amount of $15,000.at a minimum.

3) The business name and license number on the bond must correspond exactly with the business name and license number on the CSLB's records.

4) The bond must have the signature of the attorney-in-fact for the surety company.

5) The bond must be written on a form approved by the Attorney General's Office.

6) The bond must be received at the CSLB's Headquarters Office within 90 days of the effective date of the bond.

Filing a Bond Claim:

A contractor has an obligation to not commit any violation of contractor license law. Violations are grounds for disciplinary action against the license. If the contractor fails to comply with the conditions of the bond, a claim can be filed with the surety company.

Claims against a surety company may be filed by homeowners, any person damaged by a willful and deliberate violation of a construction contract, employees damaged by the contractor's failure to pay wages, or an express fund damaged as a result of the contractor's failure to pay fringe benefits for eligible employees.

Consumers must file surety bond claims with the surety company that wrote the bond within specified time frames. The CSLB does not process claims against surety companies. Surety companies will investigate any claim filed against a bond, and the CSLB will investigate any complaint filed against the license.

A license bond is canceled 30 days from the date that CSLB receives a cancellation notice from a bond company. If a bond reinstatement notice is not received by CSLB or a replacement bond is not received by CSLB before the end of the 30-day period, the license is suspended.

MECHANICS LIENS AND LIEN RELEASES

A mechanics lien is a "hold" against your property, filed by an unpaid contractor, subcontractor, laborer, or material supplier, and is recorded with the county recorder's office. If unpaid, it allows a foreclosure action, forcing the sale of the property in lieu of compensation.

A lien can result when the prime contractor (referred to as a "direct contractor" in mechanics lien revision statutes, effective July 1, 2012) has not paid subcontractors, laborers, or suppliers. Legally, the homeowner is ultimately responsible for payment even if they already have paid the direct contractor.

A lien can result in a range of problems, which include:

- Foreclosure (if the homeowner doesn't pay the lien)
- Double payment for the same job (if the homeowner pays the direct or prime contractor and he/she does not pay the subcontractor, laborer, or supplier)
- A recorded lien on the property title (which can affect the owner's ability to borrow against, refinance, or sell the property)

Conditional Lien Release:

A Conditional Lien Release is used when you make a progress payment to a lien holder (subcontractor, general contractor or material supplier, etc.) AND there are future conditions to be met.

For example, let's say you are working with a plumber to rough plumb a bathroom for $3,000 and to complete the finish plumbing $2,000. The total for this subcontractor's work is $5,000. Upon completion of the rough plumbing you make a progress payment of 3,000. The conditional release is reduces the remaining lien just $2,000, the amount of the remaining work to be completed.

Progress Payment Example - Conditional Lien Release

Work	Cost	Payment	Lien Amount
Rough Plumbing	$3,000		$3,000
Finish Plumbing	$2,000		$5,000
Rough Plumbing Done		$3,000	$2,000

Unlike an Unconditional Lien Release, with a Conditional Lien Release, should your payment to the lien holder bounce, the lien goes back into effect.

Unconditional Lien Release:

Unlike a Conditional Lien Release, an Unconditional Lien Release has no restrictions or events to take place for the lien to be released. Once the Unconditional Lien Release is signed, the lien holder (the contractor, sub-contractor, laborer or material supplier) has no further claims against your property.

Consider your lien satisfied if you receive an unconditional release. This type of release doesn't place any restrictions on the discharge of your property from the lien. In most cases, it means your check for a conditional release has cleared or you have made suitable arrangements to clear the debt. The lien holder isn't waiting for any other events to take place to clear the lien.

For downloadable Conditional and Unconditional Lien Release forms go to www.masterurl.com and click on the Helpful Downloads tab.

SAMPLE MECHANICS LIEN
NOTICE TO OWNER

Under the California Mechanic's Lien law, any contractor, subcontractor, laborer, supplier, or other person or entity who helps to improve your property, but is not paid for his or her work or supplies, has a right to place a lien on your home, land, or property where the work was performed and to sue you in court to obtain payment.

This means that after a court hearing, your home, land, and property could be sold by a court officer and the proceeds of the sale used to satisfy what you owe. This can happen even if you have paid your contractor in full if the contractor's subcontractors, laborers, or suppliers remain unpaid.

To preserve their rights to file a claim or lien against your property, a certain claimants such as subcontractors or material suppliers are each required to provide you with a document called a "Preliminary Notice." Contractors and laborers who contract with owners directly do not have to provide such notice since you are aware of their existence as an owner. A preliminary notice is not a lien against your property. Its purpose is to notify you of persons or entities that may have a right file a lien against t your property if they are not paid. In order to perfect their lien rights, a contractor, subcontractor, supplier, or laborer must file a mechanics' lien with the county recorder which then becomes a recorded lien against your property. Generally, the maximum time allowed for filing a mechanics' lien against your property is 90 days after substantial completion of your project.

TO INSURE EXTRA PROTECTION FOR YOURSELF AND YOUR PROPERTY, YOU MAY WISH TO TAKE ONE OR MORE OF THE FOLLOWING STEPS:

1 Require that your contractor supply you with a payment and performance bond (not a license bond), which provides that the bonding company will either complete the project or pay damages up to the amount of the bond. This payment and performance bond as well as a copy of the construction contract should be filed with the county recorder for your further protection. The payment and performance bond will usually cost from 1 to 5 percent of the

contract amount depending on the contractor's bonding ability. If a contractor cannot obtain such bonding, it may indicate his or her financial incapacity.

2 Require that payments be made directly to subcontractors and materials suppliers through joint control. Funding service may be available, for a fee, in your area which will establish voucher or other means of payment to your contractor. These services may also provide you with lien waivers and other forms of protection. Any joint control agreement should include the addendum approved by the registrar.

3 Issue joint checks for payment, made out to both your contractor and subcontractors or material suppliers involved in the project. The joint checks should be made payable to the persons or entities which send preliminary notices to you. Those persons or entities have indicated that they may have lien rights on your property; therefore you need to protect yourself. This will help to insure that all persons due payment are actually paid.

4 Upon making payment on any completed phase of the project, and before making any further payments, require your contractor to provide you with unconditional "Waiver and Release" form signed by each material supplier subcontractors, and laborer involved in that portion of the work for which payment was made. Most stationary stores will sell the "Waiver and Release" form if your contractor does not have them, For a Sample copy of an unconditional or conditional "Waiver and Release" PLEASE GO TO www.masterurl.com. The material suppliers, subcontractors, and laborers that you obtain releases from or those persons or entities who have filed preliminary notices with you. If you are not certain of the material suppliers, subcontractors, and laborers working on your project, you may obtain a list from your contractor. On projects involving improvements to a single-family residence or a duplex owned by the individuals, the persons signing these releases lose the right to file a mechanics' lien claim against your property. In other types of construction, this protection may still be important, but may not be as complete.

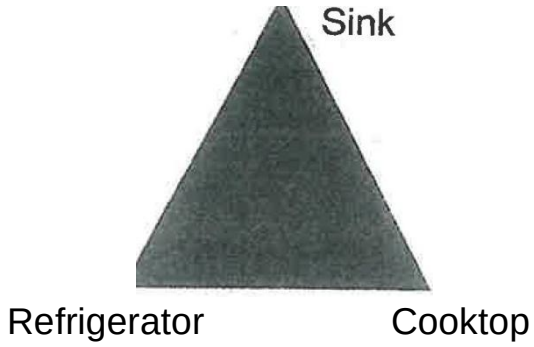
To protect yourself under this option, you must be certain that all materials suppliers, subcontractors, and laborers have signed the "Waiver and Release" form. If a mechanics' lien has been filed against your property, it can only be voluntarily released by a recorded "Release of Mechanics' Lien" signed by the person or entity that filed the mechanics' lien against your property unless the lawsuit to enforce the lien was not filed in a timely manner. You should not make any final payments until any and all such liens are removed. You should consult an attorney if a lien is filed against your property.

PROJECT **NOTES**

KITCHEN REMODELS

KITCHENS

I don't know about you, but at my house we all end up hanging out in the kitchen, both for meals and family time. There is an important design concept, the work triangle, which is a key to maximizing both the functionality and design aesthetic of your kitchen space. By paying close attention to the location of the cooktop, refrigerator and sink areas, and the distances between them, you will have a more efficient layout and will enjoy working in the space a lot more. Your designer can definitely guide you through this concept as best fits your particular room dimensions and design.



For more design tips, go to www.masterurl.com to see more guidelines from the National Kitchen Bath Association's Kitchen Best Practices.

Kitchen Electrical Checklist

Kitchens use a lot of Electrical power. Appliances (refrigerator, cooktop, ovens microwave, dishwasher, trash compactors, garbage disposals, hoods, food prep appliances, task lighting, etc.) all need power. Here's a checklist of electrical items that will be considered in designing and building out your project. The goal here is to make sure you have sufficient power that meets your local code, with outlets placed in task-appropriate areas.

- ☐ In California, Kitchens must have two separate deducted 20 AMP small appliances circuits. If the kitchen has more than one (1) countertop the circuits must be on different counter top surfaces.

  Note: This is not the number of outlets; this is the number of circuits coming to the kitchen from a main panel or sub-panel bringing electricity to the kitchen to plug in small appliances at the counter top. These outlets must be GFCI protected (See Chapter: GFCI protected Outlets)

- ☐ Check with your local building department to confirm whether or not they require any other circuits be GFCI protected (dishwasher, disposal, trash compactor, refrigerator, "insta-hot." microwave, etc.)

- ☐ If you have two or more GFCI outlets under your sink make sure each outlet is clearly labeled, i.e., "dishwasher", "disposal," or "insta-hot."

- ☐ You must have counter top outlets no more than 4' apart from each other and you must have outlets within 2 of each side of the sink basin.

- ☐ All kitchen lights must be high-efficacy lights.

- ☐ Make sure that any under cabinet lighting has its own switch separate from other lights in the kitchen.

- ☐ Make sure all entrances to your kitchen have a light switch.

- ☐ If you have any exterior door from your kitchen make sure there is a

light switch that turns on exterior lighting outside the house.

- ☐ Recessed light must not contain screw-in incandescent light bulb base sockets.
- ☐ Recessed Lighting must be listed for zero clearance insulation contact(IC).
- ☐ Recessed Lighting must have a label that certifies the light is airtight.
- ☐ Recessed Lighting with hardwire ballasts or drivers, must allow for ballast or driver maintenance and replacement to be readily accessible to building occupants form below the ceiling without requiring the cutting of holes in the ceiling.
- ☐ Have the manual for the hood fan available for the inspector. Your inspector may want to know the CFM (Cubic Feet (minute) rating of your hood.
- ☐ Make sure the minimum CFM rating of your hood is 100 CFM.
- ☐ If your cooktop hood is rated greater than 400 CFM you will most likely needed a make-up-air system for your hood. Please review the section entitled Read This before Buying Your Kitchen Hood
- ☐ Make sure all circuits in your main panel or sub-panel are labeled.
- ☐ If you have installed a new main panel or sub-panel make sure ail installation inspections have been completed, and that all panels are grounded and/or bonded per local building code.
- ☐ If you need a "hot check" or torque inspection make sure you have all necessary tools for the inspector to complete their inspection.
- ☐ Your inspector may need to go on the roof of your building or in the attic. Have a ladder readily available.

Municipalities can provide residents with specific guidelines to help cover all the remodeling bases. APPENDICES G and H are samples of the detailed City of Palo Alto inspection Guidelines for kitchen and Makeup Air.

KITCHEN APPLIANCES/FIXTURES WORKSHEET

Here is a listing of commonly installed items for a kitchen remodel. New designs and equipment are always being introduced. This should provide you with a good starting point for considering electrical and plumbing needs as well as the layout of outlets.

- [ ] Stoves
- [ ] Electrical
- [ ] Gas
- [ ] Conduction

- [ ] Oven
- [ ] Double Oven

- [ ] Microwave

- [ ] Heating Drawers

- [ ] Refrigerator
- [ ] Freezer
- [ ] Wine Chiller

- [ ] Sink(s)
- [ ] Basin(s)
- [ ] Faucetry
- [ ] Garbage Disposal
- [ ] Instal-Hot
- [ ] Built-in Soap Dispenser

- [ ] Task Lighting
- [ ] Under Cabinet
- [ ] Task
- [ ] Dinning Table

- [ ] Appliances
- [ ] Toaster Oven
- [ ] Blender
- [ ] Coffee Station
- [ ] Stand Mixer

- [ ] Other Options
- [ ] Trash Compactor
- [ ] Television
- [ ] Device Charging Station
- [ ] Wine Chiller

ABOUT COUNTERTOPS

Whether you are remodeling a kitchen or a bath, you'll need to make Decisions about the countertops. Countertops and companion backsplashes can run the materials gamut from wood, Granite Quartz tiles, marble and manmade composites. There's definitely something for everyone's aesthetic and budget. The design considerations will also cover kitchen shape, island features, overhang for seating areas, and edging. If using a designer, they'll be able to guide you through the various materials, color palettes, and edges to enhance your project.

Your contractor will work with the countertop professionals to schedule a time to visit the project and pattern the countertop based on your cabinetry layout. This is key to getting the right fit and prepping the countertop, especially around the ink for any plumbing bores (faucet, air gaps, sprayers, liquid detergent holders, etc.)

See The Following worksheet to help you consider various countertop options.

COUNTERTOP WORKSHEET

Location	Material to be Used	Edge	Overhang
Kitchen Countertop			
Backsplash			
Island Area			
Corbels/Support			
Master Bath			
2nd Bath			
3rd Bath			
Other Locations			
Kitchen Desk			

Before Buying Your Kitchen Hood

Do I Need Make-Up-Air?

Before you select your new kitchen hood make sure you ask the sales person what is the Cubic Feet per minute (CFM) rating of the hood. Why is this important to you? If you select a kitchen ventilation fan with a rating of 400 CFM or greater you will most likely need to install a make-up air system to your house. This is a safety issue. Ventilation fans with a 400 CFM or greater rating not only suck the cooking air out of the kitchen they may also suck the air out of your fireplace, water heater exhaust duct, or furnace exhaust duct and pull the poisonous fumes into the living spaces of your home.

A Make-Up Air system brings fresh air into your home when you turn on your kitchen ventilation fan. Basically, there is switch that simultaneously opens the make-up air vent when you turn on your hood. If you're installing a new furnace or gas -fireplace insert, you may also need a Make-Up Air system.

A make-up air system is relatively easy to install and should be done before installing sheet-rock or finished ceilings. A costly problem arises when you have completed your project and at your final inspection the inspector asks you to show him/her the manual for the hood, finds the hood is rated greater than 400 GFM and asks to see the make-up-air system.

Downdraft Hoods

Before buying a kitchen downdraft ventilation fan; make sure there is room to run the ducting to the outside of your home. Downdraft systems are expensive and should not be installed by inexperienced tradespeople. Most downdraft systems require a 10" diameter duct to vent the exhaust. The majority of older homes were not designed with 10" ductwork installed under the house.

To avoid costly alterations to your home that may require altering the framing, moving gas, water or sewer lines, cutting the foundation or fabrication of custom sheet metal work, make sure your contractor has

inspected your home's framing and crawl space area height and has figured out how the ductwork will be vented to the home's exterior.

For more downloadable information on Make-Up-Air or Ventilating Your Kitchen and other helpful downloads visit my website at www.masterurl.com and click on the Helpful Downloads tab.

PROJECT **NOTES**

BATH REMODELS

Bathroom Electrical Checklist

☐ IN CALIFORNIA Bathrooms must have at least one 20 AMP GFCI circuit at the sink basin.

Note: This is not the number of outlets; this is the number of circuits coming to the bathroom from a main panel or sub-panel bringing electricity to the bathroom to plug in electrical devices such as electric razors, hair dryers, curling irons or electric toothbrushes. These outlets must be GFCI protected (See Chapter: GFCI Protected Outlets.)

