

The Building Process



JP Condon Inc.

Forward

The keys to success in the residential construction process are:

- planning two - three weeks ahead of your need for workers and materials at the job site.*
- anticipating problems and buyer concerns before they occur.*
- co-ordination of sub contractors at the site.*
- and, knowing how to kick behinds and kiss behinds... and when it's best to do which!*

 = Plan Ahead

CSI = Contractor Site Inspection

BDI = Building Department Inspection



Site Selection - Design Elevation - Floor Plan

Site

Visit the site and pay attention to the immediate surroundings. Look at the topography of adjacent lots, the grade of frontage streets, side walk requirements, price range - exterior elevations and market acceptance of neighboring homes.

Check Zoning and restrictive covenants on square footage, design, fences, out buildings, easements, side yard and set back requirements, and anything effecting construction decisions.

Check location and depth of public utilities: sewer & water, gas & electric, telephone & cable. Locate man holes and water boxes.

This is an important process, and will provide information you'll need to stake out the house on a lot and set grades. The goal is to alleviate problems such as: left pumps for sewage or excessively long sewer and water services - Note, most plumbing bids provide for 30 ft. of sewer and water run in a common trench. Try to avoid man holes or water boxes in driveways, unusually steep or flat grades, etc. Usually it is best to layout the home with the garage on the high side of the lot when building a ranch or two story with attached garage. When building a home with a garage under the house (i.e. split foyer) the garage is usually on the low side of the lot. *Remember*, the grade, elevation, and size of the lot you select must compliment and accommodate the design, elevation, and floor plan of a proposed structure.



Plans and Specifications - Cost Card and Profit Projections

The Draftsman

Step one is a visit with the draftsman. Whether a plan is selected from a book or an original creation, it must be drawn to local codes and customs. In the design process always keep in mind the phrase: "FORM FOLLOWS FUNCTION." Rooms must be functional, windows properly placed, door swings proper, and volumes complimentary.

At this time basic decisions must be considered regarding structural elements. Your draftsman will need to consider brick ledges on foundations, floor joist systems, sub-floor material and size, 2x4 or 2x6 walls, sheathing thickness 1/2", 5/8", 3/4", 1", or more and the material for R value desired; window style - grills - sizes - brands - extension jams, action factors, sheet rock 1/2" or 5/8", trim package, exterior siding material, roof pitch - skylight - shingles - fireplace and flues - decks - etc.

Generally, your first drawing is a preliminary plan. Review this preliminary plan over and over again in detail. Ask others, men and women, for criticism and suggestions separating preferences from re-occurring comments. During this process visualize furniture placement - walk patterns - window lengths and locations - door swings - natural light and light fixture locations - kitchen and bath function and storage - the TV set and entertainment center etc.

It is always important to balance price considerations when making decisions on optional pzazz components. Yet, don't cheat on functional space because, "Nothing costs as much as the interest costs on an unsold home."

Return plan to the draftsman, finalize component decisions needed for your competitive bidding process. When plans are complete, write a set of specifications.

The Specifications

Some elements of the specifications are somewhat standard, dealing with the contractors duties and responsibilities during the construction process (i.e. insurance, financing, city codes etc.). Other elements of the specifications are often completed after professionals in each trade have reviewed the blue prints and determined necessary strengths, sizes, quantities of materials and components necessary to comply with codes or established standards. When designing a presold home for a specific client, consult with the client to secure as many buyer specific wants and needs as possible so as to reflect them in the final plans and specifications.

Cost Card and Profit Projections

Upon receipt of bids from all trades, select the contractors of choice and develop a cost card.
Plan for the unexpected: dirt hauling - winter costs - water tables - tree removal - etc.

Building on Lot - Plat Plan

After cost card review, if the decision is to proceed with construction... return to draftsman with a good dimensioned copy of subdivision site plan showing easements, set back, etc. Have house drawn on lot as proposed.



Pre-Construction Applications and Arrangements

Construction Loan Financing

Take personal financial information, a copy of blue prints, a copy of completed specifications, and a copy of your cost and profit projections to lender to lenders of choice.

Building Permit Application

Be sure your contractors licenses, bond, and insurance policies are current. Now, take two copies of plans, one specification, one plot plan, and a completed building application form to the city building department (see me about form preparation). Also, take a survey certificate provided by developer, lot owner, or engineer to the city at this time.

