

# 2018 NEW CASTLE COUNTY RESIDENTIAL CLOSE-IN CHECKLIST WITH 2012 IECC

(2018 IRC)(2015 IMC)(2015 IPC)(2015 IFGC)(2012 IECC)(NCC Chapter 6)

1/24/19

**Pass** **Corr** **N/A**  
1.

## **GENERAL**

- Permit displayed at worksite Ch 6 6.03.012(Q)
- Access provided to all areas to be inspected Ch 6 6.03.018(A, D)
- NCC approved, stamped building and L & G plans available at site (min size 18"x24" for SFD) Ch 6 6.03.013(B3a)
- Info on drawings shall clearly indicate the extent of the work Ch 6 6.03.013(B)
- All revisions to approved drawings have been submitted to & approved by NCC Ch 6 6.03.013(B1)
- All required child permits issued: Ch 6 6.03.012(A)
  - Decorative Appliance
  - Plumbing – in and out
  - HVAC
- As-built survey approved when required Ch 40, Sec 40.22.230(C)
- All required inspections completed to date: Ch 6 6.03.018(E,F)
  - Footings
  - Foundation
  - Underground Plumbing
  - Pre-slab
  - Lath
  - Gas Test
  - Weather Barrier
  - Exterior Framing
- Required third-party inspection reports received & approved by NCC Ch 6 6.03.018(C),(E),(G),(H)
- Rough wiring inspection approval on site Ch 6.03.018 (A,E), DE Title 24, Ch 14 Sec 1420
- Self-cert inspections (DWV, U/G, S/W) received & approved or witnessed IPC 312, Ch 6 6.03.017
- Contractor Verification Form properly completed Ch 6 6.03.002
- Smoke detectors roughed-in on each level, in each bedroom, outside bedrooms** IRC 314, Ch 6 R314.2.2
- Carbon Monoxide detectors roughed-in outside bedrooms** IRC 315, Ch 6 R315.2.2
- All equipment and materials installed in accordance with the manufacturer's installation instructions

2.

## **E&S CONTROLS**

- Silt fence per approved plan & functioning E&S Handbook 3.1.2-1, Ch 6 6.03.013
- Construction entrance installed & functioning E&S Handbook 3.4.7-1, Ch 6 6.03.013

3.

## **EXTERIOR**

- Verify there are no visual signs of damage to foundation walls IRC 404, Ch 6 R407.3
- Structure appears weather-tight IRC 701.2, 703
- Junction of foundation and sill plate is sealed as an air barrier IECC table 402.4.2  
(most foam sill sealers do not meet the air barrier requirements)
- Windows & doors installed per manufacturer's installation instructions IRC 609
- All flashings and weep holes installed per code IRC 703, 903.2

4.

## **FLOOR AND WALL FRAMING**

- Braced Wall Panel systems appear complete Ch 6 6.03.013(B)(1), IRC 602.10
  - One and two family dwelling plans show braced wall and uplift load path design
  - Sill plate attached to joist or blocking at braced wall panels by 3-16d nails at 16"oc
  - Cantilevers do not exceed 24" where full height rim joist is provided
  - Elevated post or pier foundations supporting braced wall panels are designed by engineer
- Verify clearances or decay-resistant lumber; use correct fasteners IRC 317
  - Joists less than 18" from exposed ground
  - Girders less than 12" from exposed ground
  - All sill plates, wood that rests on concrete or masonry exterior walls
  - Ends of girders entering masonry unless they have 1/2" space all around
  - Furring or studs attached to masonry on exterior or below grade walls
  - Exterior wood siding, sheathing, or framing within 6" of the ground or 2" of exposed horizontal surfaces such as concrete steps, porch slabs, or similar weather exposed structures
  - Hot-dipped galvanized, stainless steel, silicon bronze or copper fasteners used in treated wood
- Verify layout, materials & installation per approved plan & engineered drawings Ch 6 6.03.013(B1)
- Sill plates anchored correctly, min 2x4 nominal lumber, bolts in middle third of plate IRC 403.1.6
- Wood & steel columns restrained top & bottom, min. 3" steel or 4x4 wood, & located per plan IRC 407.3, Ch 6 R407.3
- Point loads carried down from roof to foundation to footer IRC 301.1, 501.2
- Proper materials and installation for engineered flooring and beam systems per NCC approved layout. Check beam type, I-joist size & spacing, support & bracing, notching & boring, attachment, hold downs, & hanger installation. (Beam type substitution must be approved) mfr specs, IRC 502
- Ends of joists, beams or girders shall not have less than 1 1/2" bearing on wood or metal, and 3" on masonry unless supported by approved joist hangers, all floor joists must be laterally restrained at the ends; engineered floor systems are supported per manufacturer's requirements mfr specs, IRC 502.6

# 2018 NEW CASTLE COUNTY RESIDENTIAL CLOSE-IN CHECKLIST WITH 2012 IECC

- Metal shims used on masonry, load is distributed evenly IRC 502.6
- Floor joist lapped over a beam must overlap 3" and attach with 3-10d nails IRC 502.6.1, (T) R602.3(1)
- All headers sized, framed and insulated per code IRC 502.10, (T)602.3, IECC (T) R402.4.2
- All built-up corners framed & insulated per code IRC 602.3(2), IECC (T) R402.4.1
- All joists, studs, sheathing nailed per fastening schedule (T) R602.3(1)
- Floor perimeter supported by framing members or solid blocking (T) R602.3(1)
- Double top plate on bearing walls, end joints offset at least 24" or single plate meets exceptions IRC 602.3.2
- Studs shall have full bearing on nominal 2" or thicker bottom plate, equal in width to the stud IRC 602.3.4
  
- 5.    **NOTCHING AND BORING** IRC 502.8, Fig R502.8, 602.6
  - JOISTS:** No notching in center 1/3 of span, notches only 1/6 depth of member, holes no closer than 2" top or bottom, or within 2" of another hole or notch, no larger than 1/3 depth of joist; engineered lumber per man specs
  - STUDS:** NOTCHES: exterior & bearing: max 25%, interior: max 40% **HOLES:** exterior & bearing: max 40%, interior or doubled studs: max 60%, not within 5/8" of face approved studs shoes may be used when installed per man specifications
  - Top plates cut over 50% fastened by 16 gauge galvanized metal tie attached with 8-10d nails extending 6" beyond notch each side. **Exception:** when the entire notch side is covered with wood structural panel sheathing IRC 602.6.1
  
- 6.    **FIREBLOCKING AND DRAFTSTOPPING**
  - Approved materials shall be used (includes 2x lumber or 2 layers of 1x with joints offset, 1/2" drywall, 3/4" OSB/plywood, un-faced fiberglass batts or mineral wool tightly packed and restrained) IRC 302.11
    - Vertically at ceilings & floors and horizontally every 10 feet
    - Penetrations at chimneys
    - Between concealed horizontal and vertical spaces – soffits, drop ceilings, cove ceilings, etc.
    - Openings around pipes, ducts, wires at penetration of floors
    - At concealed space under stair stringers at top and bottom
  - Draft stopping installed in concealed floor/ceiling spaces over 1000 sq. feet IRC 302.12
  
- 7.    **STAIRWAYS**
  - Stairway width at least 36" above handrail and 31.5" below handrail or 27" with 2 handrails IRC 311.7.1
  - Stairway headroom height minimum 6' 8" (80") along rake of stairs IRC 311.7.2
  - Maximum riser height 7 3/4" & max 3/8" variance in height within a single flight IRC 311.7.5
    - Tread minimum depth 10"
    - Winder treads shall have a minimum depth 6" and opens to 10" within 12" of narrow end IRC 311.7.4
  