☐ If you have a large counter top at your sink basin you are not permitted to have outlets more than 4' apart from each other

☐ All bathroom lights must be high-efficacy lights.

☐ Make sure all that all entrances to your bathroom have a light switch. You cannot have an entrance without a light switch.

☐ If you have an exterior door from your bathroom make sure there is a light switch that turns on exterior lighting outside the house.

☐ Recessed Lighting must not contain screw in light bulb base sockets.

☐ Recessed Lighting must be listed for zero clearance insulation contact (IC).

☐ Recessed Lighting must have a label that certifies the light is airtight.

☐ Recessed Lighting with hardwired ballasts or drivers, must allow for ballast or driver maintenance and replacement to be readily accessible to building occupants from below the ceiling without requiring the cutting of holes in the ceiling.

☐ Make sure all circuits in your main panel or sub panel are labeled.

☐ California code now requires all bathrooms have a ventilation fan. It doesn't matter if your bathroom has a window; you must have a fan.

☐ Some buildings departments are now requiring bathroom fans have

a humidistat that turns the fan on and off depending on the humidity level of the bathroom.

- ☐ Lighting and fan functions are typically wired separately.
- ☐ Bathroom fans must have a minimum rating of 50 CFM.
- ☐ If you have installed a new main panel or sub-panel make sure all installation inspections have been completed, and that all panels are grounded and/or bonded per local building code.
- ☐ If you need a "hot check" or torque inspection make sure you have all necessary tools for the inspector to complete their inspection.
- ☐ Your inspector may need to go on the roof of your building or in the attic. Have a ladder readily available.

Municipalities can provide residents with specific guidelines to help cover all the remodeling bases. APPENDICES G and H are samples of the detailed City of Palo Alto inspection Guidelines for Bathrooms and Tile Lath.

PROJECT **NOTES**

WHOLE HOUSE CONSIDERATIONS

Whole House Considerations

We've focused a lot on kitchen and bath remodels. There are remodel considerations to know whether you are embarking on a kitchen or bath remodel, or home addition.

- GFCI Protected Outlets
- Doors
- Smoke Detectors
- Painting
- Aging in Place

GFCI PROTECTED OUTLETS

How Outlets Work

A standard outlet in your house should have two vertical slots and a round hole below them. The vertical slot to the left is slightly larger than the slot to the right and is called the "neutral;" the vertical slot to the right is the "hot;" and the round hole is called the "ground". If your house has outlets without the hole in the bottom of the outlet that outlet does not have a ground connected to the outlet.

GFCI Outlet

Standard Outlet

A Ground Fault Circuit Interrupter (GFCI) outlet looks different than conventional outlets in that it also has a test and reset button on the face of the outlet. GFCI outlets have been designed to measure current flowing between the neutral and hot wires. Under normal conditions the electricity running between the neutral and hots wires is equal.

For your protection, when different events result in a power surge (lightning strike, appliance overload, etc.), a GFCI outlet will automatically trip the system to shut off when it senses a difference in the current flowing, between the neutral and the hot wires.

Where to Use GFCI Outlets

Most local building department will require that any outlets in "wet locations" (kitchens, baths, laundry rooms, outdoor areas, etc.) be GFCI protected. In the event an appliance comes in contact with water, a GFCI outlet will prevent electrical shock or electrocution.

DOORS

I strongly encourage Home Owners to visit a showroom to check out the various materials, types, size and styles of doors. These professionals will guide you through all the specifics for selecting the best doors for your project, and how to best doors for your project, and how to best protect the investment you are making.

When roughing in for doors, the adage "Measure twice, cut once" makes sense. Cheryl Hochstatter, Vice President at Johnston Millwork in Redwood City, CA, and a go-to-guru on door and window measures, emphasizes the need to ALWAYS get actual rough opening measurements on all doors, pairs, bypass, bifolds, and doors with transoms and door with transoms and/or sidelights.

Door Rough Opening Measurements

Standard doors are 1 3/8" in depth (Thick). However width and height vary Rough openings are needed to allow proper spacing of both side-to-side and ceiling-to-floor for a replacement door to fit properly. Here are some general guidelines:

- Interior Doors - when measuring the existing door, add 2" to the width and 2" to the height
- Exterior doors - when measuring for a single width door, add 2" to the width and 2 ½" to the height. For double doors, add 2 ½" to the width and 2 ½" to the height.
- Pocket Doors -when measuring, double the door width and add 2" to the width and 4" to the height.

Cheryl's detailed window and door questionnaires are included under Appendix K.

In addition to the door and lock styles, you'll need to make decisions as to:

Door material -wood, fiberglass, other

Solid/Hollow Core - solid doors are more often used for exterior doors. They offer greater privacy, insulation, and noise abatement.

Jamb thickness - standard is 4 9/16" wide

Wood to be used to frame the door

Swing right or left

Paint Color/Finish - Apply primer and paint if the tops and bottoms of doors are not sealed properly, water will wick up into the end grain causing warping and dry rot.

Stained Doors should be stained and then a marine spar varnish added to all six sides of the door. If the tops and bottoms of doors are not sealed properly, water will wick up into the end grain causing warping and dry not.

Hardware is comprised of the fittings that hold a door in place and make it functional for enter and exiting. You (and your designer, if applicable) will determine:

- Color & finish
- Handle placement (right or left)
- Rosette style

Locked/No lock and do you want all locking doors keyed to the same lock?

Which doors, if any, require addition of a deadbolt?

Door knobs or levers

No Bore Knobs (often on cabinetry doors, laundry room folding doors)

Door stoppers to protect walls and trims

Threshold (exterior, metal, wood)

A More Words about Doors

Entry and garage passageway doors must meet the local firecode. These locations should be hung with solid core doors and require 5/8" of sheetrock.

If you are in a condominium situation with a shared wall(s) with neighbors, 5/8" of sheetrock is required for privacy/noise abatement.

Specialty Doors

Dutch doors are split in half with the ability to open just half of the door for ventilation or coffee talks with the neighbors. The swing factor here means you may have multiple locking devices at the door lock area as well as sliding locks to keep the two pieces in place.

Barn Doors are definitely trending and slide across an entry way on a mounted rail.

Because wall lengths and ceiling heights vary widely, I recommend working with your designer or door vendor to get clear specifications on measurements required for rough in.

The following worksheet will help you assess your door needs.

Individual Door Rough-In Worksheet

Location: _____

Exterior Doors

Single Door — Example

1) Measure existing door size ____ "w x ____ "h
2) Add two(2) inches to width ____ "w
3) Add two(2 ½") inches to height ____"h

Rough In indeed ____ "w x ____"h

Double Door — Example

4) Measure existing door size ____ "w x ____"h
5) Add two(2 ½") inches to width ____ "w
6) Add two(2 ½") inches to height ____"h

Rough In needed ____ "w x ____"h

Interior Doors — Example

1) Measure existing door size _____ "w x ____"h
2) Add two(2) inches to width _____"w
3) Add two(2) inches to length ____"h

Rough In needed _____"w x ____"h

Pocket Design — Example

7) Measure existing door size _____"w x ____"h
8) Double the width _____"w ____"h
9) Add two(2) inches to width _____ "w
10) Add four (4) inches to height ____"h

Rough In needed _____"w x ____"h

WINDOWS

A remodel project is a great time to upgrade windows especially if you are experiencing drafts, paying high energy bills, or finding it hard to open/close windows. They provide you with natural light and a view out into your corner of the world.

The basic components of a double hung window include:

Frame - surrounds and supports the entire window (comprised the head, jamb & sill)

Head - the horizontal top of the window

Jamb - the vertical sides of the window frame

Sill - the lower horizontal section

Jambliner - snugs the window in place

Sash - the moveable part of the window. Framed by both vertical and horizontal rails.

Check Rail - the middle of the window; where the lower sash of the upper window meets the upper sash of the lower window.

Pane - a sheet of glass within the window - can be one sheet or many sheets to make the window.

Lift - the handle for pulling the window up (and down!)

Lock - secures a window in a closed position. There are various window locking mechanism. Some will be located along the Check rail, while others may wind from the sill level.

Other Glass Considerations

- **PANE THICKNESS**
    - O The majority of residential windows fall under the category of single strength glass. It measures 3/32" thick.

    - For larger windows a thicker, double-strength window may serve the project better. !t measures 1/8" thick. Due to its better resistance to breakage and enhanced noise reduction, many window providers use Double-Strength as their standard.

    - For really large windows, adequate wind-load resistance may dictate use of a thicker glass at 5/32" or 3/16".

- **EXTERIOR FINISH** - the exterior side of a window does require weatherproofing. When painting, use a primer, and paint all sides. This is especially important as leaving the top and tile sill unprotected will cause them to wick in water and, over time, this will warp the window or cause dry rot.

- **TEMPERED** - tempered glass is a form of safety glass that has undergone either thermal or chemical processes which make it stronger than normal glass. If broken, tempered glass will break into chunky pieces that are much less likely to cause injury compared to regular glass which turns into shards.

- **LAMINATE** - laminate windows are comprised of two sides of glass with a vinyl liner in the middle. This option is good for letting in light; improving safety in the event of a break (shards stick to the liner); increased UV protection to prevent furniture/rugs fading; and impact resistance during bad storms. It can also increase noise abatement when neighbors live close by.

- **FROSTED** - frosted or etched glasses are often used to bring in light while allowing for privacy.

LIGHTING

Let me shed some light on this topic. Lighting plays a key part in how you live, work and play in your home. And what a selection. In the various lighting treatments you want, you'll be able to determine power and outlet locations.

In California, state regulations require that a light switch be located at each entry into a room.

California's Title 24 Building Energy Efficient standards were put in place to ensure that any new/existing buildings achieve energy efficiency. The goal is to make living spaces more comfortable, reduce cost to power lighting in the home, and reduce emissions into the environment. With residential lighting this shows up as requiring high-efficiency lighting solutions; and auto shut-off switches for some areas of the home like the bathroom.

There are also many lighting solutions and styles to consider:

- Pendant Light - hang suspended over an area - think of a chandelier in the foyer or perhaps over a kitchen island
- Recessed Lights - run flush to the ceiling and are great for task lighting.
- Reading Lamps - perfect for areas where one wants to cozy up with a book or newspaper. You just want to be sure there is electricity available at the spot. Note: Independent reading/ standalone floor lamps are not subject to Title 24.
- Under Cabinet Lighting is another option for providing task lighting, nighttime lighting, or a cozy glow.
- Soft Lighting - I often see holiday lighting strings used in a soft area as both a decorative and functional lighting technique.
- Night Lights - are great for guiding nighttime trips to the bathroom, a child's room, or the refrigerator for a late night snack.

Other Options/Information

Dimmers - offer a variety of settings for intimate/cozy lighting or bright task lighting.

LED lights allow for cost effective and long-duration lighting. They are now become more of a commodity item which is helping to bring down the cost.

Skylights can be another effective way to bring in natural light into darker spaces.

Smoke and Carbon Monoxide Detectors

Most states will require you to have operational smoke and carbon monoxide (CO) alarms installed as part of your project's final inspection.

There are four kinds of smoke detectors commonly required by different building departments.

Photoelectric Smoke Alarms	Have a beam of light within the alarm. When some particle interrupt the light beam the light beam scatters in different directions and the light hits a light sensor which trips the alarm. Photoelectric smoke detectors are best at detecting slow burning, smoky fires that smolder for a long periods of time.
Ionization Smoke Alarms	Have a small amount of radioactive material placed between two electricity charged electrodes which causes an electric current to run between the electrodes. When smoke passes between the electrodes it interrupts the current between the electrodes and trips the alarm. Ionization smoke detectors are best at detecting fast burning, fiery fires.
Dual Sensor Photoelectric And Ionization Alarms	Have features of both photoelectric and Ionization detectors. Some building departments require combination detectors under certain conditions.
Dual Sensor Smoke and Carbon Monoxide (CO) Sensors	Can detect smoke and CO and are placed outside bedrooms (hallways) and also need to be placed on every Floor of the home including the basements.

Why Does My Smoke Alarm Go Off When There's No Fire?

Smoke alarms going off when there is no fire are an indicator that you may have a photoelectric alarm. Cooking activities where hot pots are left unattended and food burns will often create a cloud of smoke that can set off the alarm. Other "false" alarms occur if the light sensor gets dirty from dust or pollen. Even a small insect touching the light sensor may sound the alarm.

Maintaining Smoke Alarms and Carbon Monoxide Detectors - a lot of people tie maintenance of their detectors to Daylight Savings time. The twice yearly prompt, whether springing forward or falling back, is a good reminder to check batteries in these devices.

8 Painting Tips to Achieve Pro Results

Paint is a simple and affordable method of refreshing a room or grounding a design palette. Here are some useful tips to ensure the best outcome:

1) Color Choice: Not sure on which color to paint your walls or ceilings? Paint shops have sample size swatches and small buckets of paint available so you can test drive a wall color before committing to a whole room finish. Purchase a quart-sized bucket of paint to test color choices. Paint two coats onto a piece of foam board that you can easily move about the room to test the impact that time of day/lighting has on the color, and to coordinate with fabric and flooring choices.

2) Wall Prep: Prep the room in advance by removing artwork/fixtures/wall plates, etc. Move furniture to the center of the room so you can easily work around the room's perimeter without having to stop. Tape off window casings and moldings.

3) How Much Paint Do I Need?: Do the math. On average, one gallon of paint will cover 350 square foot of surface. Depending upon the existing covering you may need more than on coat. If there room has built-ins or recessed nooks purchasing an extra gallon of paint will help cover the bases.

4) When to Paint: For exterior paint jobs, climate and finish-have an impact on the quality of your paint job. Consider the weather. You'll run into problem with your paint when the ambient temperature is either too hot or too cold. The optimum temperature for applying latex paint ranges between 50° F - 86° F; oil paint is best applied when temperature range is 40° F -90° F.

5) Primer: Standard wall paints now include primer in the formulations. This saves you time, eliminates bleed-through, and provides the best coverage; However, in instances where you are painting a surface that will move from an oil-based finish to a latex finish, you will need to apply primer before you paint. Latex will only adhere if primer is applied first. Without it, a new coat of latex paint will quickly peel off.

6) Painting on Metal: Use zinc chromate primer on bare metal gutters and downspouts to ensure a smooth, enduring finish. Failure to prime exterior metal will quickly lead to crackled, peeling surfaces. Plants: Outdoor plants in the painting area should be covered for protection. Do give plants a breath of fresh air by lifting the covering every ½ hour so they stay healthy.

7) Storing Paint: Depending upon room size and existing finish, some painting projects may require more than one coat, or more than one day, to complete. Store paint indoors to maintain its integrity. At the end of the project, keep your surplus paint on hand for quick touch ups. When storing, place a dollop of paint on the lid to indicate color. Label the color formula and the room(s) in which it was used. Latex paints can last up to 10 years if stored correctly. Oil based paints may last for up to 15 years.

8) Disposing of Paint: Please dispose of paint responsibly. Paint can be toxic to the environment. Check your local municipality's garbage/dump listings for special dump days when paint can be dropped off at an authorized collection station. If this service does not exist in your area, adding kitty litter to the paint can will absorb the excess.

PAINT LOG

I strongly recommend keeping a paint log for your remodel. In the event you ever need to patch up a spot, this tool will make it easy to get the right "match." The log just requires the basics

- Room
- Area
- Color
- Finish (matte semi-gloss, high glass)
- Date Purchased

And in the event you have leftover paint to store, dab a spot of paint on the lid for a visual reminder as to what color is inside.

