Historic District Commission

AGENDA

Wednesday, May 20, 2026 4:30 PM City Hall, 2nd Floor Council Chambers

1. **Call to Order and Roll Call**
2. **Minutes:**
    a) April 15, 2026 Regular Meeting
3. **Public Hearing**
    a) **HDC-26-01 – Major Project Application:** Applicant: St. James Episcopal Church; Owner: Bishop of the Protestant Episcopal Church of NH; Proposed installation of a 54-panel rooftop solar energy system at 44 West St (TMP #575-034-000). Waivers from sec. 22.6.3.C.2 for slate roof replacement with metal and sec. 22.6.3.C.4 for chimney removal are requested. Property is ranked as a Primary Resource in the DT-C District.
4. **Staff Updates –** Open Gov
5. **New Business**
6. **Upcoming Dates of Interest:**
    a) Next HDC Meeting: June 17, 2026 – 4:30 pm
    b) HDC Site Visit: June 17, 2026 – 3:30 pm (To be confirmed)
7. **Adjourn**

City of Keene
New Hampshire

HISTORIC DISTRICT COMMISSION MEETING MINUTES

Wednesday, April 15, 2026 **4:30 PM** **Council Chambers, City Hall**

Members Present:
Sofia Cunha-Vasconcelos, Chair
Hope Benik, Vice Chair
Anthony Ferrantello
Louise Zerba
Councilor Edward Haas

Staff Present:
Evan Clements, Planner / Zoning Administrator

Members Not Present:
David Bergeron, Alternate
Russell Fleming, Alternate
Peter Poanessa, Alternate

1) Call to Order and Roll Call

Chair Cunha-Vasconcelos called the meeting to order at 4:30 PM. Roll call was conducted.

2) Minutes: February 18, 2026 Regular Meeting

Ms. Zerba made a motion to approve the meeting minutes of February 18, 2026. Councilor Haas seconded the motion, which passed by unanimous vote.

3) Outreach Project Update

Chair Cunha-Vasconcelos stated that they had discussed the outreach project last month. She continued that they had discussed doing some brainstorming and bringing ideas to this meeting. They do not have an application to hear today, but they are meeting because she thought it was important to keep the momentum going with this outreach project. She asked what ideas people have.

Mr. Ferrantello stated that he emailed Mr. Clements about making contact with Noah Ives (architecture instructor) at Keene State College (KSC), who was on paternity leave and said he would be back in April. He continued that Dr. Fernando Del Amo Gonzalo (department chair) was on sabbatical. He (Mr. Ferrantello) just emailed Mr. Ives to propose getting together to regroup and see where they are at with the project. He is waiting to hear back, hopefully soon. What they have to discuss is having the literature available for the library, having the students

recap what they did and what their experiences were, and having Mr. Clements and him sit down and go over the next steps and next layer of information the students will work with. He is waiting to hear back. A sit-down meeting would be the best way to go about this.

Chair Cunha-Vasconcelos stated that the HDC had also talked about creating some videos of about 15 seconds each. Ms. Benik replied yes, the agenda packet has an email she sent to Mr. Clements, to share with the HDC, with her ideas/outlines for some quick videos. She continued that first is a "Did you know…?" video, and she put together a rough idea for the HDC to consider. The voiceover starts way at the beginning, with "Did you know that Keene has a Historic District Commission?", briefly explains how the HDC can help homeowners in the district make exterior changes, and includes a montage of photos. Another video she came up with is a brief explanation of "Why It Matters." A third one is "What Needs Approval," to clarify for people what kind of exterior work they need approval for. All of the videos would link back to the HDC.

Mr. Ferrantello stated that he likes these video ideas. Discussion ensued about how the HDC could make brief slide presentations themselves, along with City approval and branding. Ms. Benik stated that she just threw these Canva videos together to give the HDC a rough idea, but she would be happy to take it further and make them a little more polished. Chair Cunha-Vasconcelos and Councilor Haas replied that they really like what Ms. Benik has created and that would be great. Mr. Ferrantello stated that he would like Ms. Benik to be present at a meeting with Mr. Ives and Dr. Del Amo Gonzalo and present these videos. Councilor Haas asked if producing videos/slide presentations would work in parallel with the architecture students' work. Mr. Ferrantello replied that he thinks it would generate ideas and they can decide which one or both, and he thinks both would be good. He continued that he likes what Ms. Benik created, how they are quick and get people's attention. He likes the video sending the message that the HDC is here to help people, not threaten or obstruct them. He thinks videos would work better than slides.

Ms. Zerba asked if the HDC could get a review of what the students did. Mr. Ferrantello replied yes, that is one of the items that is forthcoming. He continued that Mr. Ives said he would ask the students to relive that experience, and put it on paper. Ms. Zerba replied that it would be good to get it on video. Others agreed. Chair Cunha-Vasconcelos stated that it could be images for future videos for it to be released to the City. Mr. Ferrantello replied that first the students will put it on paper. He does not know if interviewing students on video is something the college wants to do or can do. Ms. Zerba asked if Mr. Ferrantello has photos of the homes the students researched. Mr. Ferrantello replied that the students have photos. He continued that they superimposed the photos onto an AI program that made them look historic, with a brown patina, to make it look like an old print. He thinks it would be great to have them on video if they are willing. Discussion continued. Mr. Ferrantello expressed uncertainty about the potential legalities and permissions needed. Chair Cunha-Vasconcelos replied that they have the City Attorney to help with that aspect when they get to that point. Ms. Benik stated that in the meantime, she will take some video of Keene in the beautiful spring weather.

Councilor Haas asked if the HDC has a list of the addresses the students worked with. Mr. Ferrantello replied that he has it somewhere, but not with him today, so he will have to find it.

Chair Cunha-Vasconcelos asked him to send it to Mr. Clements so Mr. Clements can distribute it to the HDC.

Discussion ensued and the HDC determined that Ms. Benik, Mr. Ferrantello, and Councilor Haas will participate in the meeting with Noah Ives, along with Mr. Clements.

Councilor Haas asked if any of the buildings are historical enough that the HDC should be promoting them as part of the upcoming 250th celebration. Mr. Ferrantello spoke about some of the interesting features he has seen represented by the students' work. Councilor Haas stated that if any of the buildings are 18th century, they absolutely should be part of the 250th somehow. He is a member of the planning committee for that, led by Councilor Molly Ellis. They welcome participation. Even if none of these buildings are 18th century, they could still be included. Mr. Ferrantello spoke about people the HDC could invite to their meetings, including some of the owners of these houses the students inventoried. Councilor Haas replied that they should clear it with Mr. Ives first and get some momentum.

Mr. Clements stated that the November 19, 2025 agenda packet has an update on this project that includes the addresses of the three properties that the students worked on and some of their rendering sketches. He continued that 91, 101, and 122 Court St. are the homes that were studied with this project.

Chair Cunha-Vasconcelos stated that Councilor Haas sent Mr. Clements/the HDC an email with some ideas on how to get the students' work in front of the public. She continued that it is great to have those ideas formalized in a list. Councilor Haas stated that the more he gets involved with the 250th anniversary planning, the more he thinks the HDC should have a presence there.

Ms. Zerba asked if it is correct that everything depends on the two professors. Mr. Ferrantello replied yes, and the HDC has to work with their schedules. He continued that he thinks the professors have been very accommodating and helpful, and he anticipates continued cooperation and cohesiveness to benefit KSC, Keene, and the homeowners.

Chair Cunha-Vasconcelos stated that a path forward is starting to emerge. She continued that one action item is, of course, Mr. Ferrantello taking the lead on the meeting with the professors and starting to work on getting the material in such a way that it can be disseminated through the library and other places. Councilor Haas can bring the three addresses to the 250th celebration committee for the HDC, if that is okay with him. Councilor Haas agreed. Chair Cunha-Vasconcelos stated that the form the 250th celebration takes is yet to be determined. Councilor Haas replied that there will be a parade, some speeches, some vendors, and more that is yet to be determined. He spoke a little more about it, and answered HDC members' questions about the day's known schedule and logistics.

Ms. Zerba asked if Mr. Clements contacted the Library to ask if they could display something from the HDC, when the HDC eventually has something to display. Discussion ensued about how it is a "chicken versus egg" thing – the HDC might need to have the materials before asking the Library, but the Library is great and no one anticipates there being an issue.

Chair Cunha-Vasconcelos stated that to recap, Mr. Ferrantello will be coordinating with KSC, Councilor Haas is taking the lead on interfacing with the 250th group, and Ms. Benik is taking the lead on the videos and social media stuff. She continued that Mr. Ferrantello, Ms. Benik, and Councilor Haas will meet with the folks from KSC. Other HDC members can participate as long as they do not form a quorum.

4) Staff Updates – NH Planning & Zoning Spring Conference – Saturday, May 9, 2026

Mr. Clements stated that the NH Bureau of Business and Economic Affairs is the State planning organization and they do a conference every year. He continued that it will be May 9, and it is free, online. If you cannot make it on May 9, everything will be recorded and available online afterwards. It is an informative conference, and this year there is a planning board track, zoning board track, and a "special topics" track, which includes a session on historic preservation planning tools. The agenda packet includes the website where you can sign up.

5) Joint HDC & Heritage Commission Meeting – Wednesday, May 13th at 4:30 PM

Mr. Clements stated that the joint meeting with the Heritage Commission is scheduled for May 13. He continued that the HDC had discussed whether to have a regular meeting as well, and it turns out they do need a regular meeting, because they have a major project application to review. The regular meeting will be May 20. A quorum is needed for both meetings.

Chair Cunha-Vasconcelos asked if there is anything the HDC needs to prepare for the joint meeting. Mr. Clements replied that he does not think so. He continued that it is more about getting the two bodies together to talk about what everyone is doing. There is definitely some overlap in the two bodies' goals and projects. It should be a productive discussion. He, Chair Cunha-Vasconcelos, HC staff liaison Megan Fortson, and HC Chair Cauley Powell should start putting their heads together to work on the agenda for that joint meeting.

6) New Business

Chair Cunha-Vasconcelos asked if there was any new business. (No).

7) Upcoming Dates of Interest:

A) Next HDC Meeting: May 20, 2026 – 4:30 PM

B) HDC Site Visit: May 20, 2026 – 3:30 PM (to be confirmed)

Chair Cunha-Vasconcelos asked Mr. Clements if there will be a site visit on May 20. Mr. Clements replied that they might want a site visit. He continued that he and Chair Cunha-Vasconcelos should briefly talk about it after this meeting.

8) Adjournment

There being no further business, Chair Cunha-Vasconcelos adjourned the meeting at 4:55 PM.

Respectfully submitted by,

Britta Reida, Minute Taker

Reviewed and edited by,
Evan J. Clements, AICP
Planner/Zoning Administrator

STAFF REPORT

HDC-26-1 – 44 West St – Rooftop Solar Energy System

Request:
Applicant St. James Episcopal Church, on behalf of owner Bishop of the Protestant Episcopal Church of NH, proposes to install a 54-panel rooftop solar energy system at 44 West St (TMP #575-034-000). Waivers are requested from Sec. 22.6.3.C.2 of the Land Development Code for slate roof replacement with metal and Sec. 22.6.3.C.4 for chimney removal. The property is ranked as a Primary Resource and is located in the DT-C District.

Background:
The subject building is the St. James Episcopal Church located at 44 West St. on the corner of Saint James and West St., approximately 350 ft from Central Square. The church was originally constructed around 1863 by Shepard Woodcock and designed by architect Charles E. Parker. The first service was held in 1864. Prior to its construction there was no permanent Episcopalian Congregation in Keene. Only the occasional visiting clergyman would provide services. In 1899, a parish house was constructed on the south side of the church to match the existing style of the original building. This was later converted to an office/reception area.


Fig 1: St. James Church – 44 West St. Photo taken 1864

The building was designed in the gothic revival style, with stone façade, pointed arch windows and doors, vaulted gable roofline with slate roof tiles, and a prominent belltower. The granite façade is broken up with stained glass windows. In 2000, a significant investment was made in the church to make it ADA compliant. In 2001, a columbarium was added to west side of the property to house the ashes of parishioners and a garden with wrought iron fence was installed to enclose the area.

The purpose of this application is to install a rooftop solar energy system consisting of 54 PV solar panels. The system will generate approximately 23.76 kW DC of power. All conduit is proposed to be routed internally along with the inverter and 100A disconnect. A second 100A disconnect is proposed on the western exterior of the building, adjacent to an existing heat pump area with screening.

Two waivers have been requested from the Historic District Regulations. The first waiver is to replace the slate roof on the parish house with a standing seam metal roof. The second waiver is to remove a chimney located within the installation area.

Per Table 22-3 of the Land Development Code (LDC), this work is classified as a “Major Project” for review by the HDC.

Completeness:
No exemptions from submittal requirements are requested; however, no quotes or other documentation to show economic hardship were submitted with this application. After reviewing the application, staff recommend that the Commission either request additional information regarding economic hardship related to the waiver requests or accept the application as complete and request this information prior to deciding on the application.

Application Analysis:
Included below is an analysis of the relevant standards of the HDC Regulations.

22.5.5 Renewable Energy Systems

A. *Renewable energy systems shall be installed in a location and manner on the building or lot that is least visible and obtrusive, and in such a way that causes the least impact to the historic integrity and character of the historic building, structure, site or district while maintaining efficient operation of the system.*

The applicant proposes to install the solar energy system on the southern exposure of parish house roof. This roof is located opposite the front façade of the building which faces West St. Part of this proposal is to remove the existing slate roof and install a standing seam metal roof. The applicant notes that the installer of the solar energy system will not work with the existing slate roof and requests a waiver from this standard to remove the existing slate and replace with a standing metal seam roof, rather than one of the replacement roof materials listed in the regulations.

Fig 2: Southern exposure of parish house roof to be replaced for PV system.

In addition, the applicant requests a waiver from Sec. 22.6.3.C.4 to remove the existing chimney to make way for the panel layout. The Commission will need to determine if this standard has been met.

B. *The order of preference for the location of renewable energy systems is listed below in order of most to least preferential location. An applicant is required to prove the most preferential priority locations are not feasible in order for the Historic District Commission, or its designee, to approve system installations on more significant parts of the site.*

The building is surrounded by public right-of-way on the northern, western, and southern exposures. The primary façade of the building faces West St. to the north. The proposed location on the southern roof of the building will not be visible from West St. and will provide the least amount of visual impact to the primary façade. The southern exposure is also the preferred location for the solar energy system. The Commission will need to determine if this standard has been met.

C. *Renewable energy systems shall be installed in such a manner that they can be removed and not damage the historic building, structure, or site with which they are associated.*

The proposed solar energy system will utilize a flush mount XR100 rail racking system with a specialized S-5 clip hardware that is designed to specifically attach to standing seam metal roofs. The system appears to be designed to be removed with minimal damage to the proposed metal roof.

D. *In order to minimize visual impacts, colors of equipment and assemblies associated with renewable energy systems shall either be muted or shall match nearby materials and colors, and solar panels shall have antireflective coating.*

The standing seam roof is proposed to be dark bronze and the solar panels are proposed to be black. It appears that these colors will minimize the visual impact of the proposed solar energy system. This standard appears to be met.

E. *Roof-mounted solar photovoltaic systems on pitched roofs shall be on the same plane as the roof and positioned so as to be in the least visible location.*

The proposed solar panels will utilize a flush mount racking system that will match the pitch of the roof. This standard appears to be met.

