# GC3 - FORTIFIED Home™ - Gold Compliance Form for Engineer – Continuous Load Path for Retrofit of Existing Home

The continuous load path (CLP) design is the responsibility of a professional engineer designated as the building designer/engineer of record for the home. This form is intended to identify structural components that need retrofitting to meet the requirements of current building code, minimum structural safety requirements, and FORTIFIED Roof, Silver and Gold requirements in accordance with section 6.5 and Appendix G of the FORTIFIED Home 2020 Standard. All sections must be completed and signed by the professional engineer performing the site inspection and evaluation of existing home. Form not valid if all sections are not filled out, initialed and/or signed by professional engineer. IBHS does not take responsibility for the continuous load path design of the home.

**1. General Information *(complete a thru g)*:**

a. FORTIFIED ID:_____ (Obtain from homeowner or FORTIFIED Evaluator)

b. Homeowner's Name:_____

c. Property Street Address:_____

d. City:_____

e. State:_____

f. ZIP:_____

g. County:_____

**2. Site Design Information *(complete a thru g)*:**

a. Building Code and Edition:_____

b. Design Wind Speed:_____ per ASCE: ☐7-05 ☐7-10 ☐7-16 (Check One)

c. Exposure Category: B ☐ C ☐ D ☐

d. Mean Roof Height:_____

e. Number of Stories:_____

f. C&C Design Roof Uplift Pressures (ASD):

**NOTE:** *C&C design roof uplift pressures used for components such as (roof covers) must correspond to a minimum of $V_{ult}$ = 130 mph and Exposure C*

*Type in or upload image* _____

g. C&C Design Wall Pressures (ASD):

**NOTE:** *C&C design wall pressures used for components (such as doors and windows) must correspond to a minimum of $V_{ult}$ = 130 mph and Exposure C*

*Type in or upload image* _____

**3. Structural Inspection and Retrofitting Requirements**

The following CLP elements at minimum are to be inspected and, if found inadequate, retrofitted to bring them to a status meeting the conditions described below.

***NOTE: If it is determined that retrofitting is required, the engineer must provide retrofit designs including connections to resist wind pressures and resulting loads using $V_{ult}$ = 130 mph for terrain Exposure C.***

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## I. Roof Construction and Framing

☐ Roof framing member can be either wood trusses or rafters:

i. Wood engineered trusses framing:

☐ Truss framing does not exceed 24 in. o.c.

☐ Existing truss members appear to be in sound condition and supporting appropriate roof loads:

a) Wood members of any truss are not deteriorated or damaged.

b) All truss connector plates at each joint of any truss member are in good condition.

☐ Alteration and/or repair of any truss members has been fully investigated and certified by a design professional to ensure such member(s) can safely carry the appropriate gravity and uplift loads.

ii. Roof rafter and ceiling joist framing:

☐ Roof rafter and ceiling joist member size, spacing, span, and framing shall comply with, at a minimum, IRC requirements for the appropriate lumber species and grade. Roof rafter framing shall conform to one of the following two construction methods listed in the IRC:

- **Method 1**: Braced rafter construction
- **Method 2**: Collar ties or ridge straps construction

Roof rafter collar ties or ridge straps to resist wind uplift shall be connected in the upper third of the attic space in accordance with IRC requirements.

☐ When ceiling joists or rafter ties are not provided for a section of or an entire roof rafter framing area, the ridge formed by these rafters shall be supported by a wall or girder designed in accordance with accepted engineering practice. The gravity and uplift loads carried by these walls or girders shall be safely transmitted down to the foundation support.

☐ Roof sheathing thickness and material are appropriate for the span between truss framing members to carry required loads but is not less than $^{7}/_{16}$ in. OSB/plywood.

☐ Roof sheathing is fastened to all roof framing members and along all perimeters with fastener size and spacing to sufficiently resist appropriate wind uplift pressures and horizontal shear diaphragm forces.

☐ Roof framing member bearing at each support wall, beam, or column shall have a sufficient connection to resist the appropriate gravity and wind uplift forces.

☐ Roof framing member bearing at top of all exterior bearing walls shall have sufficient capacity to provide lateral support to brace the wall from both positive and negative wind pressures.

☐ Each roof framing member to another roof framing member intersection shall have a connection with sufficient capacity to resist both the appropriate gravity and wind uplift forces.

☐ Support girders or beams shall be capable of accommodating all loads imposed.

☐ Each bearing support of the girder or beam shall have a connection with sufficient capacity to resist the appropriate gravity and wind uplift forces.