Here's a sample paint log:

Room Area	Finish	Vendor/Color	Date Purchased
Kitchen - Walls	Matte	Maker Sage Green	September 2018
Kitchen - Trim	Semi-Gloss	Maker Arctic White	September 2018

The Remodel Paint Log on the next page can help you capture your paint selections and keep them organized.

MY REMODEL PAINT LOG

Room	Area	Finish	Vendor/Color	Purchased

AGING IN PLACE

A lot of people are considering modifications that allow for aging in place. My mom, Ann Marie, is now in her 80's and has every hope to live (and die) in her home. My role, as both her son and her contractor, is to make sure there are safeguards in place so she can fully enjoy her home through the years ahead. Here's a list of construction items we've installed done to modify her home so she can age in place.

Ramp -we installed a beautiful brick ramp at the porch so she can skip having to manage stairs.

Electric Chair - We've modified the staircase between the first and second floors by installing an electric chair. This was easily done by removing one railing and adding electricity to power the chair. This has worked like a charm. Mom feels she has full use of her home. We also use the chair for bringing heavy suitcases or laundry baskets up and down.

Pull Out Drawers - installing pull out drawers in cabinets means Mom doesn't need to stoop down and possibly hurt her back.

Conduction Stovetop - means Mom can cook safely. There’s no worry about leaving an open flame on or accidental burn.

Grab Bars - These bars will support mom and make getting in and out of Shower and bath spaces. They reduce the opportunity for a slip and fall.

Shower Wand - With a bench and a shower makes personal grooming much easier and safer.

PROJECT **NOTES**

Tips to Prevent Your Project from Stalling Out

In my experience, the average time needed to complete a bathroom remodel, including inspections, averages 17-22 construction days; and the average time to fully remodel a kitchen including inspections, new service panel, slab-counter tops, tile backsplash and hardwood floors, averages 28- 35 construction days. The tips below will help you to prevent your project from stalling out.

1) If you need a permit for your project, have the permit at the job site before starting any work.

2) Have all "critical path" materials (valves, fans, plumbing fixtures, cabinets, windows, doors, tile or electrical fixtures, etc.) at the job site before starting construction.

3) If your project involves appliances, have all "cut sheets" (diagrams that show the size and placement of plumbing, electrical and venting requirements of each appliance) at the job site before starting construction.

4) Know which building inspections will be needed for your project and know if you can call them in on a phone automated system or if they must be called into a person. If you can call more than one inspection in advance of needing it-do it. For example: On Monday, October 5th I've scheduled the rough inspection for the morning; Call in the Insulation inspection for Tuesday, October 6th in the afternoon; Call in the drywall screw inspection for Thursday, October 8th in the afternoon, etc. If possible, don't wait to complete one inspection before calling in the next inspection.

5) If your project involves slab counter top materials, have them ready at your supplier or fabricator before starting the project. Let your fabricator know, as far in advance as possible, the approximate date you will need them to template the counter top.

6) If you are installing wood flooring; make sure that the flooring has three (3) days to acclimate to the moisture in the space you are remodeling.

7) If you are installing hardwood flooring have the flooring installed while

the counter top is being fabricated.

8) If you need a Fire Department inspection, get it done as early as possible in the construction process; don't wait until just before your final inspection.

9) Pay your contractor promptly, if not, he/she may stop construction.

10) The first time your contractor shows up late, doesn't show up as scheduled, or doesn't promptly return your calls, texts or emails bring it to their attention and let them know that it is imperative that good communication be adhered to.

11) Do not pay for work until it is completed as planned and do not give the final payment until the project is 100% completed and you have the final building permit.

Conclusion

Congratulations on completing How to Manage Your Home Remodel Like a Pro! Knowledge is power and being prepared will save you the worry and sleepless nights that so many homeowners experience when undertaking a remodel. I truly hope that you have found this information to be useful; that you feel more confident and prepared in moving forward with your project; and that you don't have to live a nightmare with your contractor to get your dream home.

APPENDICES

APPENDIX A

Gas Pipe Line Calculation Sizing – For Steel Pipe
Using CPC Pipe Sizing Table (Natural Gas)

This handout will guide you thru the basic, most common method for sizing a natural gas piping system for any residential or commercial application. There are other methods available for sizing these systems by either a complex formulaic method described in the California Plumbing Code, or the system can be engineered by a qualified professional.
The information below is paraphrased from the California Plumbing Code and is provided as an aid to designers, contractors and homeowners who are installing or modifying a schedule 40 steel pipe, natural gas piping system.

Sizing of Gas Piping Systems. Gas Piping systems shall be of such size and so installed as to provide a supply of gas to meet the maximum demand and supply gas to each appliance inlet at not less than the minimum supply pressure required by the appliance.

Maximum Gas Demand. The volumetric flow rate of gas to be provided (in cubic feet per hour) shall be calculated using the manufacture's input ratings of the appliance served, adjusted for altitude. Where the input rating is not indicated, the gas supplier, appliance manufacturer, or qualified agency shall be contacted or the rating from Table shall be used for estimating the volumetric flow rate of gas to be supplied. ***(USE 1,100)***

The total connected hourly load shall be used as the basis for pipe sizing, assuming the appliances are operating in full capacity simultaneously.

Required Gas Supply.

Volume. The hourly volume of gas required at each piping outlet shall be taken as not less than the maximum hourly rating as specified by the manufacturer of the appliance or appliances to be connected to each such outlet.

Where the rating of the gas appliance(s) to be installed is unknown, Table 1 shall be permitted to be used to estimate requirements of typical appliances.

To obtain the cubic feet per hour of gas required, divide the input of the appliances by the average Btu (kW·h) heating value per cubic foot of the gas. The average Btu per cubic foot in the Bay Area is 1,100.

Minimum Size of Piping Outlets. The size of the supply piping outlet for any gas appliance shall not be less than one-half (1/2) inch.

Pipe Sizing Methods. Where the piping size is to be determined using either of the methods below, the minimum diameter of each pipe segment shall be obtained from the pipe sizing shown in Table 2.

Longest Length Method. The size of each section of gas piping shall be determined using the total length of piping from the meter to the most remote outlet and the load of that section (see calculation example in "Figure A" use steps 1 – 5 below)

Branch Length Method. Pipe shall be sized as follows: (See calculation example in "Figure A" and use steps 1 – 6 below)

(A) The pipe size of each section of the longest pipe run from the meter to the most remote outlet shall be determined using the longest run of piping and the load of the section.

(B) The pipe size of each section of branch piping not previously sized shall be determined using the length of piping from the meter to the most remote outlet in each branch and the load of the section.

Sizing of Piping Sections. To determine the size of each section of pipe in any system use Table 2, and proceed as follows:

(1) Measure the length of the pipe from the gas meter location to the most remote outlet on the system.
(2) Locate that total length in the left-hand column of Table 2, or the next longer distance where the table does not give the exact length.
(3) Starting at the most remote outlet, find in the row just selected the gas demand for the outlet. Where the exact figure of demand is not shown, choose the next larger figure in the row.
(4) At the top of this column will be found the correct size of pipe.
(5) **Using this same row**, proceed in a similar manner for each section of pipe serving this outlet. For each section of pipe, determine the total gas demand supplied by that section.
(6) Size each section of branch piping not previously sized by measuring the distance from the gas meter location to the most remote outlet in that branch and follow the procedures of steps 2, 3, 4, and 5 above. Size branch piping in the order of their distance from the meter location, beginning with the most distant outlet not previously sized.

TABLE 1

APPROXIMATE GAS INPUT FOR TYPICAL APPLIANCES

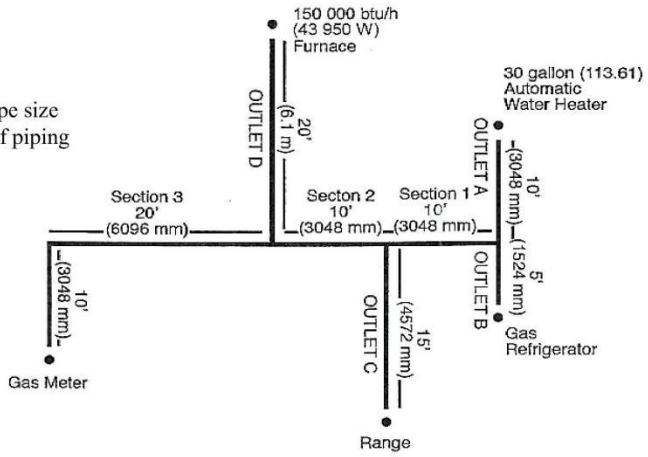
APPLIANCE	INPUT Btu/h. (Approx.)	Cubic Feet of Gas Per Hour
Space Heating Units		
Warm air furnaces:		
Single family	100,000	91
Multifamily, per unit	60,000	55
Hydronic boilers:		
Single family	100,000	91
Multifamily, per unit	60,000	55
Space-and Water-Heating Units		
Hydronic boilers:		
Single family	120,000	109
Multifamily, per unit	75,000	68
Water-Heating Appliances		
Water heaters, automatic:		
storage 30 to 40 gal. tank	35,000	32
Water heater, automatic		
storage 50 gal. tank	50,000	45
Water heater, automatic instantaneous:		
Capacity at 2 gal./minute	142,800	130
Capacity at 4 gal./minute	285,000	259
Capacity at 6 gal./minute	428,400	389
Water heater, domestic,		
circulation or side-arm	35,000	32
Cooking Appliances		
Range, freestanding, domestic	65,000	59
Built-in oven/ broiler, domestic	25,000	23
Built-in counter-top range, domestic	40,000	36
Other Appliances		
Clothes dryer, domestic	35,000	32
Gas fireplace - direct vent	40,000	36
Gas log unit	80,000	73
Barbecue	40,000	36
Gaslight	2,500	2

For SI units: 1 Btu per hour = .0293 W

FIGURE A

SAMPLE SCHEMATIC DRAWING

**Be sure to add the pipe size for each run/length of piping



Method for determining correct pipe sizing per 1216.1.1:

(1) Compute CFM demand for all appliances
Maximum gas demand of outlet A:
32 cubic feet per hour (from Table 1).
Maximum gas demand of outlet B:
3 cubic feet per hour (from Table 1).
Maximum gas demand of outlet C:
59 cubic feet per hour (from Table 1).
Maximum gas demand of outlet D:
136 cubic feet per hour [150,000 Btu/hour divided by 1100 Btu per cubic foot].

(2) Determine 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 2:
Outlet A, supplying 32 cubic feet per hour, requires ½ inch pipe.
Section 1, supplying outlets A and B, or 35 cubic feet per hour requires ½ inch pipe.
Section 2, supplying outlets A, B, and C, or 94 cubic feet per hour requires 3/4 inch pipe.
Section 3, supplying outlets A, B, C, and D, or 230 cubic feet per hour, requires 1 inch pipe.

(4) Using the column marked 60 feet in Table 2 [no column for actual length of 55 feet]:
Outlet B, supplying 3 cubic feet per hour, requires ½ of an inch pipe.
Outlet C, supplying 59 cubic feet per hour, requires ½ of an inch pipe.

(5) Using the column marked 60 feet in Table 2:
Outlet D, supplying 136 cubic feet per hour, requires ¾ inch pipe.

Table 2

SCHEDULE 40 METALLIC PIPE

											GAS:	NATURAL		
											INLET PRESSURE:	LESS THAN 2 PSI		
											PRESSURE DROP:	0.5 in w.c.		
											SPECIFIC GRAVITY:	0.60		
PIPE SIZE (inch)														
NOMINAL:	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
ACTUAL ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938
LENGTH (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
125	44	92	173	355	532	1,020	1,630	2,890	5,890	10,600	17,200	35,400	64,300	102,000
150	40	83	157	322	482	928	1,480	2,610	5,330	9,650	15,600	32,100	58,300	92,300
175	37	77	144	296	443	854	1,360	2,410	4,910	8,880	14,400	29,500	53,600	84,900
200	34	71	134	275	412	794	1,270	2,240	4,560	8,260	13,400	27,500	49,900	79,000
250	30	63	119	244	366	704	1,120	1,980	4,050	7,320	11,900	24,300	44,200	70,000
300	27	57	108	221	331	638	1,020	1,800	3,670	6,630	10,700	22,100	40,100	63,400
350	25	53	99	203	305	587	935	1,650	3,370	6,100	9,880	20,300	36,900	58,400
400	23	49	92	189	283	546	870	1,540	3,140	5,680	9,190	18,900	34,300	54,300
450	22	46	86	177	266	512	816	1,440	2,940	5,330	8,620	17,700	32,200	50,900
500	21	43	82	168	251	484	771	1,360	2,780	5,030	8,150	16,700	30,400	48,100
550	20	41	78	159	239	459	732	1,290	2,640	4,780	7,740	15,900	28,900	45,700
600	19	39	74	152	228	438	699	1,240	2,520	4,560	7,380	15,200	27,500	43,600
650	18	38	71	145	218	420	669	1,180	2,410	4,360	7,070	14,500	26,400	41,800
700	17	36	68	140	209	403	643	1,140	2,320	4,190	6,790	14,000	25,300	40,100
750	17	35	66	135	202	389	619	1,090	2,230	4,040	6,540	13,400	24,400	38,600
800	16	34	63	130	195	375	598	1,060	2,160	3,900	6,320	13,000	23,600	37,300
850	16	33	61	126	189	363	579	1,020	2,090	3,780	6,110	12,600	22,800	36,100
900	15	32	59	122	183	352	561	992	2,020	3,660	5,930	12,200	22,100	35,000
950	15	31	58	118	178	342	545	963	1,960	3,550	5,760	11,800	21,500	34,000
1,000	14	30	56	115	173	333	530	937	1,910	3,460	5,600	11,500	20,900	33,100
1,100	14	28	53	109	164	316	503	890	1,810	3,280	5,320	10,900	19,800	31,400
1,200	13	27	51	104	156	301	480	849	1,730	3,130	5,070	10,400	18,900	30,000
1,300	12	26	49	100	150	289	460	813	1,660	3,000	4,860	9,980	18,100	28,700
1,400	12	25	47	96	144	277	442	781	1,590	2,880	4,670	9,590	17,400	27,600
1,500	11	24	45	93	139	267	426	752	1,530	2,780	4,500	9,240	16,800	26,600
1,600	11	23	44	89	134	258	411	727	1,480	2,680	4,340	8,920	16,200	25,600
1,700	11	22	42	86	130	250	398	703	1,430	2,590	4,200	8,630	15,700	24,800
1,800	10	22	41	84	126	242	386	682	1,390	2,520	4,070	8,370	15,200	24,100
1,900	10	21	40	81	122	235	375	662	1,350	2,440	3,960	8,130	14,800	23,400
2,000	NA	20	39	79	119	229	364	644	1,310	2,380	3,850	7,910	14,400	22,700

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm, 1 cubic foot per hour = 0.0283 m^3/h, 1 pound-force per square inch = 6.8947 kPa, 1 inch water column = 0.249 kPa

Note:

[1] Table entries are rounded to 3 significant digits.

[2] NA means a flow of less than 10ft^3/h (0.283 m^3/h).

APPENDIX B

City of SACRAMENTO
Community Development

300 Richards Blvd., 3rd Floor
Sacramento, CA 95811

Help Line: 916-264-5011
CityofSacramento.org/dsd

Electrical Load Calculation Worksheet

2022 CEC 220.82 (100 AMP Minimum)

THIS FORM SHALL BE ON THE JOB SITE AT ALL TIMES

Permit # _____ **Date:** _____

Contractor/Owner: _____ **Size of service panel:** _____ **AMPS**

Job Address: _____ **Total SF:** _____

Phone # _____ **Email:** _____

ITEM		WATTS	*EXAMPLES
_____Sq.Ft. @ 3 watts per Sq.Ft.			**1) - A/C with gas heat**
20 amp appliance circuits @ 1,500 watts each			- compressor 20 amps
Laundry @ 1,500 watts (min)			- fan(s) 5 amps
Range (NPR - nameplate rating)	Gas: Yes□ No□		TOTAL: 25 amps x 240 volts = 6,000 watts
Oven (NPR)	Gas: Yes□ No□		**2) - A/C with 5 kW electric heater**
Cooking Units (NPR)	Gas: Yes□ No□		- compressor 20 amps
Water Heater (NPR)	Gas: Yes□ No□		- fan(s) 5 amps
Dryer @ 5,000 watts (min)	Gas: Yes□ No□		TOTAL: 25 amps x 240 volts = 6,000 watts
Dishwasher (NPR)			- 5,000 watt heater x 65% = 3,250 watts
Disposal (NPR)			- Use larger of A/C or heater - i.e., 6,000 watts
Motors (NPR)			**3) - A/C with 10 kW electric heater**
Other (NPR)			- compressor 20 amps
Other (NPR)			- fan(s) 5 amps
			TOTAL: 25 amps x 240 volts = 6,000 watts
SUBTOTAL:			- 10,000 watt heater x 65% = 6,500 watts
			- Use larger of A/C or heater - i.e., 6,500 watts
1st 10,000 watts of SUBTOTAL @ 100%			**4) - A/C with heat pump**
Remaining_____ watts @40%			- compressor 20 amps
Largest of A/C or electric heater or heat pump*			- fan(s) 5 amps
Electric vehicle supply equipment (EVSE)			
			SUBTOTAL: 25 amps x 240 volts = 6,000 watts
TOTAL WATTS:			- 5,000 watt heat strips @ 65% = 3,250 watts
TOTAL WATTS DIVIDED BY 240 VOLTS =		**AMPS**	TOTAL: 9,250 watts

* *Use largest of 100% of air conditioner or 65% of the heater, or when the residence has a heat pump, add 65% of Auxiliary heat strips to 100% of air conditioner/heat pump*

APPENDIX C

CITY of PALO ALTO

www.cityofpaloalto.org/depts/utl

Utilities Department

Electric Vehicle Supply Equipment (EVSE) Information

THIS DOCUMENT PROVIDES INFORMATION FOR NEW EVSE INSTALLATIONS. IF THE ELECTRIC SERVICE MAIN PANEL WILL BE UPGRADED, PLEASE COMPLETE THE UTILITY SERVICE APPLICATION AND SUBMIT WITH THIS DOCUMENT.

Installing an Electric Vehicle Supply Equipment (EVSE) will require changes to building wiring and may also require upgrading the electric service main panel to meet the needs of this specialized equipment. Before installing an EVSE and associated infrastructure, talk to your EV manufacturer for information about what you need to charge your vehicle and what regulatory requirements there might be.

When installing your EVSE, be sure to use a licensed electrical contractor whose license is current for electrical work. The contractor should also follow the guidelines of the manufacturer and the requirements of City of Palo Alto Building Codes.

A permit from the City is required before installing EVSE. Submit building and electrical plans for the planned installation with your permit application to the City of Palo Alto Development Center.

Why is the Electric Utility concerned about your EVSE installation?
Though an individual EVSE may have a negligible impact on the utility electric system, the combined effect of several chargers in the same service area could result in overloading the utility lines and transformers. It is crucial that the City of Palo Alto Utilities is notified of any EVSE installations to ensure that the utility electrical system remains adequately sized to serve our customers and maintain high levels of service reliability. The Utilities department needs information on location (address), number of EVSE being installed, EVSE current rating, and number of electric vehicles.

UTILITIES' REVIEW AND APPROVAL IS REQUIRED BEFORE THE BUILDING DEPARTMENT WILL ISSUE PERMITS FOR INSTALLATION OF EVSE RATED GREATER THAN 40 AMP, OR THAT REQUIRES AN OVERCURRENT PROTECTION DEVICE (CIRCUIT BREAKER) GREATER THAN 50 AMP. FAILURE TO DO SO COULD DAMAGE UTILITY SYSTEM FACILITIES, WITH THE OFFENDER RESPONSIBLE FOR THE COST OF REPAIRS.

Please provide the following information and submit with copies of any documentation from the charger manufacturer (cut sheets, installation instructions, specifications, etc.).

Project Address:	**Building Department Permit #**
Contact Person:	**Phone:**
	E-mail:

Number of EVSE being installed:	**Number of Electric Vehicles:**

EVSE Rating(s):

Quantity			
Voltage (V)			
Current (A)			
Power (kVA)			

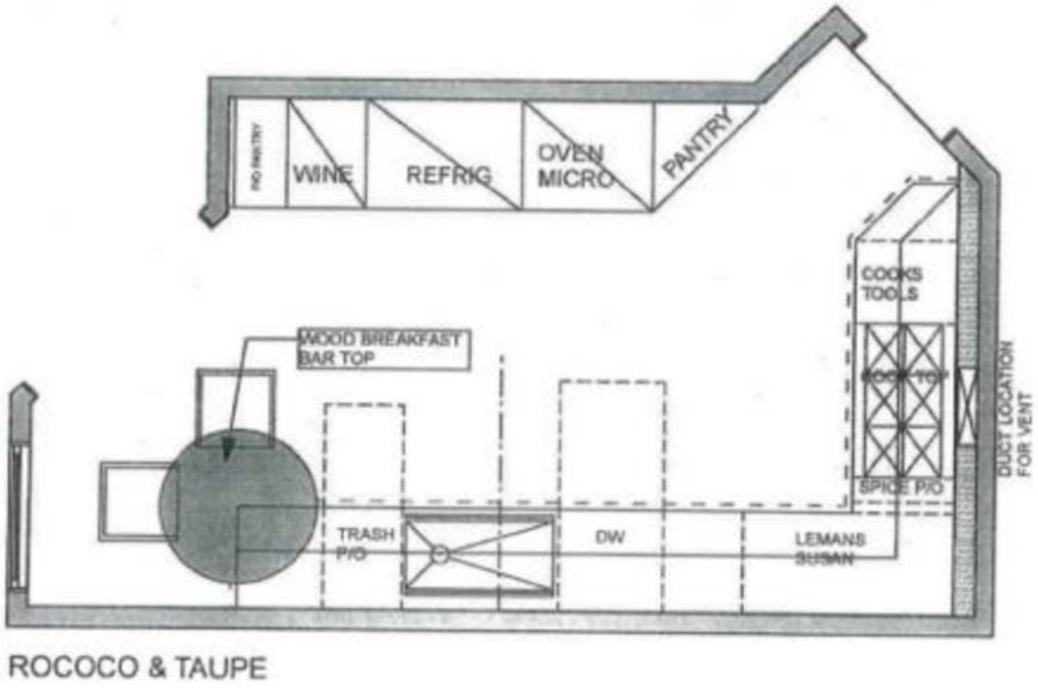
CPAU Engineering Review (required for EVSE > 40 Amp (50 Amp circuit breaker) - A copy of this approved form must be submitted to the City of Palo Alto Building department before a permit will be issued

Approved By:	**Date:**

APPENDIX D

SAMPLE KITCHEN FLOOR PLAN

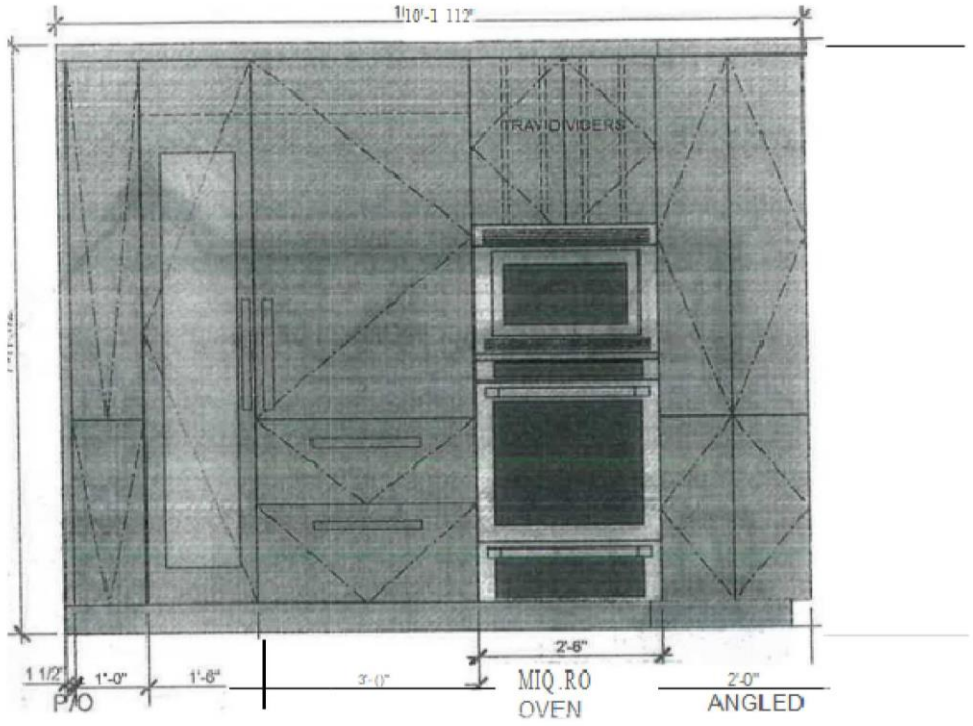
Courtesy of Rococo & Taupe , Menlo Park, CA



ROCOCO & TAUPE

SAMPLE KITCHEN ELEV ON PLAN

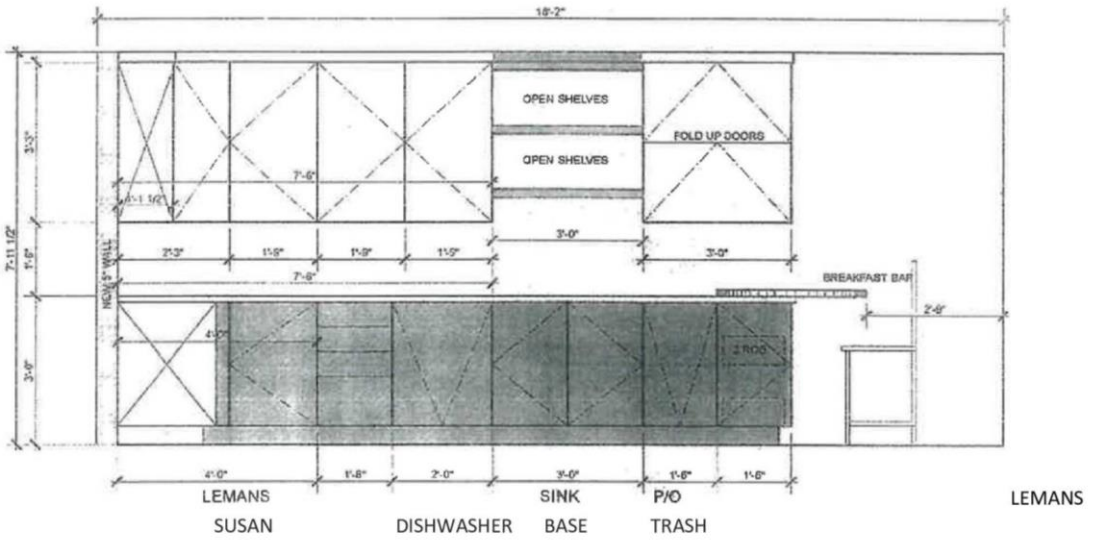
Courtesy of Rococo & Taupe, Menlo Park, CA



PANTRY WINE REFRIG WARMING PANTRY

SAMPLE KITCHEN ELEVATION PLAN

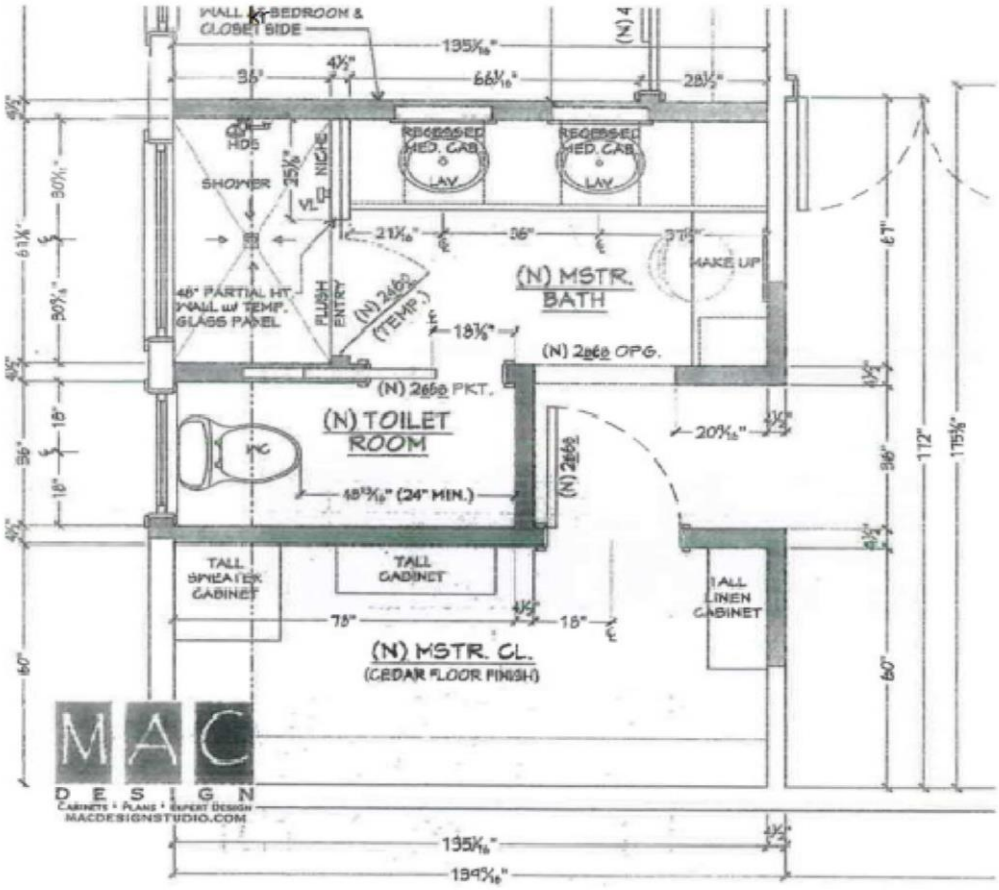
Courtesy of Rococo & Taupe



Rococo & Taupe

SAMPLE BATHROOM FLOOR PLAN

Courtesy of MAC Design, Fremont, CA



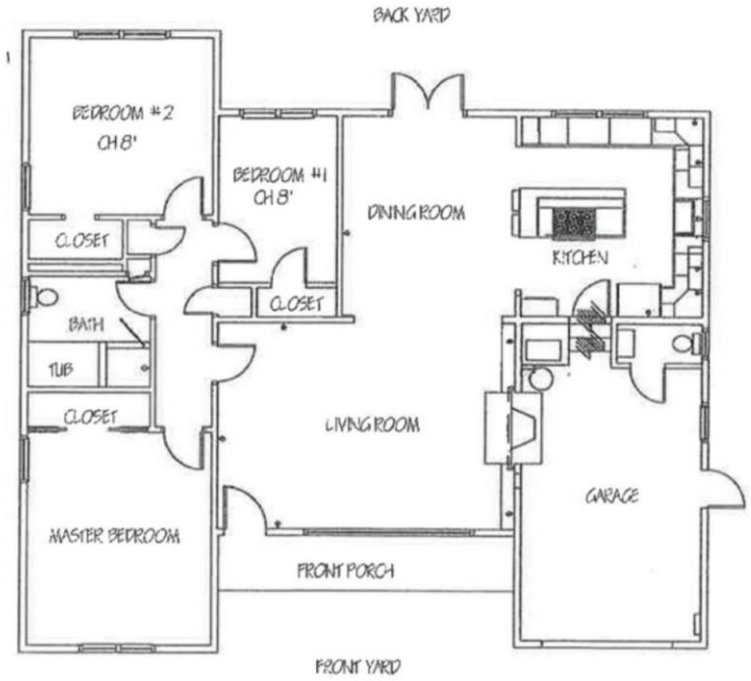
Bathroom Floor Plan

SAMPLE HOME ADDITION EXISTING PLAN

Nash Design Studio, Emerald Hills, CA

EXISTING PLAN

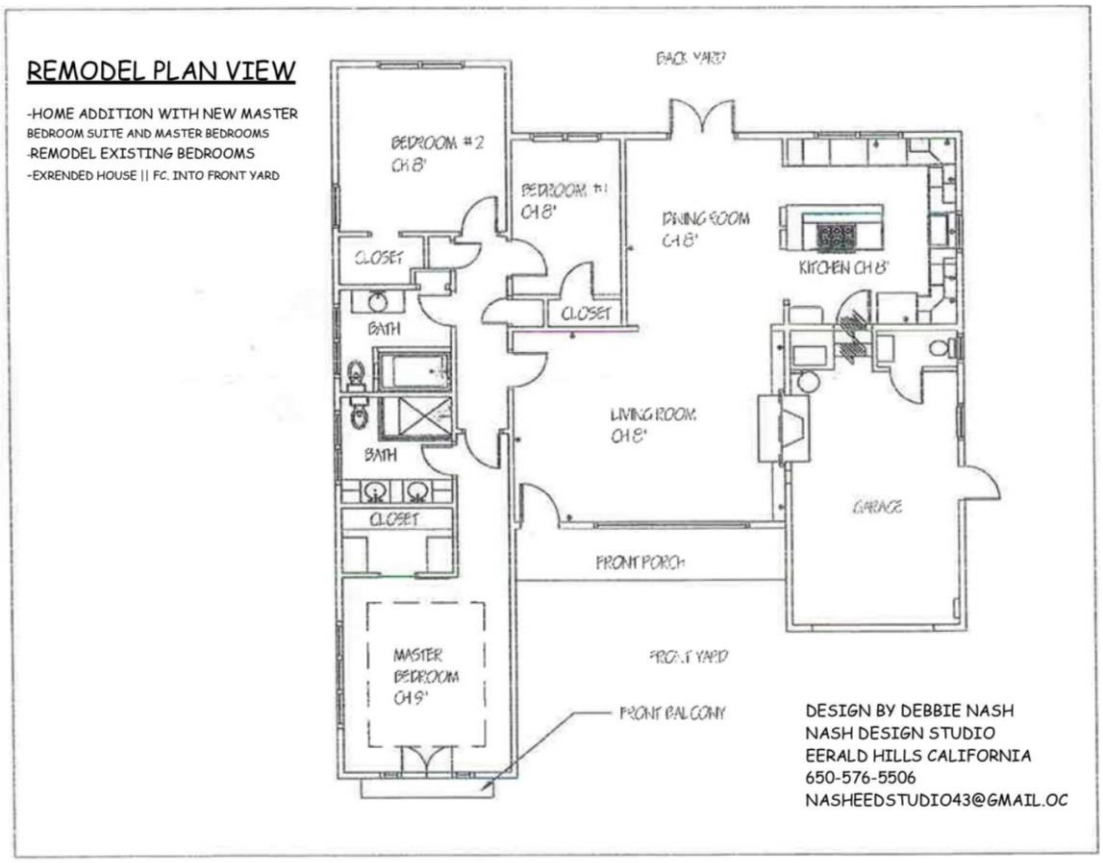
HOME ADDITION WITH NEW MASTER
BEDROOM SUITE AND MASTER BEDROOM



DESIGNED BY DEBBIE NASH
NASH DESIGN STUDIO
EMERALD HILLS.CALIFORNIA
650-576-5506
NASHEEDSTUDIO@GMAIL.COM

SAMPLE HOME ADDITION PLAN VIEW

Nash Design Studio, Emerald Hills, CA



SAMPLE HOME ADDITION EXTERIOR FRONT ELEVATION

Nash Design Studio, Emerald Hills, CA

REMODEL PLAN VIEW

-HOME ADDITION WITH NEW MASTER
BEDROOM SUITE AND MASTER BEDROOMS
- REMODEL EXISTING BEDROOMS

DESIGN BY DEBBIE NASH
NASH DESIGN STUDIO
EERALD HILLS CALIFORNIA
650-576-5506
NASHEEDSTUDIO43@GMAIL.OCM

APPENDIX E

APPENDIX F

Conditional Waiver and Release Upon Progress Payment

Use this form when the claimant is required to execute a waiver and release in exchange for or in order to induce the payment of a progress payment and the claimant has not been paid. This form is useful when the claimant has not been paid yet, but will be paid out of a progress payment that is not the final payment. This conditional waiver and release is only effective if the claimant is *actually paid*. This release does not cover all items. See the "Conditional Waiver And Release Upon Progress Payment" form for more information.

CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT

Civil Code Section 3262(d)(1)

Upon receipt by the undersigned of a check from _____
MAKER OF CHECK

in the sum of $_____ payable to _____
AMOUNT OF CHECK PAYEE OR PAYEES OF CHECK

and when the check has been properly endorsed and has been paid by the bank upon which it is drawn, this document shall become effective to release any mechanic's lien, stop notice, or bond right the undersigned has on the job of _____
OWNER

located at _____ to the following extent.
JOB DESCRIPTION

This release covers a progress payment for labor, services, equipment, or material furnished to

_____ through _____
YOUR CUSTOMER DATE

only and does not cover any retentions retained before or after the release date; extras furnished before the release date for which payment has not been received; extras or items furnished after the release date. Rights based upon work performed or items furnished under a written change order which has been fully executed by the parties prior to the release date are covered by this release unless specifically reserved by the claimant in this release. This release of any mechanic's lien, stop notice, or bond right shall not otherwise affect the contract rights, including rights between parties to the contract based upon a rescission, abandonment, or breach of the contract, or the right of the undersigned to recover compensation for furnished labor, services, equipment, or material covered by this release if that furnished labor, services, equipment, or material was not compensated by the progress payment.

Before any recipient of this document relies on it, said party should verify evidence of payment to the undersigned.

Dated: _____ _____
COMPANY NAME

By _____
TITLE

NOTE: This form complies with the requirements of Civil Code Section 3262(d)(1). It is to be used by a party who applies for a progress payment when the progress check has not yet cleared the bank. This release only becomes effective when the check, properly endorsed, has cleared the bank.

7/04

Unconditional Waiver and Release Upon Progress Payment

Use this form when the claimant is required to execute a waiver and release in exchange for or in order to induce payment of a progress payment and the claimant asserts in the waiver that he or she has in fact been paid the progress payment. This release does not cover all items. See the “Unconditional Waiver And Release Upon Progress Payment” form for more information.

UNCONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT

Civil Code Section 3262(d)(2)

The undersigned has been paid and has received a progress payment in the sum of

$ _____ for labor, services, equipment or material furnished to _____
YOUR CUSTOMER

on the job of _____ located at _____
OWNER JOB DESCRIPTION

and does hereby release any mechanic’s lien, stop notice or bond right that the undersigned has on the above referenced job to the following extent.

This release covers a progress payment for labor, services, equipment, or material furnished

to _____ through _____
YOUR CUSTOMER DATE

only and does not cover any retentions retained before or after the release date; extras furnished before the release date for which payment has not been received; extras or items furnished after the release date. Rights based upon work performed or items furnished under a written change order which has been fully executed by the parties prior to the release date are covered by this release unless specifically reserved by the claimant in this release. This release of any mechanic’s lien, stop notice, or bond right shall not otherwise affect the contract rights, including rights between parties to the contract based upon a rescission, abandonment, or breach of the contract, or the right of the undersigned to recover compensation for furnished labor, services, equipment, or material covered by this release if that furnished labor, services, equipment, or material was not compensated by the progress payment.

Dated: _____ _____
COMPANY NAME

By _____
TITLE

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

NOTE: This form complies with the requirements of Civil Code Section 3262(d)(2). It is to be used to release claims to the extent that a progress payment has actually been received by the releasing party.

7/04

Conditional Waiver and Release Upon Final Payment

Use this form when the claimant is required to execute a waiver and release in exchange for or in order to induce the payment of a final payment and the claimant has not been paid. This release is only binding if there is evidence of payment to the claimant. Evidence of payment may be demonstrated by:

- the claimant's endorsement on a single check or a joint payee check which has been paid by the bank upon which it was drawn; or
- written acknowledgment of payment given by the claimant.

CONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

Civil Code Section 3262(d)(3)

Upon receipt by the undersigned of a check from _____ (MAKER OF CHECK)

in the sum of $_____ (AMOUNT OF CHECK) payable to _____ (PAYEE OR PAYEES OF CHECK)

and when the check has been properly endorsed and has been paid by the bank upon which it is drawn, this document shall become effective to release any mechanic's lien, stop notice, or bond right the undersigned has on the job of _____ (OWNER)

located at _____ (JOB DESCRIPTION).

This release covers the final payment to the undersigned for all labor, services, equipment, or material furnished on the job, except for disputed claims for additional work in the amount of $ _____.

Before any recipient of this document relies on it, the party should verify evidence of payment to the undersigned.

Dated: _____ _____ (COMPANY NAME)

By _____ (TITLE)

NOTE: This form of release complies with the requirements of Civil Code Section 3262(d)(3). It is not effective until the check that constitutes final payment has been properly endorsed and has cleared the bank.

7/04

Unconditional Waiver and Release Upon Final Payment

Use this form when the claimant is required to execute a waiver and release in exchange for, or in order to induce payment of, a final payment *and* the claimant asserts in the waiver he or she has in fact been paid the final payment.

UNCONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

Civil Code Section 3262(d)(4)

The undersigned has been paid in full for all labor, services, equipment or material furnished to _____ (YOUR CUSTOMER) on the job of _____ (OWNER) located at _____ (JOB DESCRIPTION) and does hereby waive and release any right to a mechanic's lien, stop notice, or any right against a labor and material bond on the job, except for disputed claims for extra work in the amount of $_____.

Dated: _____ _____ (COMPANY NAME)

By _____ (TITLE)

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

NOTE: This form complies with the requirements of Civil Code Section 3262(d)(4).

7/04

APENDIX G

KITCHEN INSPECTION GUIDELINES

CITY OF PALO ALTO

DEVELOPMENT SERVICES – BUILDING INSPECTION

INSPECTION GUIDELINES: KITCHENS

INSPECTION CODE: 220, 235, 243, 246 101

SCOPE: RESIDENTIAL

APPLICABLE CODES: 2016 CBC, CRC, CPC, CMC, CEC, CALGreen, CEnC, and PAMC

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

IMPORTANT

☐ Failure to complete the items below prior to inspection may result in a re-inspection fee.

REQUIRED INSPECTIONS

1. All Trades (Inspection 220)
   - Inspection to verify rough mechanical, electrical, plumbing, and framing. See the "All Trades" inspection guidelines for more information.
2. Insulation (Inspection 235)
   - Applicable to exterior walls only. See the "Insulation" inspection guidelines for more information.
3. Drywall (Inspection 243)
   - See the "Drywall" inspection guidelines for more information.
4. Electrical Torque (Inspection 246)
5. Final Inspection (Inspection 101)

PRE-INSPECTION

☐ When upgrading the gas meter size due to installation of new equipment, or if gas meter has been removed due to unsafe or unoccupied structure, please contact Water Gas Waste Water (WGW) at 650-496-5940 for an inspection. The gas stub-out must be in compliance with WGW standards and a green tag must be applied at the gas stub-out prior to Building Final. See the "Gas Meter Release" inspection checklist for all requirements.

INSPECTION

MECHANICAL

☐ Environmental duct exhaust shall terminate not less than 3' from a property line, 10' from a forced air inlet, and 3' from openings into the building. Environmental exhaust ducts shall not discharge onto a public walkway. (CMC 502.2.1)

☐ An exhaust fan shall be installed in the kitchen with a minimum capacity to exhaust 100 cfm for demand-controlled or 5 air changes per hour (ach) for continuous ventilation. (ASHRAE 62.2-2013)

- ☐ Makeup air shall be provided to replenish air exhausted by the ventilation system. Makeup air shall be located as to avoid recirculation of contaminated air within enclosures. See the "Makeup Air" inspection checklist for more information. (ASHRAE 62.3-2013)

- ☐ Ducts used for domestic kitchen ranges shall be of metal and shall have smooth interior surfaces. (CMC 504.3)

- ☐ Any new duct shall be sealed with UL 181 non-cloth tape and insulated with a minimum R value of 4.2 and shall be supported every 5'. (CMC 603.8, CMC 603.10, CMC 604.0)

- ☐ Household cooking appliances shall have a vertical clearance above the cooking top of not less than 30" to combustible material or metal cabinets. A minimum of 24" is permitted where (CMC 921.3.2, CMC 921.4.2):
  - The underside of the combustible material or metal cabinet above the cooking top is protected with not less than 1/4" insulating millboard covered with sheet metal not less than 0.0122" thick.
  - A metal ventilating hook of sheet metal not less than 0.0122" is installed above the cooking top with a clearance of not less than 1/4" between the hood and the underside of the combustible material or metal cabinet, and the hood is as wide as the appliance and is centered over the appliance.
  - A listed cooking appliance or microwave oven installed over a cooking appliance is installed per the manufacturer's installation instructions. Microwave ovens shall comply with UL 923.

- ☐ Open-top broiler units shall be provided with a metal ventilating hood of not less than 0.0122" with a clearance of 1/4" between the hood and the underside of combustible material or metal cabinets. A clearance of 24" shall be maintained between the cooking top and the combustible material or metal cabinet, and the hood shall be as wide as the open-top broiler and centered over the unit. (CMC 923.3)

ELECTRICAL

- ☐ Electric household cooking appliances designed for permanent installations shall be installed in accordance with the manufacturer's installation instruction and comply with UL 858. (CMC 921.1)

- ☐ Verify that at least (2) 20-ampere branch circuits were provided for small-appliances at the kitchen. (CEC 210.11(C))

- ☐ Small-appliance circuits shall not supply disposals, dishwashers, and other appliances. (CEC 210.52(B)(2))

- ☐ The rating of any cord-and-plug-connected utilization equipment not fastened in place shall not exceed 80% of the branch-circuit raiting. (CEC 210.23(A)(1), CEC 210.23(B))

- ☐ Provide dedicated circuits for kitchen hoods. (CEC 210.52(B)(2))

- ☐ No lighting shall be on the required 20-amp small-appliance branch circuit. (CEC 210.52(B)(2))

- ☐ Where two or more branch circuits supply devices or equipment on the same yoke or mounting strap, a means to simultaneously disconnect the ungrounded conductors supplying those devices shall be provided at the point at which the branch circuits originate. For example, handle ties at garbage disposal and dishwashers are required for single yokes. (CEC 210.7)

- ☐ All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the kitchen shall have ground-fault circuit-interrupter (GFCI) protection and be accessible (CEC 210.8(A))

- ☐ GFCI protections shall be provided for outlets that supply dishwashers. (CEC 210.8(D))

- ☐ Tamper-resistant receptacles are required on all 125-volt, single-phase, 15- and 20-ampere receptacles. (CEC 406.4(D)(2)(a))

- ☐ Cables and raceways must be a minimum of 1-1/4" from the edge of framing members or install 1/16" thick plates. (CEC 300.4(A))

- ☐ Junction boxes and similar enclosures shall be accessible and shall have working clearances (CEC 110.26(A), CEC 314.29)
    - Install grounding pigtails in metal boxes.

- ☐ Where more than (3) current-carrying conductors are stacked or bundled, stackers shall be used to secure the conductors instead of staples.

- ☐ An upgrade of the existing electrical service may be required based on the number of and ampacity of new and existing circuits.

- ☐ Check the electrical panel for new wiring and labeling.

- ☐ For nonmetallic boxes and conduit bodies, wiring shall be secured to the box. (CEC 314.17(C))

- ☐ All switches, outlets, and junction boxes shall be flush with the finished surface. (CEC 314.20)

- ☐ Nonmetallic-sheathed cable, such as Romex, shall be supported every 4-1/2' and within 12" of every cabinet, box, fitting and within 8" of plastic receptacle boxes. (CEC 334.30)

- ☐ A receptacle shall be installed at each wall countertop space that is 12" or wider, and receptacles shall be installed such that it is not more than 2' at any point along wall line. (CEC 210.52(C)(1))

- ☐ At least (1) receptacle shall be installed at each island countertop and peninsular countertop space when the countertop space has a long dimension of 24" or a short dimension of 12" or greater. (CEC 210.52(C)(2), CEC 210.52(C)(3))

- ☐ Countertop spaces separated by rangetops, refrigerators, or sinks shall be considered as separate countertops. (CEC 210.52(C)(4))

☐ Receptacles shall be located on or above, but no more than 20" above the countertop. Receptacles are permitted to be mounted not more than 12" below the countertop and where the countertop does not extend 6" beyond the support base. (CEC 210.52(C)(5))

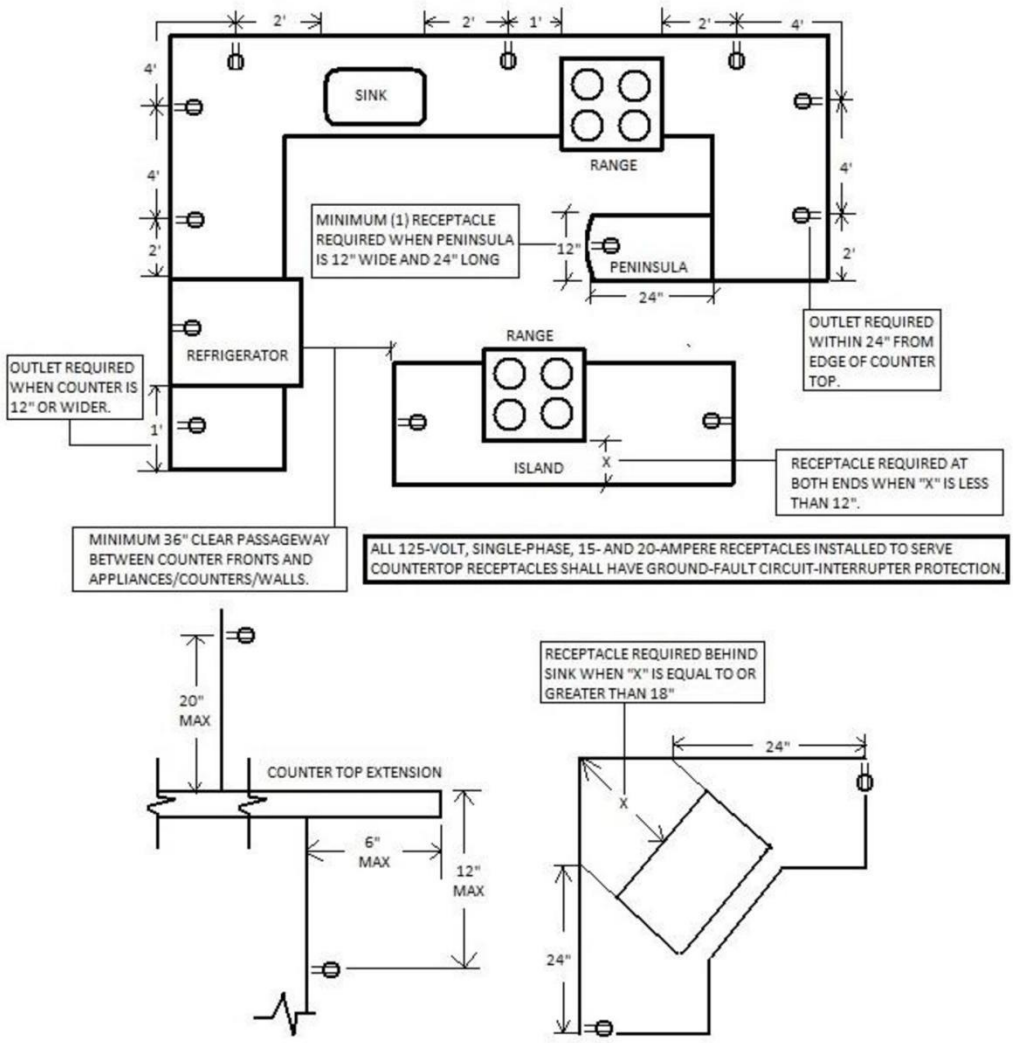
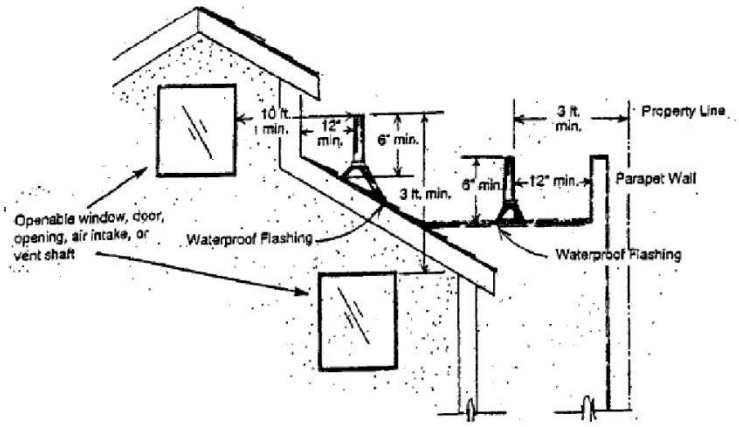


Figure CPA 047 – Kitchen Countertop Receptacles

PLUMBING

☐ Drain, waster, and vent (DWV) piping shall be tested at the time of inspection (CPC 712.2, CPC 712.3):
- Fill with water with no less than a 10' head of water for not less than 15 minutes; the system shall be tight at all points
- Except for plastic piping, fill the pipe with 5 psi for not less than 15 minutes (CPC 723.1)

☐ Each vent shall extend through the roof vertically not less than 6" above the roof and not less than 12" from a vertical surface. They shall be not less than 10' from, or not less than 3' above, an openable window, door, opening, air intake, or vent shaft. Furthermore, they shall not be less than 3' from any direction from a lot line, alley, and street. (CPC 906.1)
- New penetrations at the roof shall be properly sealed; paint if required.



☐ Verify that each vent rises 6" above the flood-level rim of the fixture. Where vents connect to a horizontal drainage pipe, the vent connection must be above the centerline of the drainage piping. (CPC 905.2, CPC 905.3)

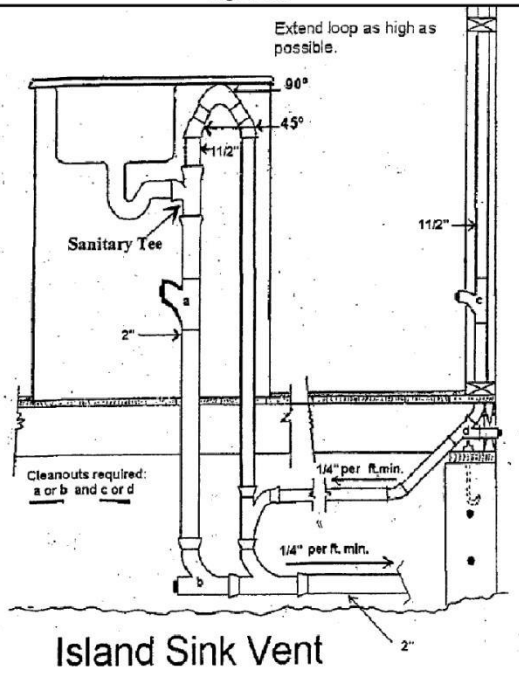
☐ Dishwashing machines shall be connected to the drainage system with an approved air gap on the discharge side of the dishwashing machine. Listed air gaps shall be installed with the flood-level (FL) marking at or above the floor level of the sink or drainboard, whichever is higher. (CPC 807.3)

☐ A minimum 1" airgap separation is required between the flood level sink, tub and water supply outlet. (CPC 603.3.1, CPC Table 603.3.1)

☐ Kitchen faucets with flexible water connections shall have an anti-siphon device.

☐ Under the kitchen sink: verify that the dish washer hose is properly installed, an air gap discharge hose slopes to a drain pipe, check for leaks, and the electrical outlet faceplate is installed.

☐ See the figure that follows for Island Sink venting.



Island Sink Vent

GAS

☐ Provisions for a range must be present, either as a capped off gas line or a 220 volt outlet installed in the wall. If the stove is wired directly, it shall be hooked up for inspection.

☐ Appliance shutoff valves and convenience outlets shall serve a single appliance and shall be within 6' of the appliance it serves. (CPC 1212.3.1, CPC 1212.5)

☐ Gas piping shall be tested with a pressure of 10 psi for no less than 15 mins. (CPC 1213.3)

- Required pressure tests of 10 psi of less shall be with gauges of 0.10 psi increments or less. (CPC 318.2)

☐ Gas appliance connectors shall not extend from one room to another, through any wall, floor, partition, or appliance housing. Verify that the connector is properly sized and listed for the appliance that it serves. DO NOT reuse old connectors. (CPC 1212.3, CPC 1212.3.1)

FRAMING

☐ Kitchens shall have a ceiling height of not less than 7' and a clear passage way of not less than 3' between counter fronts and appliances or counter fronts and walls. (CRC R305.1, CBC 1208.1)

☐ Use 2x6 studs when installing plumbing pipes 3" or larger. For a 2x6, the maximum hole is 3-5/8"; for a 2x4, the maximum whole is 2-1/8".

☐ When piping or ductwork necessitates cutting, notching, or drilling the top plate, a 0.054 inch (16 ga), 1-1/2" wide, galvanized metal tie shall be fastened across at each side with not less than (8) 10d nails; see Figure R602.6.1. (CRC R602.6.1)

☐ Fireblocking shall be provided at the following locations (CRC R302.11):
- Furred spaces and parallel rows of studs or staggered
  - Vertically at ceiling and floor levels, e.g balloon framed walls w/o top plates
  - Horizontally at intervals not exceeding 10'
- Interconnections between vertical and horizontal spaces, such as soffits, cove ceilings, etc.
- Openings around vents, pipes, ducts, cables, and wires at ceiling and floor levels with an approved material to resist the free passage of flame and products of combustion

☐ Fireblocking shall consist of the following (CRC R302.11.1)
- 2" nominal lumber
- (2) 1" nominal lumber with broken lap joints
- (1) 23/32" wood structural panels with joints backed by 23/32" wood structural panels
- (1) 3/4" particleboard with joints backed by 3/4" particleboard
- (1) 1/2" gypsum board
- 1/4" cement-board millboard
- Batts or blankets of mineral wool or glass fiber or other approved material as to be securely retained in place
- Cellulose insulation (in accordance with ASTM E119 or UL 263)

GREEN BUILDING

☐ Plumbing fixtures shall comply with the following (CALGreen 4.303):

PLUMBING FIXTURE	MAX FLUSH/FLOW	PRESSURE
Kitchen Faucets	1.8 gallons per minute	60 psi

INSULATION

☐ Where a T-24 page is not present, insulation with the following R-values shall be used (CEnC 150.0(b), (c)):
- R-13 for 2x4 walls
- R-19 for 2x6 walls
- R-13 for opaque non-framed assemblies
- R-19 for raised floors separating conditioned spaced from unconditioned space
- R-30 for ceiling and rafters
- R-6 for supply/return ducts and plenums

☐ See the "Insulation" inspection checklist for other requirements.

LIGHTING

☐ Recessed downlight luminaires in ceilings shall be listed for zero clearance insulation contact (IC) and be certified as airtight (AT). (CEnC 150.0(k)1C)

☐ For more information regarding residential lighting requirements, please see the California Lighting Technology Center guides.

☐ All installed luminaires shall be high efficacy in accordance with Table 150.0-A. (CEnC 150.0(k)1A)

TABLE 150.0-A
CLASSIFICATION OF HIGH-EFFICACY LIGHT SOURCES

HIGH-EFFICACY LIGHT SOURCES Luminaires installed with only the lighting technologies in this table shall be classified as high efficacy	
Light sources in this column, other than those installed in ceiling recessed downlight luminaires, are classified as high efficacy and are **not** required to comply with Reference Joint Appendix JA8	Light sources in this column shall be certified to the Commission as High Efficacy Light Sources in accordance with Reference Joint Appendix JA8 and be marked as meeting JA8.
1. Pin-based linear or compact fluorescent light sources using electronic ballasts. 2. Pulse-start metal halide. 3. High pressure sodium. 4. GU-24 sockets containing light sources other than LEDs.[a, b] 5. Luminaires with hardwired high frequency generator and induction lamp. 6. Inseparable SSL luminaires that are installed outdoors. 7. Inseparable SSL luminaires containing colored light sources that are installed to provide decorative lighting.	8. All light sources in ceiling recessed downlight luminaires. Note that ceiling recessed downlight luminaires shall not have screw bases regardless of lamp type as described in Section 150.0(k)1C. 9. GU-24 sockets containing LED light sources. 10. Any light source not otherwise listed in this table and certified to the Commission as complying with Joint Appendix 8.

Notes:
a. GU-24 sockets containing light sources such as compact fluorescent lamps and induction lamps.
b. California Title 20 Section 1605(k)3 does not allow incandescent sources to have a GU-24 base.

APPENDIX H

CITY OF PALO ALTO

DEVELOPMENT SERVICES – BUILDING INSPECTION

INSPECTION GUIDELINES: MAKEUP AIR

INSPECTION CODE: 220

SCOPE: RESIDENTIAL

CODES ENFORCED: 2016 CBC, CRC, CPC, CMC, CEC, CALGreen, CEnC, and PAMC

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

BACKGROUND

Most homes have several appliances with exhaust fans that remove air. Therefore, makeup air is the air that "makes up" for the air that is removed by exhaust fans operating individually or concurrently (from bathrooms, clothes dryers, kitchen range hoods, to name a few).

Without makeup air, a negative pressure condition could exist from the operation of one or more exhaust fans, and possibly affect the operation of fuel burning appliances and life safety of occupants if appliances are back-drafted or plumbing trap seals defeated.

ASHRAE Standard 62.2 requires that the vent system for combustion appliances be properly installed, as specified by the instructions from the appliance manufacturer and by the California Building Code. ASHRAE Standard 62.2 includes a provision intended to prevent backdrafting where one or more large exhaust fans are installed in a home with atmospherically vented or solid fuel appliances. **If the two largest exhaust fans have a combined capacity that exceeds 15 CFM/100 square feet of floor area, then makeup air must be provided** (see the example in the following page from the 2016 California Residential Compliance Manual).

This provision applies only when the atmospherically vented appliance is inside the pressure boundary of the house and does not include a summer cooling fan that is designed to be operated with the windows open. Direct-vent appliances are not considered "atmospherically vented." The two largest exhaust fans are normally the kitchen range hood and the clothes dryer (if located inside the dwelling unit pressure boundary). Large-range hoods, particularly downdraft range hoods, can have capacities of 1,000 CMF or more. A problem with this requirement can be solved in one of three ways:

1. All atmospherically vented combustion appliances can be moved outside the pressure boundary of the house (to the garage or other similar space).
2. The flow rate of one or more of the fans can be reduced so that the combined flow is less than 15 CFM/100 square feet.
3. Makeup air can be provided to offset the net exhaust rate.

