PLANNING COMMISSION MEETING AGENDA
TUESDAY NOVEMBER 19, 2024

7:30 PM REGULAR MEETING

1. Call to Order

2. Roll Call

3. Approval of Minutes:
    a. October 15, 2024, Planning Commission Meeting Minutes.
    b. October 29, 2024, City Council Meeting Minutes (For Information Only).

4. **PUBLIC HEARING** – Amy Pelowski (Applicant) and Jeremiah Staples (Owner) are requesting the following action for the property located at 25 Game Farm Road (PID No. 33-118-24-44-0005) in the City of Independence, MN.

    a. A conditional use permit to allow a 500 SF ground mounted solar system that meets all applicable requirements of the City's Solar Energy System Ordinance.

5. **PUBLIC HEARING** – Jon Dailing/Windsong Farm Golf Club (Applicant) and David Meyer (Owner) are requesting the following action for the properties generally located at 18 Golf Walk and 550 CSAH 92 N. (PID No.s 32-118- 24-13-0001, 32-118-24-42-0001, 32-118-24-24-0001, 32-118-24-31-0002, 32-118-24-42-0030, 32-118-24-43-0002, 32-118-24-42-0031, 32-118-24-42-0029, 32-118-24-42-0025, 32-118-24-42-0036, 32-118-24-34-0001 and 32-118-24-31-0001) in the City of Independence, MN:

    a. A conditional use permit amendment to allow a modification to the vehicle parking area for the out-of-town member guest house and amendment to the approved conditions for use of the house in association with the private golf club.

6. Open/Misc.

7. Adjourn.

MINUTES OF A MEETING OF THE
INDEPENDENCE PLANNING COMMISSION
TUESDAY OCTOBER 15, 2024

1. **Call to Order**

Pursuant to due call and notice thereof, a work session of the Independence Planning Commission was called to order by Chair Gardner at 7:30 PM.

2. **Roll Call**

Present: Gardner, Thompson, Tearse, Volkenant, Dumas
Absent: none (Tearse left early)
Alternates: Story, Usset
Staff: City Administrator Kaltsas, Simon
Visitors: See Sign in sheet.

3. **Approval of Minutes:**
   a. September 17, 2024, Planning Commission Meeting Minutes.
   b. October 1, 2024, City Council Meeting Minutes (For Information Only).

Motion by Thompson, seconded by Dumas to approve. 5-0

4. **PUBLIC HEARING** - Tyler and Kaitlin Johnson (Applicant/Owner) are requesting the following actions for the property located at 4610 Lake Sarah Dr. S. (PID No. 02-118-24-21-0001) in the City of Independence, MN.

   a. A variance to allow the subdivision of property in the RR-Rural Residential and S-Shoreland Overlay zoning districts that does not meet the minimum lot size.

   b. A variance from the front yard setback and OHWL to allow the subdivision of property in the RR-Rural Residential and S-Shoreland Overlay zoning districts that does not meet the minimum lot size.

   c. A minor subdivision to allow the subdivision of the subject parcel into two (2) lots.

Property/Site Information:

The subject property is located at 4610 Lake Sarah Drive S. The property is located along the west shoreline of Lake Sarah. There is an existing home and detached garage located on the property.

Property Information: ***4610 Lake Sarah Drive S*** Zoning: *Rural Residential (Shoreland Overlay)* Comprehensive Plan: *Rural Residential*
Acreage (North Parcel Proposed): 0.55 acres *(24,044 square feet)* Acreage (South Parcel): 1.06 acres *(46,436 square feet)*
Impervious Surface (North Parcel Proposed)*:* 22.81%

Discussion:

The applicant approached the City about the possibility of subdividing their existing property into two lots and constructing a new home on the new (north parcel). The existing property has an existing home with detached garage that is accessed via Lake Sarah Drive S. The property also touches the end of the cul-de-sac on Shady Beach Circle with ± 50 LF of frontage. The city has had several different property owners of this property inquire about a similar subdivision over the past 7-10 years.

The applicant is proposing to construct a new home on the proposed north parcel and sell the south parcel. The applicant has prepared a site plan and conceptual house plans for the proposed home and associated site improvements. The proposed home would be a two-story structure at grade.

There are two different types of variances required for the proposed lot to be considered. The first variance requested relates to the minimum lot size for properties in the S-Shoreland Overlay zoning district. The second variance(s) would allow reductions from applicable building setbacks to support the proposed home on the property.

Minimum Lot Size Variance:

The minimum lot size in the S-Shoreland Overlay District for sewered lots is one (1) acre. The existing property is 1.62 acres. In order to subdivide the property into two conforming lots, the minimum acreage would need to be two (2) acres. The applicant is asking the city to consider a
.45-acre variance to allow the north parcel to be .55 acres in total size. Should the variance to allow a reduction in minimum lot size be considered, the city could grant the requested minor subdivision.

Building Setback Variance(s):

Setbacks for properties located in the shoreland ordinance are as follows:

Subd. 2. Lot standards.

	Unsewered Areas			Sewered Areas		
	NE Waters	RD Waters	Tributary Streams	NE Waters	RD Waters	Tributary Streams
Lot Area	2.5 acres	2.5 acres	2.5 acres	1.0 acre	1.0 acre	1.0 acre
Water frontage and lot width at building line	200 ft	200 ft	200 ft	125 ft	100 ft	100 ft
Structure setback from ordinary high water mark	150 ft	100 ft	100 ft	150 ft	100 ft	100 ft
Structure setback from roads and highways	85 ft from centerline or 50 ft. from right-of-way, whichever is greater					
Structure height limitation	35 ft	35 ft	35 ft	35 ft	35 ft	35 ft
Maximum lot area covered by impervious surface	25%	25%	25%	25%	25%	25%
Sewage system setback from ordinary high water mark	150 ft	75 ft (RR) 150 ft (AG)	75 ft (RR) 150 ft (AG)	125 ft	75 ft	75 ft

The proposed home would have following setbacks:

Required:	**Proposed:**
Lake (OHWL): 100’	**60’ (40’ variance)**
Side: 30’	**30’ (west side), 30’ (south side)**
Street: 85’ from centerline, 50’ from PL*	**85’ to centerline of street/ 25’ to property line (25’ variance)**

*whichever is greater – setback from property line would be greater

In addition to the setback requirements, properties located in the shoreland overlay district can have a maximum impervious surface coverage of 25%. The proposed house and impervious site improvements have a total impervious coverage area of 22.81% (see survey for detailed breakdown).

There are several factors to consider relating to granting a variance. The City’s ordinance has established criteria for consideration in granting a variance.

520.21. Standards for granting variances. Subdivision 1. The City Council may grant a variance from the terms of this zoning code, including restrictions placed on nonconformities, in cases where: 1) the variance is in harmony with the general purposes and intent of this zoning code; 2) the variance is consistent with the comprehensive plan; and 3) the applicant establishes that there are practical difficulties in complying with the zoning code (Amended, Ord. 2011-08)

Subd. 2. An applicant for a variance must demonstrate that there are practical difficulties in complying with the zoning code. For such purposes, “practical difficulties” means:

(a) The property owner proposes to use the property in a reasonable manner not permitted by the zoning code;

(b) the plight of the property owner is due to circumstances unique

to the property not created by the landowner;

(c) the variance, if granted, will not alter the essential character of the locality.

Economic considerations alone do not constitute practical difficulties. Practical difficulties include, but are not limited to, inadequate access to direct sunlight for solar energy systems. (Amended, Ord. 2011-08)

Subd. 3. The City Council shall not grant a variance to permit a use that is not allowed under the zoning code based on the zoning classification of the affected property. (Amended, Ord. 2011- 08)

520.23. *Conditions and restrictions. The board of adjustments may recommend, and the City Council may impose conditions on a variance. Conditions must be directly related to and must bear a rough proportionality to the impact created by the variance. (Amended, Ord. 2011-08)*

Consideration of the criteria for granting a variance:

a. The subject property is somewhat unique in that it has frontage on two public roads. The proposed subdivision would create a property that is similar to adjacent properties to the east. The applicant is proposing to develop a single-family home on the property and that is consistent with the Rural Residential/Shoreland Overlay zoning districts.

b. The surrounding properties do not comply with applicable setbacks. This area of the City contains an array of properties that do not conform to applicable setbacks and are considered sub-standard lots of record.

c. The character of the surrounding area is residential. The proposed single-family home is in keeping with the City's comprehensive plan.

The Planning Commission will need to determine if the requested variances meet the requirements for granting a variance and then if the minor subdivision meets applicable criteria. Several additional considerations that could be considered are as follows:

1. The proposed lot is similar in size and character to the lots located on Shady Beach Circle. Most of the existing lakeshore lots on Shady Beach Circle are approximately .5 acres in size.

2. The proposed property would be connected to the city's sanitary sewer system via a connection to the sewer in Shady Beach Circle.

3. Setbacks to the side yard, street and lakeshore vary considerably on the surrounding properties and within a high percentage of lakeshore properties in the city.

4. There is a wetland located on the property that has been delineated. The

applicant is seeking relief from the requisite wetland buffer (by increasing the buffer on the south side of the wetland) which will need to be further reviewed if the application is moved forward.

5. The applicant is proposing to provide a 15' lake access easement for dock use for the south parcel once subdivided. This would be a private easement but would create an additional dock and access for the non-lakeshore property. It appears that the easement would need to extend along the south boundary of the north parcel as well.

6. The south parcel would meet minimum lot size standards for S-Shoreland zoned properties. Note that the existing home on the subject property does not meet applicable building setbacks and is considered legal non-conforming.

Neighbor Comments:

The City has received one phone call relating to the request at the time this report was prepared.

Recommendation:

Staff is seeking a recommendation from the Planning Commission for the requested Minor Subdivision and Variances. Should the Planning Commission Recommend approval, the following findings and conditions should be considered:

1. The proposed Subdivision and Variance request meets all applicable conditions and restrictions stated in Chapter V, Section 520.19, Procedures on variances, in the City of Independence Zoning Ordinance.

2. The City finds that the criteria for granting a variance have been satisfied by the applicant. Specifically, the City finds the following:

    a. Residential use of the property is consistent with the RR-Rural Residential District. The applicant is seeking a variance to allow a single-family home on the property.

    b. The location of the proposed home is generally in the location of the existing home and adjacent properties.

    c. The character of the surrounding area is residential. The proposed new home is in keeping and consistent with the surrounding uses found in this neighborhood.

3. The total impervious surface coverage for this property will not exceed 25% of the total lot area.

4. The variance will permit a 40-foot reduction to the lake setback (60' instead of 100') and a 25-foot reduction of the street setback (25' instead of 50') to allow the proposed

new home to be constructed on the property. Any modification change or alteration to the structure that does not meet applicable setbacks in the future would require additional review and approval in the form of a variance.

5. The applicant shall submit a grading and drainage plan to the City at the time of building permit application. The grading and drainage plan will be reviewed by the City to ensure that the proposed improvements do not adversely impact any of the surrounding properties relating to grading and drainage.

6. The applicant shall pay for all costs associated with the City's review of the requested variance and minor subdivision.

7. Any future improvements made to this property will need to be in compliance with all applicable standards relating to the Rural Residential and Shoreland Overlay zoning districts.

8. The variance approval will be valid for one year from the date of City Council approval. Construction of the new home will be required to commence prior to expiration of the variance.

9. The City Council Resolution shall be recorded with the County.

Kaltsas – Variances and minor subdivision, applicants asked city to allow subdivision in RR and shoreland overly that does not meet min lot size. Two lots. Property on west shoreline of Lake Sarah. Existing home and detached garage, zoned RR and covered under shoreland overlay, guided as RR. Property is 1.61 acres in overall size. Asking subdivision to divide a N Parcel (lakeshore) of .55 acres and south parcel of 1.06 acres with the existing home. Property is governed by RR and overlay district for shoreland. In RR/shoreland, we look at both sets of criteria and apply as needed. Accessed off of Lake Sarah Dr S. Unique that the Northern part (lakeshore side) touches ROW of Shady Beach Cir, asking city to consider the northern parcel be accessed off of the Shady Beach Cir cul-de-sac. Existing home and garage would remain on Lake Sarah Dr S. The applicant would be seeking permission to rebuild on the northern parcel and sell the existing home. Variances – min lot size & reduction in building setbacks to support new home. Min lot size variance, our min lot size is 1 acre. The existing parcel is 1.61 in overall size. They would need a min 2 acres to comply with standards. Asking for a .45 variance in acreage for North side. In order to allow this split, they would need to grant variance to min lot size. Second variance would be for the proposed building that would be built. There is applicable setbacks to shoreland overlay district and RR. Applicant prepared a survey and proposed home and as it relates to applicable setbacks. Applicant would like to set home 60ft from OHWL. It was noted that the applicable setback for lots after 1982 is 100ft from OHWL. So a 40ft variance in reduction. We have an admin for lots created prior to 1982. Lots subdivided prior to that date have a 60ft setback from OHWL and they noted that as it relates to surrounding properties. They have two side yards the way it would come off cul-de-sac. W / SW and NW sides 30 ft setbacks. Street setback – 85 ft from centerline or 50 ft from property line or whatever is greater. This would be 85 ft back from the center of the cul-de-sac. 50 ft from property line – they need a 25 ft variance for street setback. Coverage of 22.81% for impervious surface. Standards needing to be satisfied are outlined in ordinance. Property is unique – access on two public roads. Proposed subdivision would be similar to surrounding properties to E and W. To develop SFD which is consistent use. Surrounding properties do not comply with current ordinance of setbacks. Historically our ordinance is set up for 2.5 acres but there is an ordinance set up for lots created (prior to 1982?). Data points to consider

– size of lot compared to surrounding – lake shore lots are average of 0.5 acres. Property would be connected to city sanitary sewer system via Shady Beach. Setbacks to side yard street do vary considerably. We have granted variances on this stretch and other areas around the lake because there is a huge deviation in types of variances we have. There is a wetland that somewhat bisects this lot in the middle. Applicant did delineate that wetland. Physical characteristic that separates the lot. Existing home sits pretty high up on the lot compared to the lakeshore, a 30ft of fall from Lake Sarah Rd to Lake Sarah shoreline. Applicant is proposing to include a 15 ft (or 50ft -poor audio) access or dock use easement for the upper lot. The lot created would be a legal lot on the south side.

Usset – Is it 2 or 3 variances.
Kaltsas – It is 2 variances. Setback variances are looked at all together. Two side yards the way it sits. OHWL setback variance, a front yard/ street variance, and min lot size.
Dumas – there have been several different property owners that inquired about the same thing and did anyone ever take it forward?
Kaltsas – 3 different property owners approached the city to do this, previous owners of the same property. They made application but withdrew it and it never came forward. Next owner asked the same thing but did not apply. This is the first time we are actually discussing it.
Usset – Why did they withdraw?
Thompson- Regarding the private easement consideration, whose dominium is that another dock on Lake Sarah?
Kaltsas – Good question. Recent discussions on lakes. DNR regulates docks. City has the ability to take on some regulation, Lake association, too. Currently no regulation on number of docks, but through the subdivision process the city can regulate it. Not private use though. You have the ability to say we do or don't want more docks, etc. but they could still privately do something.
Story – In their letter they mention in 2022 4944 they did a deck or something that was a setback, not a subdivision, was it?
Kaltsas – It was not a subdivision. We haven't granted many. We have granted variances from subdivision standards. If a lot is bisected by a road we have granted.

PUBLIC HEARING OPENED (24:00)

Kathleen Nelson (lives next to applicants) - Just to answer a couple questions that happened up here. Mike and Pam Peterson did apply and talked to us. We were both in opposition, so they withdrew application. Owners after them who'd applied, we didn't know them. The realtor did state in the listing that possible subdivisions. I got a copy of the letter and plans and in talking to Linda Johnson she said there would be a couple things needing to be present for consideration – undo hardship and following up with the state of MN – reasonableness, uniqueness, and essential character. The ones that the applicants mentioned in their letter, you clarified that the property butts up against Shady Beach Cir. There is a 20ft strip of land and has been maintained by Jorgensons. Living closer to the lakefront is the ultimate goal. Multiple properties offer a closer lakefront that have been listed and sold that would have been a good option for them. That doesn't affect anyone. Safety challenges described for the family getting from household to lakefront. This is a first world problem. The geography of property hasn't changed. There was a large pond on the property. If we talk about safety and young family, being closer to lake would create worse challengers. Regarding proposed setbacks, there is a few reasons I am assuming we put setbacks in place, obviously high-water levels, health of the lake – Lake Sarah is a currently impaired body of water, I didn't know there would be an additional easement with the sale of property next to me creating an additional lake property being created. Setbacks have been allowed in the past but I'm most afraid of precedent this sets. There is an acre minimum, and we are trying to protect that. Anyone with over 1.5 acre could potentially ask for a subdivision and could claim discrimination if they don't get it. I spoke with applicants a few

times about this. Abundance of wetlands, The property that sits on the lake, in 26 years has always been low and wet. So to put a house on that property, it would take a lot to bring in to make it solid enough. What kind of drainage issues would that create for the next-door property?

Joe Slavic (Shady Beach Circle, 20-yr resident, active on LSIA)– Thanks for what you do giving up time to serve. This has been an impaired lake. We have fought many battles trying to reduce phosphorus. Booklet directed to homeowners and councilmembers had been brought to council many years ago re: managing shoreline. Shoreland management act regulates within 1000 ft of shoreline. The City has bad rep of not following these rules. My goal is to improve lake and go in the right direction. Not following DNR rules and regulations breaks precedence. House that went in –had approved for raingarden put in, but it is now off the side of house, no gutter, runs off into the lake. This property is so low and a rain garden wouldn't do any good. Accelerated heat going into the lake from the rain on the grass escalates the eco system devastation. 60ft is way too short, almost half.

Mary Jorgenson (property runs along Tylers') - If you put this property through, how are you going to get to it? My property goes with Tyler. It's not a through street. It's never been a through street. (Gardner stated the possible driveway comes off Shady Beach Circle.) I'm on both sides of Shady Beach Circle.

Daryl Jorgenson (Mary's son, Otsego) - I've observed a lot of this and done a lot of developing myself. This is setting a far precedent of shrinking lot size and setbacks way out of whack. The property if you look at the elevations, the water is at 79/80. The corner of the house is at 82. How much fill will you have to bring in so the house doesn't flood every spring. I believe there is a max amount of fill you can bring in on these properties. Those are other laws and precedence you will be breaking if you allow this to go forward. I vote no and I hope you consider this. Mary has maintained it, but it can't be more than 5 ft. now adding another home with another dock. The people that live on top, how do they get their jet ski down there? They will come through the cul-de-sac and use the easement. Who is going to regulate that?

Tyler & Katie Johnson (applicants)– We thank you neighbors for voicing your concerns. We take them seriously. A couple points we would like to point out and open to discussion, easement on that side. I agree with those concerns. We would be willing to remove that. As a member of the LSIA, I am all for the lake improvement. My family has been here for 5 years on this property. We really enjoy everyone in the community. We are not trying to set a precedence. No other property would be able to do this, ours is unique. Most lots are 1/3 – 1/2 of an acre. Water setback from the lake, we would love to be further back, but we are limited with the wetlands on the property. We tried to delineate it back as much as we can. There are 60ft setbacks on all the other neighbor lots including Mary's and Slavics. We would be open to take thoughts into consideration.
Katie Johnson– Re: the 2022 Variance, from our understanding that was 2 minor lots that became 1 lot to get a minimum lot size. We want to live here, and we appreciate your concerns too.

Daryl Jorgenson – I have to correct Tyler for talking about Mom's property. She has to tie her property with the other side of cul-de-sac. Her property had to have a second property there.
Kaltsas – He is referencing to when he split the two parcels off (Shady Beach Circle) and created two new parcels in the shoreland district. Mary's property has an existing detached shed, so it had to be combined to the house. If that shed came down, splitting it could be considered. They are not contiguous. We are not crossing a property line; it is the ROW. The strip is maintained by the homeowner.

Joe Slavic – Two things: I remember when Mike Peterson (original owner) was really considering, he knew there were 3 variances, so he didn't propose it. Breaking rules. More importantly, I live a few houses down where the lift station is. That thing has been filled to the brim. Before decision is made, you need to

speak to the Public Works guys that maintain it. The water was overflowing. The guys said they can't keep up with it and there are so many places on it. Guys said it was the lower point in the city to push waste up hill. If it backs up, it will be a huge issue for all.

Lyndy Nelson/Klaers (resident since 1978) - I just met the people that are trying to do this. I don't think this is right. I think they are so nice, but I agree with everything everyone said. I've been here since I was 13. It'll be a different area for animals, grandkids.

Tyler Johnson – We spoke to other neighbors that are in support of this, Brent and Sara (to West) Lowe that are not here tonight, Lewises, and Johnsons. Outside of the rejections here, there are some that approve.

Daryl Jorgenson – Isn't the connection the city ROW?
Kaltsas – It's a ROW for Shady Beach Cir (not asphalt) does touch the property.
Thompson – Arial view shows the car is completely parked on the public land in the street. To show you the City's ROW might not be as clear when one's driving on the road.
Gardner – size of cul-de-sac?
Kaltsas – Asphalt probably lesser than our standard, likely 80.

PUBLIC HEARING CLOSED

Thompson – There is 50ft of abutment between this property and Shady Beach Cir. Is there a frontage standard?
Kaltsas – 50ft
Volkenant – Does the cul-de-sac meet full requirement?
Kaltsas – With the ball that is there, it could be made full standard. It looks like the pavement is a little shy, but area is there.
Thompson – What is our strategy for upgrading cul-de-sac?
Kaltsas – City's unofficial policy – if road were built new or fully reconstruction. We try to maintain the roads in their current condition. It is either known or done at the time of redoing.
Thompson – You mentioned Bridgevine shared dock and putting restraints on it. What was the vehicle on that? Can we do the same with a motion?
Kaltsas – I would have to talk to Legal and what we would require. One variance you can add conditions to and subdivision with conditions. You could do subject to on approvals.
Gardner – If we considered moving the lot line further south, it would make setback back.
Kaltsas – Not exactly. The problem is the wetland. Wetland buffer, average buffer, reduce it on the north side of property. No where to go with that setback. You can't get less with the buffer.
Gardner – Which is worse? OHWL setback or wetland setback?
Dumas – You look at this aerial and everyone on the circle is 60ft setbacks. What was the reason and when did the city go to 100? I assume it is predated.
Kaltsas – We have provisions relating to. On the west side there is no house there. This is a unique lot. Its not inconsistent with what is there. The 60-100ft is DNR. City had to adopt the shoreland restrictions. Ordinances built in prior to a date. There are physical limitations on some lots where we have allowed homeowners to do this. I don't know any new lots where the 60ft has been applied.
Thompson – the variance comes from the hardship comes from wetland, unique access to frontage to another road, personally after Mark clarified, we put in language of no private easement. There are unique characteristics here that drove a lot of this area here.
Usset – I don't know if that pertains since they bought this the same way. I don't see the hardship. I can see why they want to do this, but I don't see hardship. I'm not voting though.

Dumas – We're creating new lot and then allowing a variance.
Gardner – But its consistent with surrounding lots.
Thompson – With wetland on the property, if they were to tear down the house in the back half and build a new one in the front, the setback would be 60ft. Is this a reasonable variance?
Usset – new lot conforming and left over lot nonconforming?
Thompson – it doesn't fix our setbacks. We are just flipping a coin on which one is less than an acre.
Story – if we put the restriction, why do we have the 1 acre?
Kaltsas – there is a history to it. Shoreland ordinance. DNR standard. City historically had a different take on shoreland ordinance. It was changed by a couple council actions in late 90's and early 2000's. There was an interpretation that you had to have 7.6 acres to subdivide any lot in the City. It got changed to if you have a sewered lot, you can go down to 1-acre septic standard. Non-sewered 2.5 a buildable upland. The 1 acre is the shoreland district.
Dumas – We are breaking a lot of rules here.
Gardner – PC makes a recommendation; city council makes the final decision.
Thompson- The sewer piece that was brought up, we rely on MetCouncil?
Kaltsas – No we rely on us to decide if we have capacity. We investigate this fully within the city. We have 2 vacant lots that haven't been built on yet, so we will investigate it.
Gardner – It fits the neighborhood like a glove.
Thompson – The issue of fill was brought up. Grading and drainage plan was in the notes.
Kaltsas –With building permits, we require a grading plan and fill plan. Whether you can build on a lot, Planning doesn't look at that. Is it in a flood plain? There isn't one. Then look at wetland for elevation and lakeshore for elevation. There are standards that would have to follow. Quite a few homes here are built on helical with no basements due to soil conditions. We are not guaranteeing that you can build a home on this. It is in the building permit.
Thompson – The City Council will ultimately decide. I would offer a motion to approve this with the additional requirements for no private easement or no additional dock or dock access being granted to Lake Sarah.
Dumas – I would suggest that the setbacks and lot and lake setback don't meet the standards. I would be inclined to say no.
Volkenant – Too many adjustments, changing drainage, it shouldn't be in existence. Building house on fill with that close to the lake is a concern.
Thompson – We are saying you can't build a house that looks like all your neighbors.
Dumas – We are creating a lot though. This isn't an existing lot that someone wants to build on.
Thompson – If we are going to tear down a house on Lake Sarah, you would still be here with a reduced setback.
Dumas – I don't know if we would approve it then either.

Motion by Story to not recommend the approval bases for quantity of variances and lack of hardship, second by Dumas. Ayes: Dumas, Story, and Volkenant. Alternate Story. Nays: Thompson. Absent: Tearse. Abstain: Gardner. Motion Denied.

Kaltsas – PC recommended to deny the requested variances and the Council will officially decide. November 19th will be the next PC Meeting. MetCouncil Draft 2050 Plan letter. I encourage you to read the Draft Plan. The land use planning act created met council. Covers 7 County Metro. Every 10 years MetCouncil must issue their own regional plan. Cities then need to put it into their plans. I feel like the reach of the MetCouncil just keeps expanding broadly. It really impacts our residents and land use in our

city. MetCouncil uses density as a planning mechanism and a one size fits all. Their vision – every development should be a mixed-use higher density development, looking like an attached house next to apartment building, etc. If we plat 10 lots or 400 lots, they don't look at City build out. How do you provide transportation, school districts, sewer systems, parks, etc. when it's all density driven? It doesn't take into consideration what cities want to be.
Usset – Is it appropriate to throw it on the agenda?
Kaltsas – We provided common letter and I sat at these meetings.
Usset – Are there formal ways to bring others into the conversation like water, etc.?
Kaltsas – They are taking away our population growth that we'd planned on. We have landowners that want to develop. When they are not boots on the ground in Cities, they don't understand what they're pushing. Read the Wastewater section of the Plan when you're not sleeping.

