

SUFFIELD BUILDING CODE BOARD OF APPEALS MEETING MINUTES

MEETING FOR THURSDAY MAY 13, 2021 - 7:00 PM

VIA ZOOM TELECONFERENCE Dial-in Number:1-646-876-9923 Meeting ID:847 2333 1571

**PBC Members Present**

Glenn Neilson, Chairman  
Joe Sangiovanni, Member  
Cathie Ellithorpe, Member  
Billy Gozzo, Member  
Marty Page, Alternate



**Also Present** - Derek Donnelly, Suffield Town Attorney, Leslie King, Attorney, Robert O'Brien, Attorney Thomas DiBlasi, Structural Engineer, Mark O'Neill, Manager Hamlet Homes, Matthew Lansdowne, Engineer, Scott Kelleher, Engineer, Ted Flanders, Suffield Building Official

**Members Absent** - Kevin Goff, Member

**Call to Order** - Chairman Neilson called the Meeting of the Building Code Board of Appeals to order, via zoom teleconference, for Thursday, May 13, 2021 at 7:02 pm. He stated that this hearing would address Case 2021-001, an appeal of the decision by the Suffield Building Official to deny a building permit application to construct a single-family residence at 14 Kings Meadow Lane (Lot 17) in Suffield. Following Connecticut Statute Section 29266, the hearing will provide both parties an opportunity to present their case.

Chairman Neilson advised the following members of the Building Code Board of Appeals were present. The members included Joe Sangiovanni, Cathie Ellithorpe, Billy Gozzo and Mary Page.

**Opening of Hearing/Reading of the Complaint:** Appeal of a decision by the Suffield Building Official to deny a building permit application to construct a single-family residence at 14 Kings Meadow Lane (Lot 17), Suffield, Connecticut.

**Swearing in Of All Witnesses**

The first order of business was the swearing in of all the individuals who would provide testimony in this evening's hearing. Chairman Neilson proceeded with the swearing in of all witnesses This was followed by the presentation of the Appellant's Case in Chief.

**Presentation of Appellant's Case in Chief**

Leslie King, Attorney representing Hamlet Homes, stated that the permit application had been denied and a letter authored by Thomas DiBlasi, Structural Engineer on behalf of the Town of Suffield, had been sent detailing specific concerns regarding the use of proprietary wall panels. Ms. King stated that the applicant was attempting to get approval to use a new product. She stated that because there appeared to be some confusion regarding the use of this product in Connecticut, detailed information was brought to the Office of the State Building Inspector for review. In the opinion of the State, the panels could be used. When the application for a building permit was submitted, the letter from the State was attached to be used as a supporting document. Mr. O'Brien, Attorney representing the Suffield Building Official, advised that the State did not have a copy of Mr. DiBlasi's letter in February when they reviewed the product information.

Ms. King stated that tonight, representatives from various engineering firms would address the issues noted in Mr. DiBlasi's letter dated March 24, 2021. It is hoped their thoughtful responses would help to alleviate concerns regarding this product and other related issues.

(Copies of Mr. DiBlasi's letter dated March 24, 2021 and a copy of the Appellant's response are attached to these minutes for reference.)

Matthew Lansdowne, Engineer, QAI, was asked to address/respond to some of the issues/concerns in Mr. DiBlasi's letter. He responded to Items #1 through #5.

Item #1 Resistance factors applied to the Greenstone ICE Panels. Mr. Lansdowne explained the strength testing used to determine load deflection.

Item #2 Testing completed on Greenstone ICE panels. Mr. Lansdowne explained the testing followed protocols for structural testing where load is applied.

Item #3 Concern regarding allowable loads governed by deflection. Mr. Lansdowne explained the methodology used.

Item #4 Requirement for waterproofing has been addressed and is complete.

Item #5 The basement configuration has been corrected.

Scott Kelleher, Engineer, Bridgestone Consultants, was called upon to address Items 5 thru 10. He responded to the items as follows.

Item #6 - Mr. Kelleher agreed that Drawing S7 did have an error in tabulated capacities and that would be corrected.

Item #7 - Incorrect snow load of 50 psf was used for the basis of calculations. Mr. Kelleher agreed and stated the calculations have been revised to meet code.

Item #8 - Structural calculations poorly assembled. Mr. Kelleher stated these have been addressed.

Item #9 - Wind Pressure calculations. Mr. Kelleher explained how these were calculated using the internal suction component which follows ASCE 7. No further action needed.

Item #10 - What is being analyzed by the basement wall calculations? Mr. Kelleher explained the process of analyzing the walls below grade. No further action needed.

Items # 11 through # 26 were generally discussed. The following was determined

Item #11- Fixed connection of sub-grade wall was addressed would need no further action.

Item #12 - Panel Capacity for 9.25" wall - Testing data is available from the Manufacturer. No further action needed.