F. *Solar array grids should be regular in shape and jointed. Multi-roof solutions should be avoided.*

The system is proposed to be three rows of 18 panels per row in a uniform pattern. All the panels will be located on a single roof. This standard appears to be met.

G. *All supplementary equipment and supply lines associated with renewable energy systems shall be placed in inconspicuous locations and/or concealed from view with architectural elements (e.g. downspouts) or other screening.*

All conduit is proposed to be routed internally along with the inverter and 100A disconnect. A second 100A disconnect is proposed on the western exterior of the building, adjacent to an existing heat pump area with screening. This standard appears to be met.

22.6.3.C Roofs and Roof Structures

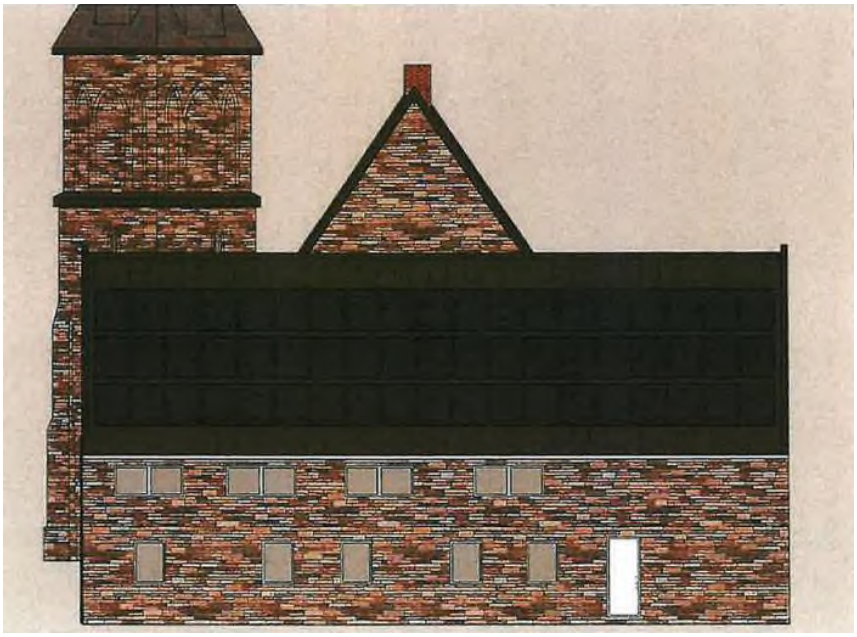


Fig 3: Proposed PV system layout.

Section 22.6.3, sub-section C.2 of the HDC Regulations require slate roofs to be retained whenever economically feasible. If an applicant proposes to remove slate, the regulations require that the applicant must obtain a written estimate from a roofing contractor with information about the existing slate, including the cost to replace with substitute materials. In addition, if slate is determined to warrant replacement, this standard states that it must be replaced with either new slate, slate salvaged from a non-visible portion of the roof, synthetic slate, or asphalt shingles that are similar in color to slate. The full standard is listed below:

22.6.3.C.
2. Slate shall be retained, whenever economically feasible. Before slate on a visible roof slope is removed, the applicant shall obtain a written estimate from a roofing contractor highly experienced in slate work with the following information:

- *a. The condition of the existing slate.*
- *b. The percentage of slate that is beyond repair.*
- *c. If some of the slates are salvageable, the cost of using new slate where replacement is warranted and reusing existing slate, including relocating some from non-visible roof slopes, if necessary.*
- *d. The cost of re-roofing with substitute materials.*

3. If slate on the visible portion of the roof warrants replacement, the new material may be either replacement slate, slate salvaged from a non-visible portion of the roof, synthetic slate, or asphalt shingles that are similar in color to slate.

As stated previously, the applicant requests a waiver from the requirements of this standard and proposes to remove the historic slate roof and replace it with a metal standing seam roof. However, no information was provided to demonstrate economic hardship. Staff recommend that the HDC require written estimates from at least three solar installers to show the difference in cost between installing solar on a slate roof versus other roofing materials. In addition, staff recommend that the HDC require documentation to show the difference in cost between the proposed standing metal seam roof and the alternative roofing materials listed in 22.6.3.C.3.

In addition, the applicant requests a waiver from Section 22.6.3.C.4, listed below, to remove the existing chimney.

22.6.3.C.4 Character-defining chimneys shall not be removed, unless determined to be a safety hazard by the Building and Health Official or their designee, and repair constitutes an economic hardship. Details of these chimneys (e.g. corbelling, stepped bases, terra cotta chimney pots, paneled sides) shall not be altered.

In deciding whether to grant these waiver requests, the Historic District Commission must find by a majority vote that all three waiver criteria listed below are met. The HDC should vote separately on both waiver requests.

Waiver Criteria:

1. Strict application of these regulations would result in a particular and exceptional difficulty or undue hardship upon the owner of the affected property; and
2. An alternative design or materials meets the design objectives stated in the Historic District Regulations of this LDC equally well or better than would strict compliance with these regulations; and
3. The waiver may be granted without substantial detriment to the intent of the Historic District Regulations and the public good.

In addition, if the HDC does decide to grant either of the requested waivers, the Commission may require any mitigation that is reasonable and necessary to ensure that the spirit and intent of the standard being waived will be preserved.

Draft Motion Language: If the Board is inclined to approve this request, the following language is suggested for the motions:

Waivers

"Grant a waiver from Section 22.6.3.C.2 of the Land Development Code to permit the removal of the slate roof on the parish house portion of the St. James church and replace with a standing seam metal roof."

"Grant a waiver from section 22.6.3.C.4 of the Land Development Code to permit the removal of chimney on the south roof."

Final Motion

"Approve HDC-26-1 to allow for the installation of a 54-panel rooftop solar energy system on the property located at 44 West St., as presented in the application and supporting materials received on April 13, 2026 and revised on May 7, 2026."

City of Keene, NH

Historic District Commission (HDC) Major Project Application

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION

PROJECT NAME:
ST. JAMES EPISCOPAL CHURCH

PROJECT ADDRESS(ES):
44 WEST ST. KEENE NH 03431

SECTION 2: CONTACT INFORMATION

PROPERTY OWNER	APPLICANT
NAME/COMPANY: Bishop of the Protestant Episcopal Church in NH	**NAME/COMPANY:** St James (Edie Fifield, Warden)
MAILING ADDRESS: 63 Green St. Concord NH 03301	**MAILING ADDRESS:** 44 West Street, Keene NH 03431
PHONE: [redacted]	**PHONE:** [redacted]
EMAIL: [redacted]	**EMAIL:** [redacted]
SIGNATURE: A Robert Hirschfeld	**SIGNATURE:** Edith Fifield
PRINTED NAME: The Rt. Rev. A. Robert Hirschfeld, Bishop	**PRINTED NAME:** Edith Fifield

AUTHORIZED AGENT (if different than Owner/Applicant)	FOR OFFICE USE ONLY:	
NAME/COMPANY:	**TAX MAP PARCEL #(s):** ___.___.___.___.___ ___.___.___.___.___	
MAILING ADDRESS:		
PHONE:	**PARCEL SIZE:**	**DATE STAMP:**
EMAIL:	**ZONING DISTRICT:**	
SIGNATURE:	**RESOURCE RANKING:**	
PRINTED NAME:	**PROJECT #:**	

SECTION 3: APPLICATION SUBMISSION REQUIREMENTS

A COMPLETE APPLICATION MUST INCLUDE THE FOLLOWING ITEMS AND MUST BE SUBMITTED BY ONE OF THE OPTIONS BELOW:

- **Email:** communitydevelopment@keenenh.gov, with "Historic District Commission" in the subject line
- **Mail / Hand Deliver:** Community Development (4th Floor), Keene City Hall, 3 Washington St, Keene, NH 03431

The submittal requirements for Historic District Commission applications are outlined further in **Article 22** and **Article 26.15** of the Land Development Code (LDC). You may request an exemption from providing any of the items below, except the application fee and narrative. The Community Development Director may grant an exemption, if it is determined that the scope of the project does not warrant the submittal.

Note: Additional information may be requested by the respective decision-making authority during the review process.

GENERAL SUBMITTAL REQUIREMENTS

CERTIFIED NOTICE LIST (See **Attachment A** for more information.)

2 SETS OF MAILING LABELS (See **Attachment A** for more information.)

PROJECT NARRATIVE (See **Section 1 of Attachment B** for more information.)

FEES: Fill in the information below to calculate the total fee.

☐ $50 base fee
☐ $62 legal ad fee
☐ .74 current USPS certificate of mailing rate x 10 abutters

= 131.20 **(TOTAL FEE)**

NOTE: Please call the Community Development Department for the current certificate of mailing rate. Checks should be made payable to the *City of Keene.* Credit card payments are accepted in-person or by calling 603-352-5440.

WAIVERS (See **Section 2 of Attachment B** for additional information.)

■ **WAIVER(S) REQUESTED**
☐ **NO WAIVER(S) REQUESTED**

ADDITIONAL SUBMITTAL REQUIREMENTS (See Attachment C for additional information.)	SUBMITTED	EXEMPTION REQUESTED
PRODUCT SPECIFICATION SHEETS	✓	
SAMPLES OF MORTAR AND/OR BRICK	✓	
COLOR REPRESENTATIONS, SIMULATIONS, OR RENDERINGS	✓	
PHOTOGRAPHS, RENDERINGS, AND/OR LINE SKETCHES	✓	
EXISTING CONDITIONS PLAN	✓	
PROPOSED CONDITIONS PLAN:	✓	
ELEVATIONS: ?	✓	

Project Narrative - St James Solar Cell Project on South Roof

Section 1 – Project Summary

To accommodate 100% of St James Church electrical needs on 44 West Street, we are proposing to install a 23.76 KW DC solar electric system on the South facing roof of our office area/reception building. This project (with code spacing) will require nearly 100% of roof area to meet production needs. This system will help us better manage electrical costs of our new heat pump system and save St James operating costs up to $9000/year.

This office area/reception structure was built in 1899 and is immediately adjacent and connected to our original church building (built circa 1865).

Section 2 – Compliance with Historic District Regulation for Renewable Energy

St James will require 2 waivers to achieve this project:

1. Remove the chimney, and
2. Replace the existing slate with standing seam metal on the south-facing roof of the 1899 addition.

With these waivers St James believes that we will meet and exceed architectural vision stated in the Keene Master Plan "to be rooted in Keene's local aesthetic, with the influence of contemporary design and sustainable innovation creating a balance between old and new and helping maintain the integrity of the built environment."

Additionally, our proposed construction strategy will also meet and exceed the overall objectives of Article 22.5.5 "Renewable Energy Systems Requirements" for appearance and long-term function. It will also be consistent with the Master Plan vision for "Energy/Green Building Guidelines for Historic Buildings Modern technologies and weatherization procedures

[that] allow significant improvements to buildings without compromising their historic value."

Finally, this project meets the public good per Keene City Council Resolution R-2018-36, Goal 1, for 100% renewable electricity by 2030. By reducing our reliance on fossil fuels and creating a healthier and more sustainable building for future generations, this installation will preserve the long-term viability of the historic Church and advance environmental sustainability in our community.

The discussion immediately below addresses Land Development Code, Article 22.5.5 Sections A through G criteria.

22.5.5 A – Solar Cell Visibility and Function – The solar array will be placed on the South facing roof of our office area/reception building. Although this building is historic because of its age, it does not contain the bell tower, stained glass, and historic doors and other historic features of the church building. The window and door features on this building are already contemporary.

The South roof cannot be seen from West Street, the main thoroughfare. Our "backyard" is Lamson street, East Gilbo Parking Lot and Gilbo Ave and the parking lot servicing Margaritas and The Colonial Theater. In fact, our largest neighbors are parking lots. This location does, however, provide an unobstructed view to the sun, which creates an optimum solar collection environment.

ReVision Energy will be installing Silfab panels in flat black. The panels will be installed with Ironridge XR 100 rails and S-5 clips specific to standing seam roofs. See attached spec sheets.

22-5-5 B – Preferential location of Renewable System (By Criterium)

1. All sides of St James are visible from public roadways.

2. Our South side roof is our rear facing side and is located on our "accessory building" (which is our "newer section") and is least visible.
3. Our "accessory building" is our "newer section" and is least visible compared to the other 3 sides of the property.
4. Our church and accessory buildings do not have flat roofs to screen solar cells.
5. Our church and accessory building do not have a façade to screen solar cells.
6. Our accessory building faces a low traffic public right of way and strictly meets this criterium.

22.5.5 C – Solar System Removability – With the use of standing seam roofing (see Waiver 1), St James will have a leak tight roof with the ability to readily remove all solar equipment, including S-5 clips on the standing seam (which is not practical with other methods). The standing seam option exceeds all other roofing methods for roof integrity and removability.

22.5.5 D – Visual impacts - The color of the standing seam roof will match the patina on the currently installed roof rails and covers and will look "normal." Standing seam roof has been used to repair a leaky section between the church and office/reception building and is barely detectable as all colors of the existing standing seam roof repair, snow belt, slate, rails and covers match extremely well. By removing the non-historic chimney (Waiver 2), all pattern concerns are addressed, as all solar cells can be installed in a rectangular pattern that complements the roof design.

22.5.5 E – Solar Cell Roof Mounting – Our solar photovoltaic systems will be installed on the same plane as the roof. As such, it will be installed as prescribed by Section E.

22.5.5 F – Multi Roof Installation – Our South roof is a single-plane roof. As such, no undesirable patterns will be created. This pattern design is much simpler if we remove the non-historic chimney (as requested in Waiver 2).

22.5.5 G - Concealing Supply Lines and Auxiliary Equipment – St James will utilize similar concealing strategies that we used when installing our heat pump system which the City approved. For the solar cell installation, we will paint any required conduit to match the surrounding granite if needed.

ReVision Energy is anticipating installing the inverter inside the building with an exterior safety shutoff on the west side of the building, concealed where the current mini split conduit is routed. They anticipate running the supply line under the panels through a watertight boot through the standing seam roof so that no conduit runs are to the exterior of the building. Power connection will be on the west side of the building in the existing conduit from the 3-phase power location on the corner of St. James and Lamson St.

WAIVERS

Required Waivers – This section addresses requested waivers according to the following the Land Development Code, Article 22.6.3:

> Article 22.6.3 - "Specific Standards for Primary and Contributing Resources" under Subsection C "Roofs and Roof Structures (e.g. chimneys, dormers, cupolas, iron cresting, flashing, gutters, downspouts)"
>
> Subsections C2 and C3 addressing Slate Removal and Use of Alternatives (Basis for Waiver 1)
>
> Subsections C4 addressing Character Defining Chimneys (Basis for Waiver 2)

Waiver 1 – Using Standing Seam Roof in place of Installed Slate

St James has been quite diligent in keeping our slate roof in a healthy condition. However, as the roofs age it becomes more challenging and expensive to maintain. We typically perform our roof inspection once every 3 years to repair known (and discovered) damage. Each repair campaign costs between $10,000 to $20,000 to repair about 20 slates.

We have had capital campaigns in earlier years that exceeded these $$$ amounts. Notably, one of the most expensive tools needed is a crane, which costs approximately $2100/day to rent. A five-day campaign will cost more than $10,000 just for the crane. You need specialty craftsman to do the job right.

The material cost for our type of roof slate can range from $75 to $100 or higher per slate. The slate on this part of the building is about 125 years old, and we would expect more failures as it continues to age and the nails holding them in place degrade.

Aside from the costs mentioned above, there is also a safety consideration. It would be possible to have a slate failure that we could not detect/predict. A broken tile could hit a pedestrian and injure/kill them. Our South roof is directly above the public sidewalk which makes that risk high. Our other roofs have land strips that are rarely accessed, so that risk is significantly less. We believe that both St James and the City would like to keep these odds as low as possible.

Only one solar installer was willing to take the risk of installing solar on the existing slate roof. -Three out of four contractors refused to work with the slate roof for a solar installation, which is telling.- The following long term implications remain:

1. Difficult installation (high potential to damage slate when installing rails and solar cells which may not be immediately detected, but lead to accelerated failure).
2. Difficult and costly maintenance of the slate requiring total removal and then re-installation of the solar panels.

These potential risks are not practical for our congregation to take.

The St James slates would not go to waste. Although many can break on removal, many can be saved and used on our east and west roofs as spares.

Asphalt is offered as an alternative to slate. However, solar supports used on an asphalt roof require drilling through the roof, which increases the risk of leakage, which is unacceptable.

Asphalt inherently has a relatively short life span, and may need to be replaced prior to the usable life of the solar panels. This would be expensive to remove the panels and racking to replace the asphalt shingles. Similarly, synthetic slates would utilize a drill-through approach and cost roughly 2x more. Based on the above analysis, and that provided for Article 22.5.5 , we request waiver to use standing seam roof for our South roof. We plan to continue to use slate on our remaining roofs.

Wavier 2 – Removal of South Roof Chimney

The existing chimney on the south roof, is old. It has none of the historic attributes listed in Subsection C4. It is not part of the historic skyline; In fact, the chimney, like the doors and windows in the accessory building, appears to be quite contemporary.

Additionally, the chimney has not been used for the past 80 years and its flue is blocked off. It is located near the bottom end of the roof and requires 2 non-decorative steel supports which detract from the building's existing architecture.

More importantly, because of chimney location (which will limit cells that can be placed on the roof and cast shadows), we estimate that the chimney if left in place could cost St. James up to a 20% power generation loss. Additionally, it would cause an undesired zig-zag pattern that would detract from the overall project's view.

Based on the above, we request a waiver to remove this chimney.

ADDENDUM

One cost not discussed in the regulation is the potential need to repair a damaged roof and loss of production. Just considering the crane cost mentioned above, one would want a roof to last and not have leaks, like standing seam. Standing seam roofs are installed with a leak resistant artificial felt, that is very durable/tear resistant and protects the wood under the metal roof. The roof is seamed and end sealed for leakage protection assurance and is attached with screws to the roof for superior strength. Finally, the steel roof provides outstanding protection and strength.

It is these attributes that provide St James maximum assurance to avoid massive repair requiring cell removal, roof repair, cell replacement and extended crane use. We would have a 4% production loss. The crane cost alone would be $21,000. Craft costs are hard to estimate, but known to be

significant, as multiple workers and craft skills would be needed. St James has experienced roof leaks before. It can be hard to find the leak source and best ways to repair. St James wants to avoid this concern for future parishioners.

St James vendors currently use drone technology to inspect our roof every 3 years. However, when solar cells are in place, drone inspection under the solar cells is not possible. If we used slate, we would not readily know the roof condition unless we experienced failure. We have judged that it is much better to have a roof guaranteed for 50 years (and will probably last significantly longer) and not have to do the inspection.

Thank you for considering this application.

Sincerely,

The Solar Project Team; St. James Episcopal Church

Mike Metell, Dave Birchenough, Peter Hansel, Edith Fifield

44 West St.

Keene, NH 03431

REVISION ENERGY

St. James Episcopal Church in Keene, NH.

ReVision Energy's submission for HDC review;

St. James Episcopal Church proposes a 23.76 kW DC / 17.3 kW AC rooftop solar array consisting of (54) all-black Silfab 440W modules, a SolarEdge 17.3 kW inverter, and SolarEdge optimizers. The array will be flush-mounted to the newly installed standing seam metal roof using S5 standing seam clamps and IronRidge XR100 rails.

The array is designed to minimize visual impact. Modules will sit approximately 6 inches above the roof valleys, with a total footprint of approximately 67.5 feet by 17 feet (three rows of 18 modules). Setbacks include approximately 3 feet from the roof ridge and 3 feet from each rake (edge of roof). A Rocky Mountain snow guard will be installed below the array to mitigate snow shedding.

All conduit from the roof will be routed internally to avoid visible exterior runs. A single coordinated roof penetration will be installed in collaboration with the roofer, allowing wiring to pass through the attic and down to the building's main electrical panel. The inverter and a 100A disconnect will be located indoors at the first-floor MDP. From there, conduit will exit through an existing louver to an exterior 100A disconnect mounted on the west side of the building, adjacent to the ASHP screening, avoiding areas prone to ice accumulation.

ReVision Energy will obtain all required permits from the City of Keene and will provide a full permit set, including third-party structural approval, upon completion. Supporting materials, including specification sheets, renderings, and photographs, are included with this submission.

Created For: Saint James Episcopal Church 44 West Street Keene, NH 03431	JANCEWICZ & SON	Jancewicz & Son 1164 Main Street North Walpole, NH 03609

Exisiting Elevations of Roof Plane Requesting Variance

View From Gilbo Ave.

Date: 3/30/2026

Created For: Saint James Episcopal Church 44 West Street Keene, NH 03431	JANCEWICZ & SON	Jancewicz & Son 1164 Main Street North Walpole, NH 03609

Exisiting Elevations of Roof Plane Requesting Variance

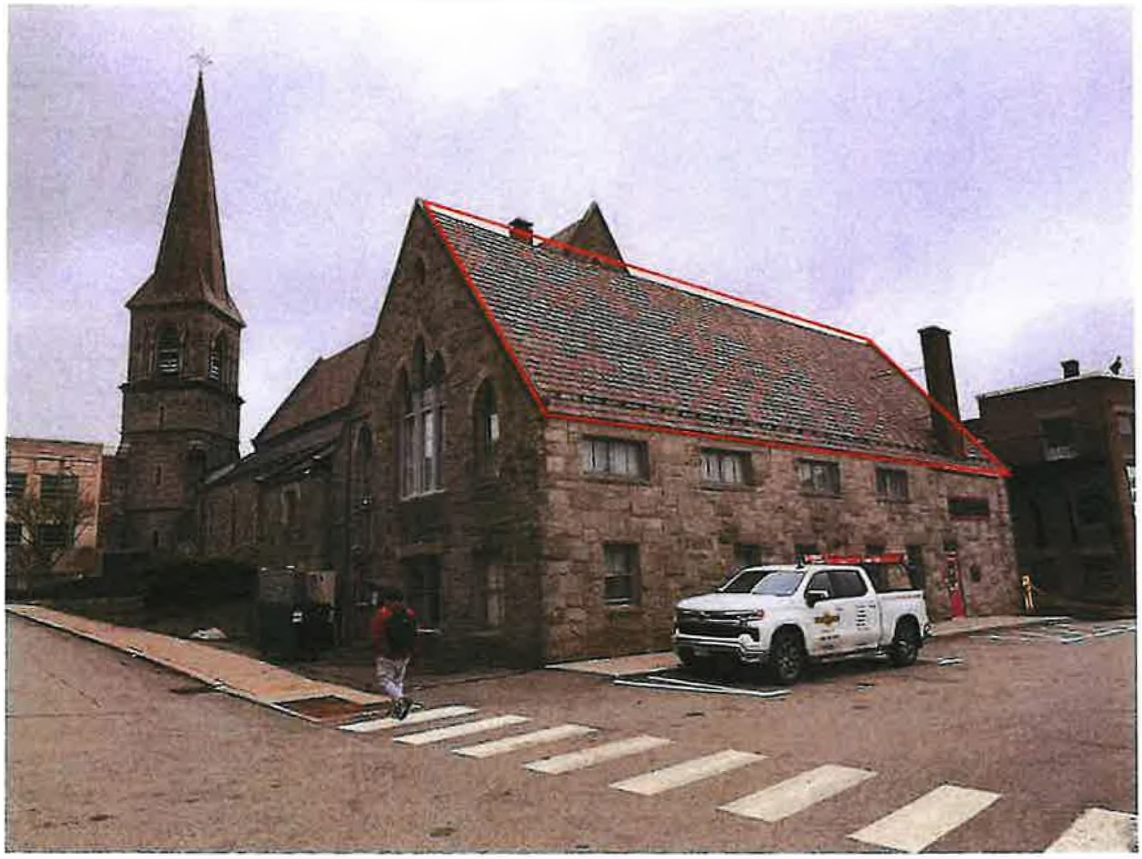
View From Lamson St.

Date: 3/30/2026

Created For: Saint James Episcopal Church 44 West Street Keene, NH 03431	JANCEWICZ & SON	Jancewicz & Son 1164 Main Street North Walpole, NH 03609

Exisiting Elevations of Roof Plane Requesting Variance

View From St. James St.



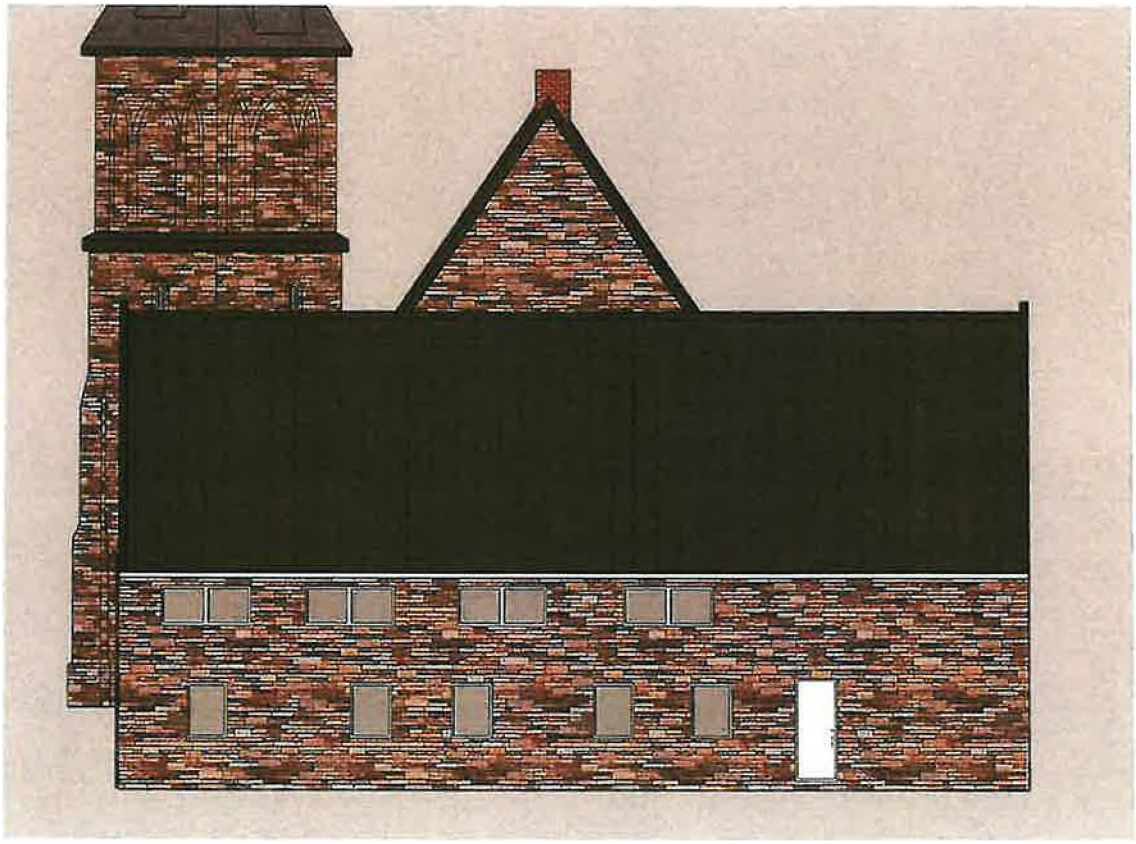
Date: 3/30/2026

Created For: Saint James Episcopal Church 44 West Street Keene, NH 03431	JANCEWICZ & SON	Jancewicz & Son 1164 Main Street North Walpole, NH 03609

Proposed Elevations of Roof Plane Requesting Variance

Prior to Solar Panel Installation

View From Gilbo Ave.



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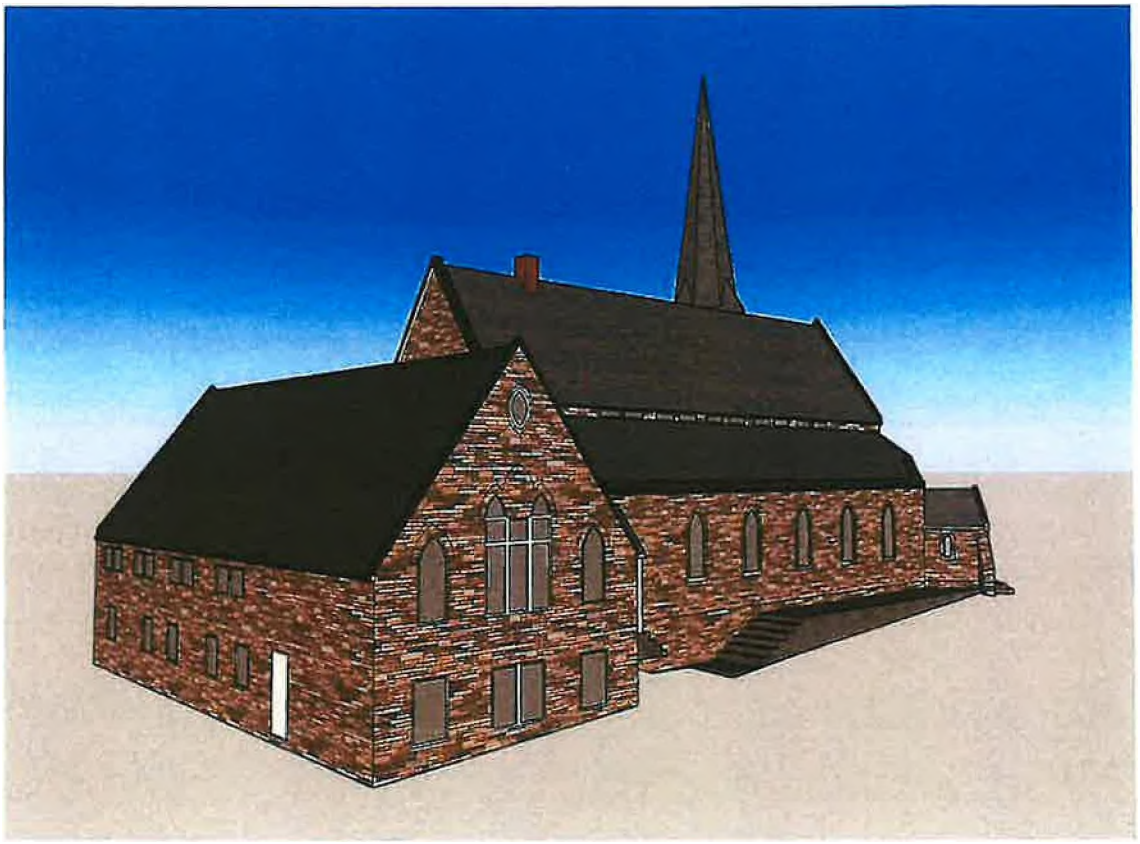
Proposed Elevations of Roof Plane Requesting Variance

Prior to Solar Panel Installation

View From Lamson St.



Date: 3/30/2026

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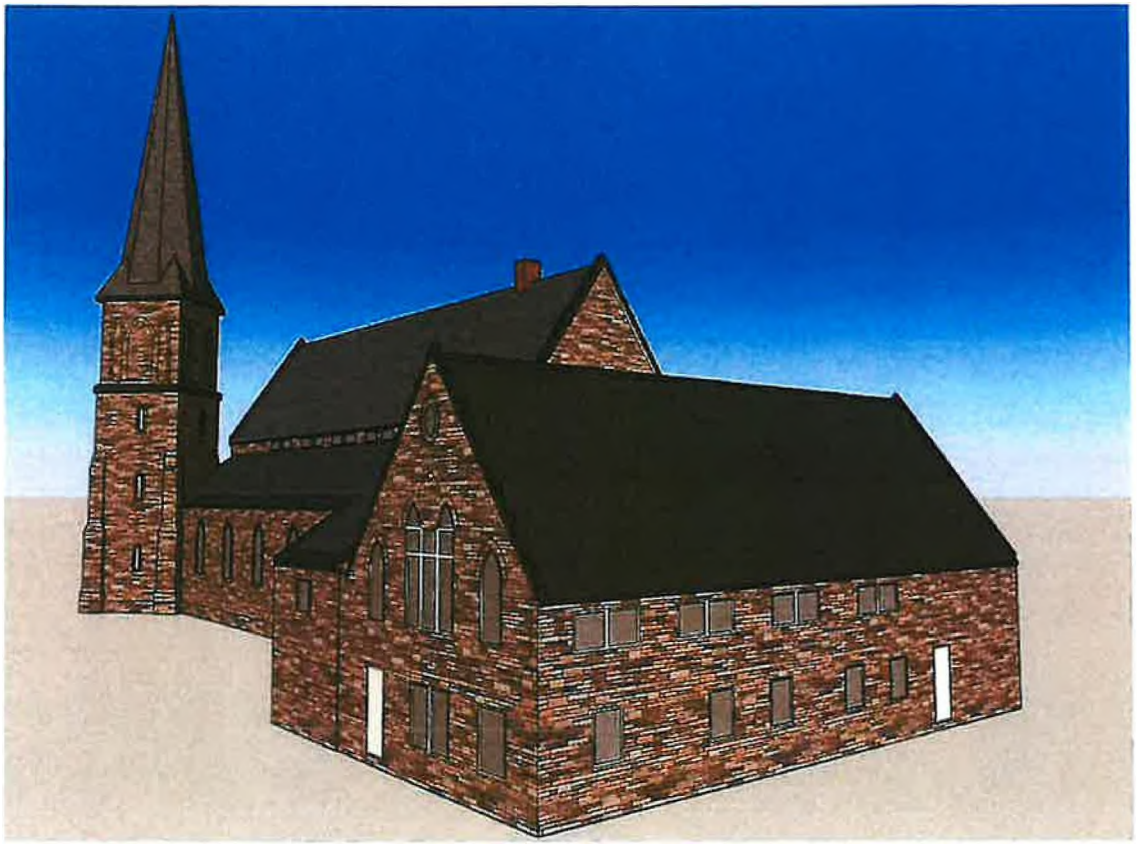
Proposed Elevations of Roof Plane Requesting Variance

Prior to Solar Panel Installation

View From St James St.



Date: 3/30/2026

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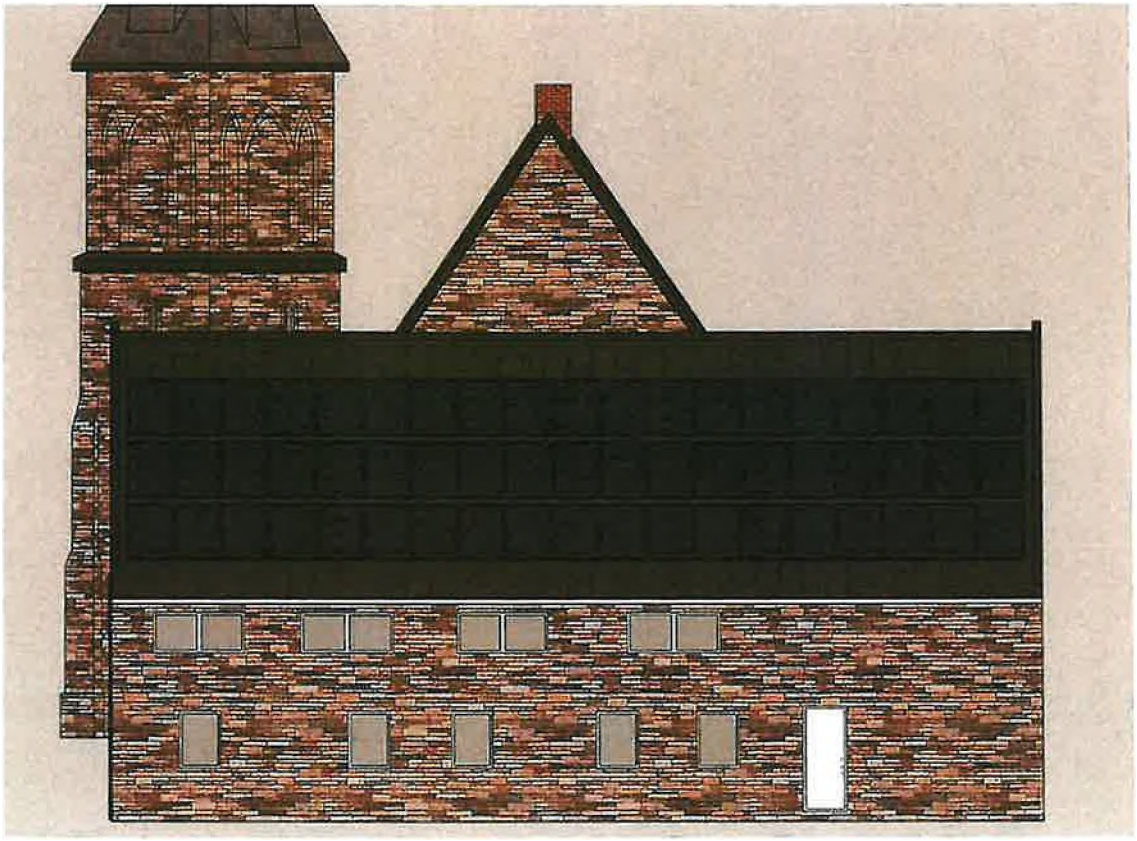
Proposed Elevations of Roof Plane Requesting Variance

After Solar Panel Installation

View From Gilbo Ave.



Date: 3/30/2026

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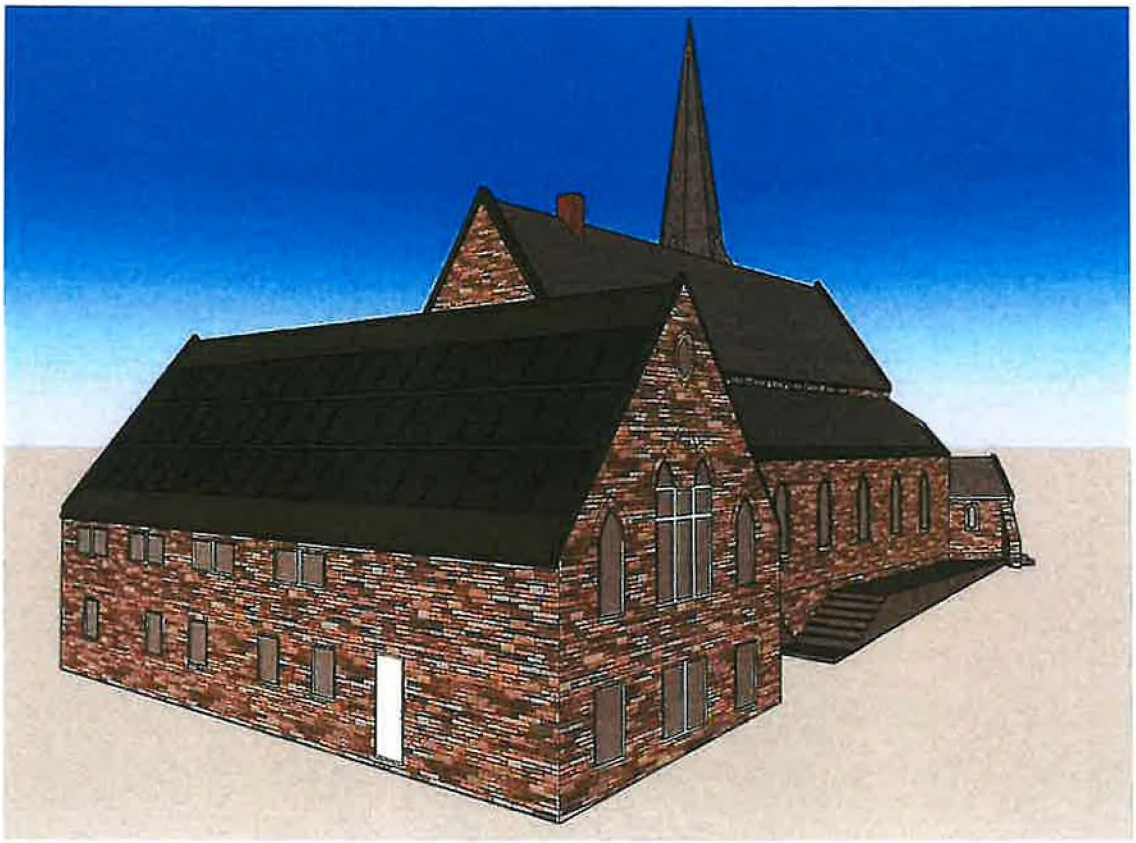
Proposed Elevations of Roof Plane Requesting Variance

After Solar Panel Installation

View From Lamson St.



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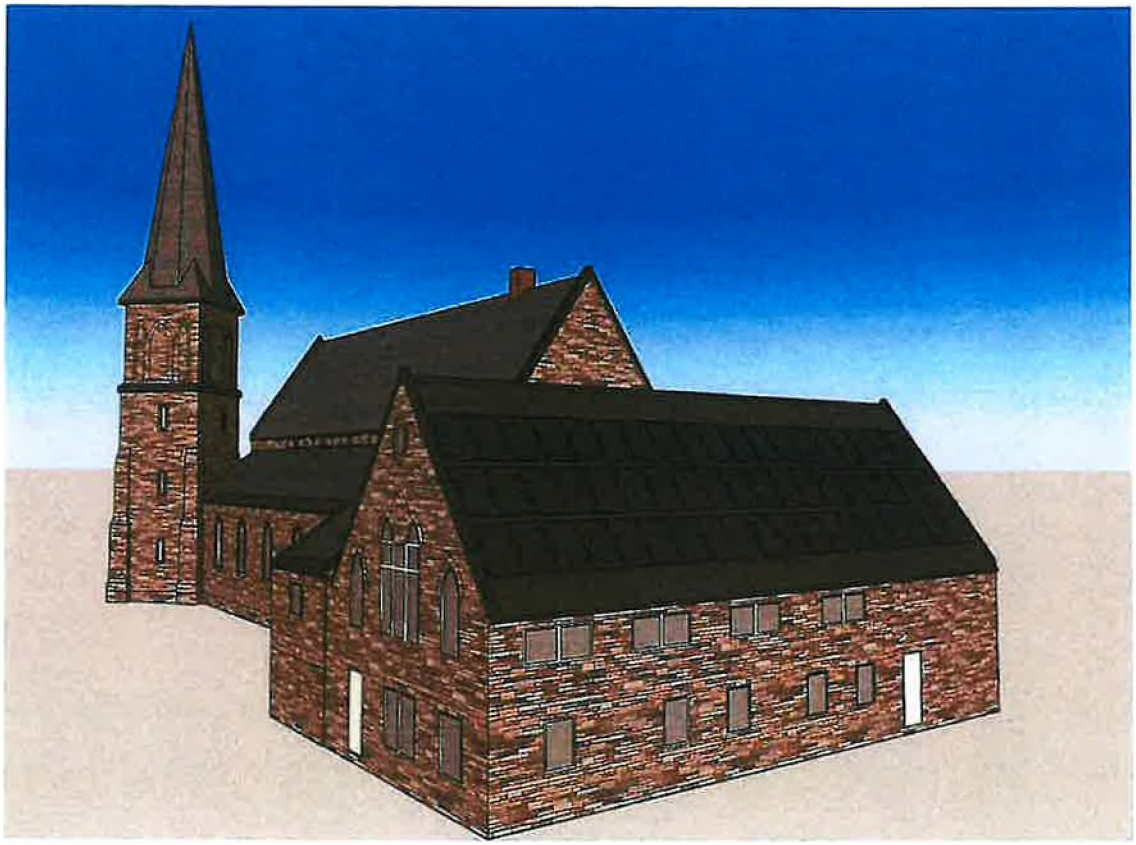
Proposed Elevations of Roof Plane Requesting Variance

After Solar Panel Installation

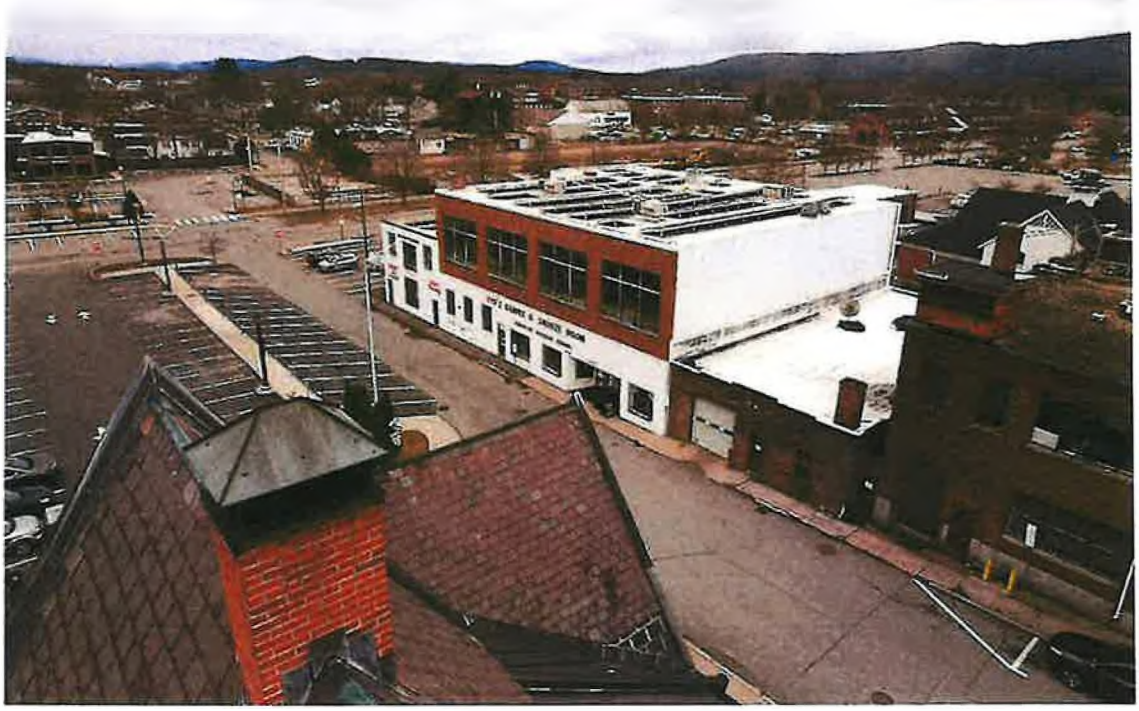
View From St James St.



Date: 3/30/2026

Created For: Saint James Episcopal Church 44 West Street Keene, NH 03431		Jancewicz & Son 1164 Main Street North Walpole, NH 03609

Aerial Photos of Adjacent Property



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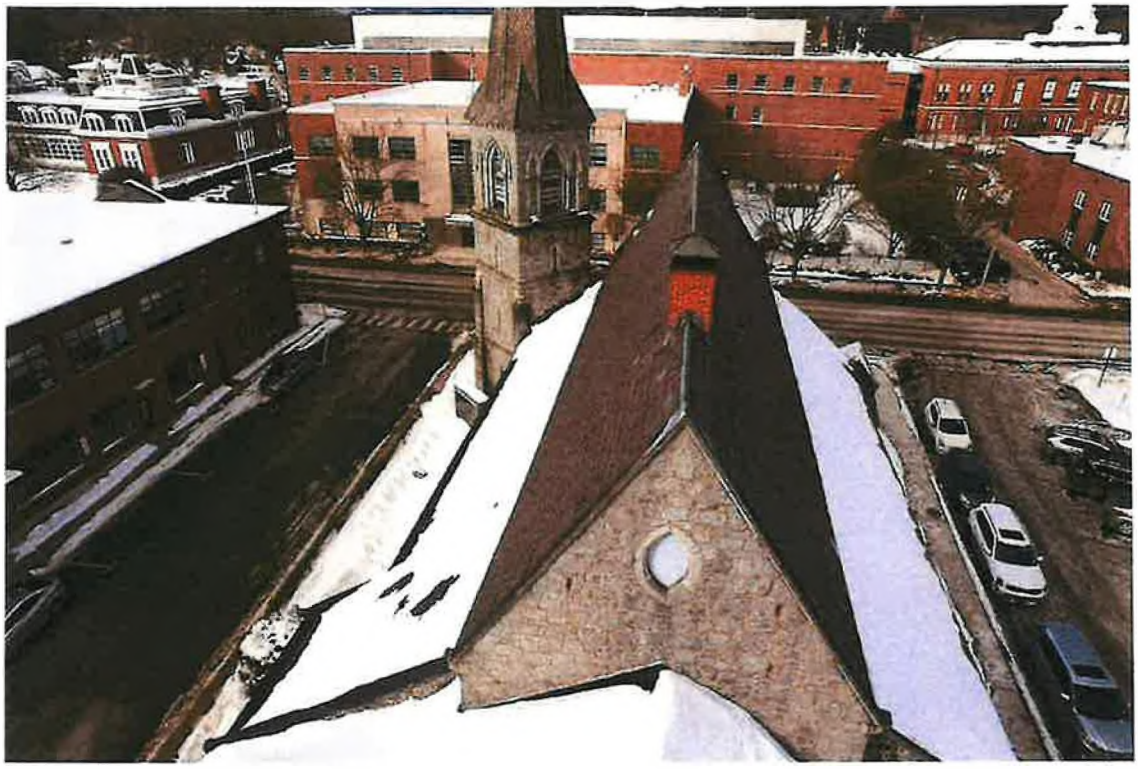

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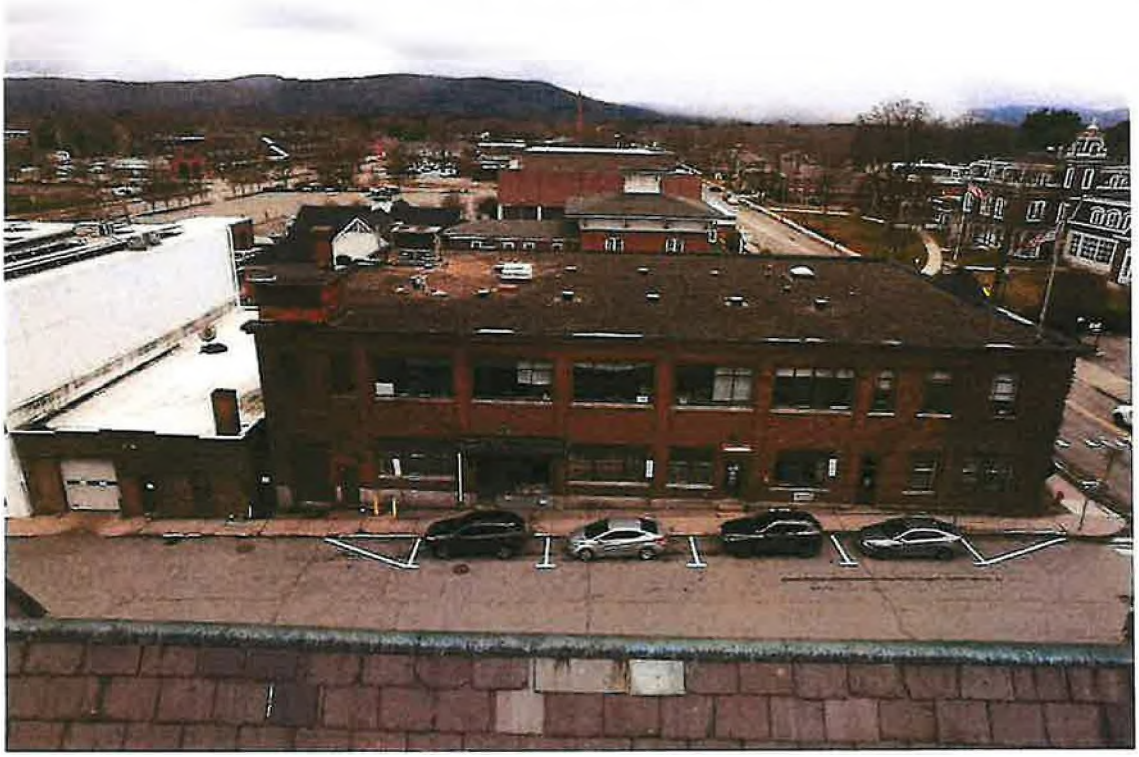

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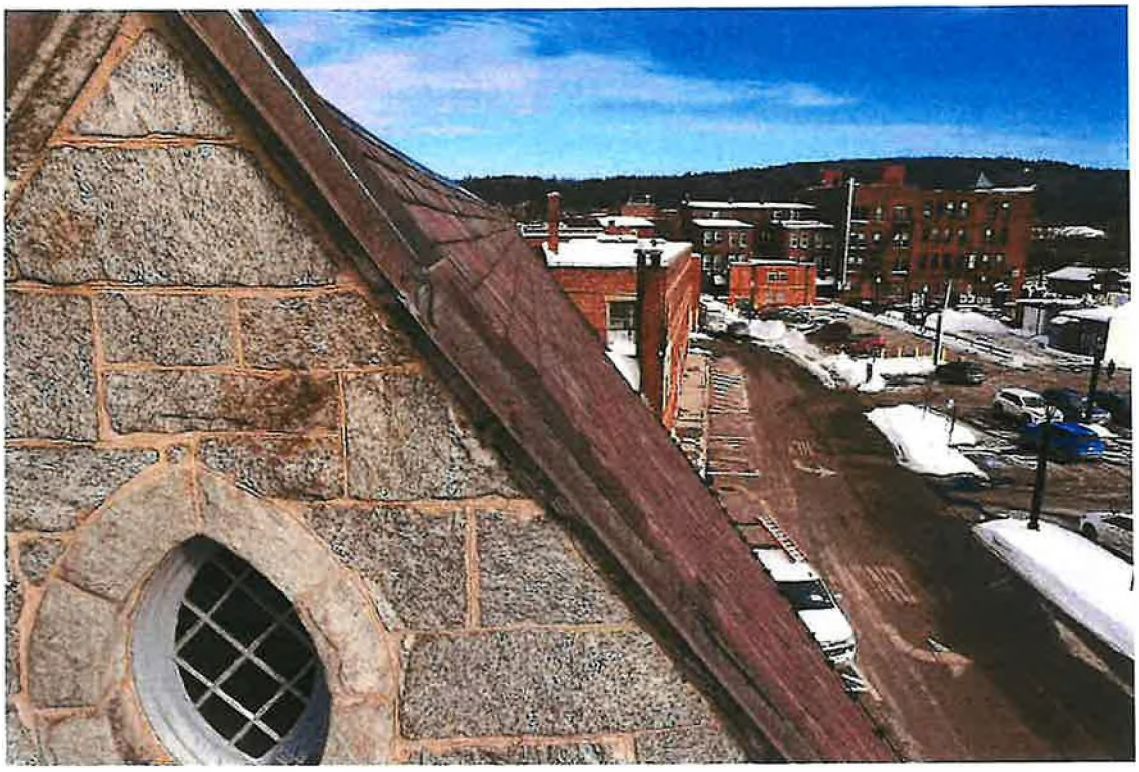


Date: 3/30/2026

Commercial Power Optimizer

USA Domestic Content Eligible

C651U

POWER OPTIMIZER

Made in the USA from imported parts

SolarEdge's USA-manufactured offering for C&I projects, for power optimization at the module level

- **Eligible for Domestic Content***
  - SolarEdge USA-manufactured power optimizers, when paired with certain SolarEdge USA-manufactured inverters, are intended to be eligible for the enhanced federal income tax credit for domestic content
- **Higher Energy Yields**
  - Generates maximum power from each PV module
  - High efficiency (99.5%)
  - Supports high power and bifacial PV modules, including G12 modules
- **Enhanced Monitoring and Visibility**
  - Maximum system visibility up to the individual module level
  - Pinpointed fault detection and remote troubleshooting
- **Maximum Protection with Built-in Safety**
  - Designed to automatically reduce high DC voltage to touch-safe levels, upon grid/inverter shutdown, with SafeDC™
  - Includes SolarEdge Sense Connect, designed to prevent arcs by monitoring Power Optimizer connectors for overheating
  - Certified to Photovoltaic Rapid Shutdown, according to NEC 2014 – 2023

* For more information, refer to the last page of this document

/ Power Optimizer

USA Domestic Content Eligible for North America

C651U

Power Optimizer Model	C651U	
INPUT		
Rated Input DC Power[1]	650	W
Absolute Maximum Input Voltage (Voc)	80	Vdc
MPPT Operating Range	12.5 – 80	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module[2]	20	Adc
Maximum Adjusted Short Circuit Current (with Safety Factor)[3]	25	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.8	%
Overvoltage Category	II	
OUTPUT DURING OPERATION		
Maximum Output Power	650	Wdc
Maximum Output Current	24	Adc
Maximum Output Voltage	60	Vdc
SAFETY FEATURES		
SafeDC™	Yes	
Safety Output Voltage per Power Optimizer	0.5 ± 0.075	Vdc
Sense Connect	Yes	
Photovoltaic Rapid Shutdown System	Yes, NEC 2014 – 2023	
STANDARD COMPLIANCE		
EMC	FCC Part 15; IEC 61000-6-2; IEC 61000-6-3	
Safety	IEC62109-1 (class II safety); UL 1741; UL 3741; CSA C22.2#107.1	
Material	UL94 V-0, UV Resistant	
RoHS	Yes	
Fire Safety	VDE-AR-E 2100-712:2013-05	
INSTALLATION SPECIFICATIONS		
Compatible SolarEdge Inverters[4]	Commercial Three Phase Inverters with one of the following part number structures: xSE-SIN-USxxIxxxx SE-DBL-USxxIxxxx SE-TRI-USxxIxxxx	
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	128 x 155 x 52 / 5.03 x 6.10 x 2.05	mm / in
Weight	1080 / 2.38	gr / lb
Input Connector	MC4[5]	
Input Wire Length	(+) 1.4, (-) 1.4 / (+) 4.59, (-) 4.59[6]	m / ft
Output Connector	MC4	
Output Wire Length	(+) 3.0 (-) 0.10 / (+) 9.84, (-) 0.32	m / ft
Operating Temperature Range[7]	-40 to +85 / -40 to +185	°C / °F
Protection Rating	IP68 / NEMA6P	
Relative Humidity	0 – 100	%

(1) Modules with a front side maximum power of up to 715W at STC are allowed. Up to +5% power tolerance is allowed
(2) When using bifacial modules, consider only the front side Isc at STC (0% back side gain). For details, see here
(3) Adjusted for ambient temperature, irradiance, bifacial gain, safety factor, and so on, in accordance with NEC and CSA
(4) For detailed inverter compatibility information, see here
(5) For other connector types please contact SolarEdge
(6) The Sense Connect feature is only enabled on the output wire connectors. For details, see here
(7) For ambient temperatures above +65°C / +149°F, power derating is applied. For details, see here

RoHS

/ Power Optimizer

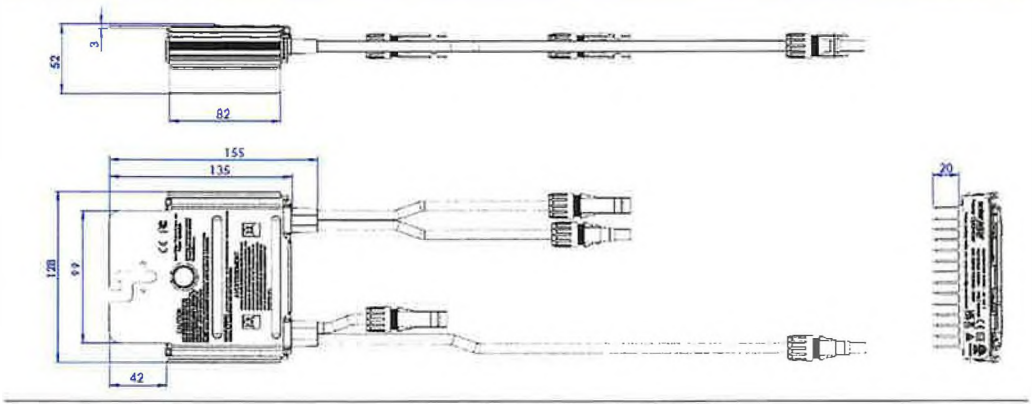
USA Domestic Content Eligible for North America

C651U

PV System Design Using a SolarEdge Inverter[8]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE30K, SE33.3K*	277/480V Grid SE40K*	
Compatible Power Optimizers		C651U				
Minimum String Length	Power Optimizers	13	13	18	18	
	PV Modules	13	13	18	18	
Maximum String Length	Power Optimizers	57	57	57	57	
	PV Modules	57	57	57	57	
Maximum Continuous Power per String		10,000	9600	20,400	20,400	W
Maximum Allowed Connected Power per String[9]		1 string or more – 15,000	1 string – 11,400 2 strings or more – 15,600	1 string – 22,650 2 strings or more – 30,400	1 string – 22,650 2 strings or more – 30,400	W
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

*The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(8) C651U cannot be mixed with any other Power Optimizer models in the same string.
(9) To connect more STC power per string, design your project using SolarEdge Designer.

C651U Mechanical Drawing



Eligibility for Domestic Content

As it relates to the domestic content rules, the U.S. Department of Treasury and the IRS have not yet issued proposed or final regulations. Rather, the IRS has issued three notices - Notice 2023-38, Notice 2024-41 and Notice 2025-08. These notices provide guidance regarding the domestic content rules. SolarEdge products referenced herein are manufactured with the intent to be eligible for inclusion under the elective safe harbor table in calculating the Domestic Cost Percentage under the **"Rooftop (MLPE)"** category (under IRS **Notices 2024-41 and 2025-08, depending on the PN used – see chart below**). Eligibility is subject to the installation of qualified USA-Manufactured inverters and Power Optimizers (C651U) in the same project. SolarEdge does not provide tax and/or legal advice. You should consult with your own legal and/or tax advisor(s) regarding the eligibility of your project for the ITC or PTC, including the 10% Domestic Content bonus, to determine how the applicable rules apply to your project. The forward-looking statements in this document are accurate as of the date herein and are subject to change. For more information, please contact your local SolarEdge sales representative.

PN	Domestically produced MPCs per notice 2024-41*	Domestically produced MPCs per notice 2025-08*
USE-SIN-USR0IBNS**6**, when paired with C651U	Printed Circuit Board Assemblies, Electrical Parts, Enclosure (35.6%)	Printed Circuit Board Assemblies (DC-DC) and (AC-AC), Enclosure, Production (24.8%)
USESUK-USR0INNN**6**, when paired with C651U	Printed Circuit Board Assemblies, Electrical Parts, Enclosure (35.6%)	Printed Circuit Board Assemblies (DC-DC) and (AC-AC), Enclosure, Production (24.8%)
USE-SIN-USR0IBNS**8**, when paired with C651U	Printed Circuit Board Assemblies, Electrical Parts, Enclosure (17.6%)	Printed Circuit Board Assemblies (DC-DC) and (AC-AC), Enclosure, Production (24.8%)
USESUK-USR0INNN**8**, when paired with C651U	Printed Circuit Board Assemblies, Electrical Parts, Enclosure (17.6%)	Printed Circuit Board Assemblies (DC-DC) and (AC-AC), Enclosure, Production (24.8%)

RoHS

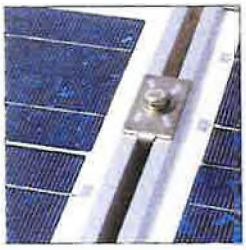
PREFORMED LINE PRODUCTS

POWER RAIL™

Commercial Mounting System
XD/UD and LD/MD Rails

COMMUNICATIONS ENERGY SPECIAL INDUSTRIES SOLAR

POWER RAIL



POWER RAIL™ Commercial Mounting System – XD/UD and LD/MD Rails

PV module mounting system is engineered for longer span and cantilever distances for commercial roof top or open structure applications.

The POWER RAIL commercial mounting system is designed with the professional PV solar installer in mind. Both the XD/UD and LD/MD rails feature single tool assembly with the revolutionary patented RAD™ Lock-in-Place bolt for fast and secure module clamping.

The high strength marine-grade aluminum rails include an integral wiring channel for securing cables and providing a professional finish.

Mounting Rail Options*

XD/UD Rail Engineered to save cost on commercial & shade structure applications

LD/MD Rail Engineered for long span commercial & shade structure applications

* Reference Rail Span and Cantilever Charts located at www.preformed.com.

Reliable

- Engineered rail profiles for maximum strength-to-weight ratio
- Structural Aluminum rigid rail construction
- High Strength stainless steel module clamps and hardware
- UL2703 Code Compliant

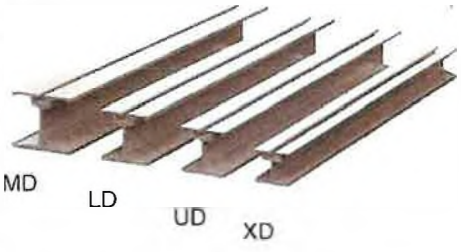
Quick Assembly

- Longer spans/cantilevers – fewer attachments
- Single tool assembly
- RAD bolt for quick and secure clamp placement
- Integral wiring channel for securing cables
- Rail lengths up to 40 feet – less splices
- Integrated grounding

Rail with mounting bracket

Standard Rail Lengths

Length	XD Part #	UD Part #	LD Part #	MD Part #
242"	XD-242	UD-242	LD-242	MD-242
282"	XD-282	UD-282	LD-282	MD-282
324"	XD-324	UD-324	LD-324	MD-324



Power Rail Extrusions

POWER RAIL™ Commercial Mounting System – XD/UD and LD/MD Rails

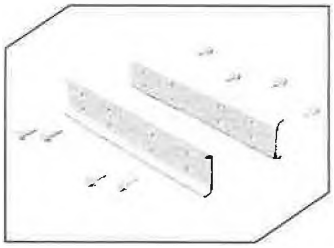
Lock-In-Place RAD Bolt

AMP™ Mid Clamp with RAD™ Bolt Hardware

- Eliminates the need for a separate bonding washer
- Twist in anywhere along rail channel - avoid sliding bolts
- Visual indicator of bolt orientation
- "D" hold on mating clamp locks bolt from rotating back out
- Tight 3/8" module spacing
- High Strength stainless steel clamp and bolt

End Clamp with RAD Bolt

AMP Mid Clamp with RAD Bolt



Each kit includes (2) splice plates with self-tapping screws

XD/UD, LD/MD Splice Plate Kits and Mounting Brackets

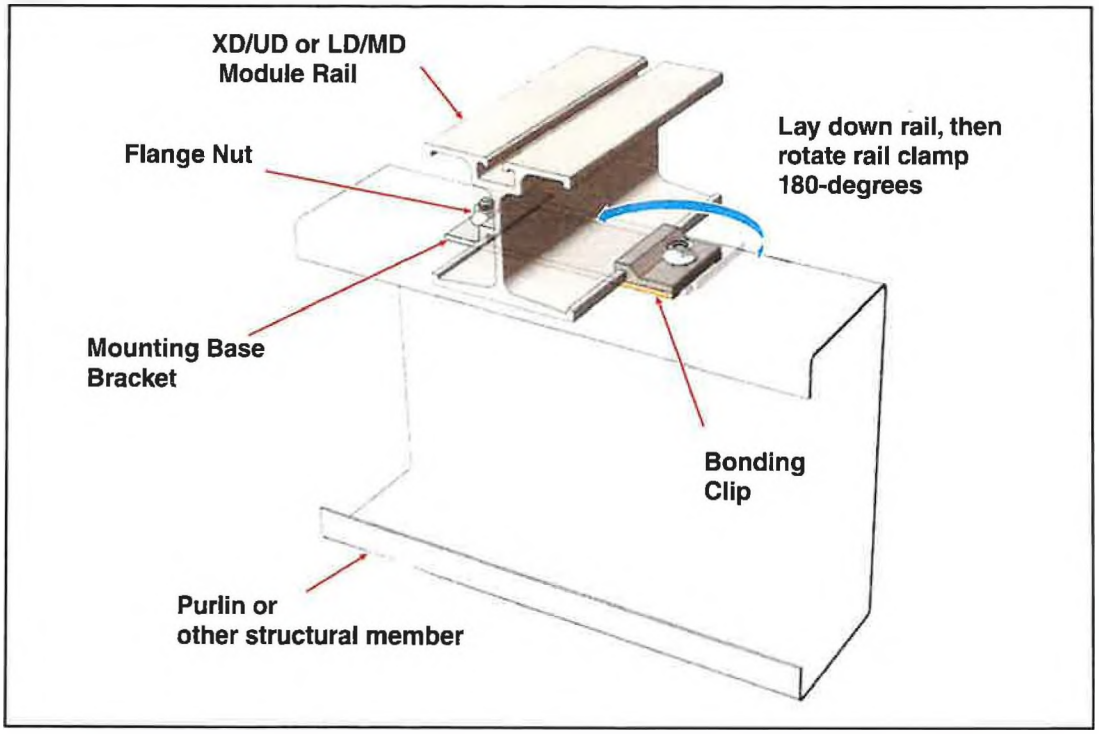
- Splice Plate installs quickly with self cutting screws provided
- Rail Clamp swivels for easier rail placement
- Universal Mounting Base Bracket - XD/UD, LD/MD Rail

Part #	Description
XD-SPK	Splice Kit - XD Rail
UD-SPK	Splice Kit - UD Rail
LD-SPK	Splice Kit - LD Rail
MD-SPK	Splice Kit - MD Rail
MBB-LD-MD	LD/MD Mounting Base Bracket
MBB-XD-UD	XD/UD Mounting Base Bracket
MBB-GC	Grounding Washer for MBB-LD-MD Base Bracket

Mounting Base Bracket with 5/16" Hardware

Refer to the Power Rail Catalog at www.preformed.com for other mounting rails, roof attachments and clamping options.

Commercial Installations



PREFORMED
LINE PRODUCTS

Albuquerque Office
1700 Louisiana Blvd., Suite 130
Albuquerque, NM 87110 USA

Corporate Headquarters
660 Beta Drive
Cleveland, Ohio 44143 USA

Telephone: 800.260.3792
Fax: 505.881.0933
Web Site: www.preformed.com
E-mail: info@plpsolar.com

SL-SS-1115-2
06.17IH

MADE IN THE USA

REVISION ENERGY

An Employee-Owned Solar Company

SNAPNRACK STANDING SEAM CLAMP

ATTACHMENT NOTES

1. MAXIMUM RAIL LENGTH IS 100" BEFORE EXPANSION GAP IS REQUIRED
2. MAXIMUM RAIL SPAN IS TYPICALLY 6'. THIS DISTANCE WILL VARY BASED ON ROOF SLOPE, SNOW LOAD, WIND SPEED AND EXPOSURE CATEGORY.
3. MAXIMUM RAIL CANTILEVER DISTANCE IS 0.40 X RAIL SPAN
4. INSTALL AND SEAL ATTACHMENTS PER MANUFACTURER'S INSTRUCTIONS
5. ROOF ATTACHMENTS SHALL BE STAGGERED FOR EVEN DISTRIBUTION OF LOAD ON STANDING SEAMS
6. CLEARANCE BETWEEN ROOF AND BOTTOM OF MODULES SHALL BE A MINIMUM OF 2"

SILFAB PRIME NTC

SIL-440 QD

SILFAB SOLAR

NEXT-GENERATION N-TYPE CELL TECHNOLOGY

- Improved Shade Tolerance
- Improved Low-Light Performance
- Increased Performance in High Temperatures
- Enhanced Durability
- Reduced Degradation Rate
- 25-Year Product Warranty/ 30-Year Performance Warranty

SILFABSOLAR.COM

ELECTRICAL SPECIFICATIONS		440	
Test Conditions		**STC**	**NOCT**
Module Power (Pmax)	Wp	440	328.0
Maximum power voltage (Vpmax)	**V**	**33.41**	**31.17**
Maximum power current (Ipmax)	A	13.17	10.52
Open circuit voltage (Voc)	**V**	**38.97**	**36.64**
Short circuit current (Isc)	A	14.22	11.44
Module efficiency	**%**	**22.6%**	
Maximum system voltage (VDC)	V	1000	
Series fuse rating	**A**	**25**	
Power Tolerance	Wp	0 to +10	

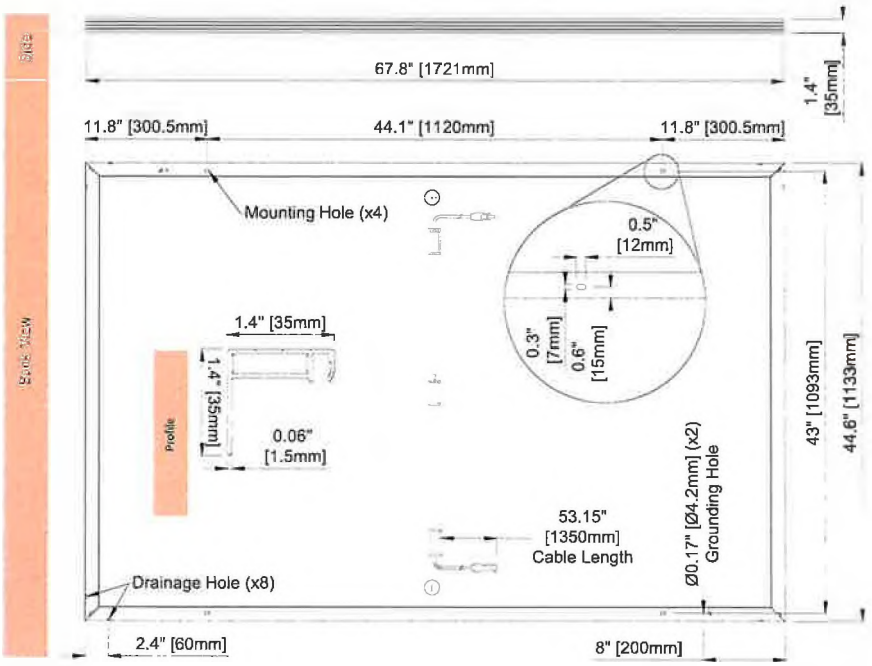
Measurement conditions: STC 1000 W/m² • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ≤ 3%
Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by 0 to +10 W.

MECHANICAL PROPERTIES / COMPONENTS	METRIC	IMPERIAL
Module weight	**21 kg ± 0.2 kg**	**46.3 lbs ± 0.4 lbs**
Dimensions (H x L x D)	1721 mm x 1133 mm x 35 mm	67.8 in x 44.6 in x 1.37 in
Maximum surface load (wind/snow)*	**4000 Pa rear load / 5400 Pa front load**	**83.5 lb/ft² rear load / 112.8 lb/ft² front load**
Hail impact resistance	ø 25 mm at 83 km/h	ø 1 in at 51.6 mph
Cells	**108 Half cells - N-Type Silicon solar cell 182 mm x 91 mm**	**108 Half cells - N-Type Silicon solar cell 7.16 in x 3.58 in**
Glass	3.2 mm high transmittance, tempered, antireflective coating	0.126 in high transmittance, tempered, antireflective coating
Cables and connectors (refer to installation manual)	**1350 mm, ø 5.7 mm, MC4 from Staubli**	**53.1 in, ø 0.22 in (12 AWG), MC4 from Staubli**
Backsheet	High durability, superior hydrolysis and UV resistance, multi-layer dielectric film, fluorine-free PV backsheet	
Frame	**Anodized aluminum (Black)**	
Junction Box	UL 3730 Certified, IEC 62790 Certified, IP68 rated, 3 diodes	

TEMPERATURE RATINGS		WARRANTIES	
Temperature Coefficient Isc	0.04 %/°C	Module product workmanship warranty	25 years**
Temperature Coefficient Voc	**-0.24 %/°C**	Linear power performance guarantee	**30 years**
Temperature Coefficient Pmax	-0.29 %/°C		**≥ 98% end 1st yr**
NOCT (± 2 °C)	**45 °C**		**≥ 94.1% end 12th yr**
Operating temperature	-40/+85 °C		**≥ 90.8% end 25th yr**
			≥ 89.3% end 30th yr

CERTIFICATIONS		SHIPPING SPECS	
Product	UL 61215, UL 61730, CSA C22.2#61730, IEC 61215, IEC 61730, IEC 61701 (Salt Mist Corrosion), IEC 62716 (Ammonia Corrosion), CEC Listed, UL Fire Rating: Type 2	Modules Per Pallet:	26 or 26 (California)
		Pallets Per Truck	**32 or 30 (California)**
Factory	ISO9001:2015	Modules Per Truck	832 or 780 (California)

* ⚠ Warning. Read the Safety and Installation Manual for mounting specifications and before handling, installing and operating modules.
** 12 year extendable to 25 years subject to registration and conditions outlined under "Warranty" at silfabsolar.com.
PAN files generated from 3rd party performance data are available for download at: silfabsolar.com/downloads.