5. Open/Misc.

Gardner – property on Klinkner's?
Kaltsas – I have heard about it, but nothing came back. We have pressure from airport property subdivide. National developers. We talked sewer and water, talked to MetCouncil, they are committed to providing sewer to the site. But water has always been talked about connecting to Maple Plain and we reached out to Maple Plain and talked to our shared engineering. They ran water usage, and they don't have the extra water to provide. They don't have firm capacity, may need another water tower. We are stepping back and trying to see how to serve that property. I think developer will pay for the study needed to understand water.
Gardner – Could they do wells?
Kaltsas – No. 270 units. Maple Plain has full treatment center. On the hottest summer day when everyone is using water, they do not have the pressure to fight a fire. Less there than they thought.

6. Meeting adjourned.

Motion by Story to adjourn at 9:02 p.m.

Approved 5-0.

Respectfully Submitted,

_____

Linda Johnson / Recording Secretary

CITY COUNCIL MEETING MINUTES
TUESDAY OCTOBER 29, 2024

6:30 PM REGULAR MEETING

1. Call to Order

Pursuant to due call and notice thereof, a regular meeting of the Independence City Council was called to order by Mayor Johnson at 6:30 p.m.

2. Pledge of Allegiance

Mayor Johnson led the group in the Pledge of Allegiance.

3. Roll Call

PRESENT: Mayor Johnson, Councilors Spencer, Betts, McCoy and Grotting.
ABSENT: None
STAFF: City Administrator Mark Kaltsas and Administrative Services Director Amber Simon
VISITORS: Joe Slavic, Lance Gyllenblad

4. ****Consent Agenda****
All items listed under Consent Agenda are considered to be routine by Council and will be acted on by one motion. There will be no separate discussion of these items. If discussion is desired, that item will be removed from the Consent Agenda and will be considered separately.

a. City Council Minutes from the October 15, 2024, Regular City Council Meeting (will be available for approval on 11.19.2024 agenda).
b. Approval of Accounts Payable (Batch #1; Checks Numbered 23179-23195 and Batch #2; Checks Numbered 23196-23206).
c. Approval to not waive the monetary limits on Tort Liability established by MN Statues, to the extent of the limits of liability coverage obtained from the LMCIT.

Motion by Spencer second by Betts to approve the Consent Agenda. Ayes: Johnson, Spencer, Betts, McCoy and Grotting. Nays: None. Absent: None. Abstain. None. MOTION DECLARED CARRIED 5-0.

5. Set Agenda – Anyone Not on the Agenda can be Placed Under Open/Misc.

Discussion on public note letter about the museum added to agenda.

6. Reports of Boards and Committees by Council and Staff.

Betts attended the following meetings:

- None

Spencer attended the following meetings:

- Planning
- West Suburban Fire

Grotting attended the following meetings:

- Planning

McCoy attended the following meetings:

- None

Mayor Johnson attended the following meetings:

- Planning
- Interview with a woman working on her doctorate
- West Suburban Fire
- Election Judge Training/Safety
- Regional Council of Mayors

Kaltsas attended the following meetings:

- Kaltsas – Nothing outside those mentioned.

Johnson announced that Shawn Ebling was named the 2nd Sergeant for WHPS effective November 1, 2024.

7. Certification of Delinquent Sewer Service Charges as Special Assessments.

    a. **RESOLUTION NO. 24-1029-01** – Resolution certifying delinquent sewer service charges.

Residents that have delinquent sewer charges will have until November 18th to make the payment to the city in order for the charges not be assessed to their taxes. Thereafter, payments will still need to be made to the city with a fee in order to remove the assessment from their 2025 taxes. This is different from previous years when the county wanted the payments made directly to them. Residents will now pay the city, and the city will send an assessment payoff to Hennepin County to notify them to remove the assessment.

Motion by Grotting, second by McCoy to approve RESOLUTION 24-1029-01 approving the certification of delinquent sewer services charges. Ayes: Johnson, Spencer, Betts, McCoy and Grotting. Nays: None. Absent: None. Abstain. None. MOTION DECLARED CARRIED 5-0.

8. Open/Misc.

9. Adjourn

Motion by Betts, second by Grotting to adjourn at 6:45pm. Ayes: Johnson, Spencer, Betts, McCoy and Grotting. Nays: None. Absent: None. Abstain. None. MOTION DECLARED CARRIED 5-0

Respectfully Submitted,
Amber Simon/Recording Secretary

City of Independence

Request for a Conditional Use Permit to Allow a Ground Mounted Solar System on the Property Located at 25 Game Farm Rd.

To:	Planning Commission
From:	Mark Kaltsas, City Planner
Meeting Date:	November 19, 2024
Applicant:	Amy Pelowski
Property Owner:	Jeremiah Staples
Location:	7297 County Road 6

Request:

Amy Pelowski (Applicant) and Jeremiah Staples (Owner) are requesting the following action for the property located at 25 Game Farm Road (PID No. 33-118-24-44-0005) in the City of Independence, MN.

a. A conditional use permit to allow a 500 SF ground mounted solar system that meets all applicable requirements of the City's Solar Energy System Ordinance.

Property/Site Information:

The property is located on the west side of Game Farm Road south of CSAH 6. The property has an existing home, a detached garage and detached accessory structure. The property is comprised of open and wooded areas. The property has the following characteristics:

Property Information: **25 Game Farm Road**
Zoning: *Agriculture*
Comprehensive Plan: *Agriculture*
Acreage: *3.83 acres*

25 Game Farm Rd. Aerial Photograph

Discussion:

The applicant would like to add a ground mounted solar energy system to the property. In all zoning districts of the City, ground mounted solar systems are permitted as a conditional use permit (CUP). Ground mounted solar systems have the following requirements:

Subd. 5. Ground-mounted solar energy systems shall conform to the following standards:

(a) Ground-mounted systems shall only be allowed on a parcel with an existing principal structure.

(b) Ground-mounted systems shall be located only in rear or side yards.

(c) Ground-mounted systems shall not be located in the Shoreland Overlay District.

(d) Ground-mounted systems shall be wholly screened from view from the public right-of-way and adjacent residential structures. Methods for screening shall include berming, fencing, landscaping and/or combination thereof.

(e) Ground-mounted systems shall be located on a parcel of at least 2.5 acres.

(f) Ground-mounted systems shall have a maximum area of 500 SF.

(g) Ground mounted systems shall be setback a minimum of 50 feet from all property lines.

(h) The maximum height for any component of the system shall be 15 feet.

(i) Ground-mounted systems shall be in compliance with any applicable local, state and federal regulatory standards, including building, electrical and plumbing codes.

(j) Ground-mounted systems and their support structures shall be designed by a certified professional to meet applicable professional standards for the local soil and climate conditions.

The proposed ground mounted solar system would be located in the northwest corner of the property. The proposed solar energy system would be comprised of two separate ground mounted arrays. The total square footage of the two arrays would be approximately 450 SF (~7.5' x 30' x 2). This would be less than the 500 feet maximum SF permitted. The arrays would be setback 50 feet from the north (side) property line and 89 feet from the west (rear) property line. The required minimum setback from all property lines is 50 feet. The proposed ground mounted system would have a maximum height of 9 ½' feet to the top of the highest portion of the panels.

The City requires systems to be wholly screened from view of the public right of way and adjacent residential structures. There is a residential structure located to the northeast of the proposed location. The proximity of the proposed ground mounted system to that residence is ~200 feet. There is a considerable natural tree/vegetation line along the north property line separating the two properties. The neighboring property owner to the north has provided a letter of support for the proposed system.

The criteria for granting a conditional use permit are clearly delineated in the City's Zoning Ordinance (Section 520.11 subd. 1, a-i) as follows:

1. The conditional use will not adversely affect the health, safety, morals and general welfare of occupants of surrounding lands.
2. The proposed use will not have a detrimental effect on the use and enjoyment of other property in the immediate vicinity for the proposes already permitted or on the normal and orderly development and improvement of surrounding vacant property for uses predominant in the area.
3. Existing roads and proposed access roads will be adequate to accommodate anticipated traffic.
4. Sufficient off-street parking and loading space will be provided to serve the proposed use.
5. The proposed conditional use can be adequately serviced by public utilities or on-site sewage treatment, and sufficient area of suitable soils for on-site sewage treatment is available to protect the city form pollution hazards.
6. The proposal includes adequate provision for protection of natural drainage systems, natural topography, tree growth, water courses, wetlands, historic sites and similar ecological and environmental features.
7. The proposal includes adequate measures to prevent or control offensive odor, fumes, dust, noise, or vibration so that none of these will constitute a nuisance.

8. The proposed condition use is consistent with the comprehensive plan of the City of Independence.
9. The proposed use will not stimulate growth incompatible with prevailing density standards.

The City has discussed the proposed ground mounted solar system with the applicant. The proposed ground mounted solar system appears to meet all applicable standards provided for in the zoning ordinance. The size of the system and its proximity to the surrounding property appears to adequately mitigate potential visual impacts. Given the location of the property on Game Farm Rd., the orientation of the proposed solar arrays and their relationship to the surrounding properties, it appears that the proposed application can be found to meet the requirements for granting a conditional use permit amendment.

Neighbor Comments:

The City received a letter of support from the owners of 66 Game Farm Rd. No other written or oral comments have been provided regarding the proposed conditional use permit.

Recommendation:

Staff is seeking a recommendation from the Planning Commission pertaining to the request for a conditional use permit with the following findings and conditions:

1. The proposed conditional use permit request meets all applicable conditions and restrictions stated in Chapter V, Section 510, Zoning, in the City of Independence Zoning Ordinance.

2. A conditional use permit will allow a ground mounted solar system to be located on the subject property and in accordance with the approved site plan attached hereto as EXHIBIT B.

    a. The ground mounted solar system shall be constructed in accordance with all applicable zoning code, building code and other applicable standards.

3. The applicant shall pay for all costs associated with the review and recording of the resolution granting approval of the conditional use permit.

Attachments:

1. Application
2. Ground Mounted Solar Site Plan (Exhibit B)
3. Ground Mounted Solar Plans
4. Adjacent Property Owner Letter of Support

CITY OF INDEPENDENCE MINNESOTA

Date Submitted: 09-25-2024

Applicant Information

Name:	Amy Pelowski
Address:	7010 US Hwy 61 Minnesota City, Minnesota 55959
Primary Phone:	5073120190
Email:	amy@championsolar.com

Owner Information

Name:	Jeremiah Staples
Address:	25 Game Farm Road North INDEPENDENCE, Minnesota 55359
Primary Phone:	5073120190
Email:	amy@championsolar.com

Property Address:

PID:

Planning Application Type: Conditional Use Permit

Description:

Supporting Documents: Preliminary/Final Plan

Signature:

JEREMIAH STAPLES - 17.080kW DC, 13.600kW AC

SITE PLAN-1

NOTE:
1.NO CLEARANCE ISSUES WITH EXISTING OVERHEAD LINES
2.PV PRODUCTION METER AND PV UTILITY AC DISCONNECTS ARE
- LOCATED WITHIN 10' OF MAIN SERVICE/BILLING METER
- VISIBLE,LOCKABLE,READILY ACCESSIBLE AND 24/7 ACCESS

3.DESIGN COMPLY WITH NEC AND NEC690
4.LABELS SHALL BE WEATHERPROOF,DURABLE,AND PERMANENTLY MOUNTED
5.24/7 UNESCORTED KEYLESS ACCESS TO METERS AND AC DISCONNECTS.
6.SECONDARY INTERCONNECTION.

NOTE:
1.INVERTER IS UL1741 RATED.
2.EACH OPTIMIZER IS RAPID SHUTDOWN COMPLIANT

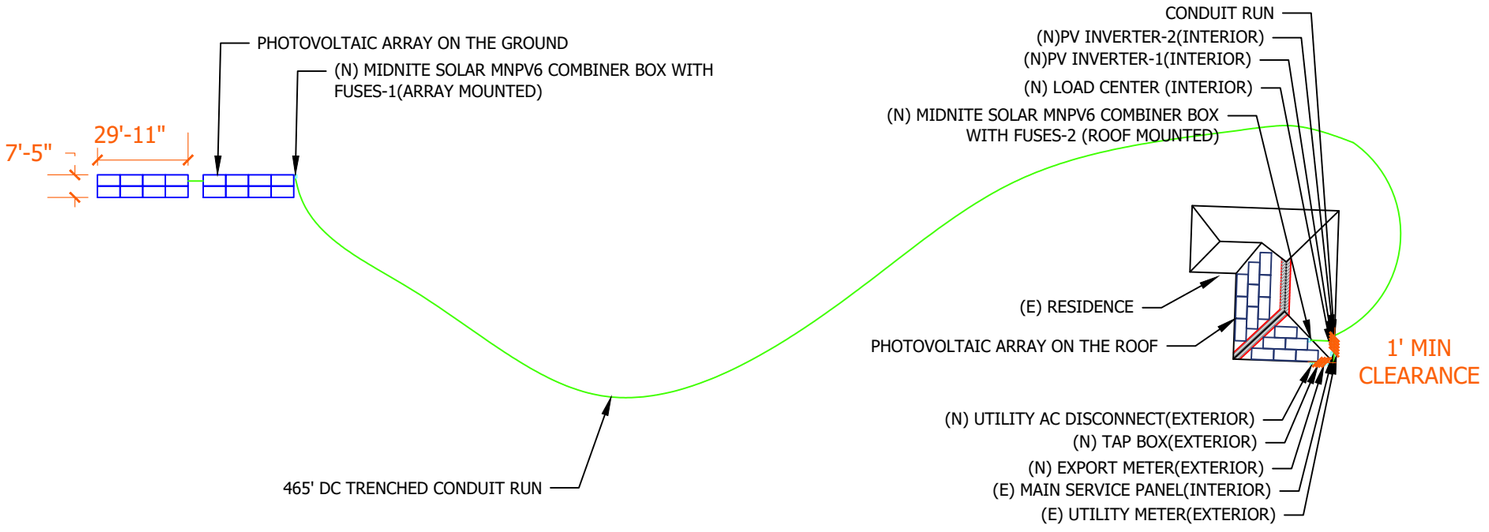
METER NUMBER	342697065

LEGEND:

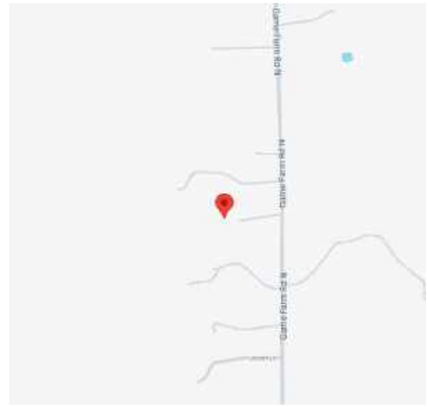
(16) JINKO SOLAR JKM580N-72HL4-BDV

(15) JINKO JKM520M-7TL4-V

DISTANCE BETWEEN EQUIPMENT		
FROM	TO	DISTANCE(FT)
MODULE	MIDNITE SOLAR MNPV6 COMBINER BOX WITH FUSES- 1, 2	5
MIDNITE SOLAR MNPV6 COMBINER BOX- 1	PV INVERTER- 1	465
MIDNITE SOLAR MNPV6 COMBINER BOX-2	PV INVERTER- 2	15
PV INVERTER- 1	LOAD CENTER	1
PV INVERTER- 2	LOAD CENTER	2
LOAD CENTER	UTILITY AC DISCONNECT	10
UTILITY AC DISCONNECT	TAP BOX	1
TAP BOX	EXPORT METER	1
EXPORT METER	UTILTIY METER	3



A | SITE PLAN-1
PV-1.0 | SCALE: 1"=50'-0"



A1 | VICINITY MAP
PV-1.0 | SCALE: NTS

GENERAL INFORMATION

ELECTRIC CODE	NEC 2023
FIRE CODE	MFC 2020
RESIDENTIAL CODE	MRC 2020
BUILDING CODE	MBC 2020
WIND SPEED	115 MPH
SNOW LOAD	60 PSF

INDEX

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
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(16)JINKO SOLAR JKM580N-72HL4-BDV
(15)JINKO JKM520M-7TL4-V
INVERTER:
(1)SOLAREDGE ENERGY HUB SE7600H-US (240V,1PH)
(1)SOLAREDGE ENERGY HUB SE6000H-US (240V,1PH)
OPTIMIZER:
(31) S650B POWER OPTIMIZERS

ENGINEER OF RECORD

CHAMPION SOLAR

7010 US-61, MINNESOTA CITY, MN 55959.
TEL:(507)312-0190
LIC:ELE#800248

CUSTOMER INFORMATION

NAME&ADDRESS:
JEREMIAH STAPLES
25 GAME FARM RD N, MAPLE PLAIN, MN 55359.

44°58'42.48"N 93°42'28.15"W
APN:331-182-444-0004

AHJ:MN-CITY OF INDEPENDENCE

UTILITY:WH ELECTRIC COOPERATIVE

PROJECT NUMBER:CHAM-011492

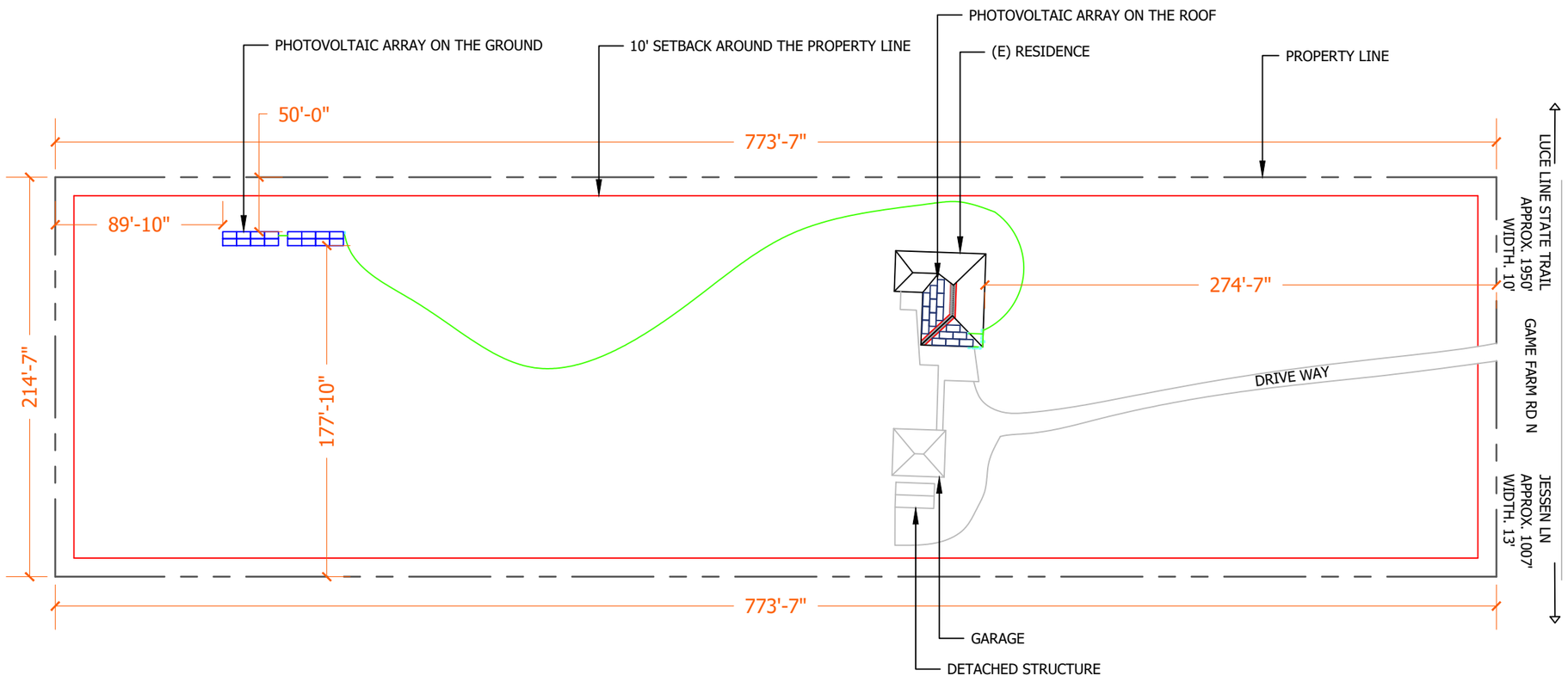
SITE PLAN-1

DESIGNER/CHECKED BY:
MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-1.0

JEREMIAH STAPLES - 17.080kW DC, 13.600kW AC

SITE PLAN-2



A | SITE PLAN-2
PV-1.1 | SCALE: 1"=70'-0"

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
MODULES:
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DESIGNER/CHECKED BY:
MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-1.1

GENERAL NOTES

GENERAL NOTES

1. MODULES ARE LISTED UNDER UL 1703 AND CONFORM TO THE STANDARDS.
2. INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
3. DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION MIGHT VARY.
4. WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC CODE.
5. ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL/ SERVICE EQUIPMENT.
6. ALL CONDUCTORS SHALL BE 600V, 75°C STANDARD COPPER UNLESS OTHERWISE NOTED.
7. THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY.
8. PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING

EQUIPMENT LOCATION:

9. ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC CODE.
10. WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC CODE AND NEC TABLES.
11. JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC CODE.
12. ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
13. ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
14. ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE

.

WIRING & CONDUIT NOTES:

15. ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
16. CONDUCTORS SIZED ACCORDING TO NEC CODE.
17. DC WIRING LIMITED TO MODULE FOOTPRINT. MICRO INVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY WITH SUITABLE WIRING CLIPS.
18. AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE PHASE C OR L3- BLUE, YELLOW, ORANGE**, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC CODE].

INTERCONNECTION NOTES:

24. LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC CODE]
25. THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS INPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC CODE].
26. WHEN SUM OF THE PV SOURCES EQUALS >100% OF BUSBAR RATING, PV DEDICATED BACKFED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC CODE].
27. AT MULTIPLE PV OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVER CURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVER CURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC CODE.
28. FEEDER TAP INTER CONNECTION (LOAD SIDE) ACCORDING TO NEC CODE
29. SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC CODE WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC CODE
30. BACK FEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC CODE].

GROUNDING NOTES:

31. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
32. PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC CODE AND MINIMUM NEC TABLE.
33. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC CODE AND MICRO INVERTER MANUFACTURER'S INSTRUCTIONS.
34. THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
35. GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC CODE]
36. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
37. DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
38. RAPID SHUTDOWN OF ENERGIZED CONDUCTORS BEYOND 10 FT OF PV ARRAY OR 5 FT INSIDE A BUILDING WITHIN 10 SECONDS. CONTROLLED CONDUCTORS ≤30V AND ≤240VA [NEC CODE]. LOCATION OF LABEL ACCORDING TO AHJ.
39. ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC CODE.