- 8.    **DOORS AND WINDOWS** IRC 310.2, 311
  - Main egress door **3'0"**, Interior doors **2'6"**, Bath/powder room doors **2'4"**
  - Egress windows/doors in sleeping & basement areas must meet **all** the following:
    - 20" minimum opening width, 24" minimum opening height
    - Sill height max 44" above finished floor
    - Clear net opening 5.7 ft<sup>2</sup> (820 sq in), \*Grade floor clear net openings 720 sq in when sill height is not more than 44" above or below grade
  - Clear window openings over 72" above grade must be at least 24" above finished floor IRC 312.2  
**Exception:** windows that do not open over 4" or have guards complying with ASTM or F2090
  
- 9.    **CEILING HEIGHT** Ch 6 R305.1, IRC 305.1
  - Basement headroom height: Minimum 6'6" (6'4" under exposed beams, girders, ducts, etc.)
  - Bathroom ceiling height above center of fixture clearance areas is at least 6'6" showers/tubs 6'8" IRC 305.1 exception 2
  
- 10.    **SAFETY GLAZING REQUIREMENTS** IRC 308
  - Doors (full height) & sidelights
  - Shower/tub enclosure
  - Glazing in all railings
  - Within 60" of pools, hot tubs or spas, showers or bathtubs
  - ~~Glazing~~ Glazing less than 36" above the plane of adjacent stairs, ramps, or landings without a rail 34-38" above the plane
  - Within a 24" arc of a door edge on either side in the plane of the door and along walls less than 180 degrees of the plane of the door on the hinge side unless the door enters a closet 36" or less in depth
  - Within 60" of the bottom tread of a stair in any direction when glazing is less than 36" above the landing
  - Single pane over 9 sq ft, less than 18" from floor, top over 36" off floor & walking surface(s) within 36" (must

# 2018 NEW CASTLE COUNTY RESIDENTIAL CLOSE-IN CHECKLIST WITH 2012 IECC

meet all 4 conditions to be required)

11.

## **ROOF AND CEILING CONSTRUCTION**

- Trusses properly installed (including plumbing, nailing, hold downs, etc.) mfr specs, IRC 802.10
  - Truss or roof layout per approved or engineered drawing Ch 6 6.03.013, IRC 802.10
  - Truss bracing per approved, engineered drawing Ch 6 6.03.013, IRC 802.10.3
  - Trusses shall not be cut, notched, spliced, broken or altered w/o approval IRC 802.10.4
- Rafters shall meet a ridge board of at least 1" nominal lumber not less in depth than its cut end IRC 802.3
- Ridge beam supported at both ends by girders or bearing walls if no ceiling joists or rafter ties are provided IRC 802.3
- Ceiling joists and rafters shall be nailed to each other and the top plate of the wall; where ceiling joists are not installed parallel to the rafters or not installed at the top plate, rafter ties shall be provided and a birds mouth shall not exceed ¼ the depth of the rafter IRC 802.5.2, (T) 602.3(1)
- Lateral support at points of bearing for rafters and ceiling joists exceeding 5:1 ratio (over 2x10) IRC 802.8
- Framing of openings in roof (double when over 4' header span, hangers required when over 6') IRC 802.9
- Townhouse separation continuous from foundation wall to underside of decking, and running the length of the exterior/common wall including all extensions, townhouse separation shall include one of the following: IRC 302.2
  - 30" high parapet or elevation change
  - Fire-retardant treated roof sheathing at least 4 ft. each side of rated separation wall with correct nails
  - 5/8" type-x drywall is installed directly beneath the decking and supported by 2 inch ledgers
- Attic access: (required for clear attic space greater than 30" when over 30 ft2) 22" X 30" with 30" headroom at some point above opening, or sized larger if needed to allow removal of mechanical equipment located in the attic IRC 807.1, IMC 306.3
- Vent collars installed IPC 904.3, IRC 905.2.8.4
- Proper venting of attic & material protected from entry of rain or snow IRC 806
- Sump pit properly located, 18" dia or 20" square X 24" deep discharged far enough to prevent recycling Ch 6 R405.1.2

12.