Item #13 - Wall panel snow load calculations - Corrected calculations would be submitted.

Item #14 - Wind Beam by garage stair - Further explanation would be provided.

Item #15 - Headers and Beam Design - Explained that loads considered following ASCE 7.

Item #16 - Upward Bracing Component - Was corrected for resubmittal

Item #17 - Built Up Post Design - Explanation resulted in no further action needed.

Item #18 - Incorrect references to details on Drawing M1 - Corrected for resubmittal

Item #19 - Missing composition of built-up posts - Can be included in resubmittal

Item #20 - Concentrated loads from bearing walls not reflected in truss design drawings - Per Truss Manufacturer, loads are reflected.

Item #21 - Question on the outrigger trusses - Can provide updated drawing for resubmission

Item #22 - Question on gable end trusses - To be addressed

Item #23- Truss design drawings - Stamped truss drawings are accurate

Item #24 - Email questioning statement the panels are compliant with all IBC and IRC building codes - Not relevant

Item #25 - Email correspondence indicating panels conform to prescriptive methods for cold formed steel framing. Not relevant

Item #26 - Email correspondence indicating you were provided a manual documenting connections, installation and inspection guidance. - Revised details for submission.

This completed Attorney King's Appellant's Case presentation.

Attorney Robert O'Brien, Appellee's Case in Chief, was called to represent the Town of Suffield. He began by sharing a document on the screen, Exhibit A, Appellee, a letter from Mr. Ted Flanders, Suffield

Building Official, dated April 1, 2021 to Mr. Mark O'Neil, Manager of Hamlet Homes. (letter attached to these minutes). The letter stated that the permit application to build a new single-family home at 14 Kings Meadow Lane (Lot 17) is not approved at this time. There was detailed information provided in the letter noting a number of concerns relative to compliance with the structural elements of the building code.

Attorney O'Brien stated Mr. Flanders had been a Building Official for 26 years, enforcing provisions of the Connecticut State Building Code. Mr. Flanders had consulted with Mr. DiBlasi, Structural Engineer, requesting he review the information presented by Hamlet Homes regarding 14 Kings Meadow Lane (Lot 17). Mr. DiBlasi reviewed the drawings and calculations and submitted a report. His findings are detailed in the letter dated March 24, 2021 referenced earlier in these minutes.

There was much discussion regarding the noted deficiencies and how they would be addressed. Attorney King asked Mr. DiBlasi if he had contacted Mr. Joseph Cassidy from the State Building Department referencing an e-mail she had received from the State approving the EPS Panels (Expanded Polystyrene ). Mr. DiBlasi responded he had not spoken with Mr. Cassidy. Attorney King continued, asking if the witness Engineers had provided clarifying information this evening. There was agreement the information was helpful, however there was still concern that a solid calculation package had not been provided.

Chairman Neilson asked if there were closing arguments. Both Attorney King and Attorney O'Brien responded No.

Chairman Neilson asked if the Commissioners had questions/comments. There were none, however, the general consensus was the Commissioners had not been given adequate time to review all the documentation including the plans.

### **Closing of the Hearing**

Chairman Neilson motioned to close the hearing. Mr. Page seconded the motion which passed unanimously.

### **Deliberation**

It was determined that the Deliberation portion of the hearing should be postponed in order to give the Commissioners adequate time to review the exhibits and plans. Derek Donnelly, Town Attorney, would deliver copies of the plans on a thumb drive to each of the Commissioners on Friday. Exhibits and any other pertinent documentation would be forwarded to them as well. The Deliberation and Action on Deliberation would be addressed at a Special Meeting. Chairman Neilson motioned to schedule a Special Meeting of the Building Code Board of Appeals on Monday, May 17, 2021 at Town Hall to address the remaining agenda items including Deliberation and Action on Deliberation. Ms. Ellithorpe seconded the motion which passed unanimously.

### **Action on Deliberation**

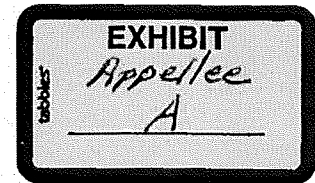
To be completed at a Special Meeting on Monday, May 17, 2021.

### **Adjourn Meeting**

Chairman Neilson motioned to adjourn the meeting. The motion was seconded by Mr. Gozzo and passed unanimously. Meeting adjourned at 9:33 pm

Respectfully submitted - Karen O'Hurley

These minutes are not official until accepted at a subsequent meeting.



