

Inspection Checklist

This list serves as a guideline for SAFEbuilt Colorado inspectors to assure that important code issues are not overlooked and to provide uniformity in the inspection process.

FOUNDATION INSPECTIONS

Setbacks/General:

- √ Check site plan for required setbacks - require contractor to string property line if setbacks are within 1 foot of required setback.
- √ Check top of foundation elevation 12" plus 2% above street flow line or drainage inlet on property.

Footings:

- √ Review approved plan for footing size, reinforcing schedule and design notes.
- √ Check depth and width.
- √ Check for proper compaction - no loose material or mud.
- √ If reinforcing is specified check for proper clearance from soil (3" above).

Caissons/Post Holes (For patio covers, pole barns and misc.):

- √ Check depth and bottom of hole.
- √ Check vertical alignment of hole.
- √ Check to see that reinforcement to be used matches that specified by design.
- √ Post hole depth to be 25% of height of post supporting structure.

Note: Drilled piers require special inspection (engineer's letter).

Foundation Walls/Piers:

- √ Check width and depth of walls or piers.
- √ Check reinforcing for proper clearance from forms, ground, etc.
- √ Check bar splices, spacing, sizes and check to see that reinforcing is secured in place to prevent movement during concrete placement.
- √ Check reinforcing at windows and block-outs - run past corners 24" (2-#4 rebar each side of windows).
- √ Check void form to assure that no gaps between void forms exist that will allow soil to contact concrete.
- √ Check footing to wall dowels or keyway.
- √ Check for egress window in basements of dwellings.
- √ Check for mud, excessive corrosion, form oil or any substance that may prevent bonding of steel to concrete.

UNDERGROUND PLUMBING

- √ On Commercial projects, review plumbing plan for piping details.
- √ Check to see if a backwater valve is required (not required for septic systems).
- √ Check venting of floor drains and assure that floor drains are connected to sewer.
- √ Check slope of drains to be $\frac{1}{4}$ inch per foot for 3", if necessary 1/8 inch per foot for 4" or larger and 1/16 inch per foot for 6" or larger.
- √ Check for water or air leaks depending on test method (10' head of water or 5 P.S.I. air).
- √ Check for proper bedding of pipe (uniformly bedded not propped up on clods, etc).
- √ Check for proper horizontal fittings (sweep not vertical fittings).
- √ Check for cleanouts every 135% change of direction or 100' of run where building drains exit building foundation.
- √ If the building is type II-fire-rated or above cannot use plastic piping above slab.
- √ Check cast iron to plastic pipe transitions for proper fitting.
- √ Check grease trap for proper design, size and venting.
- √ Check grease lines separately from other DWV lines. Note that grease lines cannot be included in a combination waste and vent system.
- √ Note that some health departments do not allow a grease trap in a food prep area such as under a 3-comp sink.

ROUGH FRAMING INSPECTION

Structural Frame:

- √ Building to be dried in with windows and doors installed (roofing felt at minimum fastened with battens or nails with washers).
- √ Lateral bracing - if plywood or other panels are used for bracing method check nailing patterns and make sure all 4 edges are nailed properly from outside (block horizontal joints to accomplish this if necessary). Thermoply panels require roofing nails (see nailing pattern printed on panel). Panels are to be applied directly to the studs not over gyp sheathing or insulation.

Note: Spot check exterior sheathing before it is covered while on other inspections in the area. If this is not possible, use a piece of metal strap, slip between sheathing and stud on inside to check nail spacing.

- √ Lateral bracing - steel angle braces are to extend from top plate to bottom plate and nailed per listing. The angle of the brace is to be no less than 45 deg. Nor more than 60 deg. from horizontal.
- √ Check all bearing point loads such as at roof beams, girder trusses floor beams and make sure all bearing points are adequately supported through all levels to the foundation. Check to see that bearing posts on plywood flooring are supported by blocks to transfer loads to beams or foundation below.
- √ Top plates joints are to be offset 48 inches.
- √ Check for top plate laps at wall intersections and require structural strap over joint if plates are not lapped.
- √ Check for top plates cut and require structural straps nailed with structural nails not roofing nails.
- √ Check for excessive gaps (>1/16") under header bearing points and require steel shims if necessary.
- √ Steel posts are to have no less than 1" nor more than 3" of thread showing to allow for adjustment and to assure stability of screw jack assembly.
- √ Steel post top plate straps are to be bent over bottom flange of I-beam.
- √ Check steel post base for proper bearing on pads or caissons.
- √ Point loads bearing on TJIs over beams require that the TJI webs be filled with $\frac{3}{4}$ " plywood at bearing points or squash blocks per TJI specs.
- √ TJI blocking at bearing points that have been removed during construction must be replaced.
- √ Check for cuts or holes in webs or chords of TJIs to see if hole chart was followed.
- √ Check for blocking between dimensional lumber floor joists at all bearing points including at cantilevers, which are longer than the depth of the joist. Note: 2x4 blocking is OK at cantilevers to allow insulation).
- √ Truss clips are to be installed on trusses at *exterior* bearing walls.
- √ Trusses are to be laterally braced at bearing points and as specified by engineer.
- √ Check for proper bearing points where trusses cantilever such as at porches with false beams.
- √ Check for framing anchors attached with structural fasteners at floor joists, rafters and headers.
- √ Check for 16" framing at house/garage ceilings which form the required occupancy separation. Hat channel, 1 x 4, 2 x 2 or RC channel are acceptable furring materials.
- √ Check for solid blocking framing corners in fire-rated construction.

- √ Check for attic access rough opening for 22" x 30" dimension and 30" headroom measured from the plane of the ceiling to the nearest obstruction above (bottom of rafter if in 22" x 30" space or sheathing if no framing encroaches).
- √ Check soffit vent insulation shields between trusses or rafters over exterior wall in attic and require at least 1" free air space between shield and roof sheathing.
- √ Check for adequate roof ventilation (1:150 using only gable or roof vents, or 1:300 with soffit and roof vents).
- √ Check for skylight framing between trusses and require framing between truss webs 24" O.C.
- √ Check notched or bored studs and require stud shoes where needed at plumbing.
- √ Check for cut floor joists and require headers where cut for tub traps, etc.
- √ Check roof trusses at roof vent holes and other cuts for top chord damage/cuts and require an engineer's letter for damage of any sort if needed.
- √ Check for proper attachment of stairs to framing at top bearing point and require structural straps if necessary.
- √ Check crawl space for 18" x 24" access (where valves or equipment are located in crawl).
- √ Check required earth to wood clearance below wood floor joists (18") and wood beams (12") in crawl spaces.
- √ Structural floors in basements must be designed by a licensed professional engineer and plans are to be on the jobsite for the inspection.
- √ Egress windows - check for egress windows in bedrooms and basement.
- √ Check headroom at stair ceilings (6' 8" - 6'6" at spiral stair).
- √ Check hallway width for a minimum of 37" rough dimension, assuming $\frac{1}{2}$ " drywall on each side will be used (36" finished).
- √ Check headroom of framing for minimum of 7' 6" except in bathrooms and hallways.
- √ Check headroom in basement for proper clearance at beams, duct chases and main part of room.
- √ Check landings especially at winders for proper dimensions.
- √ Check grab bar backing at sides and rear of handicap stools, at accessible tubs, showers etc. and where required by ANSI A117.1.
- √ Check accessible ramp slope and landing sizes where accessibility is required.
- √ Check anchor bolt spacing and anchor bolt proximity to ends of 2x4 plates and allow either expansive bolts where necessary or as an alternate powder-driven fasteners with washers placed between each stud where anchor bolting is inadequate.
- √ Check for gaps between foundation plates and foundation.
- √ Check for floating of non-bearing partitions where potential for soil expansion is moderate to high - follow recommendation of soils engineer where given but at a minimum require 1 $\frac{1}{2}$ " float.
- √ Check for roof deflection of long spans where framing is attached and require proper float to prevent structural damage caused by deflection.
- √ Check brick veneer attachment and watch for potential cross-grain shrinkage problems on multi-story buildings.
- √ Brick veneer cannot support any structural loading.
- √ Brick veneer to be supported by foundation - not on porch floor or slab.
- √ Check roof sheathing panel rating for span.
- √ Check roof sheathing for staggered joints.
- √ Check rafter spans.
- √ Check floor joist spans.
- √ Check ceiling joist spans.
- √ Check for attic access in standard 24" closet - not allowed.
- √ Check post/beams for positive connection (beam pocket, framing anchor etc.)

- √ Check clearances in front of furnace (30"), water closets (24" front, 15" sides; 18" sides for handicap).



Rough Framing Inspection, Cont....

Fire Blocking and Draftstop.