## **PLUMBING**

- Building sewer not less than 4" nominal diameter IPC 704.2
- Correct materials used (No M or WM Copper, polybutylene) IPC (T)702.1, (T)605.3,4,5
- Plastic water service pipe terminates at or before the full open valve located at the structure IPC 605.3
- Check cleanouts: location, size, clearance, access: IPC 708
  - Each horizontal drain
  - Building sewer
  - At change of direction over 45°
  - Base of stack
  - Cleanouts have clearance of 18"
  - Access is provided to all cleanouts
  - Must be the same size as the pipe they serve or 4" maximum (p-trap and cast exceptions)
- Pipe properly supported (PVC = 4', CPVC = 3' for 1" or less and 4' for 1 ¼ and larger) IPC (T)308.5
- Drain pipe properly sloped: 2 ½" diameter or less - ¼" per foot, 3 to 6" - ⅛" per foot IPC (T)704.1
- Maximum distance from trap to vent (1¼"-5', 1½"-6', 2"-8', 3"-12', 4"-16') toilets excluded
- Total fall in fixture drain due to pipe slope does not exceed pipe diameter IPC 906.1, 906.2, (T) 906.1
- Shower supply riser attached with proper material or fittings attached with screws IPC 417.2
- Clothes washing machine drains into a laundry tub or min. 2" laundry standpipe which extends 18" to 42" above trap weir & connects to a 3" min. branch drain or drain stack IPC 802.3.3, 406
- Pipe protection plates required (except cast & galvanized pipe) when closer than 1½" to edge of framing & extends 2" above sole plate & 2" below top plate. IPC 305.6
- Drainage fittings meet the following restrictions IPC 706.3, (T)706.3

	Horizontal to vertical	Vertical to horizontal	Horizontal to horizontal
Quarter bend	X	X <sup>a</sup>	X <sup>a</sup>
Short sweep	X	X <sup>a,b</sup>	X <sup>a</sup>
Sanitary tee	X <sup>c</sup>	-	-

a. The fittings shall only be permitted for a 2-inch or smaller fixture drain.

b. Three inches or larger.

- All plumbing vents must extend at least 12" above roof IPC 903.1

## 2018 NEW CASTLE COUNTY RESIDENTIAL CLOSE-IN CHECKLIST WITH 2012 IECC

- Air admittance valves installed 4" above drain, & access provided IPC 918
- HVAC & plumbing appliances installed, allow repair/replacement without disabling rated assemblies or removing other appliances or permanent construction IPC 502.5, IMC 306.1, IFGC 306.1

13.

### HVAC INSTALLATION

- All piping properly supported IMC (T)305.4
- Duct support at 10' intervals, or per man specs for prefab ducts and flex ducts IMC 603.10
- Duct seams and joints are properly sealed with mastic or tape meeting UL 181 specs IMC 603.9
- Flex duct installation
  - All joints secured tightly and per manufacturer's requirements mfr specs, IMC 603.9
  - Printed with R-value, flame spread, smoke index IMC 603.6.1, 604.7
  - Constructed of class 0 or 1, in accordance with UL 181 IMC 603.5, 604.7
- Supply ducts in attics insulated to R-8 (unless performance-based compliance used), all other ducts outside building thermal envelope insulated to R-6 IECC 403.2.1
- HVAC supply & return duct installed properly IMC 602.3, 603.17, 603.4.1, 603.10
  - Round duct joints fastened with 3 screws spaced as far apart as possible
  - Individual supply duct dampers or adjustable registers
  - Stud cavity returns cannot be part of a fire rated assembly
  - Stud cavity returns cannot convey air from more than 1 floor level - ducted returns are allowed
- B-vent is properly supported, shielded through insulated areas & maintains clearance to combustibles IMC 304.9, (T) 308.4.2, IFGC (T) 503.10.5, IMC 802.7, 802.8
- Termination of exhaust vents must go outdoors, doors cannot swing within 12" horizontally IMC 501.2, 804
- Rough-in for exhaust fans and associated duct IMC 501.2, (T)403.3.1.1
  - Toilet/bath rooms (50cfm) and cannot terminate in attics; soffit terminations shall have 2' solid on either side
  - Attached garages (100cfm per car)
  - Kitchen hood (100cfm)
  - Check for makeup air on kitchen hoods exhausting over 400 cfm
  - Whole house ventilation required (exhaust fan, fresh air intake) when blower door is 5ACH or less IRC 303.4
- Appliances in attics installed correctly IMC 306.3, IFGC 306.3, 306.4
  - Attic access and passageway are large enough to remove HVAC unit & are unobstructed along their length in an area not less than 30 inches high & 22 inches wide and are no more than 20 feet long
  - Walkway is continuous & at least 24" wide with a 30" x 30" square service floor on the service side
  - A light required near the unit with the switch located at the attic access opening
  - Electrical receptacle on or near the attic unit
  - Condensing units in or above finished space equipped with an auxiliary drain pan and secondary drain or floatation-type shut-off switch IMC 307.2.3
- Clothes dryer vent roughed in properly when dryer space is provided: State of DE amendments IMC 504
  - Terminates outdoors with a back draft damper
  - 35' max unless model instructions provided
  - Male end of duct extends in direction of airflow
  - No screws or other obstructions to airflow
  - Vertical sections equipped with cleanout
  - Minimum 4" nominal diameter duct
  - Attic dryer duct insulated to a minimum of R-2
  - Duct has a smooth interior finish (no flex)
  - Penetrations sealed with a non-combustible material
  - Length shall be identified on permanent label when the equivalent length exceeds 35'
  - Transition ducts not over 8', not within concealed space, listed as dryer transition
  - Protection plates installed (when less than 1 ¼ from edge, 2" above sole plate, 2" below top plate)
- Gas pipe protection for other than black or galvanized steel required when piping is less than 1 ½" to edge of framing members – csst requires protection within 3". Protection plates must extend 4" above or below wall plates and to **either side** of framing members mfr specs, IFGC 404.7

14.

### AIR BARRIER/ENERGY REQUIREMENTS

IECC (T) 402.4.1.1

- Air barrier installed per code in all areas connecting to unconditioned or exterior space
  - In dropped ceilings/soffits

**2018 NEW CASTLE COUNTY RESIDENTIAL CLOSE-IN CHECKLIST WITH 2012 IECC**

- Junction between foundation and sill plate is sealed
- Between garage and conditioned space
- Recessed light fixtures IC rated and air tight
- Fireplace walls
- Common walls between units
- Showers and tubs on exterior walls have air barrier separating them from exterior wall framing
- Duct shafts, utility penetrations, knee walls, flue shafts connecting to unconditioned spaces
- Electrical boxes on exterior walls are air sealed or air barrier extends behind the box
- Air permeable insulation is not used as a sealing material between conditioned and unconditioned spaces and is not used outside the air barrier
- When required, duct system leakage test results attached (rough-in test only) IECC 403.2.2
- Fenestration U-factors (check one): IECC 402.1
- Per IECC table 402.1.1 all fenestration U-values 0.35 or less except skylights 0.60 or less
- Total UA alternative U-factors per approved software report
- When applicable, performance-based compliance documentation on site IECC sec 405

15.    Approval required to proceed: do not cover up work or load house until approved Ch 6 6.03.018(A)

Inspector: \_\_\_\_\_ Permit Number: \_\_\_\_\_  
Date: \_\_\_\_\_ Inspection Results: Pass  Partial  Corrections Required