**From:** Edward Flanders

**Sent:** Thursday, April 1, 2021 4:09 PM

**To:** mark oneill ([mark@hamlethomesllc.com](mailto:mark@hamlethomesllc.com)) <[mark@hamlethomesllc.com](mailto:mark@hamlethomesllc.com)>

**Cc:** 'Derek Donnelly' <[dd@sgblackburn.com](mailto:dd@sgblackburn.com)>; King, Leslie P. <[LKing@carltonfields.com](mailto:LKing@carltonfields.com)>; Cassidy, Joseph ([Joseph.Cassidy@ct.gov](mailto:Joseph.Cassidy@ct.gov)) <[Joseph.Cassidy@ct.gov](mailto:Joseph.Cassidy@ct.gov)>; 'Thomas DiBlasi' <[tomd@diblasi-engrs.com](mailto:tomd@diblasi-engrs.com)>; Neilson, Glenn <[GNeilson@GilbaneCo.com](mailto:GNeilson@GilbaneCo.com)>

**Subject:** 14 Kings Meadow/New Single Family/Permit Rejected

Mark,

Your permit application to build a new single family residence at 14 Kings Meadow Lane (Lot 17) is not approved at this time because the documentation submitted does not demonstrate that the proposed work conforms to the requirements of the 2015 International Residential Code portion of the 2018 Connecticut State Building Code (see Section R105.3.1).

My concerns relative to compliance with the structural elements of the code and their related components are listed in the attached review completed by Thomas A. DiBlasi, P.E., SECB dated March 24, 2021.

In addition there are two other life safety requirements of the code that I have been unable to locate on the submitted documents;

1. Operable Emergency Escape and Exit Windows: Every sleeping room must have at least one operable emergency escape and rescue window as required in Section R 310.1 of the 2015 International Residential Code. Please identify where the cited window specifications confirm adherence to this requirement.
2. Door between the Dwelling and the Garage: The door between the dwelling and the garage must comply with Section R 302.5.1 of the 2015 International Residential Code. Please identify where the cited door specifications confirm adherence to this requirement.

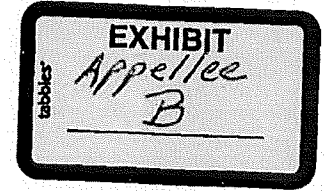
In addition to the above items, the site grading shown on Drawings A-1 and A-2 conflicts with the grading shown in Sections C and D/A-5. The former shows a walk-out basement at the rear while the latter shows grade close to the main floor level. Also, the windows shown at the basement level plan conflict with those shown on the elevations.

This office is available to review any additional documentation you feel may add to or clarify your application in response to this review.

Regards,

*Edward Flanders*

Edward Flanders



24 March 2021

Mr. Edward Flanders, Building Official  
Suffield Building Department  
230 Mountain Road #C  
Suffield, CT 06078

Dear Mr. Flanders:

17 Kings Meadow Lane  
Suffield, Connecticut  
DA Project No. 2020-073

Subsequent to the time when we issued our letter of 01/14/2021, you received additional documentation pertaining to the above-referenced single-family dwelling which you provided to us for our review. This documentation included the following:

- Architectural Drawings A1 to A6
- Structural Drawings S1 to S6
- Structural Schedules and Loads (Drawing S7)
- Design Load Calculations (7 pages)
- Floor Truss Design Drawings (19 pages)
- Roof Truss Design Drawings (41 pages)
- Floor Truss Layout Plan
- Roof Truss Layout Plan

In addition to this documentation, you also provided a copy of the 03/04/2021 email from Attorney Leslie King of Carlton Fields.

The structure in question is one story with a basement. The design is based on The Mascord Collection by Alan Mascord Design Associates, Inc., and has been amended by Atlantic Consulting & Engineering, LLC. The roof is framed with prefabricated wood trusses, and the floor is framed with Posi-Strut floor trusses (parallel-chord wood trusses with proprietary steel webs).

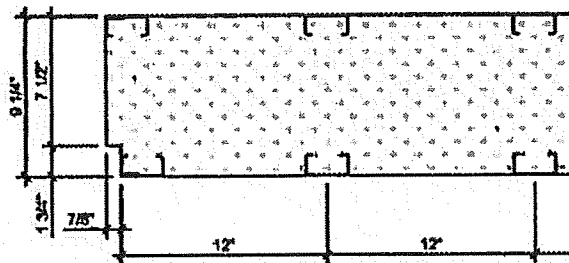
The proposed bearing walls and foundation walls utilize proprietary wall panels as manufactured by Greenstone Structural Solutions, Inc., of Manitoba, Canada. These panels are composite panels consisting of cold-formed metal studs embedded in expanded polystyrene (EPS) foam; these panels are addressed in QAI Code Evaluation Report CERus-1002 which includes references to the *International Residential Code* (IRC) and the *International Building Code* (IBC). As discussed, the organization of this report can be confusing as duplicate paragraph numbers were utilized in Section 4.3 (immediately following Paragraph 4.3.1 is Paragraph 4.3.2 – *[Above Grade] Wall Panels*; on the following page is Paragraph 4.3.2 – *Below Grade*).