EXAMPLE

Question:

A 3600 square feet custom home has four bedrooms. The kitchen will have a high-end range hood that has three speeds, nominally 1000 CMF, 1400 CMF and 1600 CMF. The house will be heated with an atmospherically vented gas furnace located in the basement. If I am using a central exhaust fan for the whole-building ventilation of 75 CMF, and there is a clothes dryer installed, how much makeup air is needed?

Answer:

You must use the high speed value for the range hood of 1600 CMF. The clothes dryer will have a flow that is assumed to be 150 CFM for sizing purposes. These two flows must be added together for a total exhaust capacity of 1750 CFM. Since the whole-building ventilation fan is not one of the two largest exhaust fans, it does not figure into the makeup air calculation. Using the equation in the last page, there must be at least 1750 CMF of makeup air provided.

15 CMF (3600SF/100SF) = 1210 CMF < 1750 CMF ∴ Makeup air is required

INSPECTION

EXHAUST FANS

☐ Verify that an exhaust fan has been installed at each kitchen and bathroom, and each shall be either one of the following two (ASHRAE 62.2 – 2013 5.1, CMC Table 403.7):

- A demand-controlled mechanical exhaust system meeting the exhaust airflow rates of Table 5.1
  - Designed to be operated as needed by the occupant

TABLE 5.1 Demand-Controlled Local Ventilation Exhaust Airflow Rates

Application	Airflow	Notes
Kitchen	100 cfm (50 L/s)	Vented range hood (including appliance-range hood combinations) required if exhaust fan flow rate is less than 5 kitchen air changes per hour.
Bathroom	50 cfm (25 L/s)	

- A continuous mechanical exhaust system meeting the exhaust airflow rates of Table 5.1
  - Designed and installed to operate without occupant intervention

TABLE 5.2 Continuous Local Ventilation Exhaust Airflow Rates

Application	Airflow	Note
Kitchen	5 ach	Based on kitchen volume.
Bathroom	20 cfm (10 L/s)	

MAKEUP AIR

☐ When installed in a closet, clothes dryers shall have an opening of not less than 100 square inches in the door or other approved means. (CMC 504.4.1)

☐ Makeup air shall be provided to replenish air exhausted by the ventilation system and air intakes shall be located as to avoid recirculation of contaminated air within enclosures. (CMC 505.5)

☐ Where exhaust fans, clothes dryers, and kitchen ventilation systems interfere with the operation of appliances, makeup air shall be provided. (CMC 701.3)

☐ Air inlets shall be located a minimum of 10' from known sources of contamination such as a stack, vent, exhaust hood, or vehicle exhaust. The intake shall be placed so that entering air is not obstructed by plantings or other material. Forced air inlets shall be provided with rodent/insect screens (mesh not larger than 1/2"). (ASHRAE 62.2 – 2013 6.8)

☐ Two ways to avoid it make up air:
- Install a residential-size range with an exhaust fan rated at 100 CFM – 200 CFM
- Perform the calculation and determine if the sum of the two largest exhaust fans does not exceed 15 CFM/100 square feet

☐ There are two common methods to providing makeup air:
- Add makeup air to your HVAC system by outdoor air being ducted to the return duct of a forced-air furnace (FAU) (see Figure CPA 057).
- Install an air intake duct that brings outdoor air into the conditioned airspace.
- Note: This duct is required to have an electronically-controlled damper that opens when then the kitchen hood is turned on, providing compensating outdoor airflow that balances the pressure in the conditioned space. Typically the diameter size of the makeup air duct is the same as the kitchen hood duct.

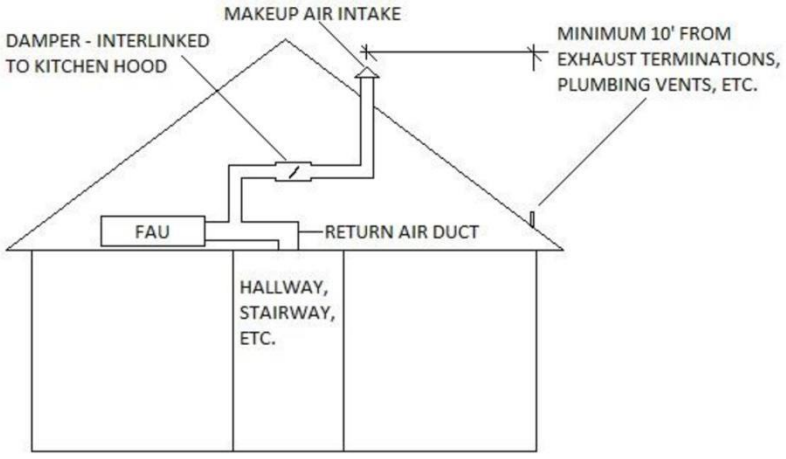


Figure CPA 057 – Makeup Air

APPENDIX I

CITY OF PALO ALTO

DEVELOPMENT SERVICES – BUILDING INSPECTION

INSPECTION GUIDELINES: BATHROOMS

INSPECTION CODE: 220, 235, 241, 242, 243, 244, 246 101

SCOPE: RESIDENTIAL

APPLICABLE CODES: 2016 CBC, CRC, CPC, CMC, CEC, CALGreen, CEnC, and PAMC

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

IMPORTANT

☐ Failure to complete the items below prior to inspection may result in a re-inspection fee.

REQUIRED INSPECTIONS

1. All Trades (Inspection 220)
   - Inspection to verify rough mechanical, electrical, plumbing, and framing. See the "All Trades" inspection guidelines for more information.
2. Insulation (Inspection 235)
   - Applicable to exterior walls only. See the "Insulation" inspection guidelines for more information.
3. Drywall/Backer Board (Inspection 243)
   - See the "Drywall" and "Tile Lath" inspection guidelines for more information.
4. Tile Lath (Inspection 244)
   - Whenever possible, combine this inspection with shower pan and tub inspections. See the "Tile Lath" inspection guidelines for more information.
5. Shower Pan (Inspection 241)/Tub (Inspection 242)
6. Electrical Torque (Inspection 246)
7. Final Inspection (Inspection 101)

Note: Whenever possible, bundle the following inspections: Drywall, Backer Board, Tile Lath, and Shower Pan. This will save trips and allow the project to progress more quickly. Please note that at the request of the inspector, you must provide sufficient evidence that the correct backer board and adequate fasteners were installed.

PRE-INSPECTION

PHASING OF WORK

☐ If the scope of work is for two or more bathrooms, all work shall be ready for inspection unless phasing of work is indicated on permit and plans. When phasing of work is not indicated on permit and plans at time of inspection, a correction will be issued requiring contractor to revise plans and pay additional inspection fees. The fees will be assessed based on additional time spent to complete the inspection process for phased work.

NOT ALLOWED

☐ As of January 1, 2008, all paper-backed gypsum board products such as "Green board", "Purple board", and "Mold Resistance board" is prohibited in shower and tub compartments and shall not be used as a backer for tile lath or concrete/hardy board. See the "Tile Lath" inspection checklist for more information.

INSPECTION

MECHANICAL

☐ Each bathroom containing a bathtub, shower or tub/shower combination shall be mechanically ventilated for purposes of humidity control. Window operation is not a permissible method of providing bathroom exhaust for humidity control. (CRC R303.3.1)

☐ Environmental duct exhaust shall terminate not less than 3' from a property line, 10' from a forced air inlet, and 3' from openings into the building. Environmental exhaust ducts shall not discharge onto a public walkway. (CMC 502.2.1)

☐ Exhaust fans shall be switched separately from the lighting system (CEnC 150.0(k)2.B)

- Exception: Lighting integral to the exhaust fan may be on the same switch as the fan provided that that the light can be switched OFF while allowing the fan to continue to operate for an extended period of time.

☐ An exhaust fan shall be installed in each bathroom with the capacity to exhaust 50 cfm for demand-controlled or 20 cfm for continuous ventilation. (ASHRAE 62.2-2013)

ELECTRICAL

☐ Luminaires and exhaust fans provided over a bathtub or in a shower shall be of the enclosed and gasketed type and listed for the type of installation and it shall be ground-fault circuit-interrupted protected. The switch for shower luminaires and exhaust fans, located over a tub or shower, shall be located outside the tub or shower. (CEC 552.54)Nail plates 1/16" thick minimum shall be used for protection of wiring that is less than 1-1/4" from the edge of framing. (CEC 300.4(A)(1))

☐ At least (1) 120-volt, 20-ampere branch circuit shall be provided at a bathroom receptacle. (CEC 210.11(C)(3))

☐ At least (1) receptacle shall be installed in bathrooms within 3' of the outside edge of each basin. It shall be located on a wall or partition that is adjacent to the basin or basin countertop, located on the countertop, or installed on the side or face of the basin cabinet. (CEC 210.52(D))

☐ Install ground-fault circuit-interrupter (GFCI) protection on all receptacles. GFCIs shall be installed in readily accessible locations. (CEC 210.8(A)(1), CEC 210.8(A)(9))

☐ All 120-volt, 15- and 20-ampere receptacles shall be listed tamper-resistant. (CEC 406.12(A))

☐ An upgrade of the existing electrical service may be required based on the number of, and ampacity of, new and existing circuits.

☐ Check the electrical panel for new wiring and labeling.

☐ Hydromassage bathtubs and their associated electrical components shall be on an individual branch circuit and protected by a readily accessible GFCI (CEC 424.44 (G), CEC 690.71)

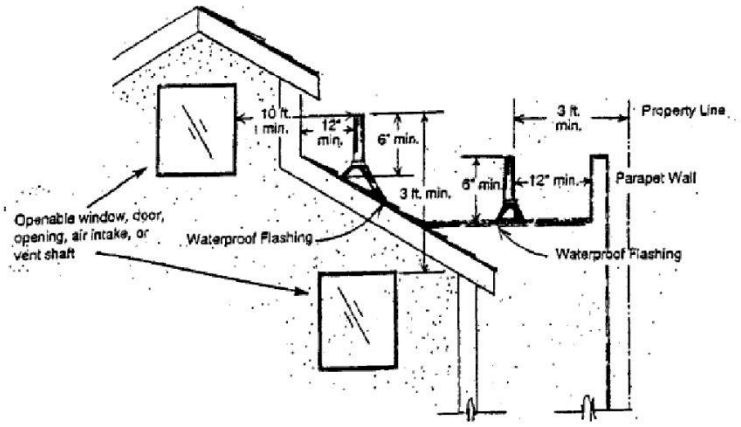
☐ Hydromassage electrical equipment shall be accessible without damaging the building structure or building finish. Where the hydromassage bathtub is cord- and plug-connected with the supply receptacle accessible only through a service access opening, the receptacle shall be installed so that its face is within direct view and not more than 12" of the opening. (CEC 680.73)

☐ Bond metal piping systems and grounded metal parts in contact with the circulating water using a solid copper bonding jumper, insulated, covered, or bare conductor not smaller than 8 AWG. (CEC 680.73)

PLUMBING

☐ Drain, waster, and vent (DWV) piping shall be tested at the time of inspection (CPC 712.2, CPC 712.3):
- Fill with water with no less than a 10' head of water for not less than 15 minutes; the system shall be tight at all points
- Except for plastic piping, fill the pipe with 5 psi for not less than 15 minutes (CPC 723.1)

☐ Each vent shall extend through the roof vertically not less than 6" above the roof and not less than 12" from a vertical surface. They shall be not less than 10' from, or not less than 3' above, an openable window, door, opening, air intake, or vent shaft. Furthermore, they shall not be less than 3' from any direction from a lot line, alley, and street. (CPC 906.1)
- New penetrations at the roof shall be properly sealed; paint if required.



- ☐ Verify that each vent rises 6" above the flood-level rim of the fixture; where vents connect to a horizontal drainage pipe; the vent connection must be above the centerline of the drainage piping. (CPC 905.2, CPC 905.3)

- ☐ The maximum hot water temperature discharging from the bathtub and whirlpool bathtub filler shall be limited to 120 °F. by a device that is in accordance with ASSE 1070 or CSA B125.3 and the water supply shall be protected by an air gap. (CPC 409.4, CPC 409.5)

- ☐ Use listed fittings only (e.g., water supply hoses). (CPC 604.1)

- ☐ Accessible full way control valve shall be installed at each sink. (CPC 606.2)

- ☐ Clean outs for sinks shall be accessible for cleaning. (CPC 719.4)

- ☐ Fixtures having concealed slip joint connections shall be provided with an access panel not less than 12" in its least dimension. (CPC 402.10)

- ☐ Provide caulking at the bottom of all water closets and all fixtures that come in contact with the wall or floor. (CPC 402.2)

- ☐ Water closets shall be no closer than 15" from its center to a side wall or obstruction nor closer than 30" center to center to a similar fixture. The clear space in front of the water closet shall be not less than 24". (CPC 402.5)

- ☐ Vacuum breakers are required for handheld showerheads. (CPC 603.0)

- ☐ Where two separate handles control the hot and cold water, the left-hand faucet shall control the hot water. (CPC 417.5)

- ☐ A minimum 1" airgap separation is required between the flood level sink, tub and water supply outlet. (CPC 603.3.1, CPC Table 603.3.1)

STEAM SHOWERS

- ☐ For steam showers, see the "Steam Showers" inspection checklist.

FRAMING

- ☐ Bathrooms shall have a ceiling height of not less than 6'-8". (CRC R305.1)

- ☐ Use 2x6 studs when installing plumbing pipes 3" or larger. For a 2x6, the maximum hole is 3-5/8"; for a 2x4, the maximum whole is 2-1/8".

- ☐ When piping or ductwork necessitates cutting, notching, or drilling the top plate, a 0.054 inch (16 ga), 1-1/2" wide, galvanized metal tie shall be fastened across at each side with not less than (8) 10d nails; see Figure R602.6.1. (CRC R602.6.1)

☐ Fireblocking shall be provided at the following locations (CRC R302.11):
- Furred spaces and parallel rows of studs or staggered
  - Vertically at ceiling and floor levels, e.g balloon framed walls w/o top plates
  - Horizontally at intervals not exceeding 10'
- Interconnections between vertical and horizontal spaces, such as soffits, cove ceilings, etc.
- Openings around vents, pipes, ducts, cables, and wires at ceiling and floor levels with an approved material to resist the free passage of flame and products of combustion

☐ Fireblocking shall consist of the following (CRC R302.11.1)
- 2" nominal lumber
- (2) 1" nominal lumber with broken lap joints
- (1) 23/32" wood structural panels with joints backed by 23/32" wood structural panels
- (1) 3/4" particleboard with joints backed by 3/4" particleboard
- (1) 1/2" gypsum board
- 1/4" cement-board millboard
- Batts or blankets of mineral wool or glass fiber or other approved material as to be securely retained in place
- Cellulose insulation (in accordance with ASTM E119 or UL 263)

SAFETY GLAZING

☐ Glazing in wet surfaces where the bottom exposed edge of the glazing is less than 60" (measured vertically above the standing or walking surface) shall be considered hazardous location and is locacted 60 inches or less measured horizontally from the water's edge of a bathtub, shower, spa, sauna or steam room. The glazing shall be tested per ANSIZ97.1. (CRC R308.4.5).

LIGHTING

☐ Recessed downlight luminaires in ceilings shall be listed for zero clearance insulation contact (IC) and be certified as airtight (AT). (CEnC 150.0(k)1C)

☐ For more information regarding residential lighting requirements, please see the California Lighting Technology Center guides.