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
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GENERAL NOTES

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-2.0

MOUNTING DETAILS

MODULES DATA

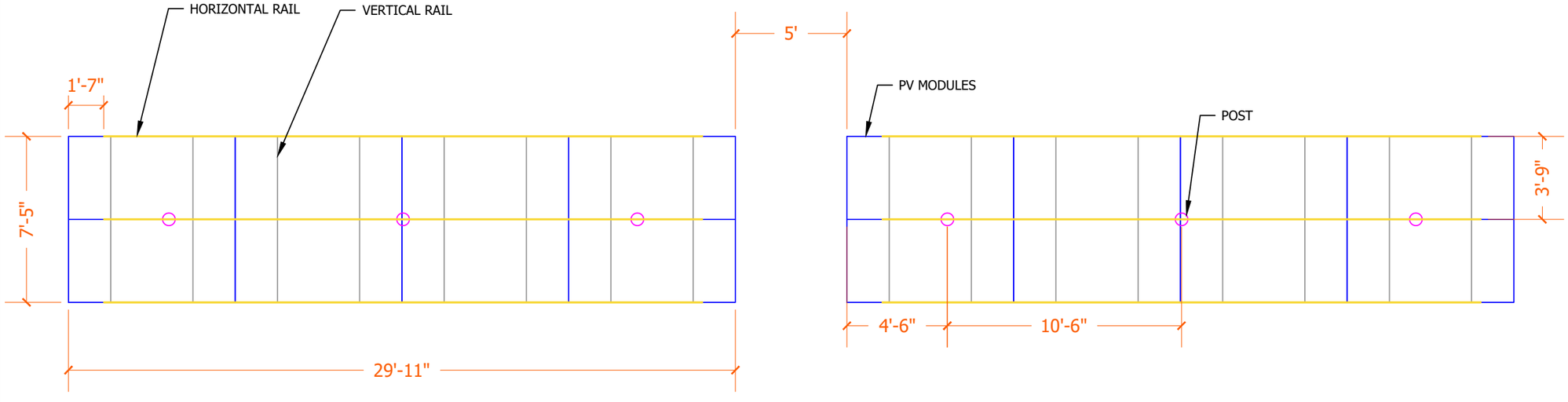
JINKO SOLAR JKM580N-72HL4-BDV	
MODULE DIMS	89.69"x44.65"x1.18"

SITE INFORMATION

AZIMUTH	180°
TILT	35°
NO. OF MODULES	28

B1 | AERIAL VIEW

PV-3.0 | SCALE: NTS



B | MOUNTING DETAILS

PV-3.0 | SCALE:3/16"=1'-0"

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MOUNTING DETAILS-1

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
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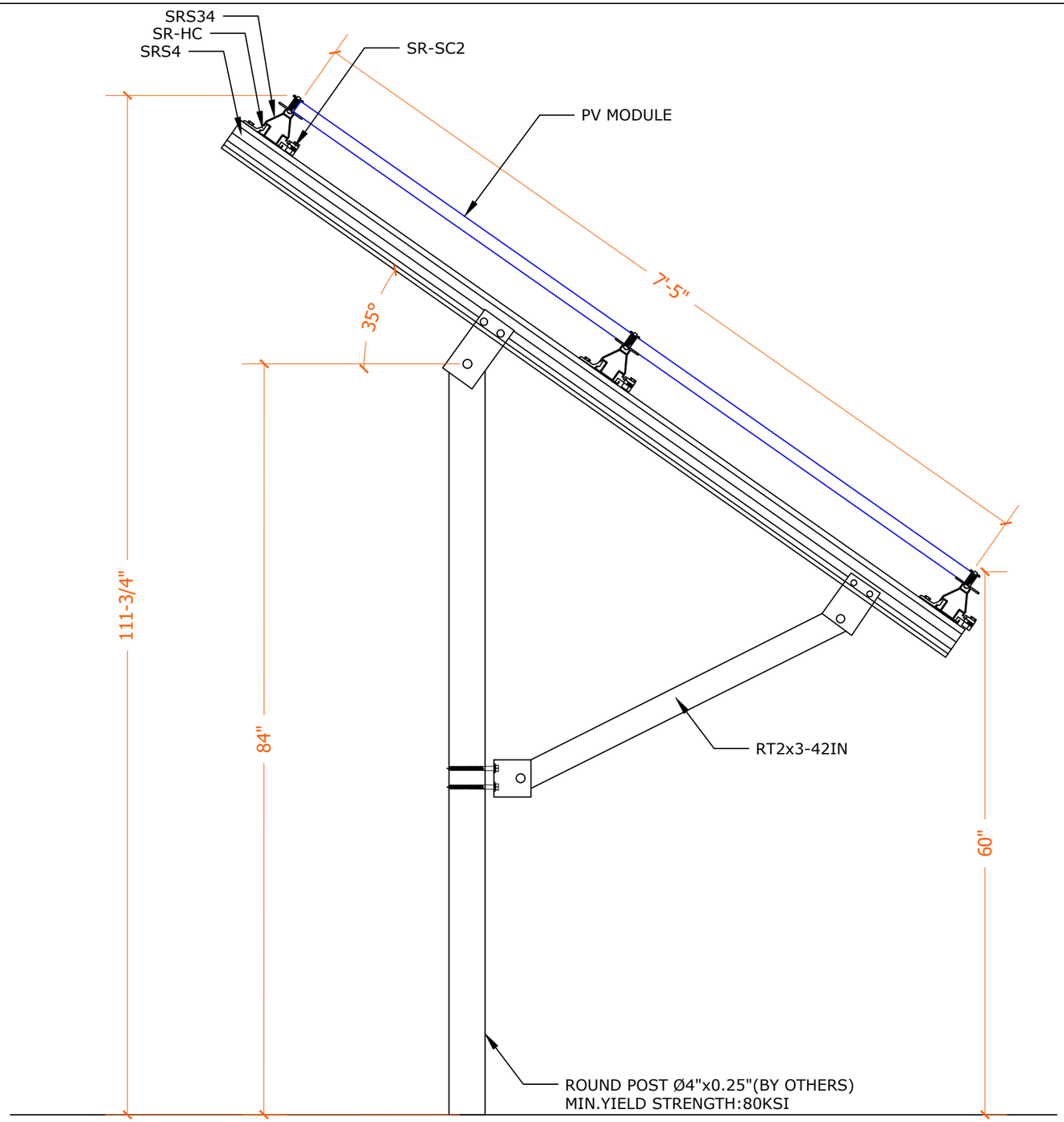
GROUNDMOUNT STRUCTURAL DETAILS



SCALE: NTS

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STRUCTURAL DETAILS-1

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-3.1

DEAD LOAD CALCULATIONS

BOM	QUANTITY	LBS/UNIT	TOTAL WEIGHT (LBS)
MODULES	15	63.71	955.65
MID-CLAMP	18	0.050	0.90
END-CLAMP	24	0.050	1.20
RAIL LENGTH	224	0.680	152.32
SPLICE BAR	10	0.360	3.60
QUICKMOUNT HUG	66	1.47	97.02
TOTAL WEIGHT OF THE SYSTEM (LBS)			1210.69
TOTAL ARRAY AREA ON THE ROOF (SQ. FT.)			778.68
WEIGHT PER SQ. FT.(LBS)			1.55
WEIGHT PER PENETRATION (LBS)			18.34

UPLIFT CALCULATIONS

UPLIFT	12250.8	LBS
PULL OUT STRENGTH	40590	LBS
POINT LOADING	14	LBS

MODULES DATA

JINKO JKM520M-7TL4-V

MODULE DIMS	87.80"x44.65"x1.38"
LAG SCREWS	5/16"x3":2.5"MIN EMBEDMENT

FIRE SETBACK

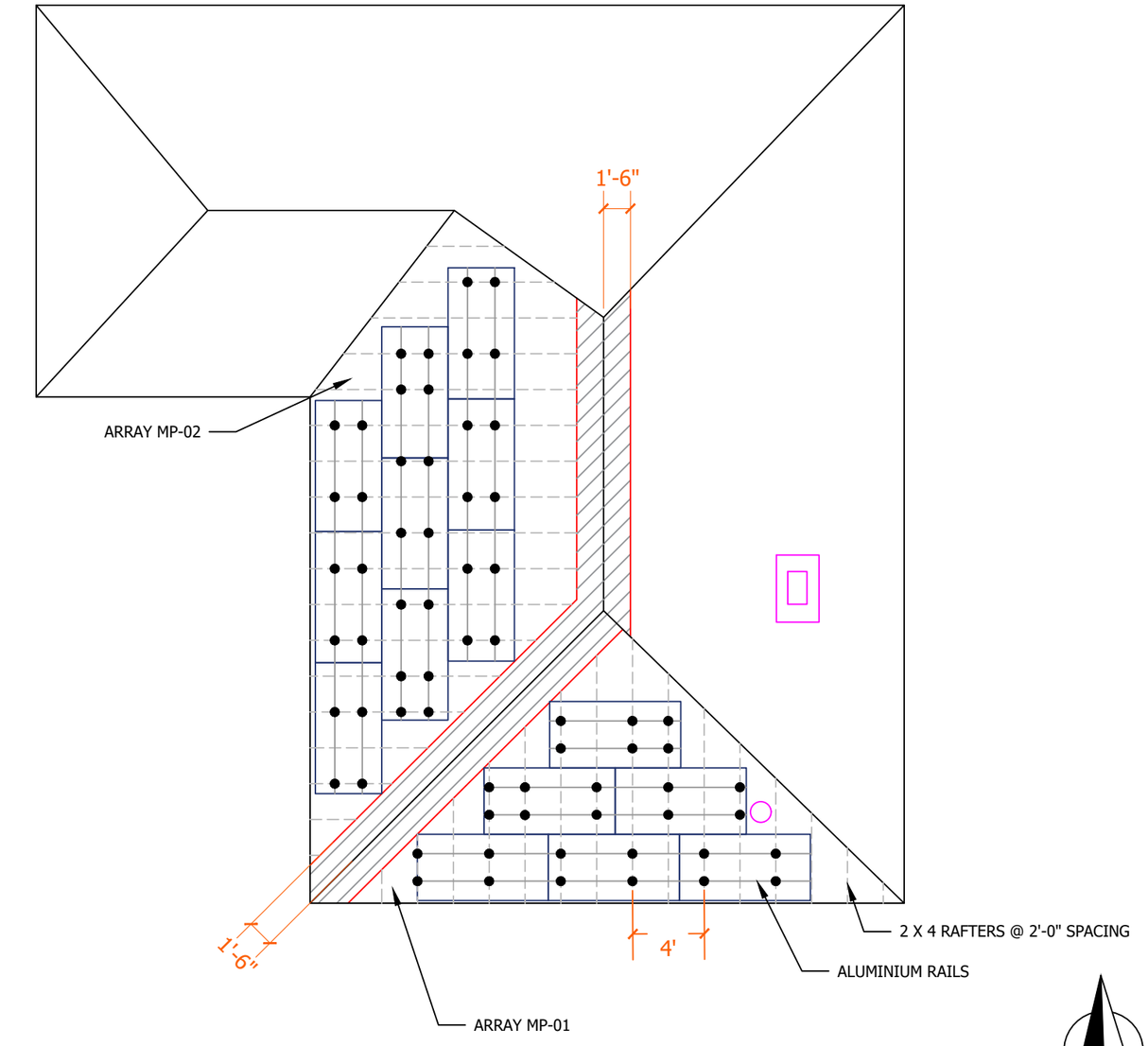
MINIMUM FIRE ACCESS PATHWAYS PER MFC 2020
RIDGE TO ARRAY: 1'-6"
EAVE TO ARRAY : 3'-0"
HIP/VALLEY W/ ADJACENT ARRAY: 1'-6"
EACH SIDE HIP/VALLEY W/O ADJACENT ARRAY: 0'-0"

NOTE: INSTALLER TO VERIFY RAFTER SIZE, SPACING AND SLOPED SPANS, AND NOTIFY ANY DISCREPANCIES BEFORE PROCEEDING.

AERIAL VIEW

SITE INFORMATION

SR.NO	AZIMUTH	PITCH	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT	ROOF EXPOSURE	FRAME TYPE	FRAME SIZE	FRAME SPACING	MAX RAIL SPAN	OVER HANG
MP-01	178°	22°	6	166.9	COMPOSITION SHINGLE	QUICKMOUNT HUG	ATTIC	RAFTERS	2 X 4	2'-0"	4'-0"	2'-0"
MP-02	268°	22°	9	250.3	COMPOSITION SHINGLE	QUICKMOUNT HUG	ATTIC	RAFTERS	2 X 4	2'-0"	2'-0"	2'-0"



B | MOUNTING DETAILS
PV-3.2 | SCALE: 1/8" = 1'-0"

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
MODULES:
(16)JINKO SOLAR JKM580N-72HL4-BDV
(15)JINKO JKM520M-7TL4-V
INVERTER:
(1)SOLAREDGE ENERGY HUB SE7600H-US (240V,1PH)
(1)SOLAREDGE ENERGY HUB SE6000H-US (240V,1PH)
OPTIMIZER:
(31) S650B POWER OPTIMIZERS

ENGINEER OF RECORD

CHAMPION SOLAR

7010 US-61, MINNESOTA CITY, MN 55959.
TEL:(507)312-0190
LIC:ELE#800248

CUSTOMER INFORMATION

NAME&ADDRESS:
JEREMIAH STAPLES
25 GAME FARM RD N, MAPLE PLAIN, MN 55359.

44°58'42.48"N 93°42'28.15"W
APN:331-182-444-0004

AHJ:MN-CITY OF INDEPENDENCE

UTILITY:WH ELECTRIC COOPERATIVE

PROJECT NUMBER:CHAM-011492

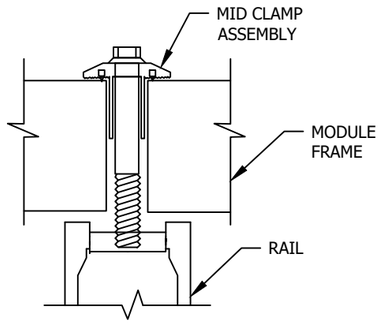
STRUCTURAL DETAILS-2

DESIGNER/CHECKED BY:
MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-3.2

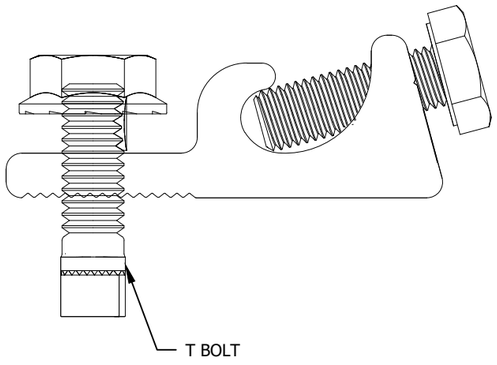
GROUNDING DETAILS

MODULE TO MODULE & MODULE TO RAIL



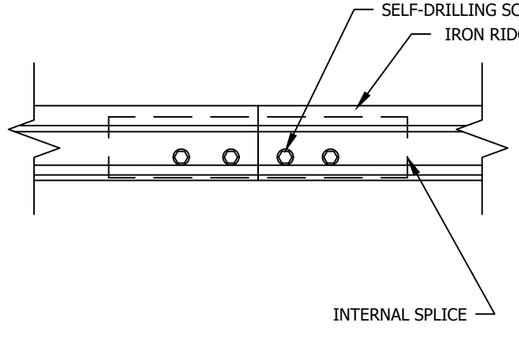
GROUNDING MID-CLAMP
SCALE: NTS

GROUNDING



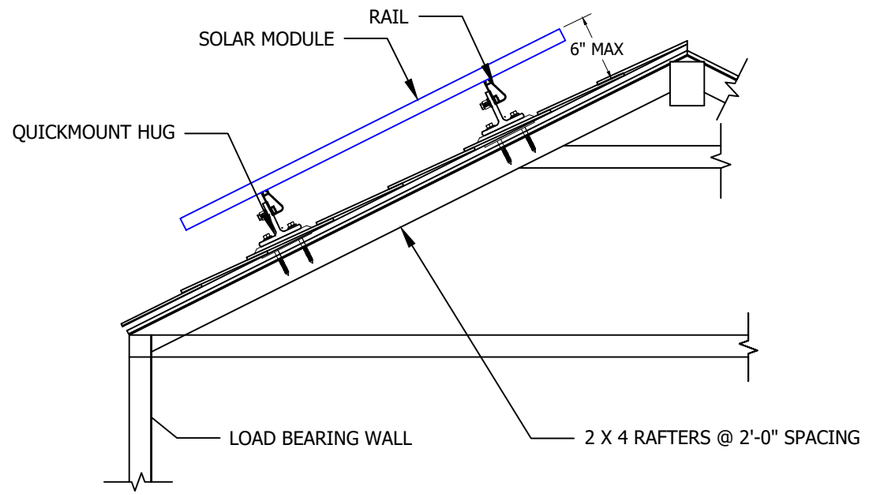
SCALE: NTS

RAIL TO RAIL



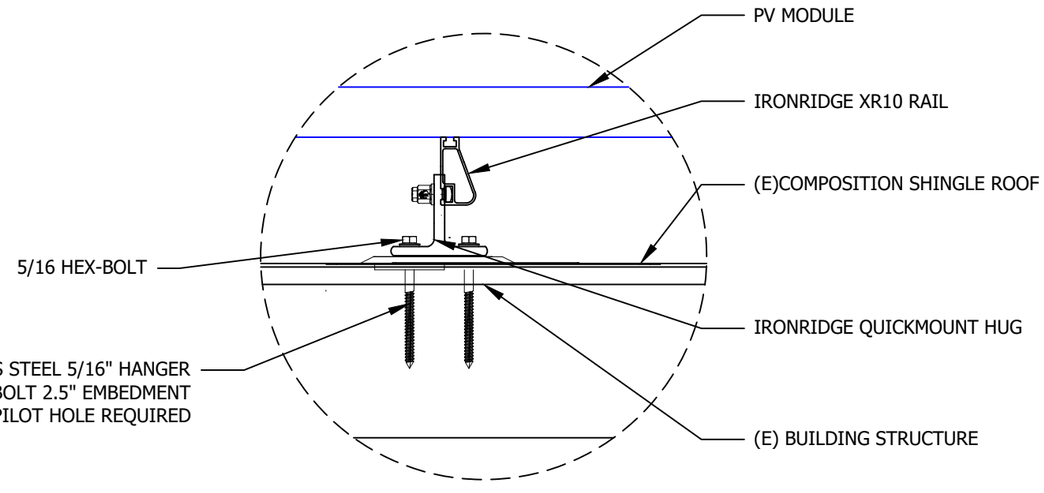
SCALE: NTS

ROOF FRAMING DETAIL



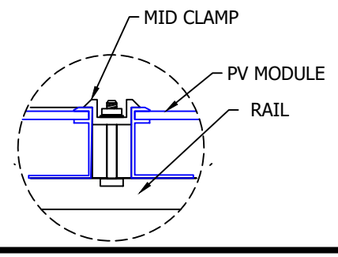
SCALE: NTS

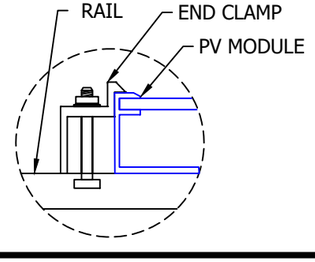
ATTACHMENT DETAIL- QUICKMOUNT HUG



SCALE: NTS

MID-CLAMP & END CLAMP DETAIL





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STRUCTURAL DETAILS-2

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-3.3

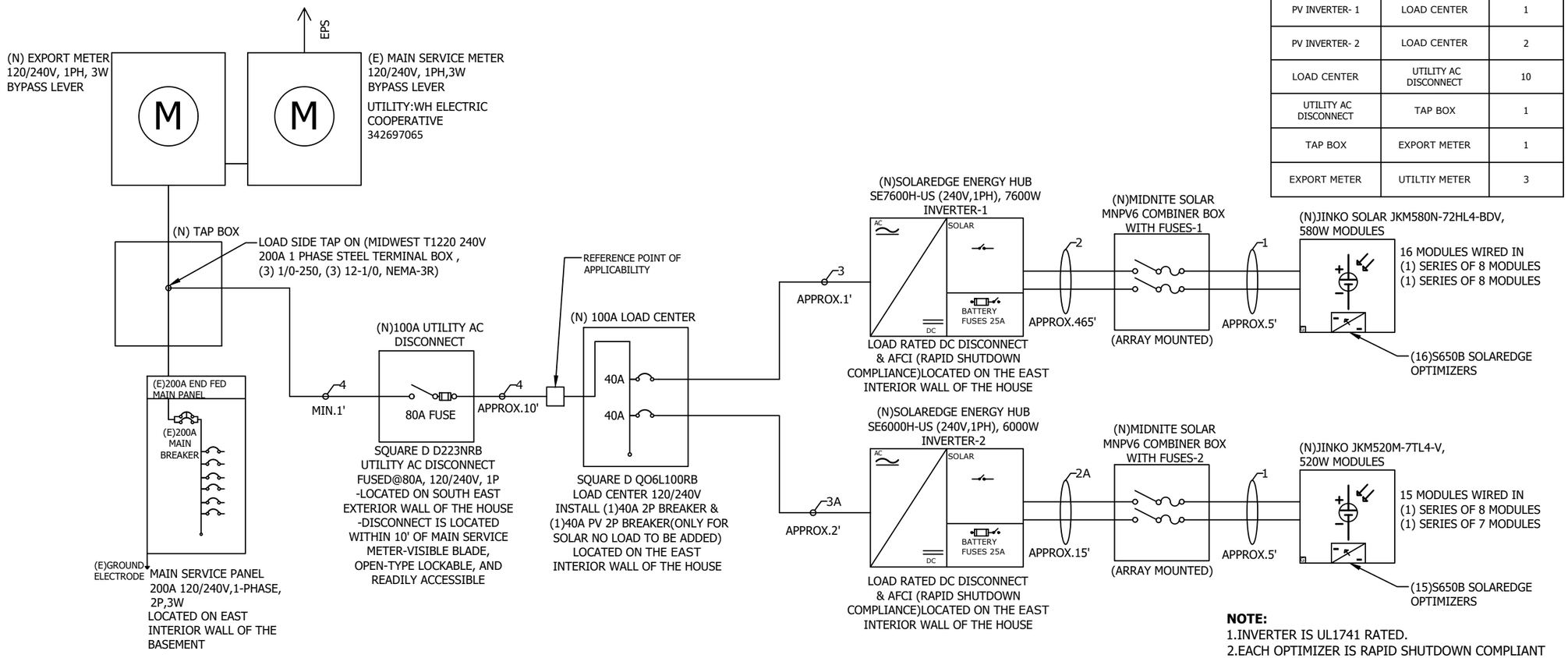
SINGLE LINE DIAGRAM: DC SYSTEM SIZE - 17080W, AC SYSTEM SIZE - 13600W

NOTES:
1.UTILITY AC DISCONNECTS ARE
- LOCATED WITHIN 10' OF MAIN SERVICE/BILLING METER
- VISIBLE,LOCKABLE,READILY ACCESSIBLE AND 24/7 ACCESS

2.SYSTEM PEAK CURRENT 53.00AMPS, 120/240V, 1 PHASE,3-WIRE
3.PV MODULES UL1703
4.INVERTER UL 1741
5.THE SITE HAS 24/7 KEYLESS ACCESS TO METERS AND UTILITY AC DISCONNECTS.
6.NO CLEARANCE CONCERNS EXISTING WITH UNDERGROUND SERVICE ENTRANCE CONDUCTORS.
7.SECONDARY INTERCONNECTION
8.DESIGN SHALL MEET NEC 2023

METER NUMBER	342697065

DISTANCE BETWEEN EQUIPMENT		
FROM	TO	DISTANCE(FT)
MODULE	MIDNITE SOLAR MNPV6 COMBINER BOX WITH FUSES- 1, 2	5
MIDNITE SOLAR MNPV6 COMBINER BOX- 1	PV INVERTER- 1	465
MIDNITE SOLAR MNPV6 COMBINER BOX-2	PV INVERTER- 2	15
PV INVERTER- 1	LOAD CENTER	1
PV INVERTER- 2	LOAD CENTER	2
LOAD CENTER	UTILITY AC DISCONNECT	10
UTILITY AC DISCONNECT	TAP BOX	1
TAP BOX	EXPORT METER	1
EXPORT METER	UTILTIY METER	3



NOTE:
1.INVERTER IS UL1741 RATED.
2.EACH OPTIMIZER IS RAPID SHUTDOWN COMPLIANT

CONDUIT SCHEDULE

TAG ID	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1,1A	NONE	(4) 10 AWG PV WIRE	NONE	(1) 6 AWG BARE COPPER
2	1" SCH 40 PVC (BELOW GROUND) 1" SCH 80 PVC (ABOVE GROUND)	(4) 8 AWG THHN/THWN-2	NONE	(1) 10 AWG THHN/THWN-2
2A	3/4"EMT OR EQUIV	(4) 10 AWG THHN/THWN-2	NONE	(1) 10 AWG THHN/THWN-2
3	3/4"EMT OR EQUIV	(2) 8 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2	(1) 10 AWG THHN/THWN-2
3A	3/4"EMT OR EQUIV	(2) 8 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2	(1) 10 AWG THHN/THWN-2
4	1"EMT OR EQUIV	(2) 4 AWG THHN/THWN-2	(1) 4 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2

DC VOLTAGE DROP (TAG-2)	
Select Material	Cu
Select Wire Size	8
Select Conduit Type	PVC
Select Voltage & Phase	400
Enter Distance to Load (ft)	465
Enter Load (Amps)	18.75
OUTPUTS	
Voltage Drop (Volts)	10.95
% Voltage Drop	2.74
VARIABLES	
Phase Factor	1.732
K	12.9
Q-Factor	1
Circular Mils	16510

OCPD CALCULATIONS:

MAIN PANEL RATING:200A,

MAIN BREAKER RATING:200A

LOAD SIDE TAP:

100% ALLOWABLE BACKFEED IS 200A

INVERTER OVERCURRENT PROTECTION=

INVERTER O/P I X CONTINUOUS LOAD(1.25)X

#OF INVERTERS=(32x1.25x1)+(25x1.25x1)=71.25A

=>PV BREAKER SIZE= 80A

RVR ENGINEERING

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SINGLE LINE DIAGRAM

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-4.0

ELECTRICAL CALCULATION

MODULE SPECIFICATION-1	
MODEL	JINKO SOLAR JKM580N-72HL4-BDV
MODULE POWER @ STC	580W
OPEN CIRCUIT VOLTAGE:**Voc**	51.47V
MAX POWER VOLTAGE:**Vmp**	42.59V
SHORT CIRCUIT CURRENT:**Isc**	14.37A
MAX POWER CURRENT:**Imp**	13.62A

MODULE SPECIFICATION-2	
MODEL	JINKO JKM520M-7TL4-V
MODULE POWER @ STC	520W
OPEN CIRCUIT VOLTAGE:**Voc**	48.99V
MAX POWER VOLTAGE:**Vmp**	40.47V
SHORT CIRCUIT CURRENT:**Isc**	13.53A
MAX POWER CURRENT:**Imp**	12.85A

INVERTER SPECIFICATIONS	INVERTER-1	INVERTER-2
MODEL	SOLAREDGE ENERGY HUB SE7600H-US (240V,1PH)	SOLAREDGE ENERGY HUB SE6000H-US (240V,1PH)
POWER RATING	7600W	6000W
MAX OUTPUT CURRENT	32A	25A
CEC WEIGHTED EFFICIENCY	99%	99%
MAX INPUT CURRENT	20A	16.5A
MAX DC VOLTAGE	480V	480V

SYSTEM CHARACTERISTICS	INVERTER-1	INVERTER-2
DC SYSTEM SIZE	9280 W	7800 W
INVERTER STRING VOLTAGE	380V	380V
MAX INVERTER SYSTEM VOLTAGE	480V	480V
MAX SHORT CIRCUIT CURRENT	30A	30A
OPERATING CURRENT	24.42A	18.32A

OPTIMIZER CHARACTERISTICS	
MODEL	**S650B**
MIN INPUT VOLTAGE	12.5 VDC
MAX INPUT VOLTAGE	85 VDC
MAX SHORT CIRCUIT CURRENT	15 ADC
MAX OUTPUT CURRENT	15 ADC

ELECTRICAL CALCULATION

DC WIRE CALCULATIONS:- MATERIAL:COPPER & TEMPERATURE RATING:90°C

TAG ID	REQUIRED CONDUCTOR AMPACITY											CORRECTED AMPACITY CALCULATION							TERMINAL RATING CHECK			DERATED CONDUCTOR AMPACITY CHECK		
1,1A	1	X	15	X	1	=	15.00	X	1.25	=	18.75A	40	X	0.96	X	1	=	38.40A	18.75A	<	35A	18.75A	<	38.40A
2	1	X	15	X	1	=	15.00	X	1.25	=	18.75A	55	X	0.96	X	0.8	=	42.24A	18.75A	<	50A	18.75A	<	42.24A
2A	1	X	16	X	1	=	15.00	X	1.25	=	18.75A	40	X	0.96	X	0.8	=	30.72A	18.75A	<	35A	18.75A	<	30.72A

AC WIRE CALCULATIONS:- MATERIAL:COPPER & TEMPERATURE RATING:90°C

TAG ID	REQUIRED CONDUCTOR AMPACITY									CORRECTED AMPACITY CALCULATION								TERMINAL RATING CHECK			DERATED CONDUCTOR AMPACITY CHECK		
3	32	X	1	=	32.00	X	1.25	=	40.00A	55	X	0.96	X	1	=	52.80A		40.00A	<	50A	40.00A	<	52.80A
3A	25	X	1	=	25.00	X	1.25	=	31.25A	55	X	0.96	X	1	=	52.80A		31.25A	<	50A	31.25A	<	52.80A
4	57	X	1	=	57.00	X	1.25	=	71.25A	95	X	0.96	X	1	=	91.20A		71.25A	<	85A	71.25A	<	91.20A

ELECTRICAL NOTES:

1. MAXIMUM DC/AC VOLTAGE DROP SHALL BE NO MORE THAN 2%.
2. BREAKER/FUSE SIZES CONFORMS TO NEC 240.6 CODE SECTION.
3. AC GROUNDING ELECTRODE CONDUCTOR SIZED PER NEC 250.66.
4. AMBIENT TEMPERATURE CORRECTION FACTOR IS BASED ON NEC 690.31(C).
5. AMBIENT TEMPERATURE ADJUSTMENT FACTOR IS BASED ON NEC 310.15(B)(2)(C).
6. AX. SYSTEM VOLTAGE CORRECTION IS PER NEC 690.7.7. CONDUCTORS ARE SIZED PER WIRE AMPACITY TABLE NEC 310.16.
8. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 310.0(D).
9. CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.8(C).

RVR ENGINEERING

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DESIGNER/CHECKED BY:
MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-4.1

WARNING PLACARDS

WARNING

ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION
AC DISCONNECT,POINT OF INTERCONNECTION
[PER CODE: NEC 690.13(B)]

WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION
AC DISCONNECT,POINT OF INTERCONNECTION
[PER CODE: NEC 690.13(B)]

WARNING-Electric Shock Hazard
No User Serviceable Parts inside
Contact authorized service provide for assistance

LABEL LOCATION
INVERTER, JUNCTION BOXES(ROOF),
AC DISCONNECT
[PER CODE: NEC 690.13]

WARNING:PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION
CONDUIT, COMBINER BOX
[PER CODE: NEC690.31(G)(3)]

WARNING
DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION
POINT OF INTERCONNECTION
[PER CODE: NEC705.12(D)(4)]

GENERATION SYSTEM CONNECTED

LABEL LOCATION
POINT OF INTERCONNECTION

UTILITY AC DISCONNECT

LABEL LOCATION
AC DISCONNECT

EXPORT METER

LABEL LOCATION
TO BE LOCATED ON EXPORT METER

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH
RATED AC OPERATING CURRENT 57 AMPS AC
AC NOMINAL OPERATING VOLTAGE 240 VAC

LABEL LOCATION
AC DISCONNECT , POINT OF INTERCONNECTION
[PER CODE: NEC 690.54]

WARNING
INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVER-CURRENT DEVICE

LABEL LOCATION
POINT OF INTERCONNECTION
(PER CODE: NEC 705.12(2)(b)
[Not Required if Panel board is rated not less than sum of ampere ratings of all overcurrent devices supplying it]

CAUTION: SOLAR CIRCUIT

LABEL LOCATION
MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES AND CABLE ASSEMBLES AT LEAST EVERY 10 FT, AT TURNS AND ABOVE/BELOW PENETRATIONS AND ALL COMBINER/JUNCTION BOXES.
(PER CODE: IFC605.11.1.4)

SOLAR DISCONNECT

LABEL LOCATION
DISCONNECT, POINT OF INTERCONNECTION
[PER CODE: NEC 690.13(B)]

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

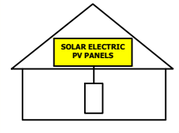
LABEL LOCATION
WEATHER RESISTANT MATERIAL, DURABLE ADHESDIVE, UL969 AS STANDARD TO WEATHER RATING (UL LISTING OF MARKINGS NOT REQUIRED), MIN ⅜" LETTER HEIGHT ARIAL OR SIMILAR FONT NON-BOLD,PLACED WITHIN THE MAIN SERVICE DISCONNECT,PLACED ON THE OUTSIDE OF THE COVER WHEN DISCONNECT IS OPERATED WITH THE SERVICE PANEL CLOSED.
(PWER CODE: NEC690.15 ,690.13(B))

RAPID SHUTDOWN SWITCH FOR SOLAR SYSTEM

LABEL LOCATION
INVERTER,POINT OF INTERCONNECTION
[PER CODE: NEC 690.56(C)(3)]

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

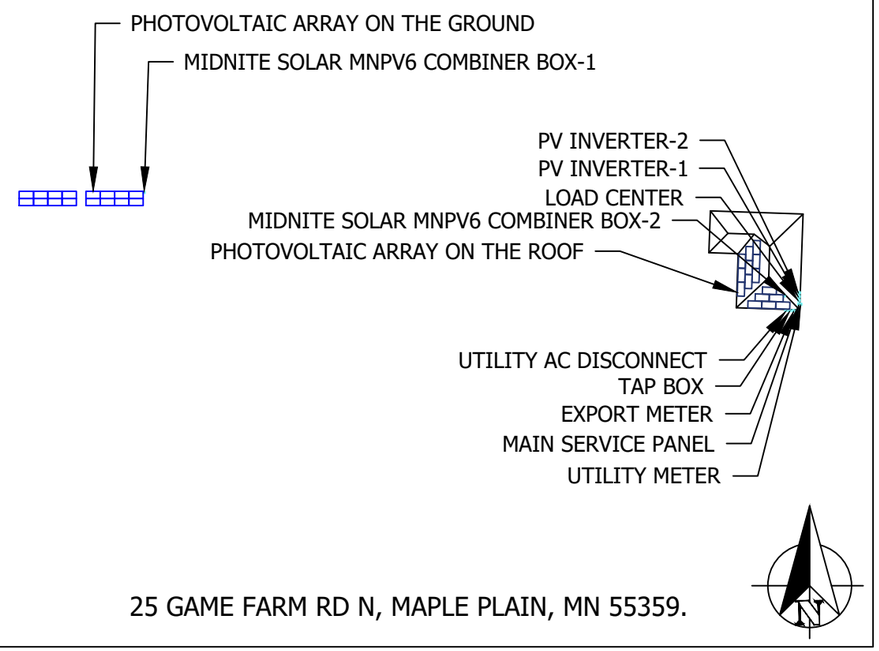


LABEL LOCATION
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC690.56(C)(1)

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.
PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.FASTENERS APPROVED BY THE LOCAL JURISDICTION
NOTE:ALL SIGNAGE CANNOT BE HAND WRITTEN NEC 110.21

WARNING: ⚠

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



25 GAME FARM RD N, MAPLE PLAIN, MN 55359.

PHOTOVOLTAIC SYSTEM DC DISCONNECT
MAXIMUM VOLTAGE 480 VDC
MAXIMUM CIRCUIT CURRENT 30 ADC
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER(IF INSTALLED) 15 ADC

LABEL LOCATION
DC DISCONNECT SWITCH, INVERTER-1
[PER. CODE: NEC 690.53]

PHOTOVOLTAIC SYSTEM DC DISCONNECT
MAXIMUM VOLTAGE 480 VDC
MAXIMUM CIRCUIT CURRENT 30 ADC
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER(IF INSTALLED) 15 ADC

LABEL LOCATION
DC DISCONNECT SWITCH, INVERTER-2
[PER. CODE: NEC 690.53]

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DATE:11/15/2024	REV:A	PV-5.0

www.jinkosolar.com

JinKO Solar
Building Your Trust in Solar

Tiger Neo N-type 72HL4-BDV

560-580 Watt

BIFACIAL MODULE WITH DUAL GLASS

N-Type

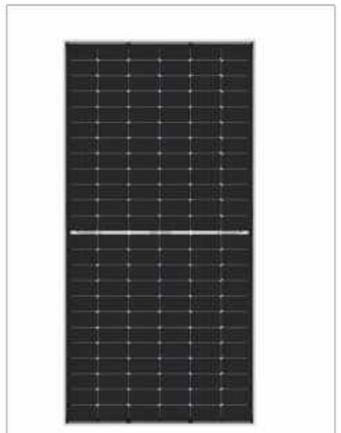
Positive power tolerance of 0~+3%

IEC61215(2016), IEC61730(2016)

ISO9001:2015: Quality Management System

ISO14001:2015: Environment Management System

ISO45001:2018
Occupational health and safety management systems



Key Features

SMBB Technology
Better light trapping and current collection to improve module power output and reliability.

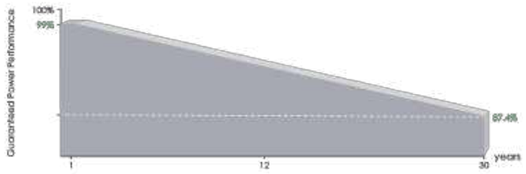
Hot 2.0 Technology
The N-type module with Hot 2.0 technology has better reliability and lower LID/LETID.

PID Resistance
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Enhanced Mechanical Load
Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).

Higher Power Output
Module power increases 5-25% generally, bringing significantly lower LCOE and higher IRR.

LINEAR PERFORMANCE WARRANTY

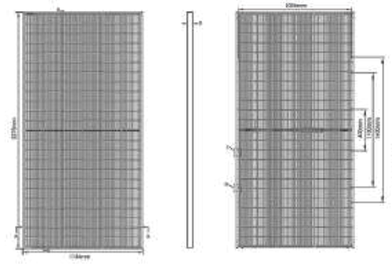


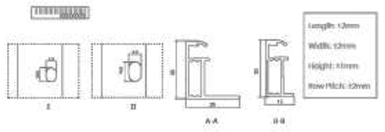
12 Year Product Warranty

30 Year Linear Power Warranty

0.40% Annual Degradation Over 30 years

Engineering Drawings



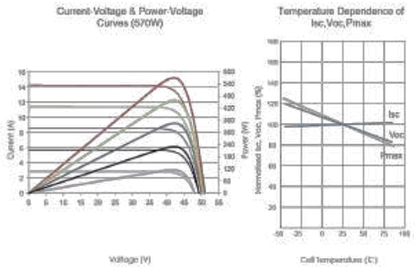


Packaging Configuration

(Two pallets = One stack)

36pcs/pallets, 72pcs/stack, 720pcs/ 40'HQ Container

Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	N type Mono-crystalline
No. of cells	144 (2×72)
Dimensions	2278×1134×30mm (89.69×44.65×1.18 inch)
Weight	32 kg (70.55 lbs)
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Output Cables	TUV 1×4.0mm² (+): 400mm, (-): 200mm or Customized Length

SPECIFICATIONS

Module Type	JKM560N-72HL4-BDV		JKM565N-72HL4-BDV		JKM570N-72HL4-BDV		JKM575N-72HL4-BDV		JKM580N-72HL4-BDV	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	560Wp	421Wp	565Wp	425Wp	570Wp	429Wp	575Wp	432Wp	580Wp	436Wp
Maximum Power Voltage (Vmp)	41.95V	39.39V	42.14V	39.52V	42.29V	39.65V	42.44V	39.78V	42.59V	39.87V
Maximum Power Current (Imp)	13.35A	10.69A	13.41A	10.75A	13.48A	10.81A	13.55A	10.87A	13.62A	10.94A
Open-circuit Voltage (Voc)	50.67V	48.13V	50.87V	48.32V	51.07V	48.51V	51.27V	48.70V	51.47V	48.89V
Short-circuit Current (Isc)	14.15A	11.41A	14.19A	11.46A	14.25A	11.50A	14.31A	11.55A	14.37A	11.60A
Module Efficiency STC (%)	21.68%		21.87%		22.07%		22.26%		22.45%	
Operating Temperature(°C)	-40°C~+85°C									
Maximum system voltage	1500VDC (IEC)									
Maximum series fuse rating	30A									
Power tolerance	0~+3%									
Temperature coefficients of Pmax	-0.30%/°C									
Temperature coefficients of Voc	-0.25%/°C									
Temperature coefficients of Isc	0.046%/°C									
Nominal operating cell temperature (NOCT)	45±2°C									
Refer. Bifacial Factor	80±5%									

BIFACIAL OUTPUT-REARSIDE POWER GAIN

5%	Maximum Power (Pmax)	588Wp	593Wp	599Wp	604Wp	609Wp
	Module Efficiency STC (%)	22.76%	22.97%	23.17%	23.37%	23.57%
15%	Maximum Power (Pmax)	644Wp	650Wp	656Wp	661Wp	667Wp
	Module Efficiency STC (%)	24.93%	25.15%	25.37%	25.60%	25.82%
25%	Maximum Power (Pmax)	700Wp	706Wp	713Wp	719Wp	725Wp
	Module Efficiency STC (%)	27.10%	27.34%	27.58%	27.82%	28.07%

*STC: Irradiance 1000W/m² | Cell Temperature 25°C | AM=1.5
NOCT: Irradiance 800W/m² | Ambient Temperature 20°C | AM=1.5 | Wind Speed 1m/s

JKM560-580N-72HL4-BDV-F3-EN

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
MODULES:
(16)JINKO SOLAR JKM580N-72HL4-BDV
(15)JINKO JKM520M-7TL4-V
INVERTER:
(1)SOLAREDGE ENERGY HUB SE7600H-US (240V,1PH)
(1)SOLAREDGE ENERGY HUB SE6000H-US (240V,1PH)
OPTIMIZER:
(31) S650B POWER OPTIMIZERS

ENGINEER OF RECORD

CHAMPION SOLAR

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APN:331-182-444-0004

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PROJECT NUMBER:CHAM-011492

MODULE SPECSHEET

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-6.0

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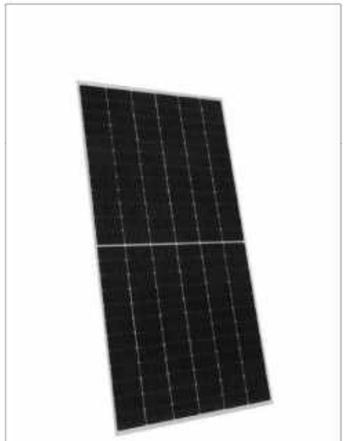
JinKO Solar
Building Your Trust in Solar

TR 72M
520-540 Watt
Mono-facial

Tiling Ribbon (TR) Technology

Positive power tolerance of 0~+3%

Tiger Pro



KEY FEATURES

TR technology + Half Cell
TR technology with Half cell aims to eliminate the cell gap to increase module efficiency (mono-facial up to 21.35 %)

MBB instead of 5BB
MBB technology decreases the distance between bus bars and finger grid line which is benefit to power increase.

Higher lifetime Power Yield
2.0% first year degradation,
0.55% linear degradation

Best Warranty
12 year product warranty,
25 year linear power warranty

Strengthened Mechanical Support
5400 Pa snow load, 2400 Pa wind load

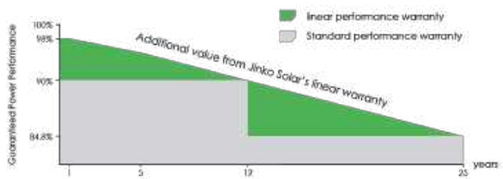
PV CYCLE · TÜVRheinland · CE · POSITIVE QUALITY · CLEAN ENERGY COUNCIL MEMBER

ISO9001:2015, ISO14001:2015, ISO45001:2018 certified factory

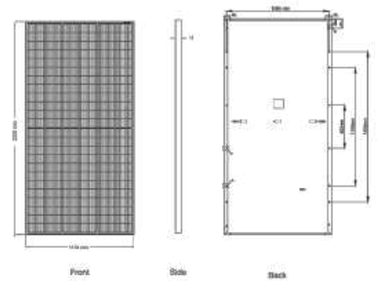
IEC61215, IEC61730 certified product

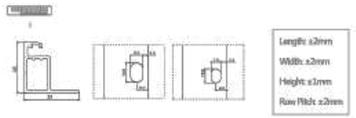
LINEAR PERFORMANCE WARRANTY

12 Year Product Warranty • 25 Year Linear Power Warranty
0.55% Annual Degradation Over 25 years

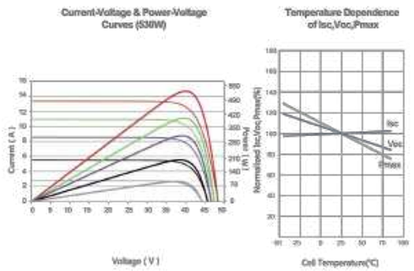


Engineering Drawings





Electrical Performance & Temperature Dependence



Packaging Configuration

(Two pallets = One stack)

31pcs/pallets, 62pcs/stack, 620pcs/ 40'HQ Container

Mechanical Characteristics

Cell Type	P type Mono-crystalline
No.of cells	144 (2×72)
Dimensions	2230×1134×35mm (87.80×44.65×1.38 inch)
Weight	28.9 kg (63.71 lbs)
Front Glass	3.2mm,Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Output Cables	TUV 1×4.0mm² (+): 290mm, (-): 145 mm or Customized Length

SPECIFICATIONS

Module Type	JKM520M-7TL4-V		JKM525M-7TL4-V		JKM530M-7TL4-V		JKM535M-7TL4-V		JKM540M-7TL4-V	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	520Wp	387Wp	525Wp	391Wp	530Wp	394Wp	535Wp	398Wp	540Wp	402Wp
Maximum Power Voltage (Vmp)	40.47V	37.63V	40.61V	37.78V	40.74V	37.92V	40.88V	38.05V	41.01V	38.19V
Maximum Power Current (Imp)	12.85A	10.28A	12.93A	10.34A	13.01A	10.40A	13.08A	10.46A	13.17A	10.52A
Open-circuit Voltage (Voc)	48.99V	46.24V	49.13V	46.37V	49.26V	46.50V	49.40V	46.63V	49.53V	46.75V
Short-circuit Current (Isc)	13.53A	10.93A	13.61A	10.99A	13.69A	11.06A	13.77A	11.12A	13.85A	11.19A
Module Efficiency STC (%)	20.56%		20.76%		20.96%		21.16%		21.36%	
Operating Temperature(℃)	-40℃~+85℃									
Maximum system voltage	1500VDC (IEC)									
Maximum series fuse rating	25A									
Power tolerance	0~+3%									
Temperature coefficients of Pmax	-0.35%/℃									
Temperature coefficients of Voc	-0.28%/℃									
Temperature coefficients of Isc	0.048%/℃									
Nominal operating cell temperature (NOCT)	45±2℃									

*STC: Irradiance 1000W/m² · Cell Temperature 25°C · AM=1.5

NOCT: Irradiance 800W/m² · Ambient Temperature 20°C · AM=1.5 · Wind Speed 1m/s

TR JKM520-540M-7TL4-V-A1-EN

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
MODULES:
(16)JINKO SOLAR JKM580N-72HL4-BDV
(15)JINKO JKM520M-7TL4-V
INVERTER:
(1)SOLAREDGE ENERGY HUB SE7600H-US (240V,1PH)
(1)SOLAREDGE ENERGY HUB SE6000H-US (240V,1PH)
OPTIMIZER:
(31) S650B POWER OPTIMIZERS

ENGINEER OF RECORD

CHAMPION SOLAR

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PROJECT NUMBER:CHAM-011492

MODULE SPECSHEET-2

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-6.1

Single Phase Energy Hub Inverter with Prism Technology

For North America

SE3000H-US / SE3800H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US[1]

HOME BACKUP

Optimized battery storage with HD-Wave technology

- Record-breaking 99% weighted efficiency with 200% DC oversizing
- Small, lightweight, and easy to install
- Modular design, future ready with optional upgrades to:
  - DC-coupled storage for full or partial home backup
  - Built-in consumption monitoring
  - Direct connection to the SolarEdge smart EV charger
- Multi-inverter, scalable storage solution
  - With enhanced battery power up to 10kW
- Integrated arc fault protection and rapid shutdown for NEC 2014, NEC 2017 and NEC 2020, per article 690.11 and 690.12
- Embedded revenue grade production data, ANSI C12.20 Class 0.5

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Single Phase Energy Hub Inverter with Prism Technology

For North America

SE3000H-US / SE3800H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US[1]

	SE3000H-US	SE3800H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	UNITS
OUTPUT - AC ON GRID							
Rated AC Power	3000	3800 @ 240V 3300 @ 208V	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	W
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	W
AC Frequency Range (min - nom - max)	59.3 - 60 - 60.5[2]						Hz
Maximum Continuous Output Current @ 240V	12.5	16	25	32	42	47.5	A
Maximum Continuous Output Current @ 208V	-	16	24	-	-	48.5	A
GFDI Threshold	1						A
Total Harmonic Distortion (THD)	<3						%
Power Factor	1, adjustable -0.85 to 0.85						
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes						
Charge Battery from AC (if allowed)	Yes						
Typical Nighttime Power Consumption	<2.5						W
OUTPUT - AC BACKUP[3]							
Rated AC Power in Backup Operation[4]	3000	3800 7600*	6000	7600 10300*	10000	10300	W
AC L-L Output Voltage Range in Backup	211 - 264						Vac
AC L-N Output Voltage Range in Backup	105 - 132						Vac
AC Frequency Range in Backup (min - nom - max)	55 - 60 - 65						Hz
Maximum Continuous Output Current in Backup Operation	12.5	16 32*	25	32 43*	42	43	A
GFDI	1						A
THD	<5						%
OUTPUT - SMART EV CHARGER AC							
Rated AC Power	9600						W
AC Output Voltage Range	211 - 264						Vac
On-Grid AC Frequency Range (min - nom - max)	59.3 - 60 - 60.5						Hz
Maximum Continuous Output Current @240V (grid, PV and battery)	40						Aac
INPUT - DC (PV AND BATTERY)							
Transformer-less, Ungrounded	Yes						
Max Input Voltage	480						Vdc
Nom DC Input Voltage	380						Vdc
Reverse-Polarity Protection	Yes						
Ground-Fault Isolation Detection	600kΩ Sensitivity						
INPUT - DC (PV)							
Maximum DC Power @ 240V	6000	7600 15200*	12000	15200 22800*	22000	22800	W
Maximum DC Power @ 208V	-	6600	10000	-	-	20000	W
Maximum Input Current[5] @ 240V	8.5	10.5 20*	16.5	20 31*	27	31	Adc
Maximum Input Current[5] @ 208V	-	9	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45						Adc
Maximum Inverter Efficiency	99	99.2					%
CEC Weighted Efficiency	99					99 @ 240V 98.5 @ 208V	%
2-pole Disconnection	Yes						

* Supported with PN SExxxxH-US000xxxx or SExxxxH-US000Nxxxxx

(1) These specifications apply to inverters with part numbers SExxxxH-US000xxxx or SExxxxH-US000Nxxxxx and connection unit model number DCD-1PH-US-PxH-F-x

(2) For other regional settings please contact SolarEdge support

(3) Not designed for standalone applications and requires AC for commissioning. Backup functionality is only supported for 240V grid

(4) Rated AC power in Backup Operation are valid for installations with multiple inverters. For a single backup inverter operation, rated AC power in Backup is 90% of the value stated

(5) A higher current source may be used; the inverter will limit its input current to the values stated

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
MODULES:
(16)JINKO SOLAR JKM580N-72HL4-BDV
(15)JINKO JKM520M-7TL4-V
INVERTER:
(1)SOLAREDGE ENERGY HUB SE7600H-US (240V,1PH)
(1)SOLAREDGE ENERGY HUB SE6000H-US (240V,1PH)
OPTIMIZER:
(31) S650B POWER OPTIMIZERS

ENGINEER OF RECORD

CHAMPION SOLAR

7010 US-61, MINNESOTA CITY, MN 55959.
TEL:(507)312-0190
LIC:ELE#800248

CUSTOMER INFORMATION

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44°58'42.48"N 93°42'28.15"W
APN:331-182-444-0004

AHJ:MN-CITY OF INDEPENDENCE

UTILITY:WH ELECTRIC COOPERATIVE

PROJECT NUMBER:CHAM-011492

INVERTER SPECSHEET-1

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-6.2

/ Single Phase Energy Hub Inverter with Prism Technology

For North America

SE3000H-US / SE3800H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US(1)

	SE3000H-US	SE3800H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	UNITS
INPUT - DC (BATTERY)							
Supported Battery Types	SolarEdge Energy Bank, LG RESU Prime(8)						
Number of Batteries per Inverter	Up to 3 SolarEdge Energy Bank, up to 2 LG RESU Prime						
Continuous Power(7)	6000	7600		10000			W
Peak Power(7)	6000	7600		10000			W
Max Input Current	16	20		26.5			Adc
2-pole Disconnection	Yes						
SMART ENERGY CAPABILITIES							
Consumption Metering	Built - in(8)						
Backup & Battery Storage	With Backup Interface (purchased separately) for service up to 200A, Up to 3 inverters						
EV Charging	Direct connection to Smart EV charger						
ADDITIONAL FEATURES							
Supported Communication Interfaces	RS485, Ethernet, Cellular(9), Wi-Fi (optional), SolarEdge Energy Net (optional)						
Revenue Grade Metering, ANSI C12.20	Built - in(8)						
Integrated AC, DC and Communication Connection Unit	Yes						
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi Access Point for local connection						
DC Voltage Rapid Shutdown (PV and Battery)	Yes, according to NEC 2014, NEC 2017 and NEC 2020 690.12						
STANDARD COMPLIANCE							
Safety	UL1741, UL1741 SA, UL1741 PCS, UL1699B, UL1998, UL9540, CSA 22.2						
Grid Connection Standards	IEEE1547, Rule 21, Rule 14H						
Emissions	FCC part 15 class B						
INSTALLATION SPECIFICATIONS							
AC Output and EV AC Output Conduit Size / AWG Range	1" maximum / 14-4 AWG						
DC Input (PV and Battery) Conduit Size / AWG Range	1" maximum / 14-6 AWG						
Dimensions with Connection Unit (H x W x D)	17.7 x 14.6 x 6.8 / 450 x 370 x 174			17.7 x 14.6 x 6.8 / 450 x 370 x 174 17.7 x 14.6 x 6.8 / 450 x 370 x 174*	17.7 x 14.6 x 6.8 / 450 x 370 x 174		in / mm
Weight with Connection Unit	26 / 11.8			26 / 11.8 41.7 / 18.9*	41.7 / 18.9		lb / kg
Noise	< 25	< 25 < 50*	< 25	< 50			dBA
Cooling	Natural Convection						
Operating Temperature Range	-40 to +140 / -40 to +60(10)						°F / °C
Protection Rating	NEMA 4						

(6) The part numbers SExxxxH-USxxxxxx only support the SolarEdge Energy Bank. The part numbers SExxxxH-USxxNxxxxx support both SolarEdge Energy Bank and LG RESU Prime batteries
Requires supporting inverter firmware
(7) Discharge power is limited up to the inverter rated AC power for on-grid and backup applications
(8) For consumption metering current transformers should be ordered separately: SECT-SPL-225A-T-20 or SEACT0750-400NA-20 units per box. Revenue grade metering is only for production metering
(9) Information concerning the Data Plan's terms & conditions is available in the following link:
https://www.solaredge.com/sites/default/files/se-communication-plan-terms-and-conditions-eng.pdf
(10) Full power up to at least 50°C / 122°F; for power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

RoHS

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
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(15)JINKO JKM520M-7TL4-V
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OPTIMIZER:
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INVERTER SPECSHEET-2

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
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Power Optimizer

For Residential Installations

S440 / S500 / S500B / S650B

POWER OPTIMIZER

Enabling PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detects abnormal PV connector behavior, preventing potential safety issues*
- Module-level voltage shutdown for installer and firefighter safety
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Faster installations with simplified cable management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules

* Functionality subject to inverter model and firmware version

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Power Optimizer

For Residential Installations

S440 / S500 / S500B / S650B

	S440	S500	S500B	S650B	UNIT
INPUT					
Rated Input DC Power[1]	440[2]	500[3]		650	W
Absolute Maximum Input Voltage (Voc)	60		125	85	Vdc
MPPT Operating Range	8 – 60		12.5 – 105	12.5 – 85	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5[2]	15			Adc
Maximum Efficiency	99.5				%
Weighted Efficiency	98.6				%
Overvoltage Category	II				
OUTPUT DURING OPERATION					
Maximum Output Current	15				Adc
Maximum Output Voltage	60		80		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)					
Safety Output Voltage per Power Optimizer	1 ± 0.1				Vdc
STANDARD COMPLIANCE[4]					
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011				
Safety	IEC62109-1 (class II safety), UL1741				
Material	UL94 V-0, UV Resistant				
RoHS	Yes				
Fire Safety	VDE-AR-E 2100-712:2018-12				
INSTALLATION SPECIFICATIONS					
Maximum Allowed System Voltage	1000				Vdc
Dimensions (W x L x H)	129 x 155 x 30		129 x 165 x 45		mm
Weight	720		790		gr
Input Connector	MC4[5]				
Input Wire Length	0.1				m
Output Connector	MC4				
Output Wire Length	(+) 2.3, (-) 0.10				m
Operating Temperature Range[6]	-40 to +85				°C
Protection Rating	IP68				
Relative Humidity	0 – 100				%

(1) Rated power of the module at STC will not exceed the Power Optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.
(2) For installations after April 1st, 2024, the Rated Input DC Power for S440 is 490W, and the Maximum Isc of Connected PV Module is 15A.
(3) For installations after April 1st, 2024, the Rated Input DC Power for S500 and S500B is 550W.
(4) For details about CE compliance, see Declaration of Conformity – CE.
(5) For other connector types please contact SolarEdge.
(6) Power derating is applied for ambient temperatures above +85°C for S440 and S500, and for ambient temperatures above +75°C for S500B. Refer to the Power Optimizers Temperature Derating technical note for details.