500 Purdy Hill Road Monroe Connecticut 06468-1661 203-452-1331 FAX 203-268-8103  
Email Mail@DiBlasi-Engrs.com www.DiBlasi-Engrs.com

*An Equal Opportunity Employer*

In our letter 01/14/2021, we identified a number of concerns, the majority of which have not been satisfactorily addressed. Based on our review of the above information, we offer the following comments, some of which are new and some of which were previously cited:

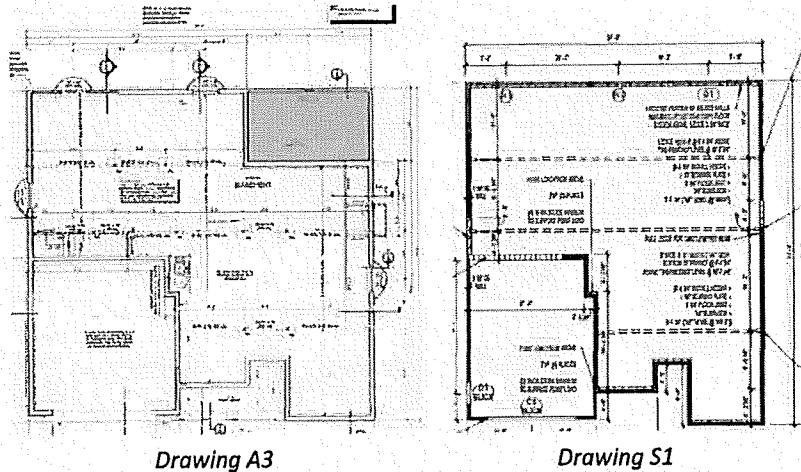
1. Footnotes to the load tables with QAI CERus-1002 indicate that the design strength is determined based on the AISI S100 Load and Resistance Design (LRFD) methodology with a Resistance Factor ( $\phi$ ) of 0.80. It also notes that the Allowable Strength Design (ASD) capacities are to be based on the noted nominal strengths ( $R_n$ ) divided by a Safety Factor ( $\Omega$ ) of 2. AISI S100 is the *North American Specification for the Design of Cold-Formed Steel Structural Members*; this is a referenced standard within both the IBC and the IRC. Section A.1.1 of AISI S100 indicates that the scope of the standard applies to the design of structural members cold-formed to shape from carbon or low-alloy steel sheet, strip, plate, or bar not more than 1 in. in thickness. There is no reference to this standard being applicable to the product under consideration which is comprised of cold-formed steel studs embedded in and acting compositely with EPS foam; the EPS foam is acting in a structural fashion, not solely as an insulating component. AISI S100 is based on pure steel components which have extremely well-known material properties. The use of the same resistance factors and safety factors for this composite assembly is not justified.
2. Concerns relative to the out-of-plane deflection of the basement wall panels were cited in our letters of 09/30/2020 and 01/14/2021. These concerns related to the performance of the panels under sustained loads. As previously mentioned, the panels are composite elements: there are steel studs on the inside and outside faces, and the panels are filled with EPS foam, yielding a cross section as follows:



While steel behaves in an elastic fashion (i.e., it rebounds to its original shape after a load is removed), we are not confident that the EPS composite panels will behave similarly. No testing data under sustained loads was provided.

3. The allowable loads governed by deflection that are contained in CERus-1002 are significantly higher ( $\pm 19\%$ ) than those tabulated in the reports that had been previously submitted; an explanation for this improved performance should be provided.
4. On Drawing S1, the requirement for waterproofing of the wall panel walls has been added. This addresses Section 4.3.2.1 of QAI CERus-1002 that indicates that when using Greenstone ICE panels as foundation walls, the design shall consider "methods for protection of the steel elements from potential corrosion effects of soil moisture in event of dampproofing or waterproofing material failure."

5. The basement configuration on Drawing A3 does not coincide with that shown on Drawing S1. In the latter, the basement extends out to the rear right corner whereas in the former, the basement bumps inwards to allow for an enclosed porch above:



If the basement is to be constructed per Drawing S1, then additional interior footings will need to be added to support the interior carrying beam. The construction documents should be revised accordingly.

6. Drawing S7 contains a chart documenting the strength of the Header Z-Channels. The tabulated shear resistance is far less than that which would be required in any application that will be encountered on the project. We suspect that the tabulated capacities may be erroneous.
7. Drawing Nos. A1, S3 and S7 contain loading schedules that indicate the structure was designed for a snow load of 50 psf. The structural calculations (page 1 of 7) indicate the use of a design snow load of 1.17281 kPa which equates to 24.5 psf. The truss design drawings indicate a design roof live load of 35 psf. Clearly there is a disconnect. The 35 psf roof live load cited in the truss design drawings complies with the Building Code. The 24.5 psf load used for the basis of the calculations is non-compliant, and this is the snow load that is used throughout the calculations.
8. The structural calculations are poorly assembled and are largely incoherent. Units of measure are often omitted. Descriptions or diagrams are not provided. Applicable Building Code references are not cited. Many calculations fluctuate between U.S. customary units and metric units. The calculations need to be revised to clearly identify what is being analyzed and its compliance with the Building Code.
9. The wind pressure calculations (page 2 of 7) determine the pressure on the windward wall but neglect the suction on the leeward wall. Both of these loads must be resisted simultaneously.
10. What is being analyzed with the basement wall calculations (page 3 of 7) is not at all clear. There is a comment that this is "not considered a relatively rigid wall." The basis for this comment is not clear nor is the impact on the analysis. These are braced walls that are restrained at the top by the first floor diaphragm.



11. The basement wall calculations (page 3 of 7) indicate that the wall is fixed at one end. If the wall is fixed at one end, then it must have an end connection capable of providing rotation restraint. Nothing resembling a fixed-end connection was depicted on the drawings. This should be identified, and calculations documenting the ability to resist the fixed end moment should be provided.
12. The basement wall calculations indicate that the 9½" panels have an axial load resistance of 7,846 pounds. CERUS-1002 does not identify the axial loading capacity for 9½" panels. How does the use of this capacity conform with the evaluation services report?
13. The wall panel loading assessments (pages 3 and 4 of 7) are based on a snow load of 24.5 psf (1.173 kPa) which is not compliant with the Building Code.
14. A "wind beam" is being used to brace the top of the foundation wall alongside the garage stair where there is no direct connection to the first floor diaphragm. While calculations were provided (page 4 of 7), the meaning of these calculations is unclear. These need to be revised to clearly identify the means by which the applicable design loads are resisted and to show compliance with the Building Code.
15. The design of the headers and beams (pages 5 and 6 of 7) are unclear and lack detail. We suspect these components are likewise designed for inadequate snow loads. These need to be revised to provide clarity and to demonstrate compliance with the Building Code.
16. The lateral bracing calculations (page 7 of 7) are likewise unclear and need to be revised to demonstrate compliance with the Building Code. It appears from Drawing S6 that X-strapping is to be utilized to provide lateral resistance. The connections at the base of the panels to resist the upward components of the bracing loads should be identified.
17. Calculations for built-up posts (including details showing configuration of additional studs) should be provided.
18. Drawing S2 contains multiple references to details on Drawing M1. We believe these references should be to Drawing S6.
19. Drawing S2 contains references to what appears to be built-up posts (i.e., PL4-16). The composition of these posts and the meaning of the designations do not appear to be present on the drawings.
20. The roof trusses are supported in some locations by interior bearing walls, some of which bear within the span of the floor trusses. The concentrated loads from these bearing walls do not appear to be reflected in the truss design drawings.
21. At the fireplace cantilever, the outrigger trusses are supported on one of the typical Type F1A floor trusses, but the additional load induced from the outriggers has not been included in the truss design drawings.
22. The gable end trusses indicate that they are designed for in-plane wind loads only. These gable trusses will be subjected to out-of-plane wind loads and will likely require supplementary bracing. The means by which out-of-plane loads are resisted at the interface between the wall panels and the gable end trusses also needs to be identified.



23. Truss design drawings were missing for many of the trusses identified on the truss layout drawings. Likewise, many truss design drawings were included that were not identified anywhere on the truss layout drawings. The vaulted ceiling locations shown on the truss design drawings do not coincide with the vaulted ceiling locations on the architectural drawings. Many of the truss spans shown on the truss design drawings do not remotely resemble those spans shown on the truss layout plans. Based on all the discrepancies, it is quite apparent that the truss design drawings are not applicable to this particular dwelling.
24. The email correspondence that you forwarded indicates that *the panels are compliant with all IBC and IRC building codes*. This is not entirely correct. If QAI Report No. CERus-1002 is accepted, then the compliance of the panels with the IBC and IRC would be subject to the conditions and limitations within this report. As stated in paragraph 2.1 of this report, *where Greenstone ICE panels are used for construction governed by the 2018/2015 IRC, Engineered Design in accordance with Section 3.1.1.3 is required*.
25. The email correspondence that you forwarded indicates that the panels *conform to the prescriptive methods for cold-formed steel framing (AISI S230 prescriptive method for one and two family)*. There is nothing within AISI S230 that remotely resembles these composite panels.
26. The email correspondence that you forwarded indicates that you were provided with a *200+ page manual documenting connections, installation and inspection guidance*. The overwhelming majority of the details within this manual are not applicable to the details on this project. As previously discussed, it should not be your responsibility to sift through the numerous details within the manual to determine which are applicable and which are not. Any applicable details from the design guide should be specifically referenced on the drawings.