☐ Luminaires installed in wet locations shall be marked, "Suitable for Wet Locations"; luminaires in damp locations shall be marked, "Suitable for Wet Locations" or "Suitable for Damp Locations." (CEC 410.10(A))

☐ No parts of cord-connected luminaries, chain-, cable-, or cord-suspended luminaries, lighting track, pendants, or ceiling-suspended (paddle fans) shall be locate within 3' horizontally and 8' vertically from the bathtub rim or shower stall threshold. (CEC 410.10(D))

☐ In bathrooms, at least one luminaire shall be controlled by a vacancy sensor. (CEnC 150.0(k)2J)

☐ Vacancy sensors shall control all luminaires required to have light sources compliant with Reference Joint Appendix JA8. ((CEnC 150.0(k)2K)

☐ All installed luminaires shall be high efficacy in accordance with Table 150.0-A. (CEnC 150.0(k)1A)

TABLE 150.0-A
CLASSIFICATION OF HIGH-EFFICACY LIGHT SOURCES

HIGH-EFFICACY LIGHT SOURCES Luminaires installed with only the lighting technologies in this table shall be classified as high efficacy	
Light sources in this column, other than those installed in ceiling recessed downlight luminaires, are classified as high efficacy and are **not** required to comply with Reference Joint Appendix JA8	Light sources in this column shall be certified to the Commission as High Efficacy Light Sources in accordance with Reference Joint Appendix JA8 and be marked as meeting JA8.
1. Pin-based linear or compact fluorescent light sources using electronic ballasts. 2. Pulse-start metal halide. 3. High pressure sodium. 4. GU-24 sockets containing light sources other than LEDs.[a, b] 5. Luminaires with hardwired high frequency generator and induction lamp. 6. Inseparable SSL luminaires that are installed outdoors. 7. Inseparable SSL luminaires containing colored light sources that are installed to provide decorative lighting.	8. All light sources in ceiling recessed downlight luminaires. Note that ceiling recessed downlight luminaires shall not have screw bases regardless of lamp type as described in Section 150.0(k)1C. 9. GU-24 sockets containing LED light sources. 10. Any light source not otherwise listed in this table and certified to the Commission as complying with Joint Appendix 8.

Notes:
a. GU-24 sockets containing light sources such as compact fluorescent lamps and induction lamps.
b. California Title 20 Section 1605(k)3 does not allow incandescent sources to have a GU-24 base.

GREEN BUILDING

☐ Tub waste piping openings in framed construction to crawl spaces shall be protected from rodent intrusion with no openings greater than 1/2" by the installation of approved metal collars or metal screen fastened to the adjoining structure or as shown below. (CPC 312.12.3, CALGreen 4.406.1)

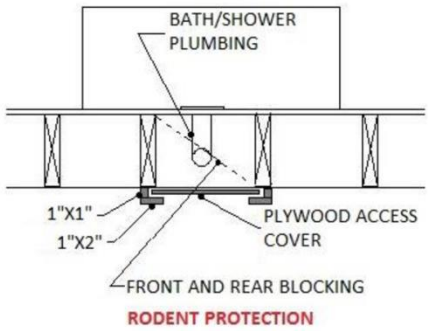


Figure CPA 031 – Rodent Protection at Crawl Space/Shower Plumbing Access Locations

☐ Plumbing fixtures shall comply with the following (CALGreen 4.303, CPC 411.2, CPC 420.2.1):

PLUMBING FIXTURE	MAX FLUSH/FLOW	PRESSURE
Water Closets	1.28 gallons per flush	-
Urinals	0.125 gallons per flush	-
Showerheads	1.8 gallons per minute	80 psi
Lavatory Faucets	1.2 gallons per minute	60 psi

INSULATION

☐ Where a T-24 page is not present, insulation with the following R-values shall be used (CEnC 150.0(b), (c), CEnC 150.1(c)):
- R-13 for 2x4 walls
- R-19 for 2x6 walls
- R-13 for opaque non-framed assemblies
- R-19 for raised floors separating conditioned spaced from unconditioned space
- R-30 for ceiling and rafters
- R-6 for supply/return ducts and plenums

☐ See the "Insulation" inspection checklist for other requirements.

TUB TEST

☐ Fill water slightly above overflow (fill the tub(s) prior to inspection).

TILE LATH

☐ Bathtub and shower floors and walls above bathtubs with installed shower heads and in shower compartments shall be finished with a nonabsorbent surface. Such wall surfaces shall extend to a height of not less than 6' above the floor. (CRC R307.2)

SHOWERS & BATHTUBS

☐ See the "Tile Lath" inspection checklist for tile backer board and other requirements.

☐ Showers shall have a waste outlet and fixture tailpiece not less than 2" in diameter. (CPC 408.4)

☐ Bathtubs shall have a waste outlet and fixture not less than 1-1/2" in diameter. (CPC 409.2)

☐ Where a shower receptor has a finished dam, curb, or threshold, it shall not be less than 1" lower than the sides and back of such receptor. In no case shall the dam or threshold be less than 2"or exceed 9" in depth where measured from the top of the dam or threshold to the top of the drain. (CPC 408.5)

☐ For on-site built shower receptors lined with hot-mop or other approved materials, the finished floor of the receptor shall slope not less than 1/4" per foot and not more than 1/2" per foot. The receptor shall be adequately reinforced, provided with an approved flanged floor drain designed to make a watertight joint in the floor, and shall have smooth, impervious, and durable surfaces. Shower receptors shall have the subfloor and rough side of walls lined with watertight materials not less than 3" above the top of the finished dam or threshold. (CPC 408.5, CPC 408.7)

☐ Lining materials shall be pitched 1/4" per foot to weep holes in the sub drain or a smooth and solidly formed subbase. Such lining shall extend upward on the rough jambs of the shower opening to a point of not less than 3" above the horizontal. (CPC 408.7)

☐ Thresholds shall accommodate a 22" door and the door shall open as to maintain not less than 22" unobstructed opening for egress and swing outwards. (CPC 408.5)

- ☐ Spaces in showers without thresholds shall be considered wet locations and shall have the entire bathroom waterproofed. (CPC 408.5)

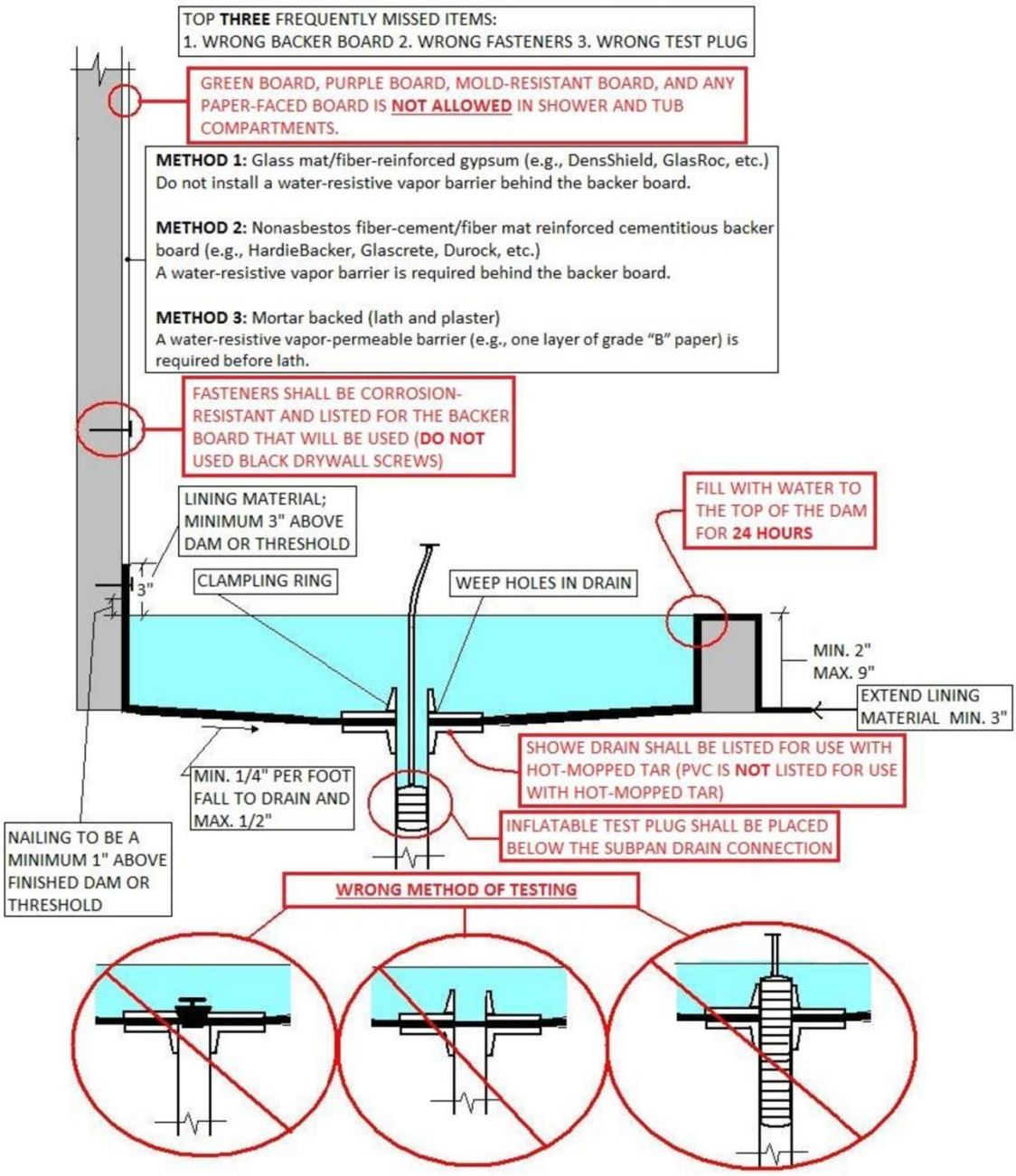
- ☐ Shower compartments shall have a minimum finished interior of 1024 square inches and be capable of encompassing a 30" circle; maintain 70" above the shower drain. (CPC 408.5)
    - Exception: Shower receptors having overall dimensions of not less than 30" in width and 60" in length.

- ☐ Showers with a built in place, permanent seat shall be first lined with sheet plastic, lead, copper or shall be lined with other durable and watertight materials that extend not less than 3" above horizontal surfaces of the seat or the seating area. (CPC 408.7)

- ☐ Shower door or rod shall be installed prior to final. !

- ☐ Shower receptors shall be tested for water tightness by filling with water to the level of the rough threshold for 24 hours. Install the test plug as shown in the figure that follows. At time of inspection, a qualified person with proper tools shall remove the test plug and demonstrate weep hole function. (CPC 408.7.5)

ON-SITE BUILT-UP SHOWER RECEPTORS



APPENDIX J

CITY OF PALO ALTO

DEVELOPMENT SERVICES – BUILDING INSPECTION

INSPECTION GUIDELINES: TILE LATH

INSPECTION CODE: 244

SCOPE: RESIDENTIAL AND COMMERCIAL

APPLICABLE CODES: 2016 CBC, CRC, CPC, CMC, CEC, CALGreen, CEnC, and PAMC

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

IMPORTANT

☐ Failure to complete items below, prior to inspection, may result in a re-inspection fee.

☐ As of January 1, 2008, all paper-backed gypsum board products such as "Green board", "Purple board", and "Mold Resistance board" is prohibited in shower and tub compartments and shall not be used as a backer for tile lath or concrete/hardy board.

REQUIRED INSPECTIONS

1. Screw inspection for tile backer board
2. Water barrier and lath inspection

NOTE: When possible, combine the shower pan inspection with the lath inspection.

SHOWER AND BATHTUB COMPARTMENT APPROVED TILE BACKER BOARD METHODS

METHOD 1: Glass mat/fiber-reinforced gypsum (e.g., DensShield, GlasRoc, etc.)
Do not install a water-resistive vapor barrier behind the backer board.

METHOD 2: Nonasbestos fiber-cement/fiber mat reinforced cementitious backer board (e.g., HardieBacker, Glascrete, Durock, etc.)
A water-resistive vapor barrier is required behind the backer board.

METHOD 3: Mortar backed (lath and plaster)
A water-resistive vapor-permeable barrier (e.g., one layer of grade "B" paper) is required before lath.

INSPECTION

GENERAL

☐ Shower and bathtub floors and walls above bathtubs with installed shower heads and in shower compartments shall be finished with a nonabsorbent surface and it shall extend not less than 6' above the floor. (CBC 1210.2.3, CRC R307.2)

☐ Materials used as backer boards for wall tile in tub and shower compartments and wall panels in shower areas shall be per Table R702.4.2 and installed per the manufacturer's recommendations. (CBC 2509, CRC R702.4.2)

Table R702.4.2: Backer Board Materials

MATERIAL	STANDARD
Glass mat gypsum backing panel	ASTM C1178
Fiber-reinforced gypsum panel	ASTM C1278
Nonasbestos fiber-cement backer board	ASTM C1288 or ISO 8334, Category C
Nonasbestos fiber mat reinforced cementitious backer units	ASTM C1325

☐ Water-resistant gypsum board (e.g., "Green Board", etc.) shall not be used in the following locations (CBC 2509.3, CRC R702.3.7):

- Over a vapor retarder in shower or bathtub compartments.
- Where there will be direct exposure to water or in areas subject to continuous high humidity.

☐ Interior walls covered with tile or similar material shall be protected with an approved moisture barrier such as a one layer of grade "B" paper (e.g., Aquabar "B") or better. Install the moisture barrier per the manufacturer's recommendations. (CBC 2511.5)

☐ On shower and bathtub compartments with materials other than structural elements used in walls, the materials shall be of a type that is not adversely affected by moisture.

☐ Fasteners such as Durock screws or hot-dipped galvanized shall be user per the manufacturer's specifications. (CBC 2507.1)

☐ Metal lath and attachments shall be corrosion resistant in tub and shower compartments. (CBC 2510.4)

☐ Metal lath and attachments shall be made to the framing members and shall be spaced 8" on center vertically and 16" on center horizontally. Staples may be used at 8" on center with self-furring lath only, otherwise, at 6" on center. (CBC 2504.1.1, CRC R702.2.3, CRC R703.7.2)

☐ Metal or wire lath shall be applied with the long dimension of the sheets perpendicular to the supports. (CBC 2707.2)

- ☐ Metal lath shall be installed as required by the manufacturer's specifications or at a minimum, lapped not less than 1/2" at sides and 1" at ends. Wire lath shall be lapped not less than one mesh at sides and ends, but not less than 1". Overlap round corners 12". (CBC 2707.2)

- ☐ Metal and wire lath shall be furred out away from vertical supports at least 1/4". Self-furring lath shall meet furring requirements. (CBC 2707.2)

- ☐ Caulk or foam seal around plumbing fixture penetrations.

- ☐ Caulk transition between bathtub and shower pan.

- ☐ Fix for "Green Board"/"Purple Board"/mold-resistant board in tub and shower compartments:
  - Remove non-compliant materials and replace with approved materials, OR
  - Apply approved liquid membrane (i.e., RedGard, HTM 4000, etc.) over non-compliant board.
  - Pay the re-inspection fee and schedule inspection.

PROJECT **NOTES**

DESIGN IDEAD/DRAWING SPACE

The following pages are set aside for your collection of project ideas, vendor sources, and drawing/doodling space


Design/Ideas


Design/Ideas


Design/Ideas


Design/Ideas

Tim Hmelar (pronounced Mahler) has over 44 years experience as a self-employed tradesperson, general contractor, electrician and construction educator. Tim is the owner of The Kitchen and Bath Company of Palo Alto and has completed over 550 residential remodels in the greater Palo Alto, California area and has worked for many of Silicon Valley's business Titans. Tim is a best selling author, sought after public speaker and is passionate about coaching youth sports. Tim and his family live in Palo Alto and San Diego, California.

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