## II. Wall Construction and Framing

☐ Wall framing system* shall be capable of accommodating all external loads imposed at each level of building:
***** Wall framing system can be either shear wall, moment-resisting frame, or combination.

i. Basement walls or below grade portion of any walls

☐ Wall framing shall resist lateral earth pressure due to “saturated” soil condition and/or lateral wind pressures on partially exposed wall portion.

☐ Wall framing shall have capacity to simultaneously carry gravity loads from above and resist stated lateral pressures.

☐ Top and bottom of the wall framing shall be mechanically fastened to structural framing members to resist lateral force due to above stated forces. For example: bottom of wall shall be fastened to the foundation and top of wall shall be fastened to a floor framing system with sufficient horizontal diaphragm capacity.

☐ Portion of walls in contact with soil shall be protected by water-resistant materials.

ii. Exterior bearing walls

☐ Wall framing system must resist all imposed loads (wind, gravity) and be capable of transmitting the resulting loads to the foundation.

- Forces acting perpendicular to wall surface (wind pressure acting perpendicular to wall height)
- Forces acting parallel to length of wall segment (base shear or shear diaphragm)

☐ Wall framing system shall be capable of supporting gravity loads from each floor framing system above plus the roof framing system and applicable lateral loads.

☐ Structural framing around wall opening shall be sufficient to carry above stated loads. Example: column on each side of opening, beam spanning over the opening, and the connection of beam to column at each side shall be sufficient to accommodate gravity, uplift, and applicable lateral loads.

☐ Top and bottom of the wall framing system shall be mechanically fastened to structural framing members to resist lateral wind pressures and uplift forces.

☐ Bottom of the wall framing system shall be mechanically fastened to the support structural member/system below to resist base shear forces resulting from summation of shear wall or moment-resisting system loads of all floor level(s) above plus the its current floor level.

☐ Wall framing system at each level shall provide sufficient lateral stability for the overall structure resulting from all applicable lateral loads.

iii. Interior bearing walls

☐ Interior bearing wall framing system shall resist all applicable loads imposed.

☐ Top of wall framing system shall provide sufficient bearing surface for roof or floor framing members and shall be connected to each supported framing members to resist applicable uplift and lateral forces.

☐ Bottom of wall framing system shall be properly supported by a structural framing system such as foundation, floor framing, or bearing wall. Bottom of wall framing system shall be connected to support systems below to transmit applicable gravity, uplift, and lateral forces to support system below.

**III. Floor Construction and Framing**

☐ The floor framing system must support all applicable IRC live loads, all imposed dead loads, plus any interior bearing walls or columns resting on it.

☐ Floor framing systems shall resist horizontal shear diaphragm resulting from applicable lateral forces.

☐ Floor framing system shall be properly supported and sufficiently connected to safely transmit all applicable gravity, uplift, and lateral forces to structural support system below.

**IV. Continuous Load Path Verification**

A continuous and adequate load path from the roof to the foundation of the home must exist. The building must have positive connection from the roof to foundation as a means to transmit wind uplift and lateral shear loads safely to the ground. This includes providing roof-to-wall connection hardware with required uplift and shear resistance as determined by the professional designer.

☐ Roof-to-wall connections shall resist uplift and applicable shear forces.

☐ Wall above-to-below shall have sufficient connection to resist cumulative uplift and shear forces.

☐ Ground wall-to-foundation connection must resist cumulative uplift and shear forces.

**V. Foundation Support System Verification**

☐ Existing foundation support system must resist gravity loads, uplift, and lateral shear forces to provide building stability.

**4. Structural Drawings**

☐ I confirm that inspection of all items listed in section 3 has been performed by the professional engineer and signed and sealed structural drawings detailing all retrofit requirements have been provided to the building owner and/or installing contractor prior to retrofit installation/construction.

**5. Certification**

**I certify that I am a licensed professional engineer in the state of _____.**
**I verify that I have inspected all items listed in section 3 of this form and provided the required retrofit designs for the home located at:**

_____

_____

**Furthermore, I understand that any person who makes a false statement or misrepresentation, and any other person knowingly, with an intent to injure, defraud, or deceive, who assists, abets, solicits, or conspires with such person to make a false statement or misrepresentation may be subject to both criminal and/or civil penalties. By completion of this Affidavit, the undersigned does not make a health or safety certification.**

Signature:_____Date:_____

Printed Name:_____

Company:_____

Phone Number:_____

Address:_____

City:_____

State:_____ ZIP:_____

License or Registration Number:_____

Affix Seal: