

ANN ARBOR BUILDING BOARD OF APPEALS

STAFF REPORT

Meeting Date: March 19, 2026

Type of Request: APPEAL

Building Board of Appeals Request **BBA26-0002** at 1620 Hillridge Blvd., ANN ARBOR, MI 48103

(Parcel Identification Number: **09-09-19-103-006**)

DESCRIPTION AND DISCUSSION

Property Owners Name and Address:

Zachary and Jessica Adams
1620 Hillridge Blvd..
ANN ARBOR, MI 48103

BACKGROUND

The accessory structure located at 1620 Hillridge Blvd was constructed without permits and was brought to the building department's attention through a complaint (BCODE25-0003). The initial site visit was conducted 3/11/2025, there was no compliance and a ticket was issued 6/12/2025. The photos from the initial site visit confirmed non prescriptive construction and an electrical permit has been applied for to add a circuit to this structure. Under normal circumstances the design requirements would be reviewed prior to construction beginning. Because of the elements included in this structure it is not exempt from permits per Section 105.2 (i) (viii) or (x) and unable to be reviewed through the prescriptive code. Plans from a design professional were required as allowed per section 106.1 and section 301.1.3 of the 2015 Michigan Residential Code. Plans signed and sealed by David Arnsdorf were submitted 12/11/2025. Through review a few additional pieces of documentation were required the last documentation requested is to verify the bolts used are rated and tested for the specific application at 1620 Hillridge and confirm that they can handle the imposed loads. Once documentation is submitted and reviewed and approved a permit can be issued.

Standards for Approval:

- 1. An equal or better form of construction is proposed*

STAFF RECOMMENDATION

Staff recommends this application be denied as it does not meet the standards for approval, the code has not been misinterpreted, the provisions of the code do apply, and the building department is unable to confirm an equal or better form of construction has been provided.

2015 Michigan Residential Code

The Building Official's determination is based on the following sections of the 2015 MRC:

- Section R301.1.3 (Engineered Design): "Where a building or portion thereof utilizes elements not conforming to the prescriptive provisions of this code, those elements shall be designed in accordance with accepted engineering practice."
 - *Note: There are no prescriptive tables in the MRC for attaching structures to living trees.*
- Section R104.11 (Alternative materials, design and methods of construction): This section allows the Building Official to approve alternatives, provided they are found to be "satisfactory and comply with the intent of the provisions of this code." However, it explicitly states the Building Official shall require supporting data to assist in the approval.
- Section R106.1 (Submittal Documents): Authorizes the Building Official to require construction documents prepared by a registered design professional when the complexity of the work warrants it.

Basis for the Requirement

A treehouse with stairs and electrical is an occupiable accessory structure. Unlike a standard deck or shed, the "foundation" (the tree) is dynamic.

1. Failure of Prescriptive Fastening (Table R602.3(1)) The prescriptive fastening schedules in the MRC are designed for wood-to-wood connections in a static environment. They do not account for:

- Wind-Induced Stress: Trees sway independently. In a high-wind event, if the fastening system does not allow for differential movement, the fasteners will experience "withdrawal" or "shear failure," potentially causing the entire structure to detach and fall.
- Standard lag bolts are not designed to handle the "lever arm" effect created by a treehouse beam that may sit several inches away from the tree trunk to allow for growth.

2. Life Safety (Stairs and Egress) Because this structure includes formal stairs, it invites higher occupancy and frequent use. If the fasteners at the main platform fail, the stairs—which are likely anchored to the ground at the bottom and the tree at the top—will be subjected to massive tension forces, leading to a catastrophic collapse of the means of egress.

3. Fire and Electrical Safety The inclusion of electrical wiring necessitates a stable structural platform. If the fastening system is not engineered to handle the tree's growth and movement, the structure can shift and shear the electrical conduit, creating a hidden fire risk or an energized "hot" structure.

Findings

The Building Official finds that the proposed construction is non-prescriptive. Without a professional engineer's analysis of the fastener shear capacity and the specific hardware's ability to accommodate tree growth and movement:

1. The structural integrity cannot be verified.
2. The safety of the occupants (specifically regarding the stairs) is at risk.
3. The project does not meet the minimum safety standards of the 2015 MRC.

The Core Issue

The applicant has submitted structural drawings and testing data from an IAS-accredited laboratory. While IAS accredits the *facility's* ability to perform a test correctly, it does not provide an Evaluation Report that interprets those results for code compliance. The Building Official maintains that without a recognized Evaluation Report, the "allowable load" of these fasteners remains unverified.

Code Requirement for "Approved" Materials

Under the 2015 MRC Section R104.11, alternative materials must be "Approved" by the Building Official.

- Section R202 (Definitions): "Approved" means "acceptable to the building official."
- Section R104.11.1 (Research Reports): Explicitly states that "Supporting data, where necessary to assist in the approval of materials... shall consist of valid research reports from approved sources."