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Silfab - SIL-440-QD-20240829

Three Phase Inverters for the 120/208V Grid

For North America

SE14.4KUS / SE17.3KUS

INVERTERS

The best choice for SolarEdge enabled systems

- Specifically designed to work with power optimizers
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for superior efficiency (97.5%) and longer strings
- Built-in type 2 DC and AC Surge Protection, to better withstand lightning events
- Small, lightest in its class, and easy to install outdoors or indoors on provided bracket
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Built-in module-level monitoring with Ethernet, wireless or cellular communication for full system visibility
- Integrated Safety Switch
- UL1741 SA certified, for CPUC Rule 21 grid compliance

solaredge

/ Three Phase Inverters for the 120/208V Grid[1]

For North America

SE14.4KUS / SE17.3KUS

MODEL NUMBER	SE14.4KUS	SE17.3KUS	UNITS
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXK-USX2IXXXX		
OUTPUT			
Rated AC Power Output	14400	17300	W
Maximum apparent AC output power	14400	17300	VA
AC Output Line Connections	3W + PE, 4W + PE		
AC Output Voltage Minimum-Nominal-Maximum[2] (L-N)	105-120-132.5		Vac
AC Output Voltage Minimum-Nominal-Maximum[2] (L-L)	183-208-229		Vac
AC Frequency Min-Nom-Max[2]	59.3 - 60 - 60.5		Hz
Continuous Output Current (per Phase)	40	48.25	Aac
GFDI Threshold	1		A
Utility Monitoring, Islanding Protection, Country Configurable Set Points	Yes		
THD	≤ 3		%
Power Factor Range	+/- 0.85 to 1		
INPUT			
Maximum DC Power (Module STC)	21600	26000	W
Transformer-less, Ungrounded	Yes		
Maximum Input Voltage DC+ to DC-	600		Vdc
Operating Voltage Range	370 - 600		Vdc
Maximum Input Current	40	48.25	Adc
Maximum Input Short Circuit Current	55		Adc
Reverse-Polarity Protection	Yes		
Ground-Fault Isolation Detection	167kΩ Sensitivity[3]		
CEC Weighted Efficiency	97.5		%
Night-time Power Consumption	< 4		W
ADDITIONAL FEATURES			
Supported Communication Interfaces	2 x RS485, Ethernet, Cellular (optional)		
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection		
Rapid Shutdown	NEC2014, NEC2017 and NEC2020 compliant/certified		
RS485 Surge Protection Plug-in	Supplied with the inverter, Built-in		
AC, DC Surge Protection	Type II, field replaceable, Built-in		
DC Fuses (Single Pole)	25A, Built-in		
Smart Energy Management	Export Limitation		
DC SAFETY SWITCH			
DC Disconnect	Integrated		
STANDARD COMPLIANCE			
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07		
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)		
Emissions	FCC part15 class A		
INSTALLATION SPECIFICATIONS			
AC output conduit size /AWG range	¾" or 1" / 6 - 10 AWG		
DC input conduit size / AWG range	¾" or 1" / 6 - 12 AWG		
Number of DC inputs pairs	4		
Dimensions with Safety Switch (H x W x D)	31.8 x 12.5 x 11.8 / 808 x 317 x 300		in / mm
Weight with Safety Switch	78.2 / 35.5		lb / kg
Cooling	Fans (user replaceable)		
Noise	< 62		dBA
Operating Temperature Range	-40 to +140 / -40 to +60[4]		°F / °C
Protection Rating	NEMA 3R		
Mounting	Bracket provided		

(1) For 277/480V inverters refer to: https://www.solaredge.com/sites/default/files/se-three-phase-us-inverter-277-480V-setapp-datasheet.pdf
(2) For other regional settings please contact SolarEdge support
(3) Where permitted by local regulations
(4) For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

CE

S-5!®

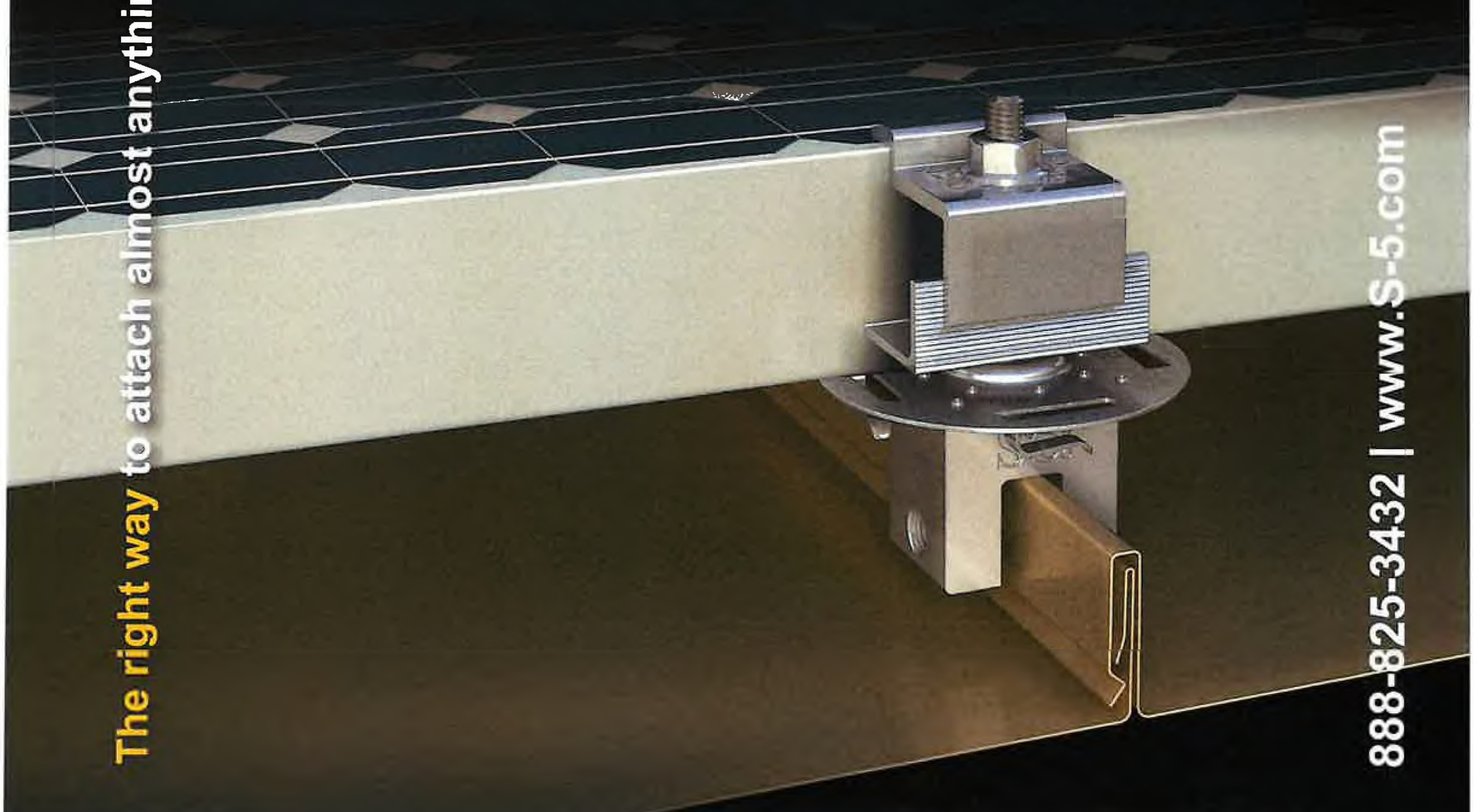
The Right Way!

S-5-PV Kit and EdgeGrab™

The concept of combining photovoltaic arrays with standing seam metal roofing is growing—and for good reasons. A standing seam metal roof has a life expectancy consistent with that of framed PV modules. A 30-year power source on a 40-year roof, along with zero-penetration technology, creates the most sustainable roof system available with alternative power generation, all without compromising the roof manufacturer's warranty!

The new S-5-PV Kit boasts an important breakthrough in PV mounting technology. It is one of the first solar module mounting solutions in the industry to be listed to the new UL subject 2703, a standard that covers both bonding and mounting. Furthermore, the S-5!® Mounting Disk has gained an ETL Listing to UL 1703.*

The S-5-PV Kit features a groundbreaking new stainless steel mounting disk with twelve nodes designed to ensure the module-to-module conductivity of anodized aluminum module frames. This means it automatically provides a ground path in the module frame. No lugs or wire required except to connect one string of modules to another and to ground the system. This connection detail represents installed electrical cost savings of \$6-\$12 per unit. In most cases, the savings in time and materials is sufficient to pay for the entire S-5-PV Kit and clamp setup.



The right way to attach almost anything to metal roofs!

S-5-PV Kit and EdgeGrab™

888-825-3432 | www.S-5.com

S-5!®

The Right Way!

The S-5-PV Kit is a revolutionary new solution to attach solar PV panels to standing seam metal roofs!

The **S-5-PV Kit** is furnished with the hardware shown at right, excluding the attachment clamp, which is supplied separately. (When ProteaBracket™ is used in conjunction with the S-5-PV Kit, an additional nut is required during installation to secure the universal PV stud and mounting disk to ProteaBracket's slotted L-flange.) The S-5-PV Kit is compatible with most common metal roofing materials, including brass. The S-5!® **EdgeGrab™** and S-5-PV Kit together accommodate PV frame thicknesses 30–48 mm (if EdgeGrab's serrated L-flange is positioned below the stud's hex nut) and 34–51 mm (if EdgeGrab's serrated L-flange is positioned above the stud's hex nut).†

The embossed panel guide makes the module placement easier. The mounting disk is multi-directional and rails are not required.

Four strategically placed under-disk hooks assist in wire management. The PV grab ears that hold the solar panel in place are broader to allow for ease of installation and precise module engagement.

Accommodating module thicknesses between 30 and 51 mm, the S-5-PV Kit fits the majority of solar panels on the market. Using the S-5! mini clamps, it fits most standing seam metal roofs. When paired with other S-5! products, the S-5-PV Kit and EdgeGrab will work on most exposed-fastened and corrugated metal roofs. The standard grab is designed to fit field conditions (two adjacent panels), while the new EdgeGrab is designed specifically for end conditions.

Wind dynamics are complex; thus, each system should be reviewed by a qualified licensed professional who understands wind effects on metal roof design and construction prior to purchase and installation. For more detailed information including specifications, installation instructions, and CAD drawings, visit **www.S-5.com** or your S-5-PV Kit distributor.

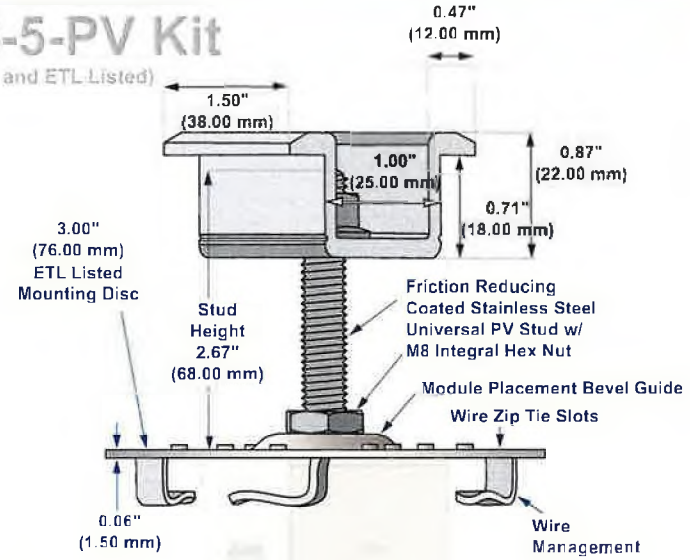
The S-5-PV Kit continues to be the easiest, most cost-effective way to install solar panels directly to standing seam metal roofs, remaining the most popular choice worldwide.

LISTED

Listed to UL subject 2703.
ETL Listed to UL 1703.*

S-5-PV Kit

(UL and ETL Listed)

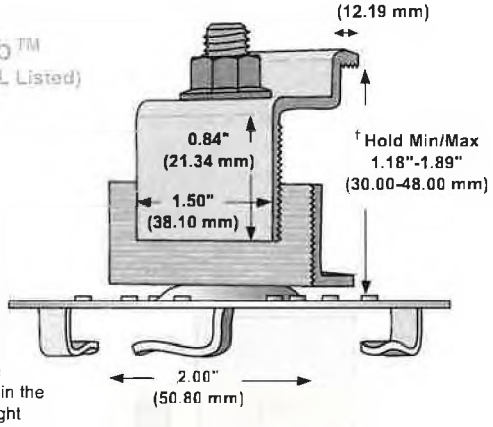


Please Note:
Dimensions of both the Universal PV Stud and the Mounting Disk are identical between these two illustrations.

S-5! clamp not included

EdgeGrab™

(Not UL or ETL Listed)

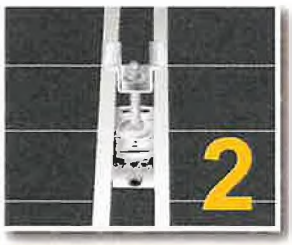


Please note: The assembly option in the diagram to the right illustrates the serrated L-flange positioned below the stud's hex nut.

S-5! clamp not included.

Please note: All measurements are rounded to the second decimal place.

** Patents pending. Certain components featured in illustration may not be UL listed.*
Due to the variety of attachment needs, S-5-PV Kits are sold separately from S-5! mini clamps. The S-5-PV Kit fits only S-5! mini clamps, NOT standard clamps.



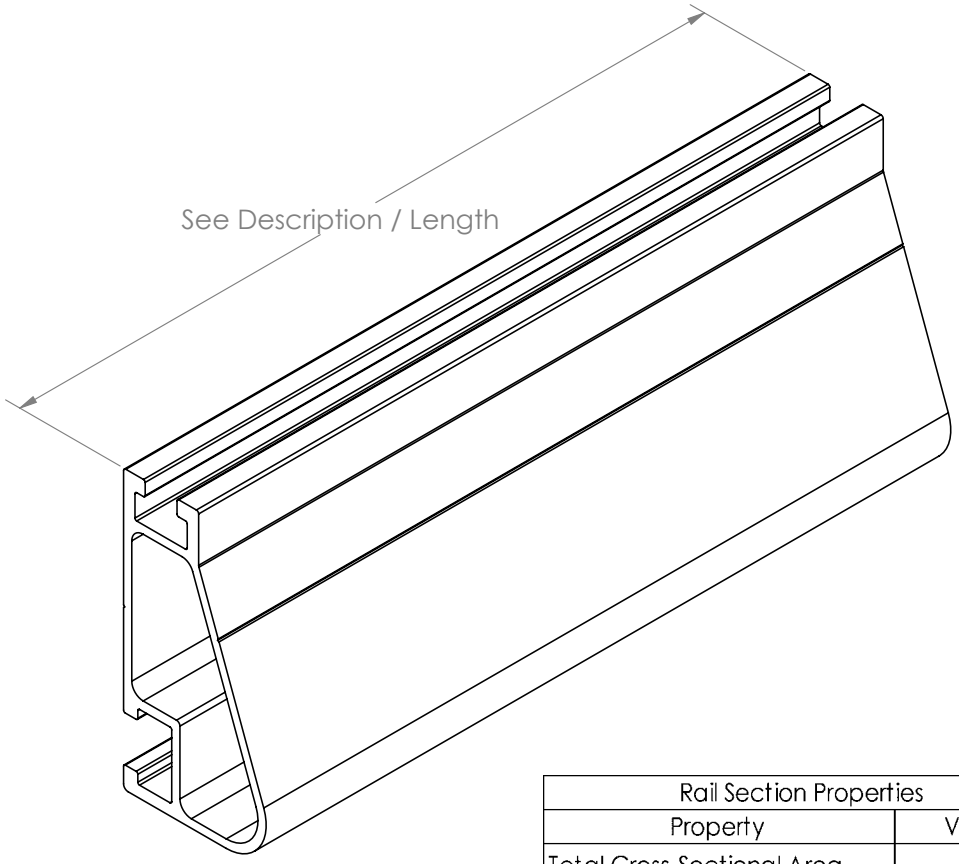
S-5!® Warning! Please use this product responsibly!