Public Utilities Applications

MidAmerican Gas & Electric: An application form must be completed showing proposed locations of desired gas and electric meters on your house, the houses on lots and adjacent street names, and identifying mechanical contractors who will be working on the job. (NOTE, if no service is to this lot yet, and no adjacent neighbors have power. You can purchase... contact your electrical contractor immediately - to install a temporary electric meter at the site.) Always, think about requested exterior meter locations in terms of distance from service origination and the eventual location of the electrical panel inside the home. Will it interfere with an eventual finished basement? Is it convenient to the furnace and water heater? When possible, ask that gas and electric service be run in the same trench. If power is not available - make arrangements for has powered generators at the site.

Water Meter Application

Water meter applications may be done by telephone, but you must wait to request meter installation until after the plumber runs the primary water line into the basement. Practically, delay meter installation as long as possible to avoid water charges... but don't get caught because you'll get fined.

Borrowed Power

Arrange to temporarily purchase power from a neighbor until meters are installed. Be sure they have outside plugs and you have access if a breaker is blown.

Building Permit Granted

When the permit is granted, the city will call and tell you the dollar amount of the check you must provide when you pick up the permit at the building department.

Advance Decisions and Material Orders - Prior to Construction

The following is a list of decisions you should make and orders you should place prior to beginning construction or ASAP. **DECIDE:** how much authority will you give to “on site sub-contractors” to order material and charge your account. **ORDER:** Lumber package, windows (color selected), exterior doors, shingles, aluminum siding and custom color soffit-facia or gutters, Jacuzzi or tub shower units. Review jam sizes on windows and doors.

Stake out Building & Set Grades

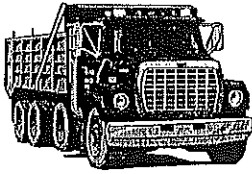
A critical process! **Consider** the topography of surrounding lots and structures. You want water to flow away from your house but not onto the foundation of a neighbor. Determine desired slope of driveway to curb (not too steep) and adjust garage up or down - remembering steps from the garage to house and roof lines. **Consider** sewer depth in relation to footings and basement floor depth. Also, keep in mind the amount of dirt generated from the basement hole to limit dirt hauling charges.

Purchase Builders Risk & Liability Insurance

Close on Construction Loan

Review Plans and Specifications and Cost Card

Plan Ahead - Call Plumber About Sewer & Water Trench Location



Construction Begins

Excavation

Check weather report, call excavator, say a prayer, dig hole.

Contractor Site Inspection (CSI)

Look for moisture in hole and soil conditions. How solid is soil at base of the hole? Are you on fill dirt? Do footings need to be deeper? If excess moisture is discovered, plan for extra gravel and drain tile inside and outside foundation and larger sump pit or two sump pits on opposite sides of basement. Look for how level grade is at bottom of hole. Be sure the hole is deep enough inside top of future footings to hold a full 4" to 5" of gravel base under floor. (NOTE, if plumber wants to run sewer and water before back fill, determine best spot to pile excavated dirt away from trench).

- ☎ Call Lumber Co. - check on lumber package.
- ☎ Call Flat Work Contractor - check on availability.
- ☎ Call Plumber - sewer and water before back fill.

Footings and Foundation

Footings: Contractor digs for wall footings, post footings and pads and sets forms.

Building Department Inspection (BDI) - City inspector must approve forms before concrete footings are poured. After inspection, footings are poured, concrete cures, and forms removed.

CSI - Look, are they level and square? Adequate weep holes - are post footings and pads properly located?

BDI - City also inspects footings.

- ☎ Check on framing carpenters schedule and lumber order.
- ☎ If a window buck is needed - get it built to proper size now.

Foundation Forms Set

CSI - Look at set forms before walls are poured. Are they level on top corner to corner and square at corners? Look down wall, is it plum and straight? Notice basement window locations and brick ledge locations.

Step 1 - Pour wall. Allow to cure 2-3 days. Strip forms. CSI look for honey combing. Check wall to print.

Step 2 - Tar exterior wall for water proofing.

Step 3 - Drain tile exterior of wall at footing to sump area, (location of sump per plan - think about basement finish), gravel exterior wall at footing.

Step 4 - Let wall set 2-3 days. Back fill hole and rough grade lot. (NOTE, Was sewer and water run yet? Water jet trench.)

Sewer and Water

If not run while back fill was open, call and schedule. Ask about trench location to avoid lumber delivery in area of trench.

Power Arrangements

If power has not yet been arranged for, with a neighbor or by temporary pole... now is a must. If those are not available, plan for a gas generator.