- √ Fireblocking in combustible construction is required at all interconnections of hidden vertical and horizontal spaces which occur at:
 - Kitchen soffits.
 - Drop ceilings.
 - Vent/duct chases at attic and ceilings.
 - Dead chases at attic and ceilings.
 - Top plate penetrations of pipes, conduit, ducts, etc.
 - Along and in line with stair stringers when only outside of wall is finished.
 - In fireplace chases at ceilings and attic.
 - Horizontally every 10 feet such as at furred spaces in basements.
 - Vertically such as between stud spaces and furred spaces over 10 feet in height.
 - Penetrations at floors such as tub and shower traps.
 - Every 100 sq. ft. space between wood floor sleepers, platform framing etc.
 - In spaces between exterior walls and floors or ceilings.

Acceptable fireblock materials are:

- Fiberglass or mineral wool insulation secured in place to seal off penetrations.
- Nominal 2x lumber fastened in place
- Plywood or OSB - $\frac{3}{4}$ " fastened securely in place with joints backed up by $\frac{3}{4}$ " plywood or OSB.
- One half inch or thicker drywall (non-rated or rated) fastened securely in place.

Note: The above provision is not to be confused with through-penetration firestop systems or membrane-penetration firestop systems for fire-rated assemblies.

Draftstop.

- √ Draftstop is required in combustible construction in the following locations:
- In floor-ceiling assemblies of single-family dwellings where the space exceeds 1,000 sq. ft. and where there is usable space above and below the floor.
 - In floor-ceiling assemblies and attics above and in line with walls separating two or more dwelling units or guest rooms in hotels or motels and in attics between such dwelling units or guest rooms and other spaces such as laundry or mechanical rooms. Note that draftstops between units must extend through mansards, false fronts and similar spaces to be complete.
 - In floor/ceiling assemblies of uses other than dwelling units and guest rooms, draftstops must be installed such that no space exceeds 1,000 sq. ft. and so that the minimum horizontal dimension between draftstops does not exceed 60 feet (Exception when space is sprinkled can be 3,000 sq. ft. and 100' between draftstops).
 - In attics of uses other than dwelling units and guest rooms, draftstops must be installed such that no attic space exceeds 3,000 Sq. Ft. between draftstops and the maximum distance between draftstops does not exceed 60 ft. (Exception: if attic is sprinkled space can be 9,000 Sq. Ft. and distance between 100 Ft.)

Draftstop Materials.

- √ Draftstop material shall be $\frac{1}{2}$ " drywall, $\frac{3}{8}$ " wood structural panel, $\frac{3}{8}$ " particle board or other approved material properly supported.
- √ Openings in draftstop within attics between units should be equipped with a means for sealing the opening. A self-closing door constructed of any structural material with a latch is acceptable - does not need fire rating.

ROUGH PLUMBING INSPECTION

DWV

- √ Check to see if pipe material is acceptable for application (plastic pipe in certain types of construction not allowed; II-1-Hr, II-F.R. and I- F.R.). Also, plastic pipe not allowed above certain height of building.
- √ Check size and slope of drains.
- √ Check for proper fittings at change of direction from vertical to horizontal, horizontal to horizontal (sweep fittings).
- √ Check venting of traps for location, size and slope.
- √ Check for cleanouts at upper end of horizontal drains, at every 135 deg. change in direction and every 100 feet of run.
- √ Check for support of plastic pipe every 4' O.C. horizontally and at offsets horizontally and vertically. Note: Vents in attics should be supported 4' O.C. horizontally and where vent goes vertical even if at 45 deg.
- √ Support vertical DWV at each floor, offsets and mid-points when floor to ceiling distance exceeds 8 ft.
- √ Check for dishwasher standpipe unless an approved airgap will be installed at fixture.
- √ Check for clothes washer standpipe (18"-30" above floor) and downstream vents no closer than 10' from clothes washer trap arm.
- √ Check tub traps for proper connection and that slip joints are not concealed.
- √ Check water piping for proper supports.
- √ Check sewage ejector/lift station for proper venting, minimum 2" vent, gate valve, check valve, and separate vent through roof.
- √ Check DWV water (10' head above highest fitting) or air test (5 P.S.I.).

Gas Piping:

- √ Check gas pipe size and support.
- √ Check to make sure gas pipe fittings are proper (no thread protectors allowed).
- √ Check for exposed unions.
- √ Check gas valve locations.
- √ Check gas pipe sizing - if not correct give option of either having pipe sized by mechanical engineer or follow plumbing code tables.
- √ Observe gas pressure test of 10 PSI for 30 minutes.
- √ If gas test is approved tag gas piping adjacent to meter location.
- √ Check to see if for medium or high pressure gas will be used (commercial).
- √ If a manifold system is used require supporting data and bring into office for approval unless already on file. If on file follow listing.
- √ Flex gas pipe connector not allowed through sidewall of appliance - must be hard piped.



ROUGH H. V. A. C. INSPECTION

- √ Check bath fans and exhaust ducts. If bath fan is recirculating type verify whether this is acceptable (only in water closet compartments - not shower or spa tub areas).
- √ Check supply ducts for proper connections, size and material.
- √ Check return air ducts and spaces between studs and floor joists for completion.
- √ Check for wires in plenum spaces, which run vertically along studs.
- √ Check for return plenum spaces to be sealed from duct chases especially where flu vents are involved.
- √ Check for return air plenum for adequate cross-sectional dimension at top plates etc.
- √ Check between floor joists for proper and tight completion of plenums.
- √ Check for excessive bends (not over 2-90 deg. bends) and length (not over 14') in dryer vents. If manufacturer's design allows longer duct documentation must be on hand for the inspector. Also no screws allowed in dryer vents to prevent lint build-up.
- √ Check for proper termination of exhaust vents.
- √ Check B vents for proper size based on equipment.
- √ Check B vents for proper installation - no screws allowed in B vents.
- √ Support offsets of B vents at vertical 45% and horizontal.
- √ Check for metal fireblock pan at B vents at floors and in furnace room at ceiling and maintain 1" clearance to combustibles from B vent.
- √ Check for combustion air duct to furnace and water heater on rough. Note options allowed by the code. Most houses are of "tight" construction and will need at least one duct adjacent to furnace even in unfinished basements.
- √ Check B vents for clearance to combustibles at roof (roofing felt or sheathing, trusses etc.)
- √ Check single wall gas appliance (low temp) vent connectors for 6" clearance to combustibles.
- √ Check for vibration damper/expansion isolation connection in areas where expansive soils exist and furnace is resting on slab on grade.

ROUGH ELECTRICAL INSPECTION

- √ Check panel driven ground connection.
- √ Check panel neutral/ground bonding.
- √ Check wire sizes of service entrance conductors.
- √ Check wire size at breaker connection.
- √ Check NMC installation for proper anchorage.
- √ Check for nail plates where wires are closer than 1" from edge of plate/or framing member.
- √ Check location of receptacle outlet boxes and anchorage.
- √ Check wire termination length.
- √ Check for required space (sq. in.) for number of connections.
- √ Check 3 wire cable for smoke detectors.
- √ Check 220v cable to dryer or range.
- √ Check ceiling fan boxes for proper support (bridge between framing required also proper size screws).
- √ Check switch, light wiring.
- √ Check for 110 v W.P. (GFI) outlet boxes - front and rear of house at grade.
- √ Check for 110 outlet in garage.
- √ Check for 110 v outlet adjacent or within 25 ft of mechanical equipment.
- √ Check for light in mechanical rooms or crawl space and switch at access point.
- √ If electrical wiring is OK tag electrical panel for temp meter.
- √ Check 3 wire at smoke detector and detector locations.

DRYWALL INSPECTION

Single-Family:

- √ Check for 5/8 type X drywall inside garage.
- √ Check nail pattern for garage / house occupancy separation to be bugle head drywall screws 12 inches on center or one on each edge and three in the field. If nails are used the need to be spaced 7 inches on center and need to penetrate the wood framing a full one inch.
- √ Check cuts around electrical boxes to be with no more than an eight of an inch gap and can't be scratch and break cuts - router or saw cuts only.
- √ Check to assure that horizontal occupancy separation is supported by walls beams and columns having equal fire-rating.
- √ In house, check nail patterns giving more latitude for non-rated drywall.
- √ Check water-resistant drywall behind tubs, showers (up to 72 inches above drain) and water closets (48 inches high).
- √ Check usable under stair storage areas for 5/8 X drywall on the underside of the stairs and on walls of enclosure. This is required for both wood and steel framing.

Multi-Family:

- √ Check fire-rating of building on plans and review fire test data before inspection.
- √ If building is non-rated there may still be area separation walls and in any event 1-hour unit separation will be required at partition walls and floor/ceilings if condos or apartments.
- √ Often a "pre-rock" rough framing, plumbing HVAC and electrical inspection may need to be done for areas such as drop ceiling areas, behind tubs and showers, behind duct chases etc.
- √ If an area separation wall is part of the inspection, the base layer and finish layer will have to be inspected individually to assure that proper staggering and fastening schedules are followed. This is true for both walls and for multi-layer floor or roof/ceiling assemblies.
- √ Check nailing patterns to conform to fire tested assembly detail.
- √ Check for gaps around penetrations such as wood framing, metal pipes, ducts and steel outlet boxes and do not allow more than $\frac{1}{4}$ " gaps. For plastic electrical outlet boxes make sure the boxes are listed for the assembly it is a part of and follow the listing - typically the maximum gap allowed is $\frac{1}{8}$ ".
- √ Check for plastic pipe and conduit penetrations. These penetrations are not allowed without either a through-penetration firestop or membrane-penetration listed firestop system. Ask for specification of firestop system to be used.
- √ Bath fan and other duct penetrations of a one hour floor/ceiling assembly can be allowed without a fire damper provided the joist space is lined with 5/8" X drywall for the full length of the duct run (if this method is chosen, the drywall lining must be inspected on the pre-rock inspection).
- √ When inspecting chases for steel ducts, vents, etc. note the special shaft provisions for such items penetrating not more than 2 floors (non-rated chase OK).
- √ Check for continuation of fire-rating through attics, floor/ceiling assemblies, etc. at exterior walls.
- √ Check fire-rated shaft wall termination to be to the underside of roof sheathing unless top of shaft is enclosed with same fire-rating as walls.

- √ Check corridor walls and ceiling for complete envelope. Corridor walls must extend to floor or roof deck or be tented.



FINAL BUILDING INSPECTION

- √ Check for address numbers visible from the street on contrasting background.
- √ Check for flashing and counter flashing at exterior.
- √ Check exterior penetrations of siding such as gas pipe TV cable etc. and require seal.
- √ Check for positive drainage away from building around house (2% or $\frac{1}{4}$ inch per foot).
- √ Check house/garage fire separation - look for door between house and garage to be self-closing and latching, 5/8 X drywall in garage to be intact without holes, etc.
- √ Look for plastic vacuum line penetrations in house/garage wall.
- √ Look for 5/4 trim at house/garage door.
- √ Look for 5/4 trim at garage attic access if part of fire-separation.
- √ Check step rise and run and check for gripable handrails where required.
- √ Check for door swing over landings or steps not allowed.
- √ Check egress window size (5.7 Sq. Ft. openable area, at least 20" wide, 24" high) and height (not over 44" above floor to sill).
- √ Check window wells at egress windows for exit criteria (3'x3' with ladder if more than 48" deep).
- √ Check Smoke detector locations and test to see if functioning and interconnected.
- √ Check exit door for "openable from the inside without the use of a key, knowledge or special effort" criteria.
- √ Check under-stair areas for 5/8 X drywall if considered usable space.
- √ Check insulation of rim joists and foundation walls in crawl spaces.
- √ Check beam bearing in basement.
- √ Check for proper crawl space ventilation.
- √ Check to see if steel posts are secure to I beam.
- √ Check for cut floor joists in basement at traps etc.
- √ Check exterior landings and stairs at decks and porches.
- √ Check fireblocking at furnace flue penetrations, open soffits in garage at ceiling and holes in attic ceiling etc.
- √ Check for window well protection when well is within 36" of a walking surface such as a driveway, sidewalk, patio.

FINAL PLUMBING INSPECTION

- √ Check to see that all fixtures are connected to plumbing properly.
- √ Check plumbing fixtures - are hot and cold crossed?
- √ Test stools.
- √ Test showers
- √ Test garbage disposal.
- √ Check to see if dishwasher discharge hose is connected to a standpipe or an approved airgap.
- √ Check exterior gas piping - to be painted to prevent corrosion.
- √ Check hose bibs - are hose bibs equipped with back-flow prevention?
- √ Check jetted tub for access to pump.
- √ Check seal of shower fixture to tile or surround.
- √ Check sewage ejector or sump pump if required.

FINAL H.V.A.C. INSPECTION

- √ Check gas fireplace for proper function and for accessible gas pipe valve under unit.
- √ Check furnace function (venting gas connection etc.).
- √ Check water heater function venting, gas connection, etc.).
- √ Check bath fan function.
- √ Check kitchen hood function.
- √ Check for floor registers either in place or present.
- √ Check combustion air ducts for proper location size and termination.
- √ Check flue vent termination and caps.
- √ Check fire block at flue penetration of ceiling or floor.
- √ Check return air duct to furnace connection for gaps.
- √ Check return air plenum caps between joists for excessive gaps.

FINAL ELECTRICAL INSPECTION

- √ Test GFIs in baths, kitchen counter near sink, in garage and at front and rear of house at grade.
- √ Check panel for circuit labels, grounding, etc.
- √ Check water pipe ground.
- √ Check fixtures for proper connection and function.
- √ Check Jacuzzi motor for bonding.