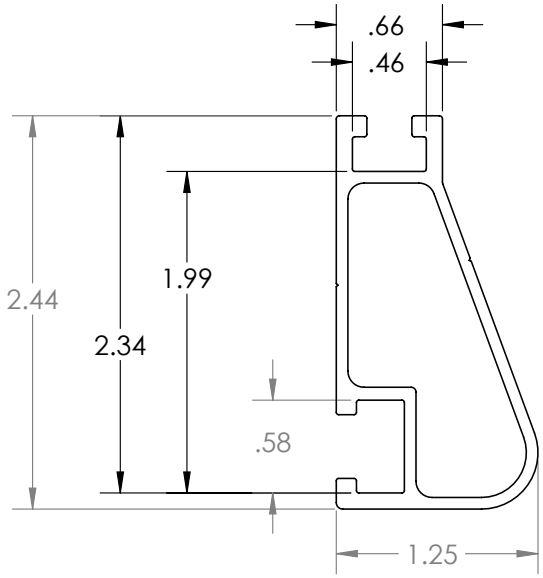
Products are protected by multiple U.S. and foreign patents. Visit the website at www.S-5.com for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at www.S-5.com for published data regarding holding strength.

Distributed by

IRONRIDGE

XR100® Rail





Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.582 in^2
Section Modulus (X-axis)	0.297 in^3
Moment of Inertia (X-axis)	0.390 in^4
Moment of Inertia (Y-axis)	0.085 in^4
Torsional Constant	0.214 in^3
Polar Moment of Inertia	0.126 in^4

APPROVED MATERIALS:
6005-T6, 6005A-T61, 6105-T5, 6N01-T6
(34,000 PSI YIELD STRENGTH MINIMUM)

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-100-132A	XR-100-132B	XR100, Rail 132" (11 Feet)	6000-Series Aluminum	7.50 lbs.
XR-100-168A	XR-100-168B	XR100, Rail 168" (14 Feet)		9.55 lbs.
XR-100-204A	XR-100-204B	XR100, Rail 204" (17 Feet)		11.60 lbs.

DARK BRONZE

MEDIUM BRONZE

MANSARD BROWN

SIERRA TAN

STONE WHITE

BONE WHITE

SANDSTONE

HARTFORD GREEN

FOREST GREEN

HEMLOCK GREEN

EVERGLADE MOSS

PITCH BLACK

DARTH BLACK

MATTE BLACK

CHARCOAL GRAY

SLATE GRAY

DOVE GRAY

BURGUNDY

COLONIAL RED

DEEP RED

TERRA COTTA

SLATE BLUE

PACIFIC BLUE

ROYAL BLUE

SUNNET BLUE

E

Standa ... S
and

GREAT EAST

color representations

PERMACOLOR

Full Strength 70% Kynar 500® ... 000®

All colors available in Galvalume and Aluminum

To view current SRI values, please visit the Englert website.

Colors shown are close to actual finishes, however, due to the limitations of printing processes, slight variations may exist. Please contact Englert for actual color chips before ordering.

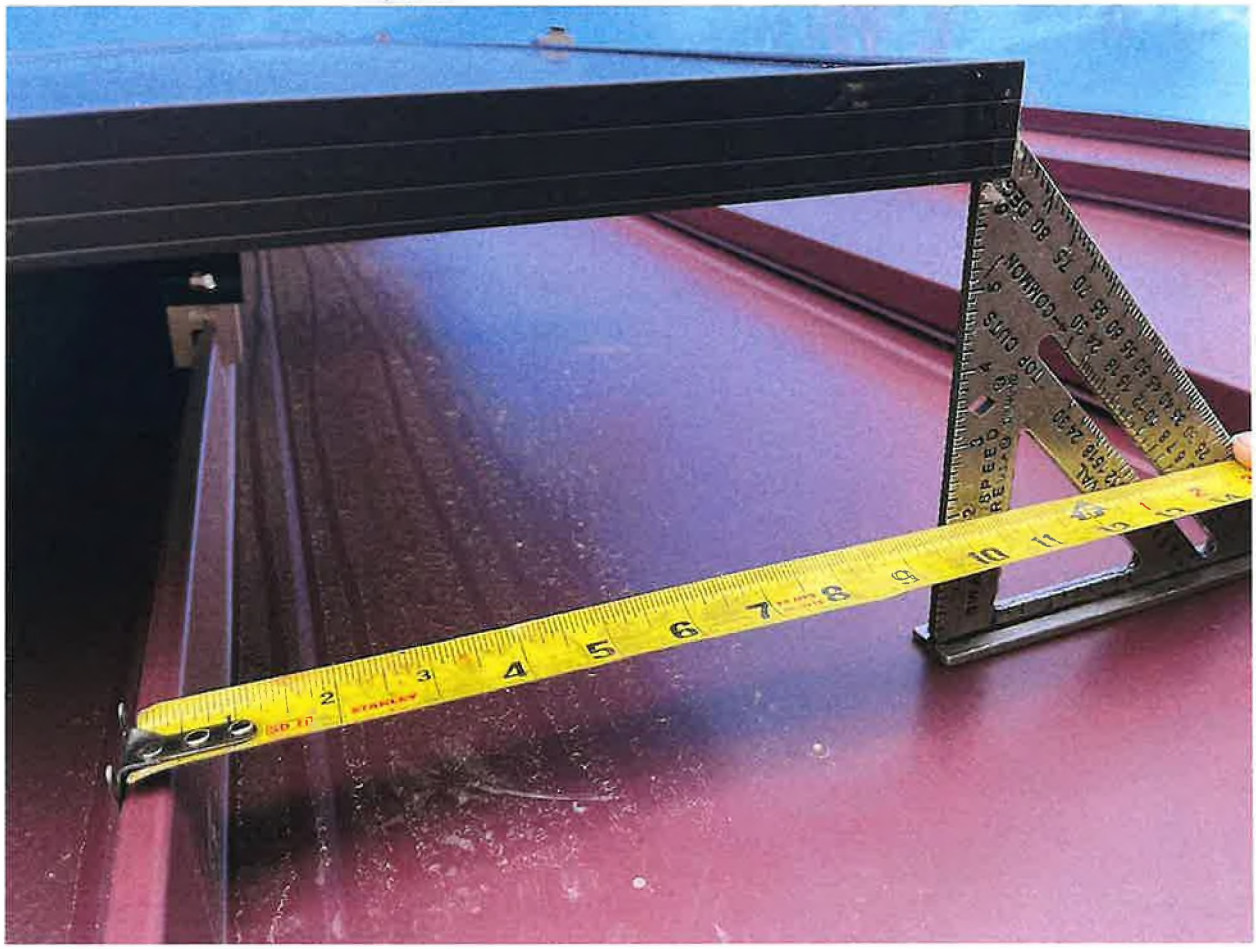
USGBC
MEMBER

GALVALUME PLUS

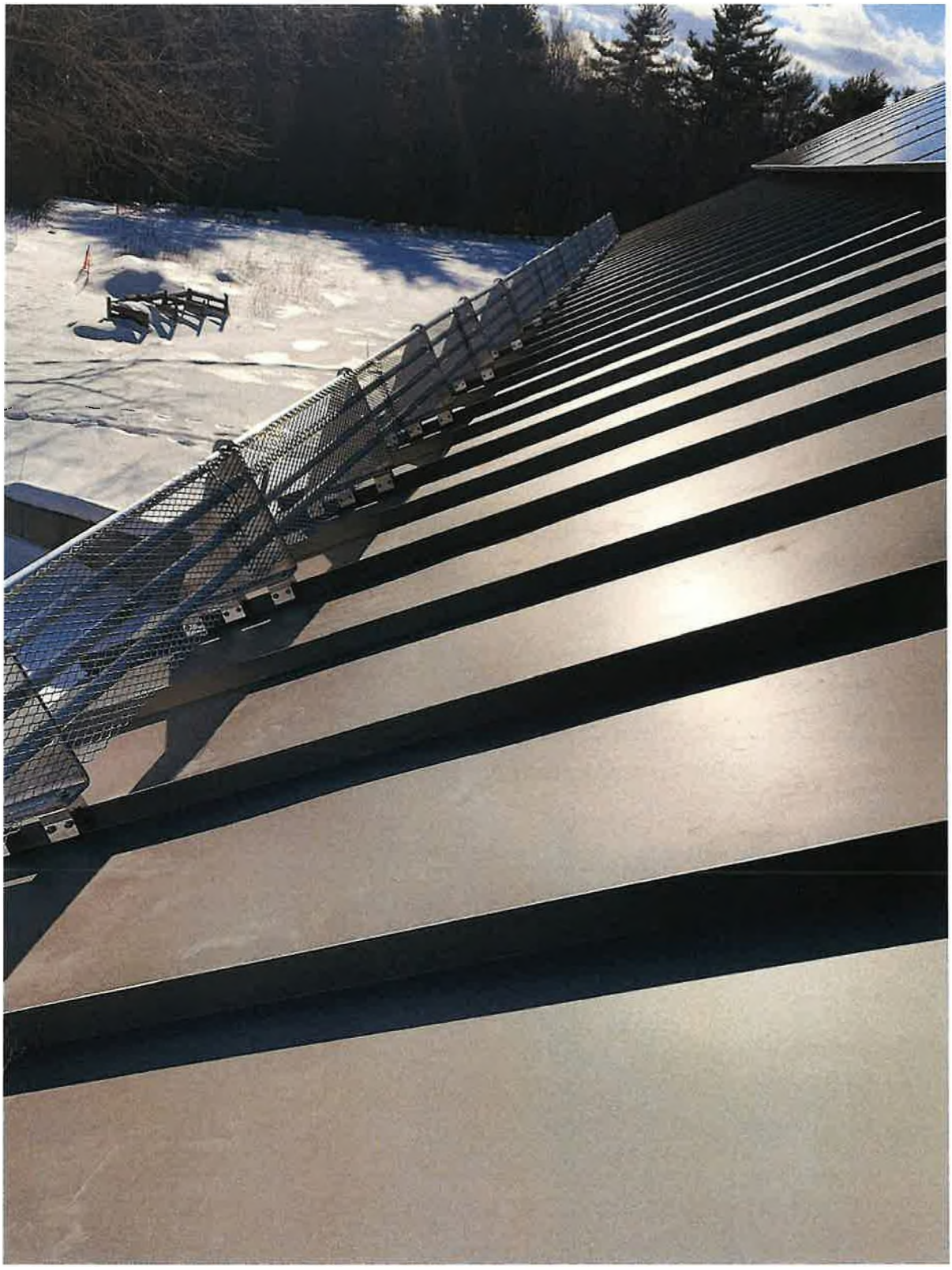
CHAMPAGNE

COPPER

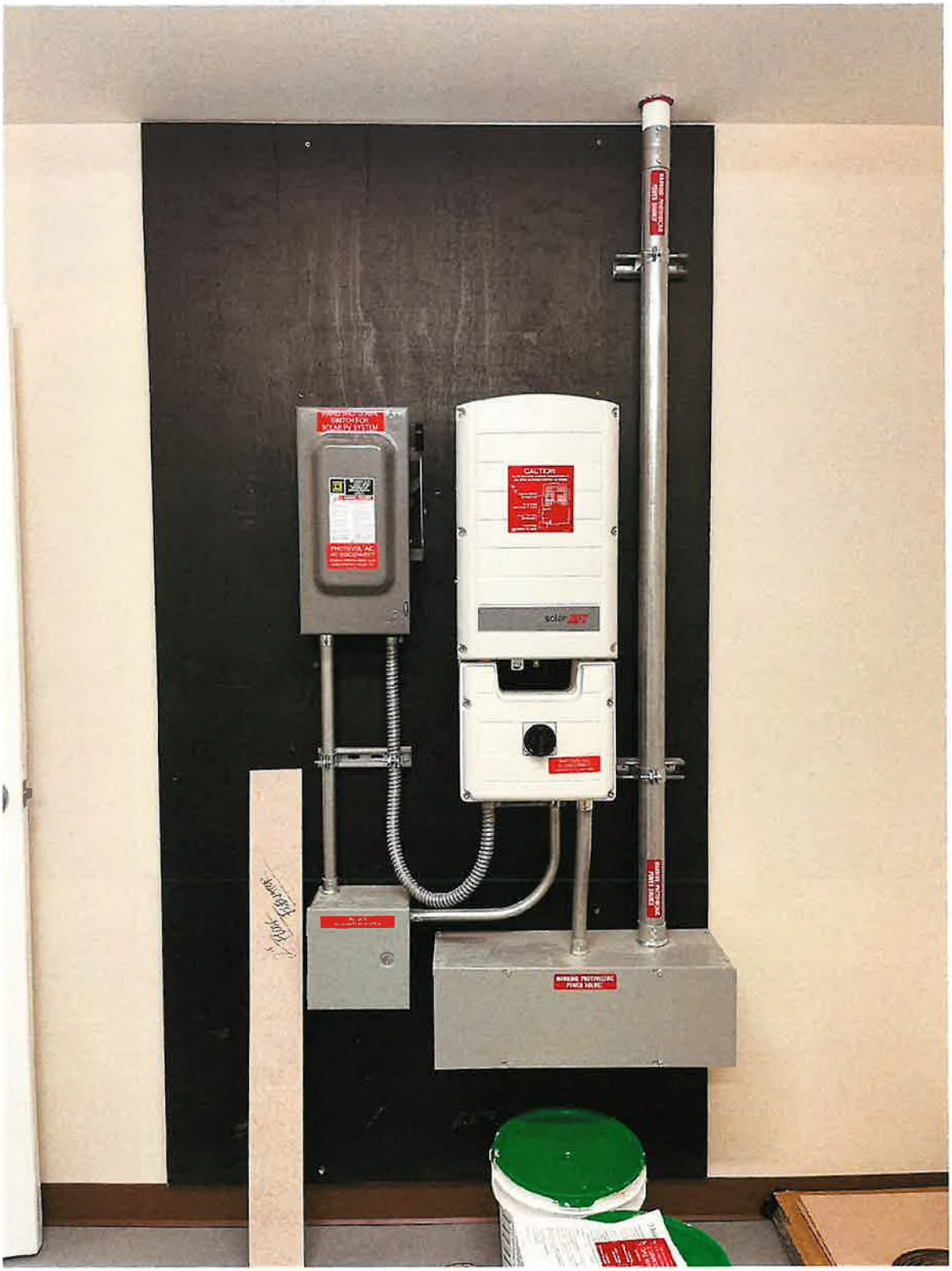
PREWEATHERED GALVALUME



Showing the ~6" clearance between bottom of roofing valley



Rocky Mountain Snowguards with added meshing on black standing seam



17.3kW Inverter with interior disconnect (this will be your setup)

REVISION ENERGY

100A exterior disconnect up close

17.3kW Inverter w/ 100A exterior disconnect (if inverter had to be outside)