Why IAS Testing Data is Insufficient for This Project

1. Safety Factors. An IAS lab report might state a bolt broke at 10,000 lbs. However, an ICC-ES report does the engineering math to tell the inspector: "This bolt is safe to hold 2,000 lbs in a living tree." Raw data from a lab does not establish this safety margin.
2. Testing. IAS lab testing indicates Western Red Cedar and Douglas Fir logs that were harvested within the state of Washington which were selected for consistent diameter and controlled for moisture content vs live trees of another species which were found on site. (IAS report included in packet)
3. Independent Verification: ICC-ES reports (or similar ANSI-accredited reports like IAPMO or UL) provide a continuous oversight program. They ensure the bolts being sold today are identical to the ones tested three years ago. A one-time lab test from an IAS facility does not provide this quality assurance.
4. Specific Application: For a treehouse, the fastener is subject to lateral (shear) and withdrawal forces simultaneously. Standard IAS testing often only covers one direction. An Evaluation Report specifically reviews the fastener's performance under the complex loading described in the engineered drawings.

Risk to the Jurisdiction

If the Board of Appeals allows fasteners based solely on lab data without a formal Evaluation Report:

- The Board is essentially acting as the "Engineer of Record" for the fastener's performance.

- The Building Official cannot verify that the "Allowable Stress" used in the submitted drawings matches the actual performance of the hardware under the conditions of the 2015 MRC.

PROPOSED MOTION

APPEAL GRANTED

That in Case BBA26-0002, **the appeal of the Building Official’s decision that 1620 Hillridge Blvd.** is **GRANTED** relief from section R104.11, R106.1 and R301.1.3 of the 2015 Michigan Residential Code. The applicant is not required to provide supporting data to assist in the plan review approval of the non-prescriptive structure design from an approved source. The Building Board of Appeals **REVERSES** the Building Official’s decision for the reason(s) that *[state reason in motion]*:

- (1) The 2015 Michigan Building Code and section R104.11, R106.1 and R301.1.3 are not applicable or required.
- (2) The provisions of 2015 Michigan Residential Code section R104.11, R106.1 and R301.1.3, do not apply to the accessory structure at 1620 Hillridge.
- (3) The Building Board of appeals accepts what is proposed as an equal or better form of construction.

Stipulations – If Applicable:

[Chairman to check box(es) following vote]

Yeas:

Nays:

Absent for this vote:

Date

Paul Darling, Chairperson
Building Board of Appeal

OR
APPEAL DENIED

That in Case BBA26-0002 **the appeal of the Building Official's decision** that requested documents in compliance with sections R104.11 R106.1 and R301.1.3 not be required is **DENIED for the structure at 1620 Hillridge Blvd** and the Building Board of Appeals **AFFIRMS** the Building Official's decision for the reason(s) that *[state reason in motion]*:

- (1) 2015 Michigan Residential Code and sections R104.11, R106.1 and R301.1.3 requiring approved supporting data are required and has been correctly interpreted by the Building Official
- (2) 2015 Michigan Residential Code section R104.11, R106.1 and R301.1.3 requirements do apply to the accessory structure located at 1620 Hillridge Blvd.
- (3) The applicant has not proposed an equal or better form of construction;

Stipulations – if Applicable:

[Chairman to check applicable box(es) following vote]

Yeas:

Nays:

Absent for this vote:

Date

Paul Darling, Chairperson
Building Board of Appeal



Photo taken 3/11/2025 part of BCODE25-0003



Photo taken 3/11/2025 part of BCODE25-0003

[A] APPROVED. Acceptable to the *building official*.

R104.11 Alternative materials, design and methods of construction and equipment. The provisions of the code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by the code, if the alternative has been approved. An alternative material, design, or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of the code, and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in the code. Compliance with the specific performance-based provisions of the Michigan building, R 408.30401 to R 408.30547, electrical, R 408.30801 to R 408.30880, mechanical, R 408.30901 to R 408.30998, and plumbing, R 408.30701 to R 408.30796, codes instead of specific requirements of the code shall also be permitted as an alternate.

R 408.30504

R104.11.1 Tests. Where there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the *building official* shall have the authority to require tests as evidence of compliance to be made at no expense to the *jurisdiction*. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the *building official* shall approve the testing procedures. Tests shall be performed by an *approved* agency. Reports of such tests shall be retained by the *building official* for the period required for retention of public records.

SECTION R106

CONSTRUCTION DOCUMENTS

R106.1 Submittal documents. Construction documents, special inspection and structural program and other data shall be submitted in 1 or more sets with each application for a permit. The construction documents shall be prepared by or under the direct supervision of a registered design professional when required by 1980 PA 299, MCL 339.101 to 339.2919, and known as the Michigan occupational code. Where special conditions exist, the building official may require additional construction documents to be prepared by a registered design professional.

R301.1.3 Engineered design. Where a building of otherwise conventional construction contains structural elements exceeding the limits of Section R301 or otherwise not conforming to this code, these elements shall be designed in accordance with accepted engineering practice. The extent of such design need only demonstrate compliance of nonconventional elements with other applicable

provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the *International Building Code* is permitted for buildings and structures, and parts thereof, included in the scope of this code.