Once these items are addressed and you receive a coherent set of structural calculations, we are available to perform a follow-up review. There are a lot of issues that need to be resolved.

Should you have any questions in the meantime, please do not contact us. We appreciate this opportunity to serve you.

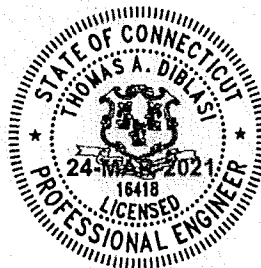
Respectfully submitted,

DiBLASI ASSOCIATES, P.C.



Digitally signed by Thomas A. DiBlasi  
DN: E=TomD@DiBlasi-Engrs.com,  
CN=Thomas A. DiBlasi, O="DiBlasi  
Associates, P.C.", L=Monroe,  
S=Connecticut, C=US  
Date: 2021.03.24 09:53:38-04'00'

Thomas A. DiBlasi, P.E., SECB



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Derek Donnelly <derek@donnellylawoffice.com>

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## FW: ICE Panels

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King, Leslie P. <LKing@carltonfields.com>

Thu, May 13, 2021 at 6:39 PM

To: Derek Donnelly <derek@donnellylawoffice.com>, Robert O'Brien <robrien@goodwin.com>

Sent from my iPhone

Leslie P King  
Attorney at Law | Carlton Fields  
One State Street  
Suite 1800 | Hartford, Connecticut 06103  
Direct: 860.392.5053 | Fax: 860.392.5058  
LKing@carltonfields.com

Begin forwarded message:

From: "Cassidy, Joseph" <Joseph.Cassidy@ct.gov>  
Date: March 8, 2021 at 6:54:17 AM MST  
Subject: RE: ICE Panels

Leslie,

We have finished our review of the documents you provided. We will be sending something out to Ted and Henry today that we feel this package is acceptable.

Thanks for your help getting to closure on this,  
Joe

Joseph V. Cassidy, P.E. | State Building Inspector  
Office of the State Building Inspector  
Department of Administrative Services  
450 Columbus Boulevard, Suite 1303  
Hartford, CT 06103  
Office: (860) 713-5705  
Mobile: (860) 797-4978  
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[cid:image002.png@01D713F8.667B6920]<<http://portal.ct.gov/DAS>> [cid:image003.png@01D713F8.667B6920]  
<<https://www.facebook.com/Connecticut-Dept-Administrative-Services-292851694722591/>>  
[cid:image004.png@01D713F8.667B6920] <<https://twitter.com/ConnDAS>> [cid:image005.png@01D713F8.667B6920]  
<<https://www.linkedin.com/company/ctdas/>> [cid:image006.png@01D713F8.667B6920] <<https://www.pinterest.com/StateOfCTJobs/>> [cid:image007.png@01D713F8.667B6920] <<https://www.instagram.com/ctstatejobs/>>

From: King, Leslie P. <LKing@carltonfields.com>  
Sent: Thursday, March 4, 2021 2:18 PM  
To: Cassidy, Joseph <Joseph.Cassidy@ct.gov>  
Subject: RE: ICE Panels

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Hi Joe,

Just an FYI, I submitted plans to Suffield. There are 15 houses under contract so I am just trying to expedite. Do you have any specific feedback on those plans?

Thank you for your help.

Leslie P King  
Attorney at Law | Carlton Fields  
One State Street  
Suite 1800 | Hartford, Connecticut 06103  
Direct: 860.392.5053 | Fax: 860.392.5058  
LKing@carltonfields.com<mailto:LKing@carltonfields.com>

From: Cassidy, Joseph <Joseph.Cassidy@ct.gov<mailto:Joseph.Cassidy@ct.gov>>  
Sent: Friday, February 26, 2021 9:13 AM  
To: King, Leslie P. <LKing@carltonfields.com<mailto:LKing@carltonfields.com>>  
Subject: RE: ICE Panels

Leslie,

We will review this material and provide our input. As discussed at the last meeting with Hamlet Homes, et.al. the remaining issue was the level of detail provided in the site specific documents, i.e. lack of detailing for point load supports, etc. demonstrating the application of the panels in an engineered design as required in the product report. At the meeting Colleen showed a project manual, that seemed to contain that level of detail. If this package contains that level of detail, we should be able to get to a resolution.

Joe

Joseph V. Cassidy, P.E. | State Building Inspector  
Office of the State Building Inspector  
Department of Administrative Services  
450 Columbus Boulevard, Suite 1303  
Hartford, CT 06103  
Office: (860) 713-5705  
Mobile: (860) 797-4978  
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From: King, Leslie P. <LKing@carltonfields.com<mailto:LKing@carltonfields.com>>  
Sent: Thursday, February 25, 2021 12:38 PM  
To: Cassidy, Joseph <Joseph.Cassidy@ct.gov<mailto:Joseph.Cassidy@ct.gov>>  
Subject: ICE Panels

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Dear Joe:

Thank you for your continued assistance with the ICE panels. As you know, my client has been working diligently to secure permits for these panels for quite some time. As a new product, the panels already satisfy all code standards to the IBC/IRC. Section R. 104.11 that governs alternative materials states: "Compliance with the specific performance-based provisions of the International Codes shall be an alternative to the specific requirements of this code." I intend to appeal any adverse decision of any local official who fails to recognize his or her duty to approve these panels in light of the ample documentation and evidence of compliance. As you know, QAI is an accredited testing company that performed industry accepted testing to demonstrate compliance. QAI also provided information about what code requirements or acceptance criteria were used to evaluate the product, how the product should be installed to meet the requirements, how to identify the product, and much more. The data (i.e. test reports, calculations, installation instructions) that was used to evaluate the panels is provided in the report. As you are also aware, my client submitted drawings stamped by a duly licensed structural engineer, who relied on the QAI values. Certainly, this is more than enough information to obligate any local official to approve the panels.

As discussed, and in anticipation of potential appeals, we are providing you with sample permit plan documents which my client will use as the standard permit set to maintain clarity and consistency. These are contained in the link below. Under separate cover I will send you project specific installation manual which can be sent to building official after permit issuance if required. Our goal is for you to be able to assist the building official with any questions should they arise. We will be submitting these to local officials within the next ten days. My client has over twenty-one houses under contract, and any local official who fails to perform his or her duties in accordance with the law will likely cause my client unnecessary damage. Your intervention will likely help us avoid such a scenario.

Thank you very much.

Leslie King

A Box link is here: <https://carltonfields.box.com/s/c9onfjl3lo1gthy6erqjvq2w8ibvqj6j><<https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcarltonfields.box.com%2Fs%2Fc9onfjl3lo1gthy6erqjvq2w8ibvqj6j&data=04%7C01%7CJoseph.Cassidy%40ct.gov%7C99534c7246774e48cfb208d8df424a48%7C118b7cfaa3dd48b9b02631ff69bb738b%7C0%7C0%7C637504823139260849%7CUnknown%7CTWFpbGZsb3d8eyJWljoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6IjEhaWwiLCJXVCi6Mn0%3D%7C1000&sdata=qXOd%2B18ossqXLFKaWqhKDLbJYsJ%2FNLIhMDy7e4zvmrk%3D&reserved=0>>

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15 attachments

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## DiBlasi Letter Response

### **1.QAI Response:**

Resistance factors to be applied to the Greenstone ICE panels were based off considerable strength testing of panels to determine load deflection and yield loads for different configurations of panels. Based off this testing, the variation in panel stiffness, and variation in yield strengths for different panel configurations was determined. This variation was used to calculate load resistance factors appropriate for the different panel geometries. Based on this testing data, following methodology outlined in Section K of AISI S100 for Special cases, the resistance factors were determined for each panel geometry evaluated. Following this, the resistance factor applied was taken as the lesser between the AISI S100 Load Resistance Factor and the AISI S100 Section K load resistance factor. This can be seen by the resistance factor applied for panel shear capacity, which calculated  $<$  AISI S100 specified value, and as such, an allowable stress value of 3 was applied for racking shear load capacity, with corresponding resistance factor.

CERus-1002 resistance factors applied were based on significant panel testing to determine the appropriate resistance factors.

### **2.QAI Response:**

The testing done on Greenstone ICE panels followed protocols for structural testing where load is applied, and sustained for a period following which the load is released, and the panel deformation measured to determine permanent set. Test data taken showed the panels to recover without permanent set under the transverse load condition at load deflection measurement points, indicating the assembly is operating within its elastic range.

Further to this, Greenstone has provided information to the state of CT regarding the use of ICE panels in foundation applications for various projects with dates back to 2007 previously. The information provided by Greenstone had outlined that panels used back to the dates noted were still providing resistance to lateral loading, with no evidence of deformation affecting the foundation wall performance. This information can be provided I would believe if requested to Greenstone, but the use in foundation applications by CT state I believe were accepted based on the above information being provided.

### **3.QAI Response:**

I believe this comment is regarding the change in CERus-1002 load capacity tables from previously submitted Sumner Engineering load capacity information provided. The original Sumner Engineering load capacity tables were developed for use in Canada, following Limit States Design (LSD) methodology as required for use in Canada, with a resistance factor determined by Sumner engineering based on this approach.

CERus-1002 as noted above, used the LRFD methodology based on load testing as noted above. As such, this change in methodology from LSD to LRFD lead to different calculated design strengths. It should be noted, to err on the side of conservative the load at deflection points noted in CERus-1002 had an applied resistance factor included.

**4. Complete – No response necessary**

**5. Corrected for resubmittal**

### **6. Header Z-Channel Capacity:**

This comment correctly identified an error in the units uses on Drawing S7. The shear capacity as determined by testing should have the units of Kips (1000 lbs) not lbs.

Corrected for resubmittal

### **7. Snow Loads**

The snow loads for the building design follow the load requirements of ASCE 7. Of particular note in this section, the ground snow load of 35psf was taken from the appropriate figure for this geographic area. See design notes attached. The truss manufacturer may use higher snow loads than prescribed by the code in an effort to standardize trusses. This design used 30psf as allowed by the CT amendments to the IBC.

Corrected calculations to be submitted

### **8. Units**

The printout of excel spreadsheet provided was not intended for review without a thorough understanding of the project and design as well as the embedded formula within the design check spreadsheet. ASCE and the building code use both metric and imperial units, and design with both is also acceptable. A further sample of calculations has been attached to this submission.

Revised calculations for submittal



## **9. Wind Pressure Leeward Suction**

The windward and leeward pressure forces must be resisted by the building system simultaneously, however, in this case, the windward wall does not resist these global lateral loads but rather contributes load to the systems that resist the global building lateral loads. In this case, the leeward side of the wall is an internal face, and thus was calculated using the internal suction component. This method of design follows ASCE 7.

No further action needed

## **10. Relatively Rigid Walls:**

This section is analyzing the walls below grade. The relatively rigid versus relatively unrigid determines the allowable deflection criteria used in the wall design. In this case, a wall not considered relatively rigid would effectively attract less load from soil as it is flexible and the active soil pressure case would govern the design rather than the at rest condition a rigid wall would require. The deflection criteria for a more flexible wall is  $l/240$  as was considered in this design. This ultimately did not impact the design as the unity equation was less than 0.5 indicating there is likely more than double the required capacity when considering the load cases including axial and moment capacity.

No further action needed

## **11. Fixed Connection of Sub-grade wall**

The below grade design of exterior walls exceeds the requirements of the code. The use of fixed in this case does not apply to the model used to calculate moment due to soil pressure on the wall. The appropriate terminology for this wall is pin-pin as it is restrained in movement but not rotation at the top and bottom. Following this model and an analysis of soil pressure, the calculations follow an overly conservative approach by applying load factors from multiple load cases to the Unity equation.

No further action needed

## **12. Panel Capacity for 9.25"**

Testing was not available for the 9.25" wall at the time of this design. As a conservative approach, the values for the smaller wall section were used. As the 9.25" wall has larger moment of inertia and more material, using the values for the nominal 7.5" are a conservative approach.

Testing data is available from Manufacturer. No further action needed

**13.Wall Panel Snow Load**

See #7 above- the ground snow load from ASCE 7 was applied appropriately.

Corrected calculations will be submitted

**14.Wind Beam by Garage Stair**

This load is transferred by its connection to the main floor diaphragm. The loading assumes the conservative approach of an external wind pressure acting on exposed portion of the wall

Driftstone to provide further explanation

**15.Headers and Beam Design**

These designs consider applicable load cases as required by the code to perform in both lateral wind loading as well as vertical snow loading. The critical case is shown in these calculations. As per #7 above, the loads considered are consistent with the snow loads determined following ASCE 7.

**16.Upward Bracing Component**

The upward forces are resisted by tek screws for the track at the bottom of the wall. This detail should be added to the drawing.

Corrected for resubmittal

**17.Built Up Post Design**

The built up post design is based on the tested axial capacity of the wall elements. Additional elements are added to achieve the resistance required by the appropriate load case.

No further action needed

**18. Corrected for resubmittal****19.Built Up Post details**

The built up post details are part of the shop drawing package. These shop drawings should be added to the submission package.

We can include this in resubmittal if wanted. As discussed with State OBSI this may add more confusion to submittal. Also referenced were exorbitant amounts of documentation and this will add to that. The shop drawings consist of manufacture assemblies of over 200 pages. Also referenced were exorbitant amounts of documentation, this will add to increased confusion.

**20. Per truss manufacturer, loads are reflected**

**21.** MiTek reference is the distributed fireplace weight of 120 pounds at 16-inch cantilever with upward lift motion on F1A designed to 150-pound load no additional bracing required. If Building Official wants additional bracing for field condition not known to us, we have alternate design available with bracing or truss depending on load. We can provide updated drawing for resubmission.

**22.** Scott to address

**23.** Per truss manufacturer, stamped truss drawings are accurate to the structural plan set.

**24.** Not relevant

**25.** Not relevant

**26.** Revised details for resubmission