PV System Design Using a SolarEdge Inverter[7]		SolarEdge Home Wave Inverter Single Phase	SolarEdge Home Short String Inverter Three Phase	Three Phase for 230/400V Grid	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	S440, S500	8	9	16	18	
	S500B, S650B	6	8	14		
Maximum String Length (Power Optimizers)		25	20	50		
Maximum Continuous Power per String		5700	5625	11,250	12,750	W
Maximum Allowed Connected Power per String[8] (In multiple string designs, the maximum is permitted only when the difference in connected power between strings is 2,000W or less)		6800[9]	See[9]	13,500	15,000	W
Parallel Strings of Different Lengths or Orientations		Yes				

(7) It is not allowed to mix S-series and P-series Power Optimizers in new installations in the same string.
(8) If the inverter's rated AC power < the maximum continuous power per string, then the maximum connected power per string will be able to reach up to the inverter's maximum input DC power. Refer to the Single String Design Guidelines application note for details.
(9) For inverters with a rated AC power ≥ 8000W that are connected to at least two strings.

CE RoHS

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
MODULES:
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(15)JINKO JKM520M-7TL4-V
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OPTIMIZER:
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LIC:ELE#800248

CUSTOMER INFORMATION

NAME&ADDRESS:

JEREMIAH STAPLES
25 GAME FARM RD N, MAPLE PLAIN, MN 55359.

44°58'42.48"N 93°42'28.15"W
APN:331-182-444-0004

AHJ:MN-CITY OF INDEPENDENCE

UTILITY:WH ELECTRIC COOPERATIVE

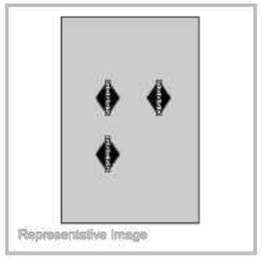
PROJECT NUMBER:CHAM-011492

OPTIMIZER SPECSHEET

DESIGNER/CHECKED BY:

MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-6.4



Catalog No. T1220

Description: TERMINAL BOX 200A 14X21 1PH

UPC No 784567574906

Home > Terminal Boxes > Terminal Boxes

Midwest Electric's Terminal Boxes are for use in converting from overhead to underground services and for multi-circuit wiring. The NEMA 3R enclosure provides protection for all terminations inside and provides a convenient, timesaving means of wire splices and connections. Midwest offers a full line of terminal boxes for 240-volt, single-phase and 600-volt, three-phase ratings. Typical applications, both indoors and outdoors, include inter building wiring on farms, convenient splicing means for industrial use, and commercial construction.

Descriptors

Category	Terminal Boxes

Specifications

Amps	200
Phase	1
Volts	120/240
AIC	10,000
Cabinet Size	14 in. W X 21 in. H
Hub Provision	Yes
Wire Range	(3) 1/0-250, (3) 12-1/0
Unit Weight	19 lb

Classifications

Standard Package	1
Stock Class Code	Stock

Approvals

Certification	UL/CUL

Publications

Title	Publication No.	Publication Type
Storm Season Brochure This brochure highlights the most popular products sold during storm season.	MET1005	Brochures
Terminal Boxes, 120/240V - 600V 2 pages. MET-021 Rev. C.	MET-021B	Brochures

Additional Documentation: Visit our Publication Library to find technical documentation, time current curves, CSI Specifications and promotional literature.

RVR ENGINEERING

SYSTEM INFORMATION

DC SYSTEM SIZE: 17080W
AC SYSTEM SIZE: 13600W
MODULES:
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(15)JINKO JKM520M-7TL4-V
INVERTER:
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(1)SOLAREDGE ENERGY HUB SE6000H-US (240V,1PH)
OPTIMIZER:
(31) S650B POWER OPTIMIZERS

ENGINEER OF RECORD

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TAP BOX SPECSHEET

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Tech Brief

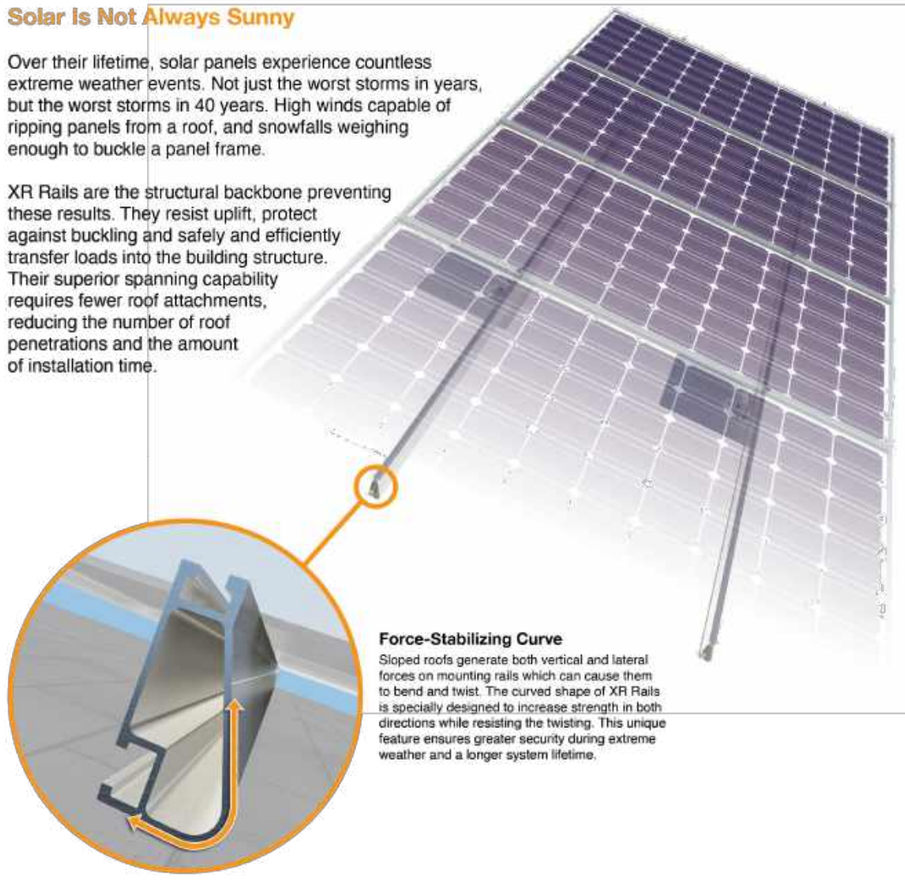
IRONRIDGE

XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

Tech Brief

XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available

XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

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RACKING SPECSHEET

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Tech Brief

IRONRIDGE

QuickMount® HUG

The Respect Your Roof Deserves

When integrating with a home, solar attachments must be dependable for the lifetime of the rooftop. Due to recent innovations, many asphalt shingles have bonded courses. A mount that protects without the need to pry shingles can really speed things up.

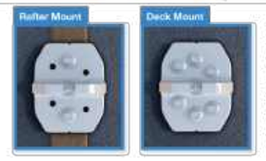
Halo UltraGrip®(HUG®) is here to respect the roof. Its Halo is a cast-aluminum barrier that encases the UltraGrip, our industrial-grade, foam-and-mastic seal. This allows HUG to accelerate the installation process and provide the utmost in waterproofing protection. Give your roof a HUG.®

Multi-Tiered Waterproofing
HUG® utilizes a multi-tiered stack of components to provide revolutionary waterproofing protection. The Halo cast-aluminum, raised-perimeter foundation surrounds the UltraGrip base—a foam-backed mastic seal combination that prevents water intrusion by adhering and sealing with the shingle surface.

Halo UltraGrip™ is part of the QuickMount® product line.

UltraGrip® Seal Technology
HUG UltraGrip utilizes a state-of-the-art seal design that uses a unique, foam-and-mastic combination. The foam-backed adhesive provides an entirely new flashing system that conforms and adheres to every nook and cranny of composition shingles, filling gaps and shingle step-downs (up to 1/8" in height).

Triple Rated & Certified to Respect the Roof™
UL 2703, 441 (27)
TAS 100(A)-95



Rafter & Deck Mounting Options
Mount HUG® to the roof rafters, the roof deck, or both with our custom-engineered RD (rafter-or-deck) Structural Screw. The RD Structural Screw anchors HUG to the roof with an EPDM sealing washer, completing the stack of waterproofing barriers. See backside for more installation information.

Tech Brief

Adaptive, Rafter-Friendly Installation

Hit the rafter? Good to go!
When you find a rafter, you can move on. Only 2 RD Structural Screws are needed.

Miss the rafter? Try it again.
Place another screw to the left or right. If rafter is found, install 3rd and final screw.

Still no luck? Install the rest.
If more than 3 screws miss the rafter, secure six screws to deck mount it.

Trusted Strength & Less Hassle

25-Year Warranty
Product guaranteed free of impairing defects.

Structural capacities of HUG® were reviewed in many load directions, with racking rail running cross-slope or up-slope in relation to roof pitch.

For further details, see the HUG certification letters for attaching to rafters and decking.

IronRidge designed the HUG, in combination with the RD Structural Screw to streamline installs, which means the following:

- No prying shingles
- No roof nail interference
- No pilot holes necessary
- No sealant (in most cases)
- No butyl shims needed

Attachment Loading
The rafter-mounted HUG has been tested and rated to support 1004 (lbs) of uplift and 368 (lbs) of lateral load.

Structural Design
Parts are designed and certified for compliance with the International Building Code & ASCE/SEI-7.

Water Seal Ratings
HUG passed both the UL 441 Section 27 "Rain Test" and TAS 100(A)-95 "Wind Driven Rain Test" by Intertek.

UL 2703 System
Systems conform to UL 2703 mechanical and bonding requirements. See Flush Mount Manual for more info.

RVR ENGINEERING

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MOUNTING SPECSHEET

DESIGNER/CHECKED BY:
MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
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Tech Brief

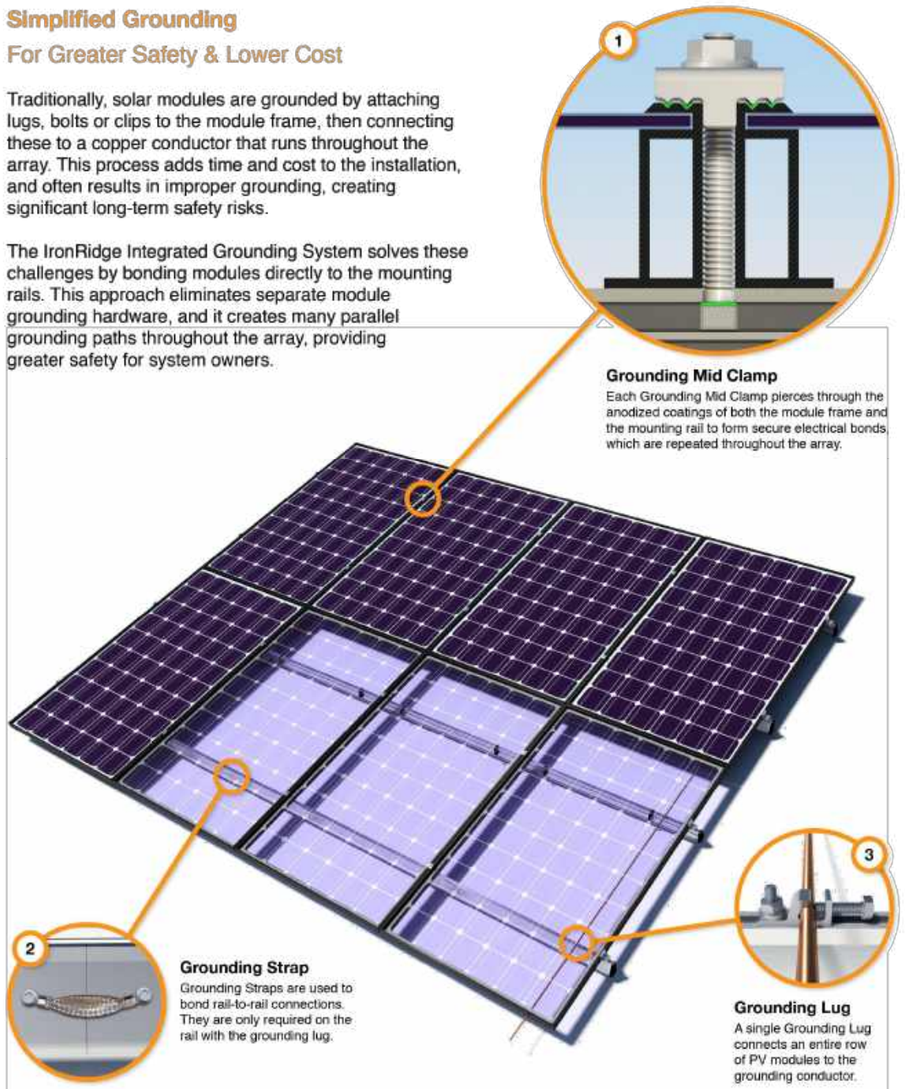
IRONRIDGE

Integrated Grounding System

Simplified Grounding
For Greater Safety & Lower Cost

Traditionally, solar modules are grounded by attaching lugs, bolts or clips to the module frame, then connecting these to a copper conductor that runs throughout the array. This process adds time and cost to the installation, and often results in improper grounding, creating significant long-term safety risks.

The IronRidge Integrated Grounding System solves these challenges by bonding modules directly to the mounting rails. This approach eliminates separate module grounding hardware, and it creates many parallel grounding paths throughout the array, providing greater safety for system owners.



Grounding Mid Clamp
Each Grounding Mid Clamp pierces through the anodized coatings of both the module frame and the mounting rail to form secure electrical bonds, which are repeated throughout the array.

Grounding Strap
Grounding Straps are used to bond rail-to-rail connections. They are only required on the rail with the grounding lug.

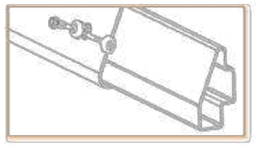
Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.

Tech Brief

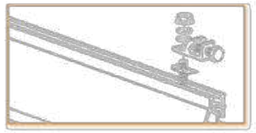
Installation Overview

1 Install Roof Attachments
- Install appropriate roof flashing and/or standoff for roof type.
- Attach L-Feet to flashing or standoff.

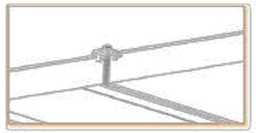
2 Prepare Rail Connections
- Insert splice into first rail, then secure with Grounding Strap and self-drilling screw.
- Slide second rail over splice, then secure with opposite end of Grounding Strap and self-drilling screw.



3 Mount & Ground Rails
- Attach rails to L-Feet and level rails.
- Install one Grounding Lug per row of modules.
- Connect Grounding Lug to grounding conductor.



4 Install Modules & Clamps
- Install first module using End Clamps and Grounding Mid Clamps.
- Install additional modules using Grounding Mid Clamps.
- Finish row with a second pair of End Clamps.



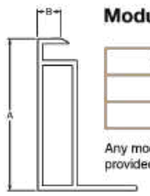
Testing & Certification

The IronRidge Integrated Grounding System has been tested and certified to UL 2703 by Intertek Group plc.

UL 2703 is a proposed UL standard for evaluating solar module mounting and clamping devices. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

The testing process closely mirrors that of UL 1703, the solar module testing standard, including temperature and humidity cycling, electrical and mechanical load testing, and manufacturing quality reviews.

Module Frame Compatibility



Dimension	Range
A	31.0mm - 51.0mm
B	5.08mm (minimum)

Any module frames whose parameters are not listed in the provided table have not been tested for compatibility.

The Grounding Clamp has proven robust in grounding 60-cell and 72-cell solar module frames with box construction and a range of anodization thicknesses.

All solar modules listed to UL 1703 and with frame construction within the parameters stated above are compatible with the IronRidge Integrated Grounding System.

Go to ironridge.com/ig

RVR ENGINEERING

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INTEGRATED GROUNDING SPECSHEET

DESIGNER/CHECKED BY:

MS/VR

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Tech Brief

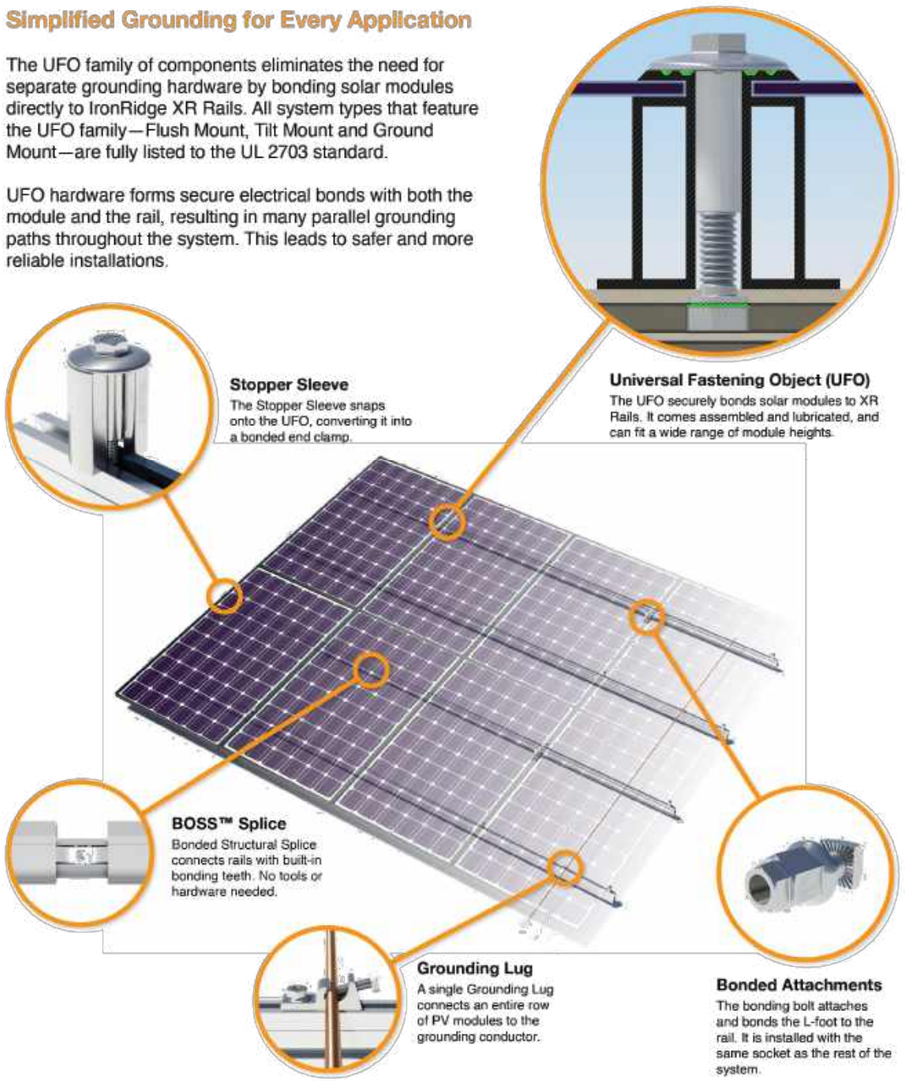
IRONRIDGE

UFO Family of Components

Simplified Grounding for Every Application

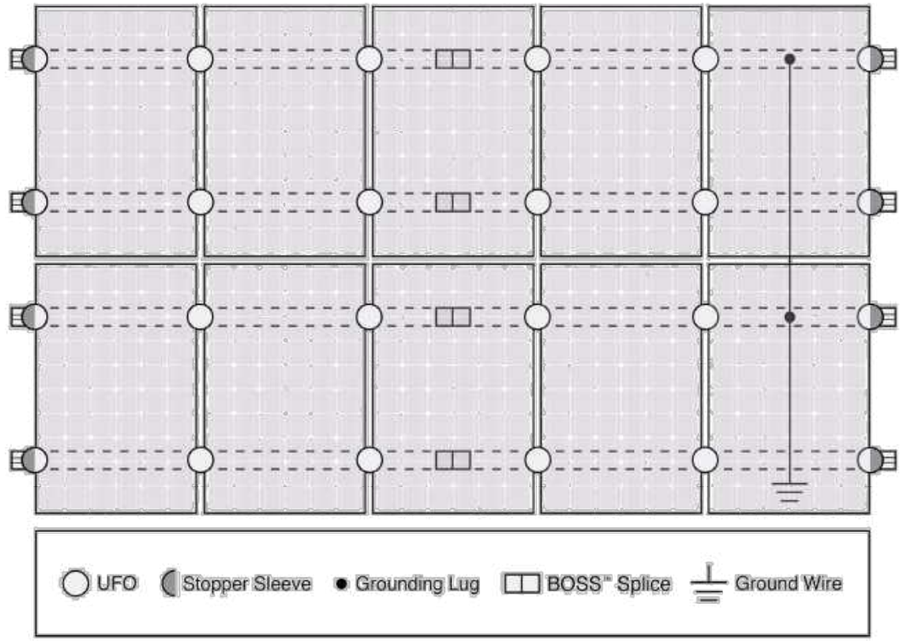
The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



Tech Brief

System Diagram



Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to IronRidge.com/UFO

Cross-System Compatibility			
Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✔	✔	XR100 & XR1000
UFO/Stopper	✔	✔	✔
BOSS™ Splice	✔	✔	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Compatible with most MLPE manufacturers. Refer to system installation manual.		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

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Tech Brief

IRONRIDGE

Class A Fire Rating

Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

These new requirements are being adopted throughout the country in 2016.

IronRidge Certification

IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Flush Mount and Tilt Mount Systems were tested on sloped and flat roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

Fire Testing Process

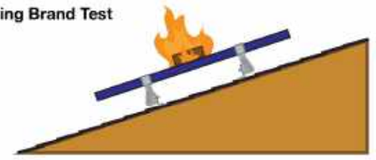
Test Setup

Solar Modules
Solar modules are given a Type classification based on their materials and construction.

Mounting System
Mounting is tested as part of a system that includes type-tested modules and fire-rated roof covering.

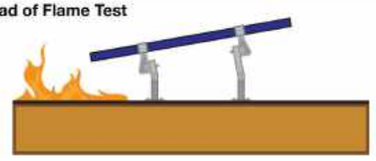
Roof Covering
Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.

Burning Brand Test



A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test



Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

System	Roof Slope	Module	Fire Rating*
Flush Mount	Any Slope	Type 1, 2, & 3	Class A
Tilt Mount	≤ 6 Degrees	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs.

Tech Brief

Frequently Asked Questions

What is a "module type"?

The new UL1703 standard introduces the concept of a PV module type, based on 4 construction parameters and 2 fire performance parameters. The purpose of this classification is to certify mounting systems without needing to test it with every module.

What roofing materials are covered?

All fire rated roofing materials are covered within this certification including composition shingle, clay and cement tile, metal, and membrane roofs.

What if I have a Class C roof, but the jurisdiction now requires Class A or B?

Generally, older roofs will typically be "grandfathered in", and will not require re-roofing. However, if 50% or more of the roofing material is replaced for the solar installation the code requirement will be enforced.

Where is the new fire rating requirement code listed?

2012 IBC: 1509.7.2 Fire classification. Rooftop mounted photovoltaic systems shall have the same fire classification as the roof assembly required by Section 1505.

Where is a Class A Fire Rating required?

The general requirement for roofing systems in the IBC refers to a Class C fire rating. Class A or B is required for areas such as Wildland Urban Interface areas (WUI) and for very high fire severity areas. Many of these areas are found throughout the western United States. California has the most Class A and B roof fire rating requirements, due to wild fire concerns.

Are standard mid clamps covered?

Mid clamps and end clamps are considered part of the PV "system", and are covered in the certification.

What attachments and flashings are deemed compatible with Class A?

Attachments and their respective flashings are not constituents of the rating at this time. All code-compliant flashing methods are acceptable from a fire rating standpoint.

What mounting height is acceptable?

UL fire testing was performed with a gap of 5", which is considered worst case in the standard. Therefore, the rating is applicable to any module to roof gap.

Am I required to install skirting to meet the fire code?

No, IronRidge achieved a Class A fire rating without any additional racking components.

What determines Fire Classification?

Fire Classification refers to a fire-resistance rating system for roof covering materials based on their ability to withstand fire exposure.

Class A - effective against severe fire exposure
Class B - effective against moderate fire exposure
Class C - effective against light fire exposure

What if the roof covering is not Class A rated?

The IronRidge Class A rating will not diminish the fire rating of the roof, whether Class A, B, or C.

What tilts is the tilt mount system fire rated for?

The tilt mount system is rated for 1 degrees and up and any roof to module gap, or mounting height.

More Resources

Installation Manuals
Visit our website for manuals that include UL 2703 Listing and Fire Rating Classification.
Go to IronRidge.com

Engineering Certification Letters
We offer complete engineering resources and pre-stamped certification letters.
Go to IronRidge.com

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ENGINEER OF RECORD

CHAMPION SOLAR

7010 US-61, MINNESOTA CITY, MN 55959.
TEL:(507)312-0190
LIC:ELE#800248

CUSTOMER INFORMATION

NAME&ADDRESS:
JEREMIAH STAPLES
25 GAME FARM RD N, MAPLE PLAIN, MN 55359.

44°58'42.48"N 93°42'28.15"W
APN:331-182-444-0004

AHJ:MN-CITY OF INDEPENDENCE

UTILITY:WH ELECTRIC COOPERATIVE

PROJECT NUMBER:CHAM-011492

FIRE RATING SPECSHEET

DESIGNER/CHECKED BY:
MS/VR

SCALE:AS NOTED	PAPER SIZE:17"x11"	
DATE:11/15/2024	REV:A	PV-6.10

1.0 GENERAL NOTES

1.1 THE CONTRACTOR(S) MUST VISIT THE SITES AND BECOME FAMILIARIZED WITH ALL CHARACTERISTICS AFFECTING NEW AND EXISTING CONSTRUCTIONS ON DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ANY CHANGES, ALTERATIONS, OR REVISIONS MUST BE REPORTED TO THE ENGINEER.

1.2 ENGINEER'S SEAL DOES NOT APPLY TO THE ADEQUACY OF THE EXISTING STRUCTURE TO SUPPORT THE LOADS IMPOSED BY THE ARRAY AND MOUNTING SYSTEM. EXISTING STRUCTURE ADEQUACY SHALL BE VERIFIED BY OTHERS.

1.3 OPSUN RACKING EXPECTS THAT THE BUILDING WAS PREVIOUSLY APPROVED BY THE MUNICIPAL BUILDING DEPARTMENT, AND THAT IT CONFORMS WITH REQUIREMENTS OF THE RELEVANT BUILDING CODES.

1.4 PROVIDE A MINIMUM SEPARATION BETWEEN THE RACKING SYSTEM AND ROOF EDGE AS NOTED ON THE DRAWING.

1.5 REVIEW OF THE STRUCTURAL CAPACITY OF THE EXISTING ROOF TO SUPPORT THE PV SYSTEM IS TO BE DONE BY OTHERS.

1.6 THE RACKING SYSTEM IS DESIGNED TO RESIST UPLIFT, OVERTURNING, AND SLIDING.

1.7 NOTES ON THIS PAGE APPLY BY DEFAULT. CAN DIFFER WHERE INDICATED IN THIS DOCUMENT

2.0 GENERAL INSTALLATION NOTES

2.1 READ STRUCTURAL DRAWINGS / BUILDING PERMIT DRAWINGS / CONSTRUCTION DRAWINGS IN CONJUNCTION WITH THE PRODUCT INSTALLATION INSTRUCTIONS (WITHIN THIS DOCUMENT AND/OR OTHER PROVIDED DOCUMENTS).

2.2 ON-SITE POSITIONING OF COMPONENTS, SUB ASSEMBLIES AND ASSEMBLIES MUST BE DONE USING DIMENSIONS PROVIDED IN THIS DOCUMENT. IF POSITIONING WITH THE PROVIDED DIMENSIONS IS NOT POSSIBLE, THE INSTALLER SHALL CONTACT AN OPSUN SYSTEMS REPRESENTATIVE.

2.3 ANY PERMANENT DEFORMATION (PLASTIC DEFORMATION) DUE TO OVER-TORQUING, HANDLING, SHIPPING OR ANY OTHER REASONS SHOULD BE BROUGHT TO THE ATTENTION OF AN OPSUN SYSTEMS REPRESENTATIVE.

2.4 THERE MUST BE A MINIMAL 13mm (0.5in) THERMAL BREAK FOR ANY CONTINOUS RAIL LENGTH OF 14.6m (48ft).

2.5 IF THE INSTALLER BREAKS THE BONDING OF THE PROVIDED HEX CAP SCREWS WITH LOCTITE BY TIGHTENING AND UNTIGHTENING THE FASTENER, THE INSTALLER MUST USE NEW FASTENERS, USE LOCTITE 204 OR EQUIVALENT OR USE AND ADEQUATE LOCK WASHER.

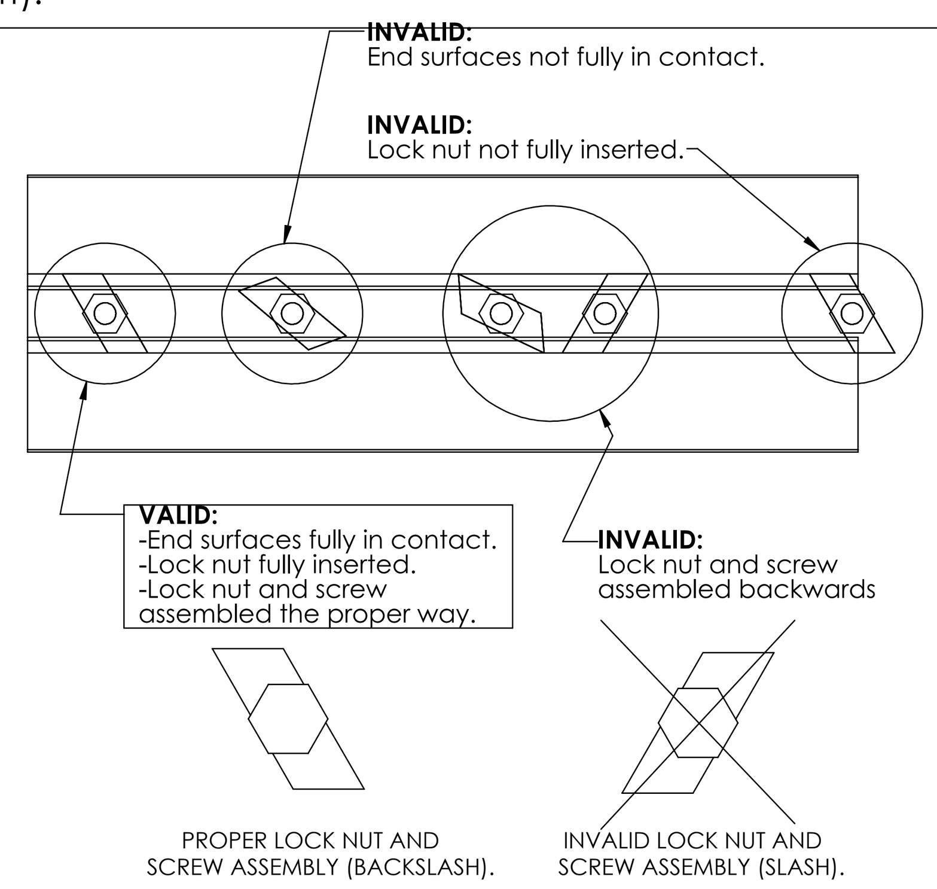
2.6 ALL PV WIRES MUST BE SECURED USING A TIE OR STAINLESS STEEL CABLE CLIP (WILEY / BURNDY OR EQ. BY OTHERS) ATTACHED TO THE RACKING STRUCTURE AT EACH 1m (3.28 ft).

2.7 OPSUN'S LOCK NUT (LN2-AL):

2.7.1 END SURFACES OF THE LOCK NUT MUST BE FULLY IN CONTACT WITH THE INTERIOR SURFACES OF RAILS.

2.7.2 LOCK NUTS MUST BE FULLY INSERTED INTO RAIL SLOTS. LOCK NUTS MUST NOT PROTUDE AT RAIL ENDS.

2.7.3 LOCK NUTS MUST BE ASSEMBLED TO LOOK LIKE A BACKSLASH WHEN LOOKING AT THE FASTERNER'S HEAD.



2.8 REQUIRED FASTENERS TIGHTENING TORQUE

2.8.1 3/8" HEX CAP SCREWS (BL-SS-3/8-XX) COUPLED TO LOCK NUTS (LN2-AL) MUST BE TORQUED AT 16 N·m (12 lbf · ft).

2.8.2 3/8" HEX CAP SCREWS (BL-SS-3/8-XX) COUPLED TO HEX NUTS (N-SS-3/8) OR KEPS NUTS (KN-SS-3/8) MUST BE TORQUED AT 27 N·m (20 lbf · ft).

2.8.3 SOCKET HEAD SCREW 5/16" (USED ON ZBC/UBC) MUST BE TORQUED AT 14 N·m (10 lbf · ft).

2.8.4 M8 SCREWS MUST BE TORQUED AT 8.-9.5 N·m (6-7 lbf · ft).

2.8.5 5/16" HEX CAP SCREWS COUPLED TO FIT NUTS (FN4-AL) MUST BE TORQUED AT 9.0 N·m (80 lbf · in).

2.8.6 1/2"HEX CAP BOLTS (BL-SS-1/2-XX) COUPLED TO HEX NUTS (N-SS-1/2) MUST BE TORQUED AT 58.3 N·m (43 lbf · ft)

2.8.7 1/4"HEX CAP BOLTS (BL-SS-1/4-XX) COUPLED TO HEX NUTS (N-SS-1/4) MUST BE TORQUED AT 13.5 N·m (10 lbf · ft)

2.8.8 10/32"HEX CAP BOLTS (BL-SS-10/32-XX) COUPLED TO HEX NUTS (N-SS-10/32) MUST BE TORQUED AT 3.6 N·m (32 lbf · in)

3.0 MATERIALS

3.1 RAILS ARE MADE OF ALUMINIUM 6005A-T61.

3.2 FIXTURES ARE MADE OF ALLUMINIUM 6005A-T61, 6005-T5 AND 6061-T6.

3.3 ALL FASTENERS ARE MADE OF STAINLESS STEEL 304 AND 316 EXCEPT WHERE INDICATED.

3.4 LOCK NUTS (LN2) AND FIT NUTS (FN4) ARE MADE OF ALUMINIUM 6061-T6.

4.0 DESIGN/CODES COMPLIANCE AND REFERENCES

4.1 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES[ASCE 7-16]

4.2 ALUMINUM DESIGN MANUAL 2020

4.3 AISC DESIGN GUIDE 27 - STRUCTURAL STAINLESS STEEL

4.4 WIND LOAD ON OPSUN PV MOUNTING SYSTEMS, BLWT-SS36-2010, ALAN G. DAVENPORT WIND ENGINEERING GROUP, S. FARQUHAR, G.A KOPP

4.5 OPSUN LARGE ROOF PV ARRAY STUDY - BLWT-SS6-2020_V3
4.6 OPSUN LARGE ROOF PV ARRAY - PORTRAIT ORIENTATION BLWT-P101-IR1-2022

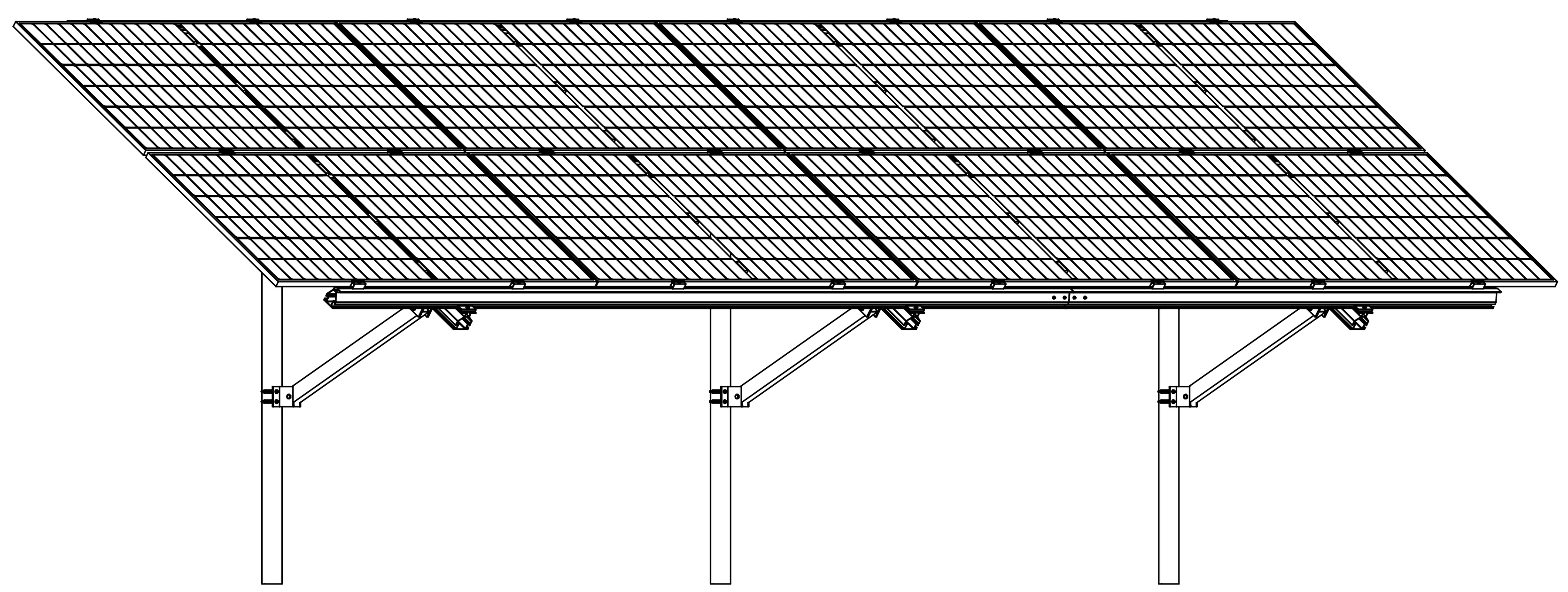
4.7 THE ADDITION OF THE SOLAR PANELS IS NOT EXPECTED TO RESULT IN SIGNIFICANT CHANGES TO OVERALL ROOF SNOW LOADS AND PATTERNS. WITH SOLAR PANELS IN PLACE SNOW LOADS TEND TO CONCENTRATE IN THE SPACES BETWEEN ROWS AND IN THE GAPS BETWEEN MODULES,THE DESIGN SNOW LOADS FOR THE PV PANEL SURFACES THEMSELVES ARE USUALLY EQUIVALENT TO THE WORSE SNOW FALL EVENT IN 50 YEARS.

5.0 SPECIFIED COMPONENT CERTIFICATION

5.1 FATH CLICLOC (SOLAR MODULE END AND MID CLAMPS) SHOULD BE IN ACCORDANCE WITH : CSA C22.2#41 GROUNDING AND BONDING EQUIPMENT; AND ANSI-UL 467 ED.9 STANDARD FOR SAFETY FOR GROUNDING AND BONDING EQUIPMENT.

5.2 PV MODULES (BY OTHERS) SHOULD BE IN ACCORDANCE WITH UL-1703.

5.3 GROUND LUGS (BY OTHERS) SHOULD BE IN ACCORDANCE WITH ANSIUL 467 ED.9 STANDARD FOR SAFETY FOR GROUNDING AND BONDING EQUIPMENT



LATITUDE, LONGITUDE	(44.978350, -93.708140)
DESIGN CRITERIA	
CODE(S)	ASCE 7-16
CITY REFERENCE	INDEPENDANCE, MN
RISK CATEGORY	II
WIND	
BASIC WIND SPEED, V	109 MPH
EXPOSURE CATEGORY	C
ROOF HEIGHT	12 ft
EXPOSURE COEFFICIENT, K_z	0.85
DIRECTIONALITY FACTOR, K_d	1.0
TOPOGRAPHIC FACTOR, K_{zt}	1.0
Ground Elevation Factor, K_e	0.96
SNOW	
GROUND SNOW LOAD, P_g	50 PSF
IMPORTANCE FACTOR, I_S	1.0
SLOPE FACTOR, C_S	35° : 0.54 / 55° : 0.23
THERMAL FACTOR, C_t	1.0
EXPOSURE FACTOR, C_e	1.0
PV MODULE	
MANUFACTURER	Jinko Solar
MODEL	JKM580N-72HL4-BDV
DIMENSIONS	2278x1134x30mm(89.7x44.6x1.18in)
MASS	32 kg (70.55 lb)

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Note

Revision

Rev.#	Review	Date
01	For Coordination	2024-08-23

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amy@championsolar.com

Project Info

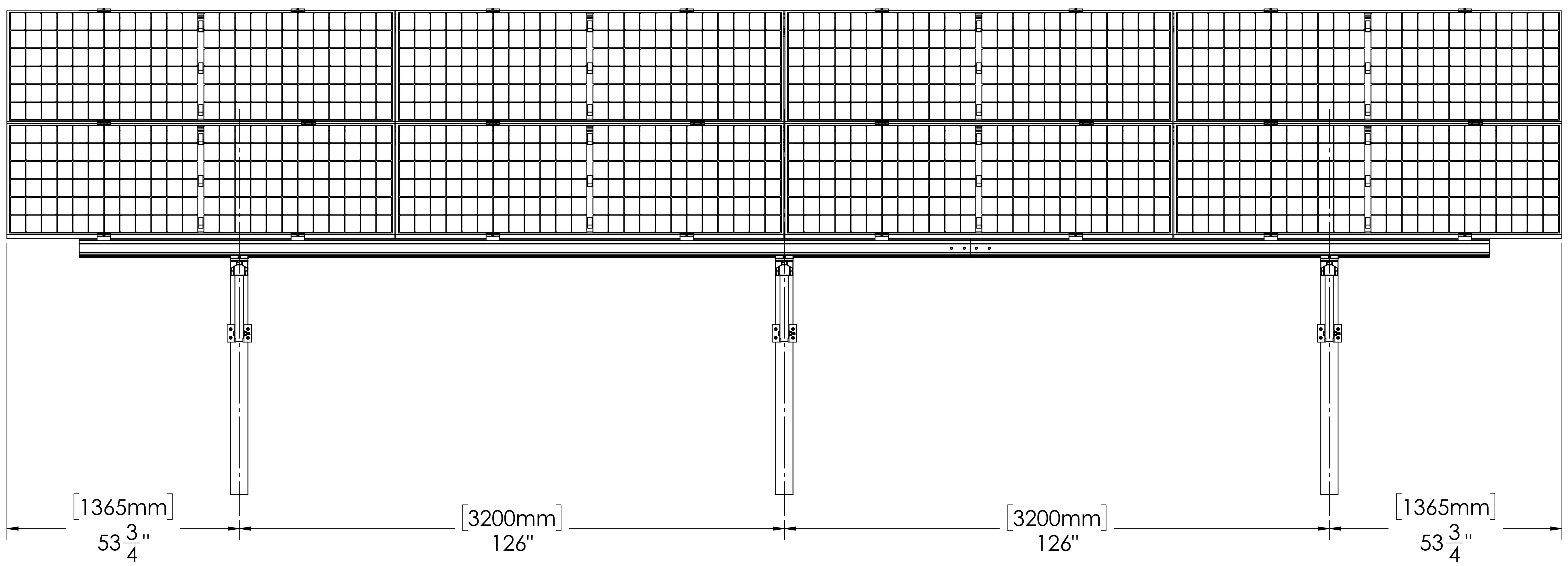
Project Name:
GAME FARM RD

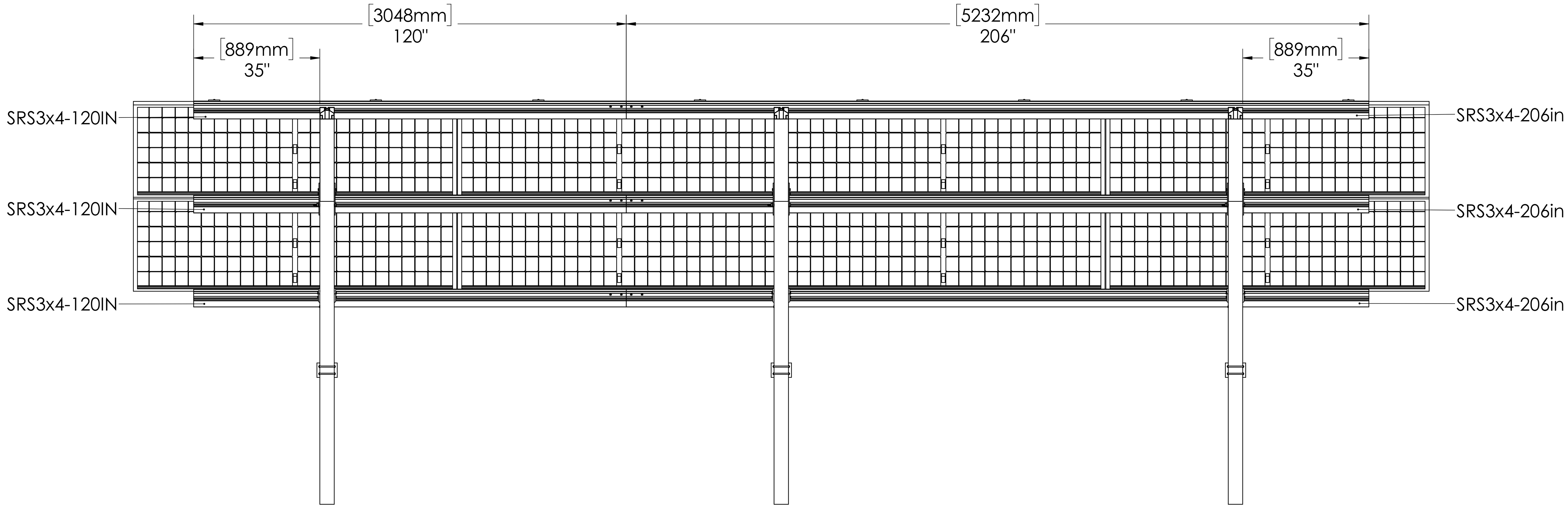
Project Number:
cmn-24080505

Project Address:
25 GAME FARM RD
INDEPENDENCE, Minnesota, 55359

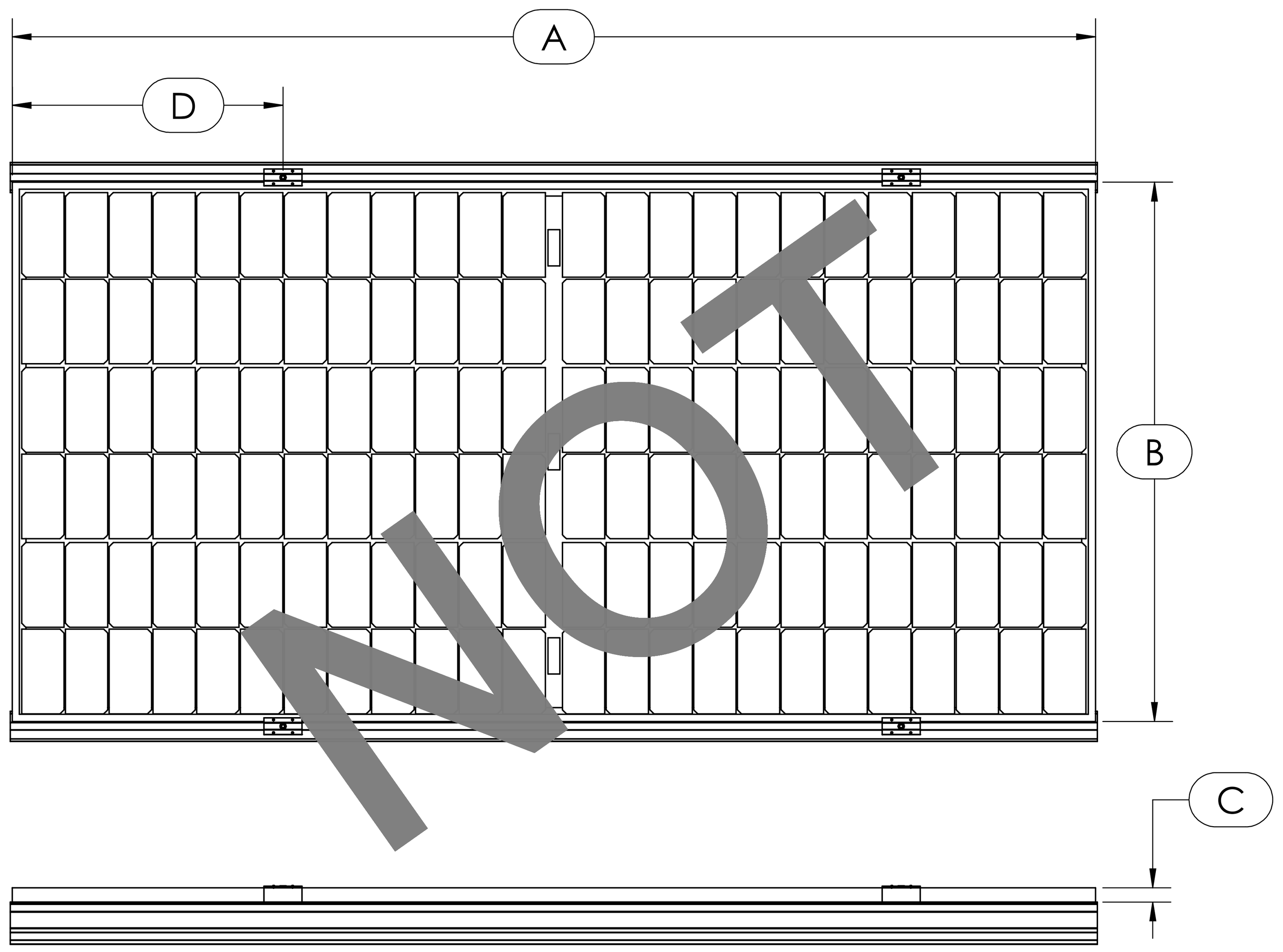
Title
NOTES

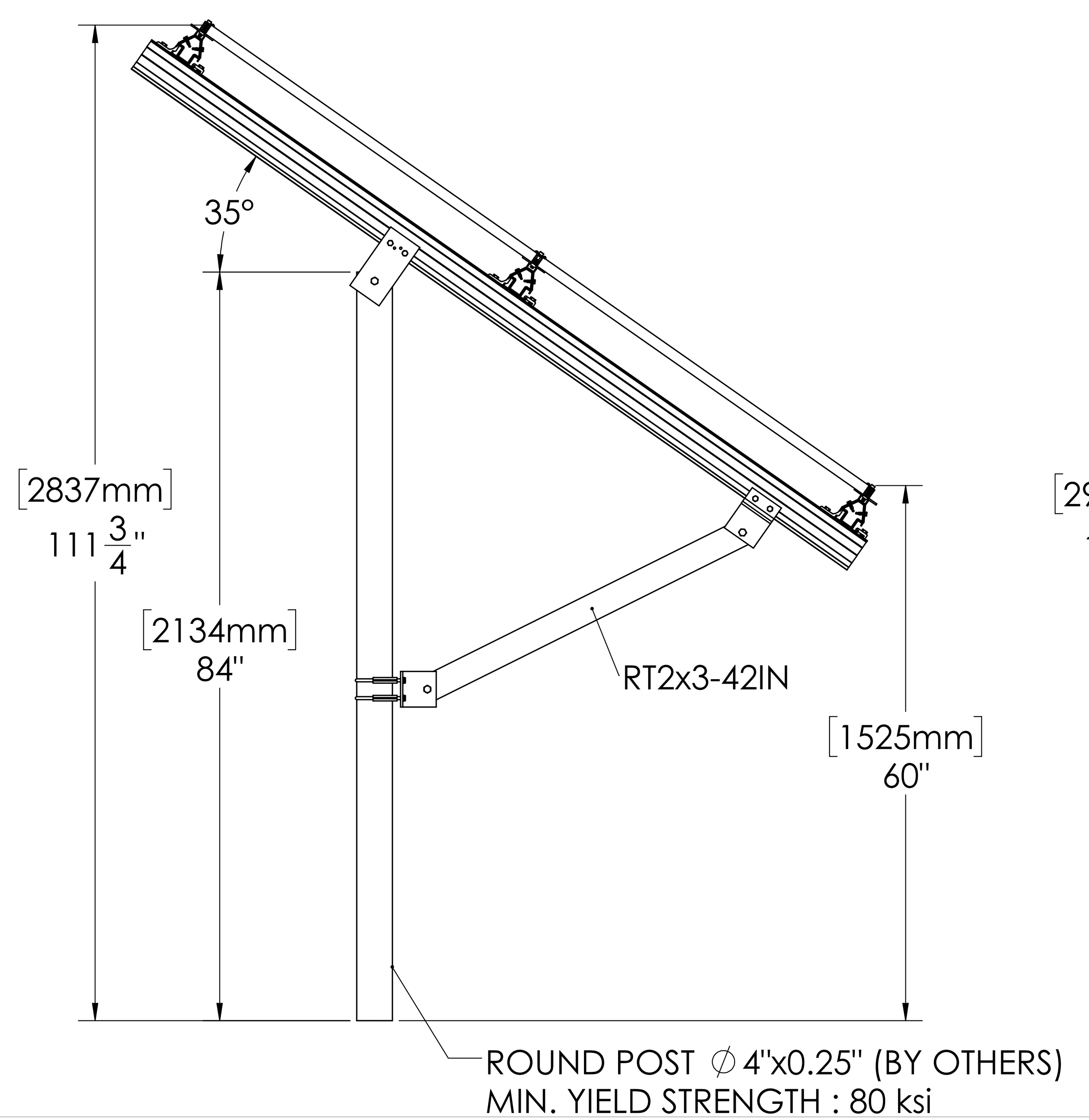
Drawn By: NL	Check By: FM
Drawn Date: 2024-08-23	Rev: 01
Scale: 1:24	Page: PV0.101

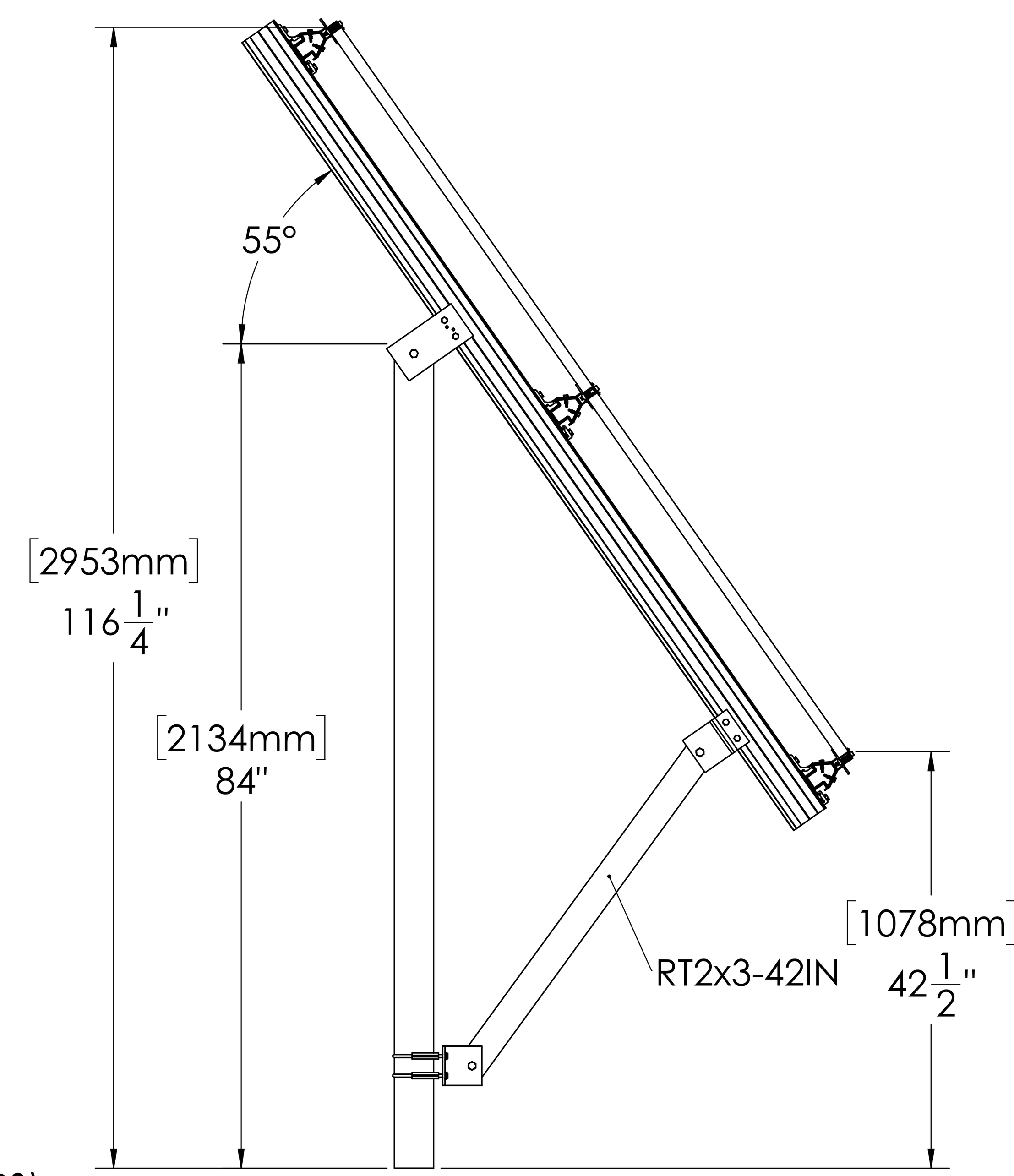




PV PANEL DIMENSION
SEE PAGE PV1.501







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Project Info

Project Name:
GAME FARM RD

Project Number:
cmn-24080505

Project Address:
25 GAME FARM RD
INDEPENDENCE, Minnesota, 55359

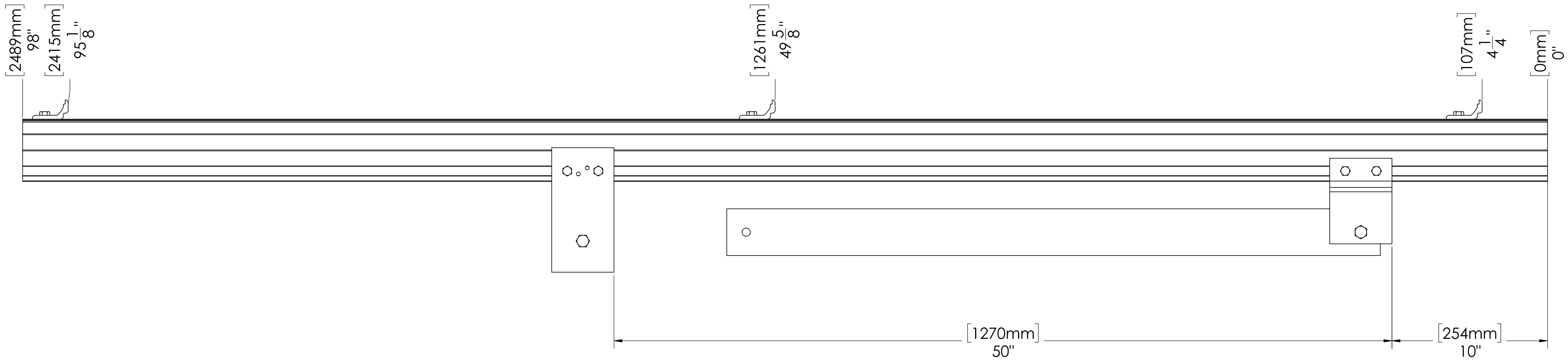
Title
SYSTEM DETAILS

Drawn By:	Check By:
NL	FM
Drawn Date: 2024-08-22	Rev 01
Scale: 1:20	Page: PV1.301

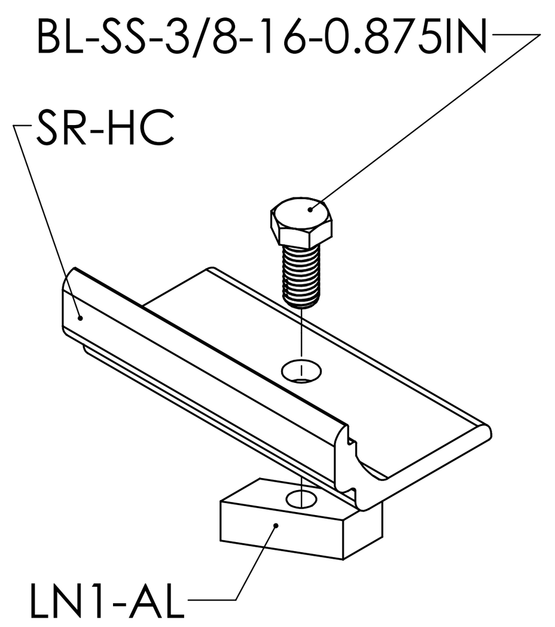
GM-S-BS-VT-L-JSO11-SRS34-10.5FT-2x4-3F-D4.0

SRS4 PREASSEMBLY

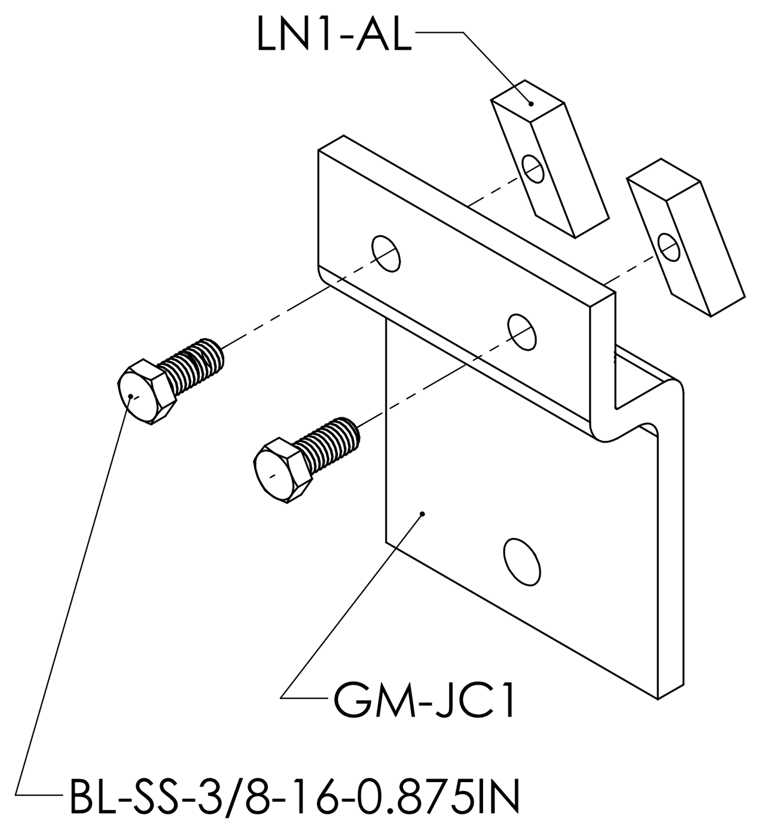
PANEL BRANDS	SOLAR PANEL MODELS	PV PANEL DIMENSION					RAIL LENGHT	HOOK CLAMP POSITION			POST
		WEIGHT	A	B	C	D	L1	H1	H2	H3	DIAMETER
Jinko Solar	JKMxxxN-72HL4-BDV	32kg (70.5lb)	2278mm (89.69in)	1134mm (44.65in)	30mm (1.18in)	570mm (22.4in)	2489mm (98in)	107mm (4.25in)	1261mm (49.63in)	2415mm (95.13in)	102mm (4.0in)



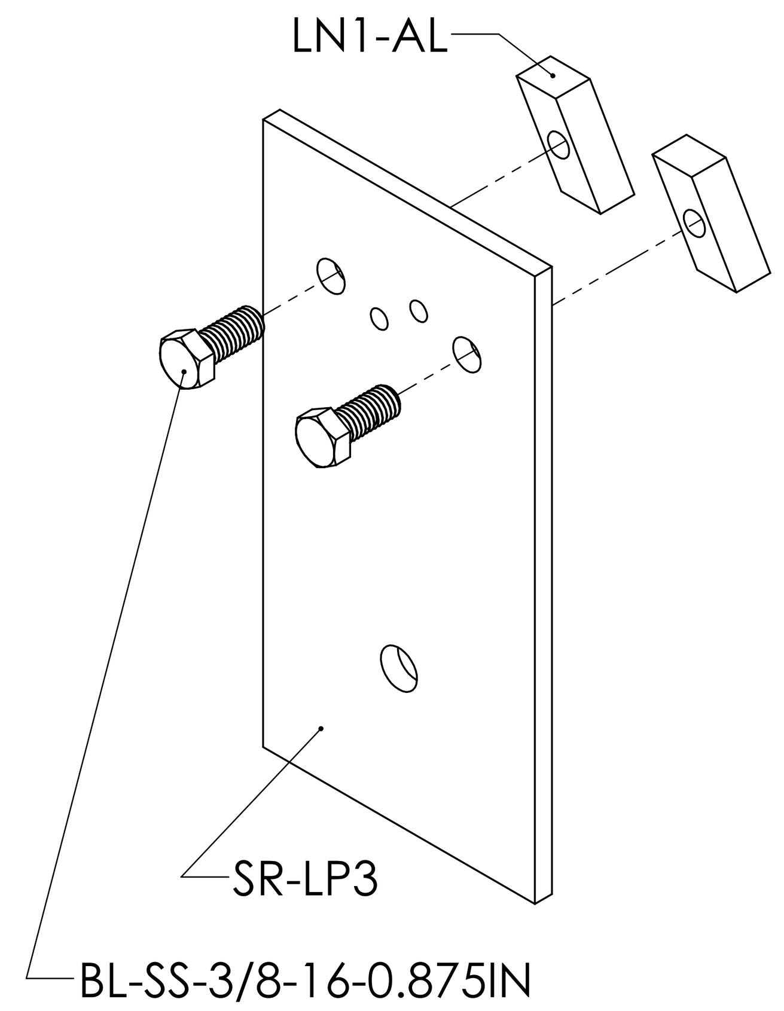
HC PREASSEMBLY



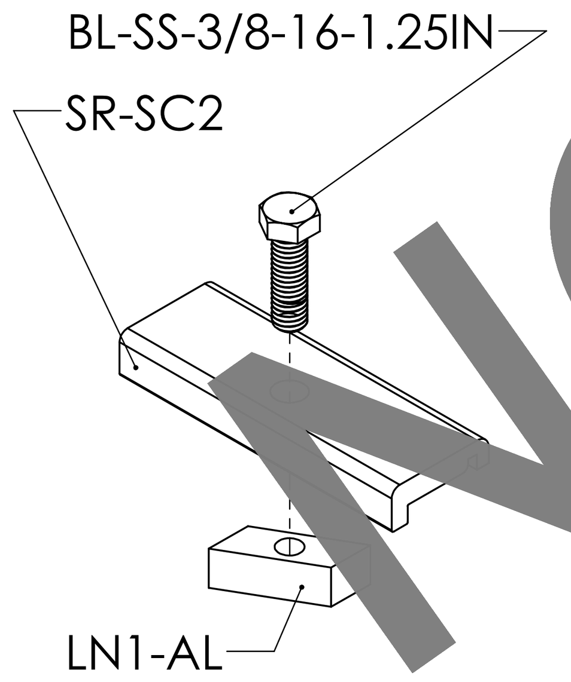
JC01 REVERSE PREASSEMBLY

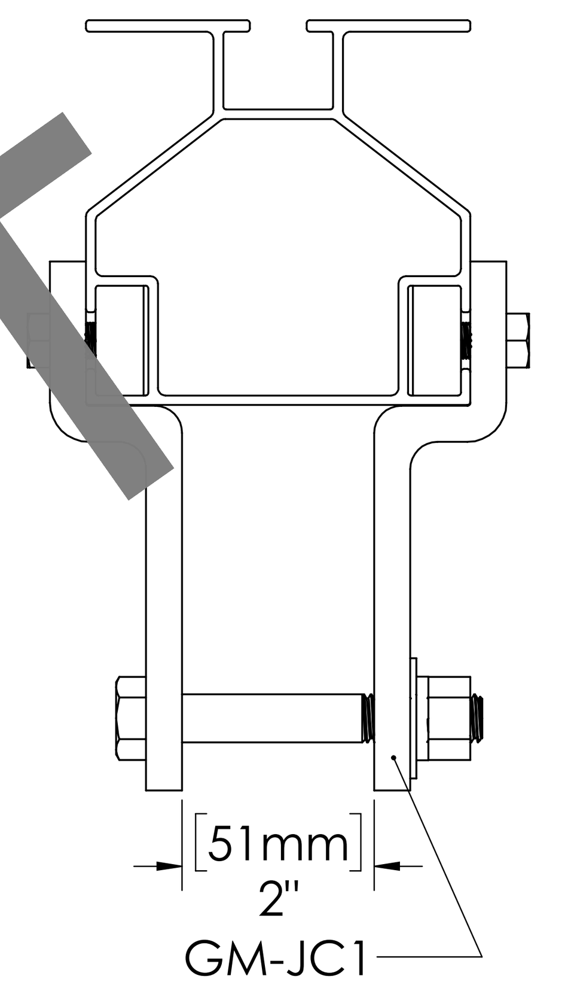


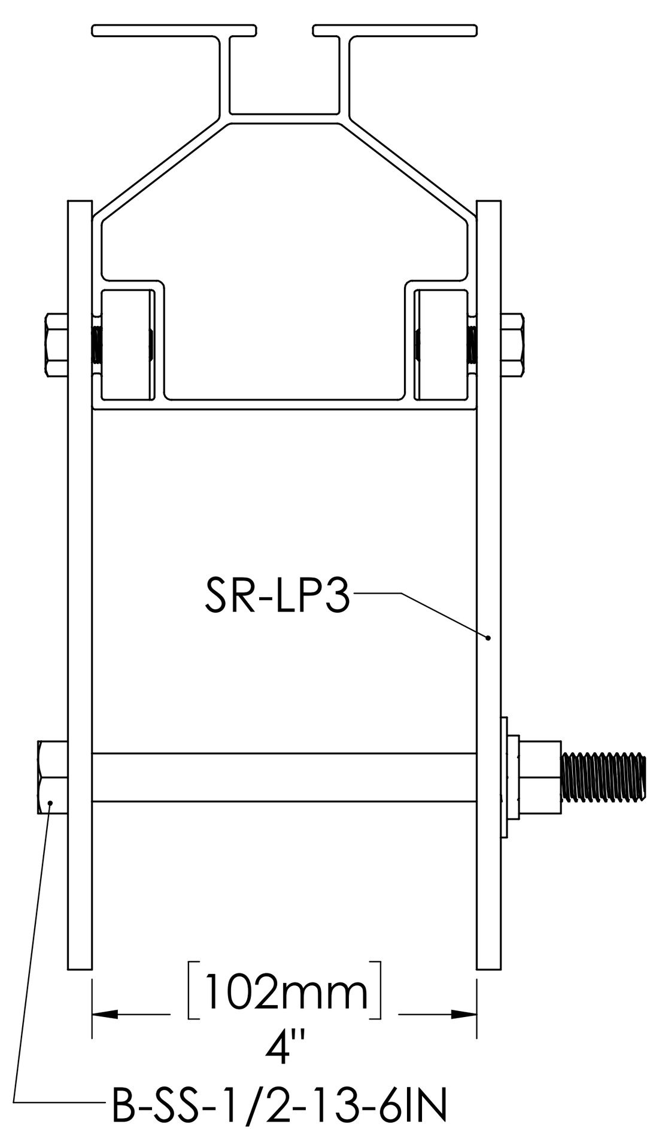
LP3 PREASSEMBLY



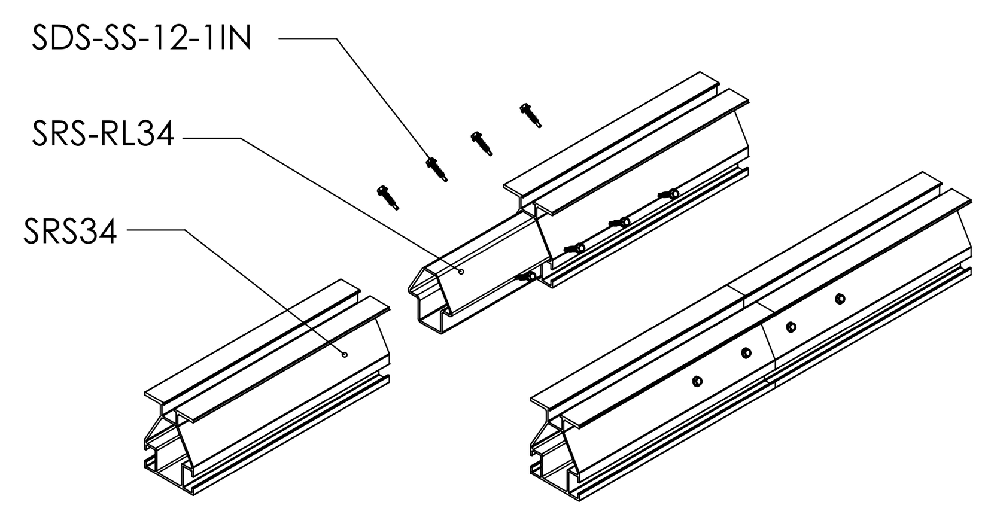
SC2 PREASSEMBLY

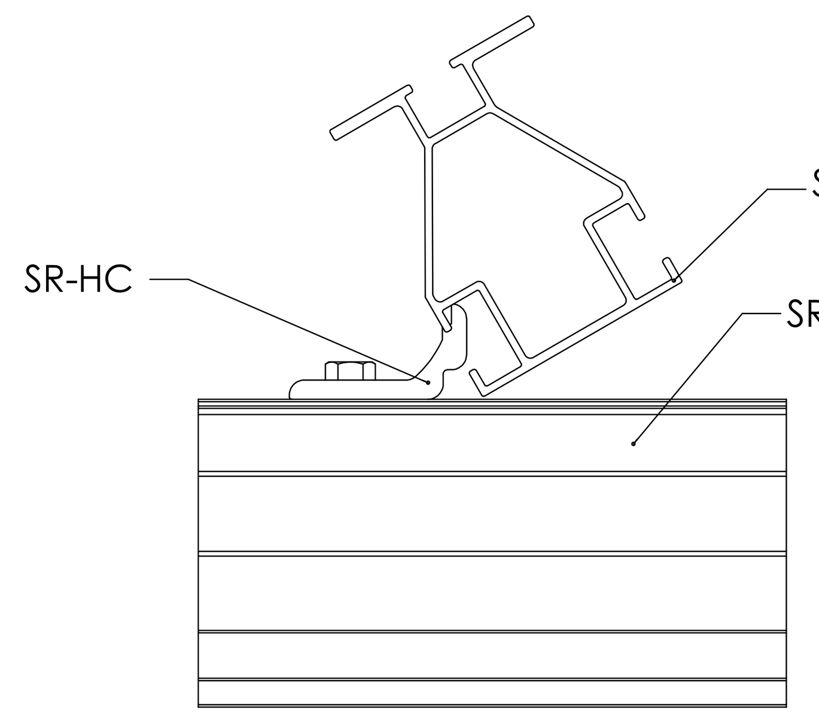




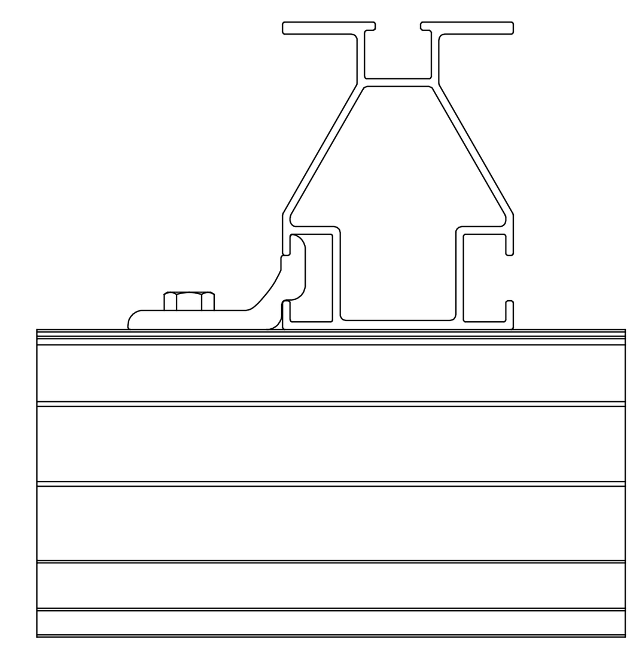


SRS-RL34 INSTALLATION
NORMAL JOINT (K)
PLACE ONE (1) SRS-RL34 AT EACH SRS34 RAIL JUNCTION. SCREW ON THE SRS-RL34 ON EACH RAILS WITH THE SDS-SS