- ☎ Call Fireplace Supplier - Reserve unit.
- ☎ Call Roofer & Roofing Suppliers - check schedule.
- ☎ Check with Plumber on availability of fixture set on rough, Plumber can do basement underground before or after carpenters do first floor deck.
- ☎ MidAmerican & Electrician - Run services and set meter soon?
- ☎ Aluminum Siding Supplier & Installer.

Carpentry and Lumber Delivery

Decision: Make arrangements in advance for carpenter foreman to order all lumber deliveries. Tell lumber yard and Forman you want all delivery tickets given to you when you visit the job site. Learn to identify materials and check against delivery list. During the rough framing process, visit site 3 times daily - Early Morning - Noon - and last contracts working hour of day.

CSI - visualize floor plan and space relationships. Are any modifications necessary? Ask questions... do they need anything? Is there anything you should be doing? Ask, when do they feel structure will be ready for other trades (plumber, roofer, etc..) Notice, are walls and floors straight, plumb and level? Do floors squeak? Ask, when windows and doors will be installed so you can schedule aluminum siding and garage door. When is fireplace needed, etc.

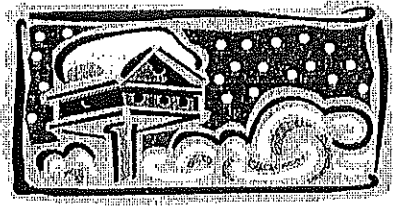
BDI - Building department must inspect and tag rough carpentry. Remind carpenter foreman to call for inspection.

- ☎ Garage Door Company - select and schedule.
- ☎ Outside flat work, weather and grade permitting, driveway, garage floor, sidewalks and approach may be possible. No need to hurry unless winter is near.



NOTICE: Several trades can now be working at the same time inside and out - structural and mechanical.





Structural Elements

Shingles & Roofing

When trusses and roof sheeting is complete, roofers can apply shingles. Have roofers coordinate delivery (off load) with shingle supplier. Sky lights should be installed prior to shingle application. Discuss style and color of roof edge, drip cap, flashing, etc. and coordinate with soffit and fascia color. Be sure roofers clean up wrapping paper daily and clean site upon completion.

Aluminum Siding Contractor

After windows and doors are installed, the aluminum siding can be installed. Installer will want to know if you are wrapping garage door jams, posts, and kick area under door threshold.

Garage Door Installation

Following rough framing and in conjunction with aluminum siding, the garage overhead door can be installed. If garage floor is not yet poured, later adjustments may be necessary. **DO NOT** order installation of automatic door opener until near completion.

FOLLOW UP NOTE: While rough carpentry was being done, the plumber was probably installing all the underground sewer and water in the basement. Thus, though we have not yet stated this, some weeks ago the basement floor may have been poured after underground plumbing was City inspected.

☎ If you've not yet done so, order Trim Package.



Mechanical Trades

Generally, the three mechanical trades of plumbing, heating, and electrical can be working on the job site at the same time. It is important, however, to coordinate the three trades and get them to talk to each other, as to the location and layout of the mechanical rough in. Remember, there are only so many joist and stud spaces that will accommodate runs, vents, and stacks. When possible, always think about the future finish of a basement and ask that mechanical stacks and runs be adjacent to beams or walls and grouped together to reduce need for drop ceilings.

Plumbing Rough

Did you plan ahead? Were plumbing fixtures and colors selected when framing began? Was the tub, shower stall and Jacuzzi delivered and set on the second floor by crane when the trusses were being set? As noted earlier, just before or just after the carpenters build the first floor deck, the underground basement plumbing can be installed. Suggest plumber and carpenter talk about exact location on plumbing stacks so they are properly located on rough. Remember, you need a wall to run plumbing vents and stacks through.

CSI - Look for dips and sags in cast iron ground work... you don't want back-ups. Is there proper fall? Has anyone stepped on/or cracked a pipe. Are 3/4 bath and floor drain in proper location?

Upstairs plumbing rough begins when framing is complete. At this point, plumber will run plastic P.V.C. stack, waste lines, and vents. This involves drilling studs, floors and joist.

CSI - Look to be sure the structural integrity of framing has not been reduced, and everything is according to blue print. Copper water lines are run and capped, and valves may also be installed. Always try to keep water lines and waste stacks in warm, well insulated walls and free from possible drafts. Plumber also runs gas lines on rough to furnace, dryer, fireplace, and water heater or stove. Water lines must be pressure tested to avoid fixture leaks. Look at copper line. Is it straight? Is it subject to freezing? Is it securely fastened against studs to avoid shaking and banging with pressure. Look at copper and waste lines and determine where added insulation will be needed to reduce water waste sound. Is gas valve to fireplace in the best spot?

BDI - City must inspect, approve, and tag rough plumbing and gas lines.

Heating Rough

Rough in heating process includes cutting holes in decks and plates to locate and install hot air and cold air runs, and locate vents and registers. Again, think about and discuss location of tin trunk lines and returns in basement to limit drop ceilings. Plan ahead when studying blue print... are furnace and flue in best spot? Furnace may be set on rough or even in advance of tin work for "temporary" winter heat.

CSI - Look at framing cut outs and particularly joist or TJI cuts... is structure weakened?
Heating rough also includes vents for bath fans and dryer vents. Look for leaks where heat vent goes through roof.

BDI - City must inspect, approve and tag furnace rough prior to sheet rock. If "temporary" heat is required, a special request and inspection must be made of and approved by City. (NOTE, City must approve furnace and call MidAmerican Energy before gas meter can be installed. Builder must request meter from MidAmerican). Heating person lights furnace and Electrician must wire temporary thermostat. Ask when work will be completed. Be sure water is in water heater before it's lit. The furnace and water heater must be vented, wired, and gas piped before requesting temporary heat from the city.

As mechanical trades near completion -

- ☎ Call insulation contractor and alert to schedule.
- ☎ Arrange to measure for cabinet order.

Electrical Rough

The electrical service panel should have been ordered and installed as soon as first floor walls were built by carpenters. Check your electrical bid for planned number of openings. It's easy to exceed your financial allowances. Now, meet electrical contractor at house and layout or locate all outlets, switches, recesses, fans and lights; inside and out. This includes telephone and cable TV. THINK ABOUT DOOR SWINGS.

Electrical rough involves setting outlet and switch boxes, drilling studs and pulling wire, telephone, and cable TV. Many wires will be left hanging loose in basement near panel box and at furnace. By this time you should have a meter outside. If not, call MidAmerican Energy and check it out.

CSI - Look for outlets or switches behind door swings or in mirrors locations. Will lights over tables be in proper location? Are recess lights properly located?

BDI - City must inspect, approve, and tag electrical rough prior to insulation.

- ☎ Check on trim order. Some trim may need to be delivered to painter early for pre-staining. Trim may take 4 to 5 weeks from order to delivery.
- ☎ Alert trim carpenters as to your progress.
- ☎ Schedule sheet rock.
- ☎ FOLLOW UP: Call Building Department - Be sure you have all inspections and tags.

Sweep and Clean

Look for bowed or crooked studs in need of replacement prior to sheet rock. Is there proper backing at all corners and at the ceiling? Are windows properly installed and shimmed? Look at the load bearing points and check for needed solid blocking and crush blocks.

- ☎ Call brick layer for fireplace front - and schedule installation following drywall.

Drywall

This stage of construction is a seven step process: STOCK - HANG - TAPE & MUD - SAND - CEILING TEXTURE - PAINT.

Builder must provide rockers information, as to what jams will be rocked vs. wood wrapped, plant shelves, window seats, etc. Heat is necessary for board to be taped and mudded, (propane tanks may be required in the winter). Water must also be available. Decisions must be made on interior finish of garage walls and ceilings.

CSI - Look for quality of workmanship on joints and sanded finishes on interior and outside corners. Everything should be square, flat, and smooth, all electrical wire in walls must be covered with rock. Talk with rock hangers - ask them to point out any bad walls or problem areas that may need extra attention on the finish. Look to be sure all electrical outlets and air vents have been cut out. Ask in advance what drywall will be complete so you can plan ahead.

- ☎ Order Interior Trim Package for delivery day following drywall finish - any Pre Staining must be complete.
- ☎ Schedule Trim Carpenters 2 days after drywall finish.
- ☎ Call Carpet Company and order underlayment to be installed before cabinets are set.
- ☎ Immediately after cabinets are set, call Cabinet Company and have them measure for counter tops and schedule delivery. Ask for date of commitment.
- ☎ FOLLOW UP: Call Brick Layer or Fireplace Company for installation or delivery of fireplace front.



The Finishing Stages - Structural & Mechanical

CRAZY best describes this stage of construction. Now more than ever before the need to coordinate and plan ahead is necessary. You need to push for completion commitments and keep the subs at your job. You must schedule tight and reduce lost days.

The Completion Date Letter - & - Completion Schedule


The best way I've found to coordinate this phase is to write a common letter of expectations and necessary completion dates to each sub-contractor (see example). This letter should also be posted in several locations at the job site. Then, start making evening follow up calls to all subcontractors to make sure they are doing what's necessary to meet your schedule. Again, multiple trades can work side by side at various stages of completion.

- ☎ Order closet shelving material and pre-drilling.
- ☎ Order fireplace doors and blower installation.
- ☎ If Carpenters are delayed - window frames can be stained.

Carpentry Finish - Trim and Set Cabinets

It is assumed all cabinets are delivered and trim is delivered and pre-stained as necessary. Carpenters will set all doors, case windows, set cabinets, and set base trim. Be sure all material is adequately pre-sanded and finish work is to your satisfaction. CSI - Look at miter joints, open and shut doors to be certain everything fits. Ask carpenters for estimated completion date and plan ahead. A good crew can trim a house in a week or so. This is an important stage. If possible, let them work alone. However, during trim process and best before cabinets are set, floor covering company can install under-layment. Hopefully, before carpenters are finished, the counter tops will be delivered and installed.

- ☎ Select decorative light fixtures and mirrors.
- ☎ If exterior flat work and finish grade is not yet complete, get it done.
- ☎ Call - order electric garage door opener.
- ☎ Call - order appliance delivery.
- ☎ Call - order delivery of dishwasher and microwave.
- ☎ Determine color of electrical switches and plate covers.

 Determine color of heating vent covers.

Sweep and Clean

Staining and Painting

Although multiple trades can work together for a good job of finish trim - Elimination of dust is critical. Following carpentry, unstained trim can now be stained. TRY NOT to seal and varnish with other trades. Paint walls in bathrooms immediately following installation of counter tops and plumbing.

Plumbing Finish

When counter tops are installed, plumber can set sinks, faucets, disposal, dishwasher, finish gas pipe to utilities and fireplace etc. Stools cannot be set until after vinyl. Try to get most work done before finish coat of paint and floor covering.

Electrical Finish

Outlets and switches are now wired in boxes. Recessed lights and trim installed. Decorative fixtures are best delayed until last few days of construction - Basement wiring is now completed. Thermostat installed. Dishwasher, disposal, microwave, hood fan, door opener, etc. DO NOT install plate covers until painting is complete.

Heating Finish

Install wall and floor grates. Unless previously done, complete mechanicals on furnace in basement and set and complete compressor. Balancing of air flow best to complete after carpet and drapes.

Painting and Varnish

Assuming the dirty work of plumbing, heating, and electrical is complete... give the painters 2 -3 days to finish interior trim in a dust free environment. It is possible to paint walls now, but best to wait until just before carpet.

Floor Covering - Vinyl and Hardwood

Installation of vinyl can come at anytime after installation of underlayment. But, if installed early, extreme care must be taken to cover and protect. It is best to delay until just before or just after walls are painted. Hardwood if installed, must be protected.

Carpentry

Install base shoe, cabinet hardware, door knobs.

Ceramic at Jacuzzi

The key is to plan ahead. This can be done at most anytime late in the finish process.

Plumbing - Stools

Set stools following vinyl installation.

Painting

Paint walls finish coat if not yet done.

Electrical

Hang decorative fixtures. Wire garage door opener.

Carpeting

Install carpet and pad.

SPECIAL NOTE: ALL MECHANICAL TRADES NEED CITY BUILDING DEPARTMENT INSPECTIONS. SO TO, DOES CARPENTRY WORK NEED A FINISH INSPECTION. HANDRAILS, PATIO STEPS, GARAGE STEPS, DECKS MUST BE COMPLETE. EXTERIOR LIGHT INSTALLED. HOUSE NUMBERS APPLIED.



Exterior Finish Items

While completing final interior work, the following exterior work must be completed.

Painting

Exterior doors and trim, decks, etc.

Carpentry

Decks, steps

Finish Grade

This may require advance lot clean up, hauling, and burning. Check grade and inquire as to need for window wells.

Landscape

Be sure you have water meter installed by this date.

Sod

Green side up.

Final Interior and Exterior

Clean up - Cleaning person and hauling trash.

Touch up and detail by all trades.

Final Inspection

City Occupancy Permit.