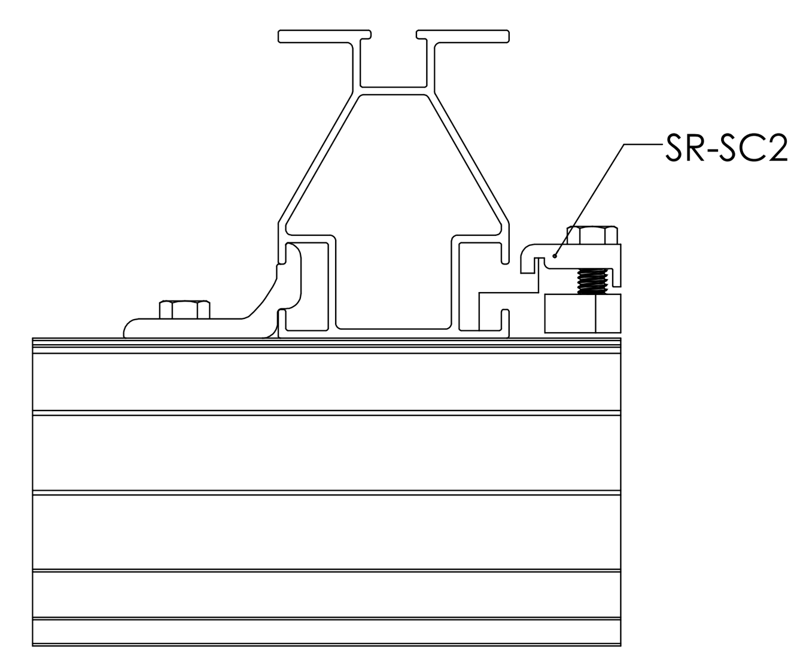




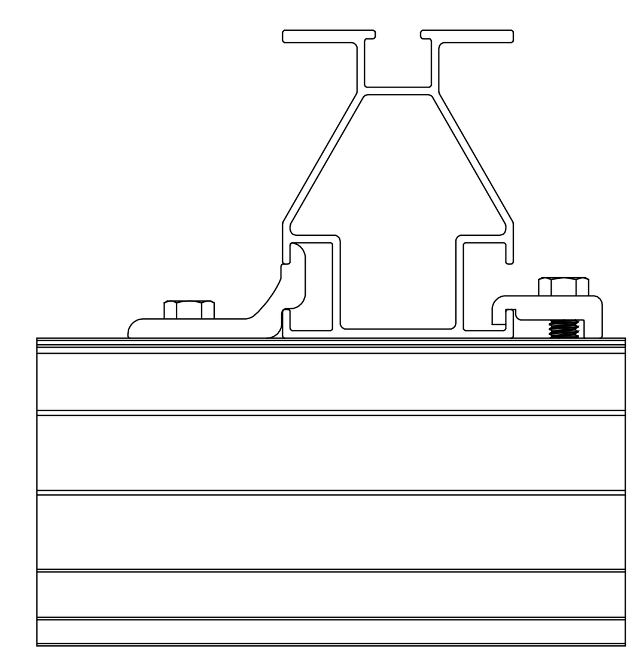
1- TILT THE SRS34 RAIL TO INSERT THE RAIL SIDE SLOT INTO THE SR-HC.



2- ALIGN THE SRS34 AS PER THE BELOW PLAN.



3- INSERT THE SR-SC2 INTO THE OTHER SIDE OF THE RAIL.



4- TIGHTEN THE SR-SC2, TO FIT THE SRS3 IN PLACE.

SEE NOTE 2.8 PAGE PV01-1 FOR TIGHTENING TORQUES

SRS4-GM-VT-136IN-JC01-W-RT23

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Note

Revision

Rev.#	Review	Date
01	For Coordination	2024-08-22

Customer Info

Phone:
Email: amy@championsolar.com

Project Info

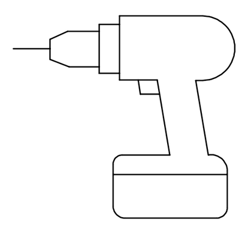
Project Name: GAME FARM RD
Project Number: CMN-24080505
Project Address: 25 Game Farm rd. Independence, MN, 55359
Title: SRS4 PREASSEMBLY

Drawn By: NL	Check By: FM
Drawn Date: 2024-08-23	Rev: 01
Scale: 1:4	Page: PV1.501

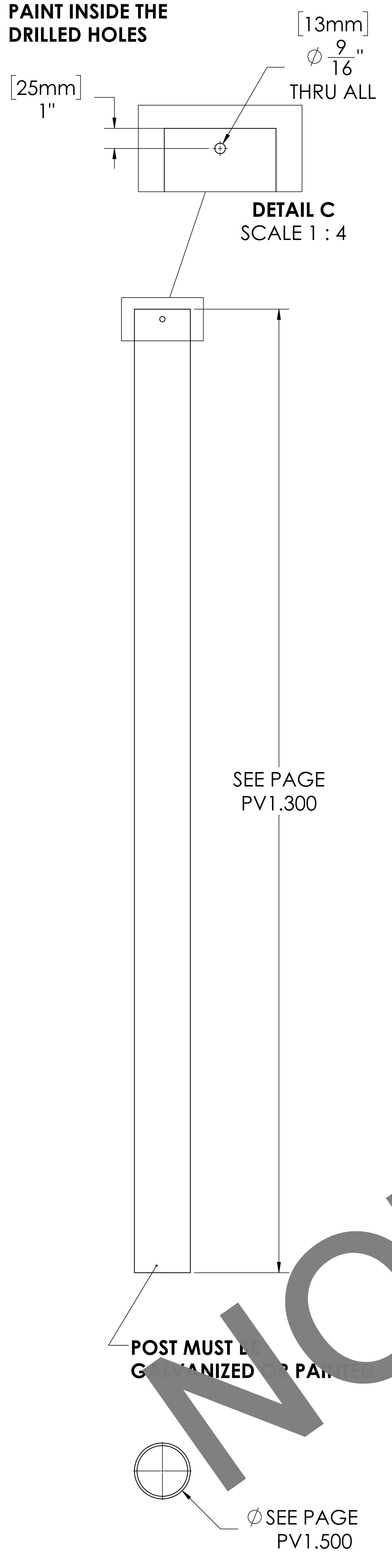
POSTS INSTALLATION

POST DETAIL

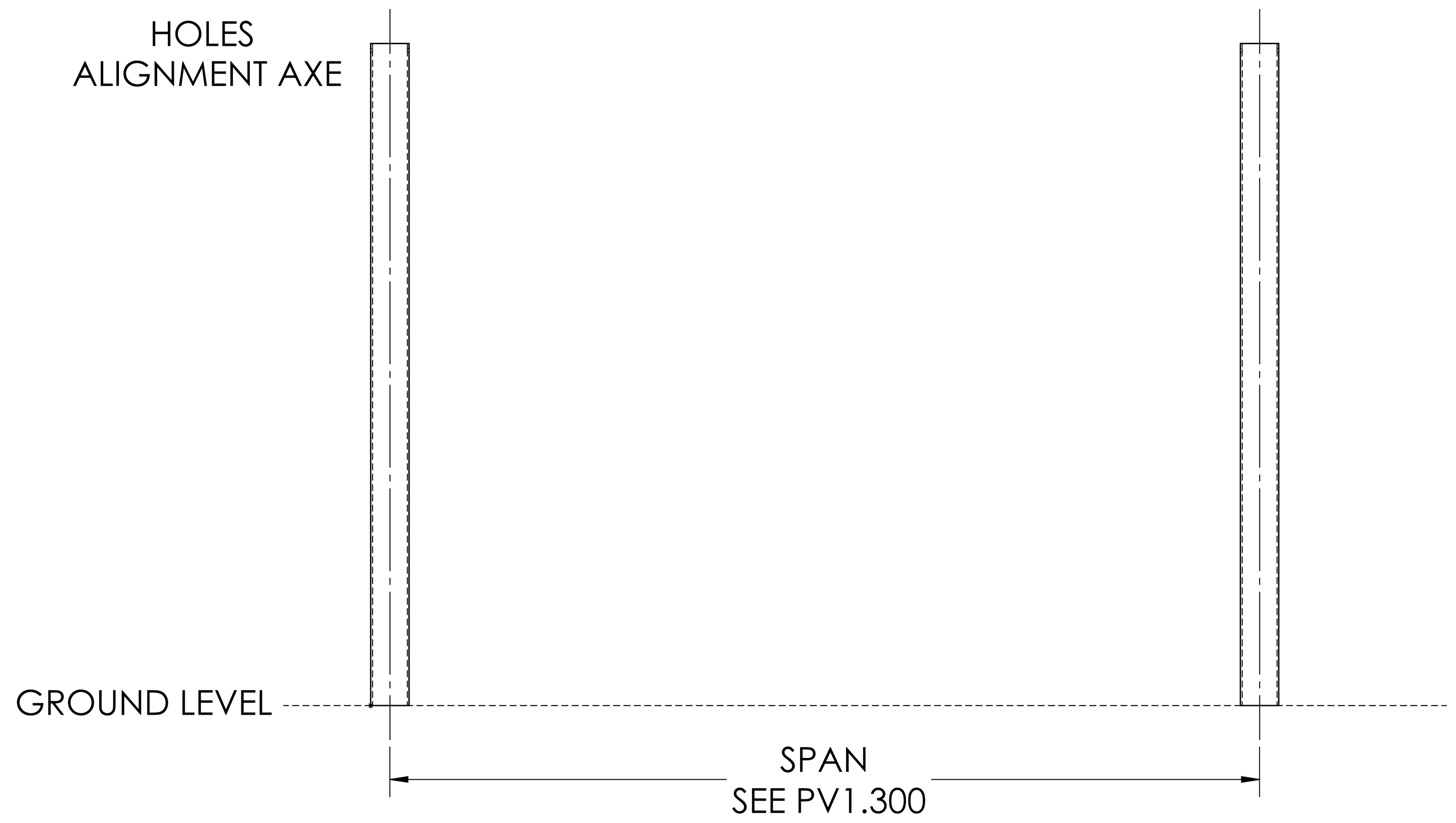
POST HOLES HAVE TO BE DRILLED ON SITE



*****IMPORTANT*****
ADD GALVANIZED PAINT INSIDE THE DRILLED HOLES

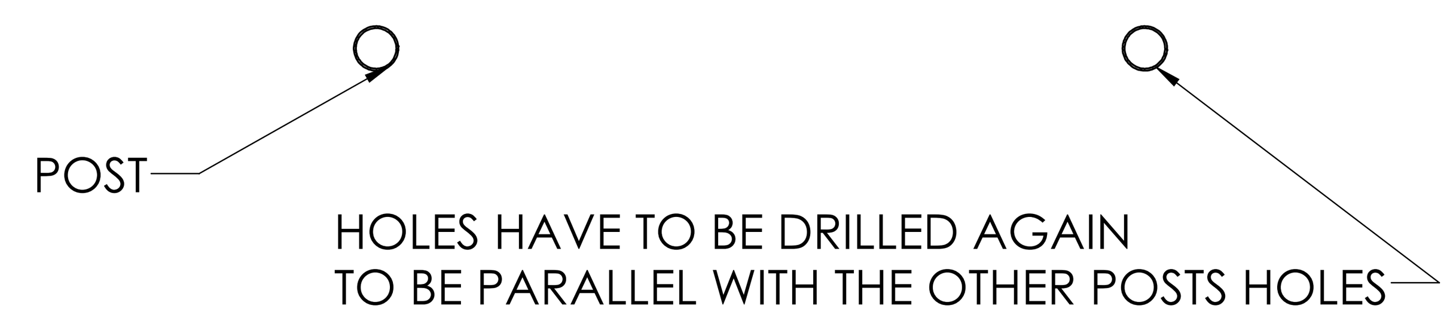


POSTS POSITION



HOLES ALIGNMENT TOP ELEVATION

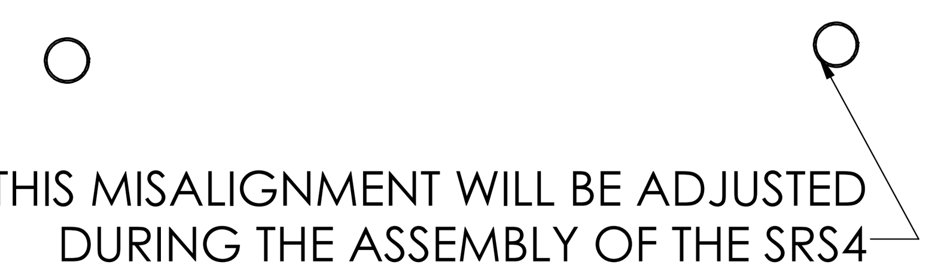
ALL HOLES ARE NOT PARALLEL
*****NOT ACCEPTABLE*****



ALL HOLES ARE PARALLEL AND ALIGNED

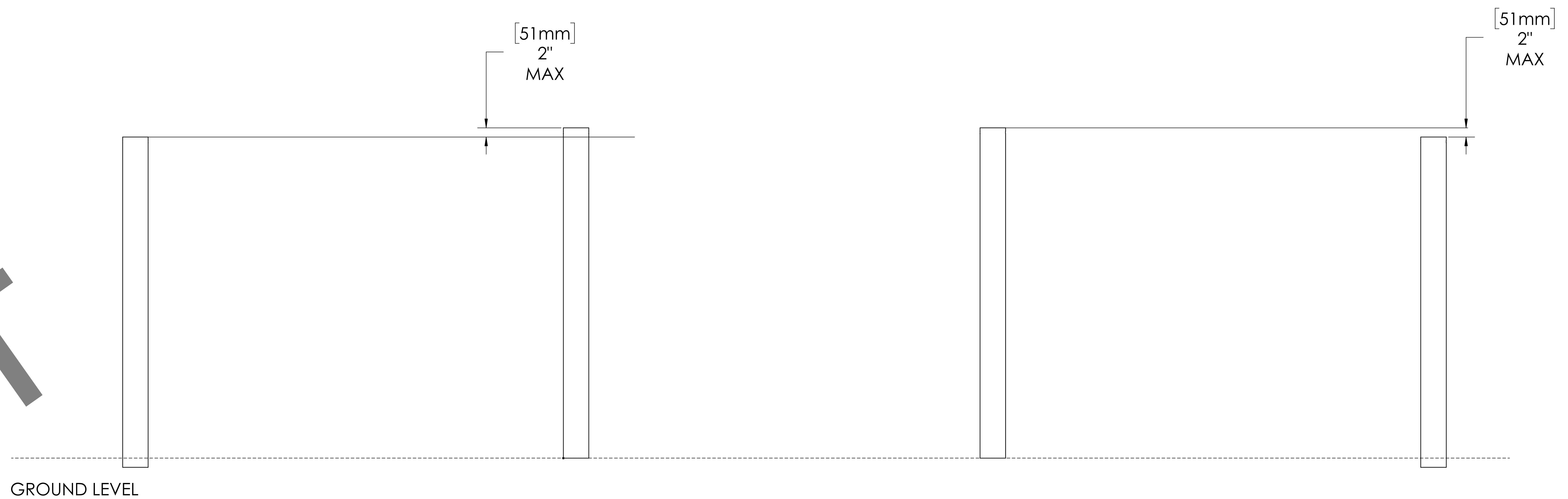
ACCEPTABLE

ALL HOLES ARE PARALLEL BUT NOT ALIGNED



ACCEPTABLE - SEE PV1.603

POSTS HEIGHT



IF POST HEIGHT IS OUT OF TOLERANCE (± 2"), THE POST MUST BE CUT, ON SITE, TO BE WITHIN TOLERANCE (± 2") AND THE MAXIMAL HEIGHT OF THE SYSTEM.

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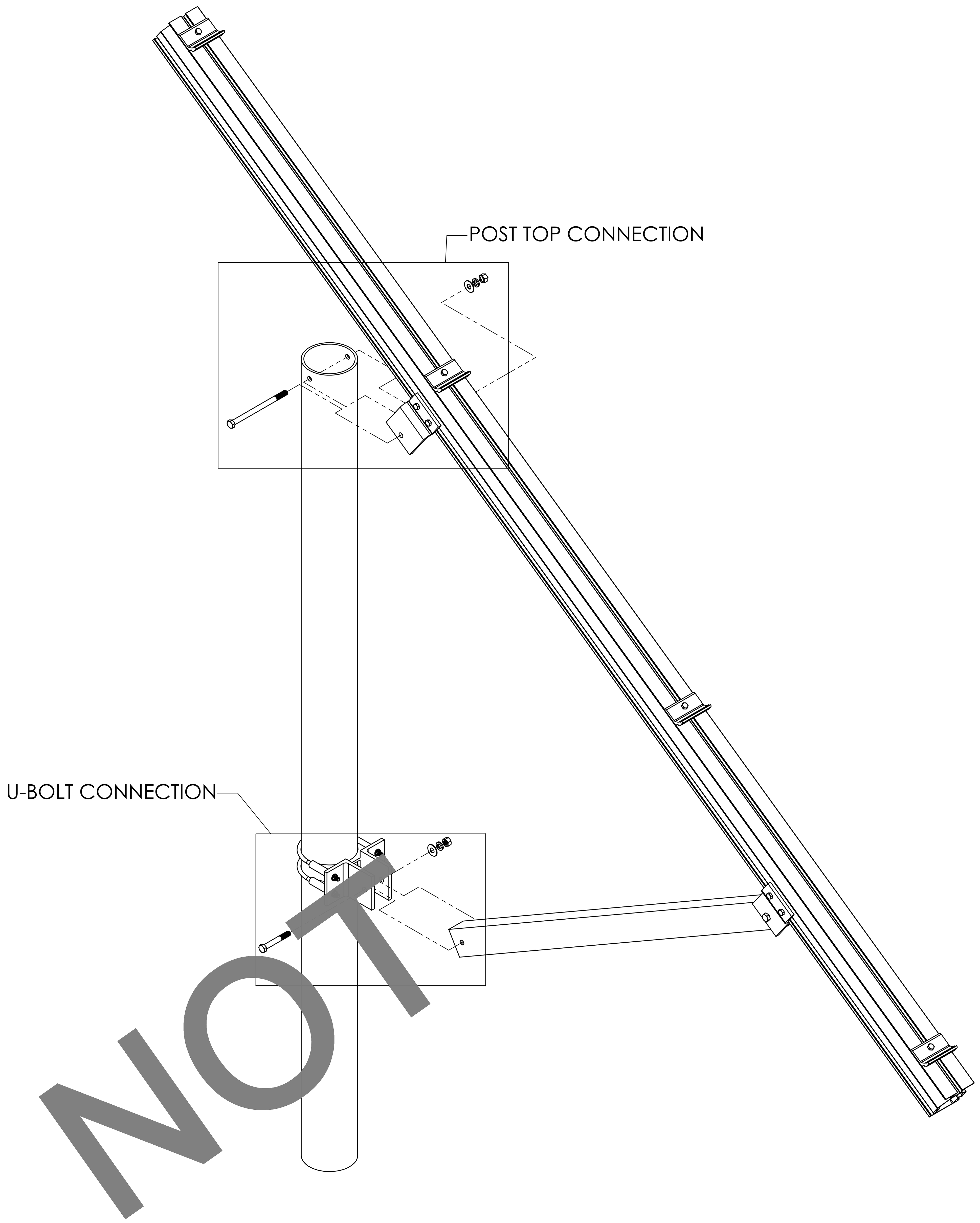
Project Number: CMN-24080505
Project Address: 25 Game Farm rd, Independence, MN, 55359

Title: POST INSTALLATION

Drawn By: FM	Check By: NL
Drawn Date: 2021-10-12	Rev: 01
Scale: 1:1	Page: PV1.601

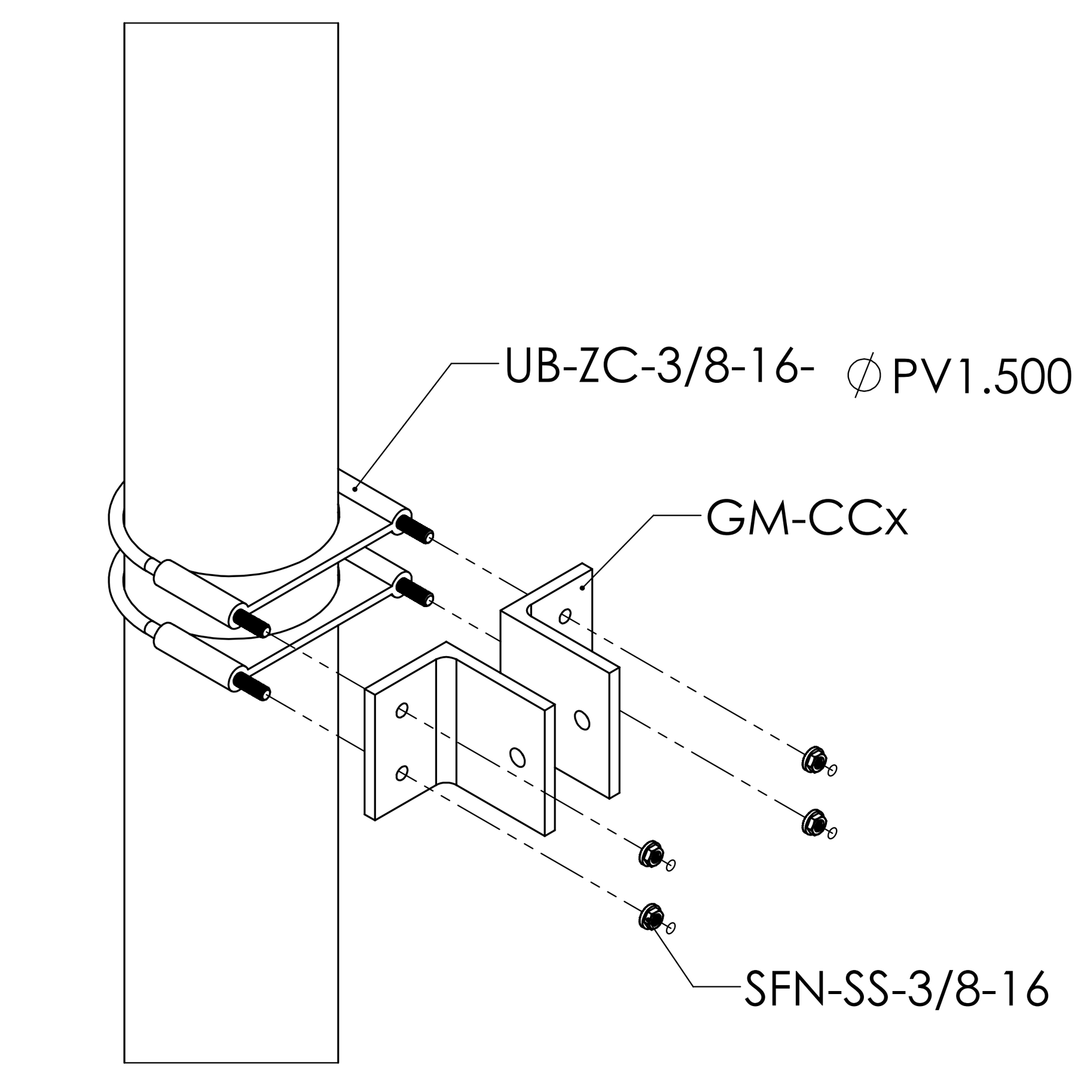
RP-5.56in-0.255

POST ASSEMBLY



DETAIL: POST U-BOLT ASSEMBLY

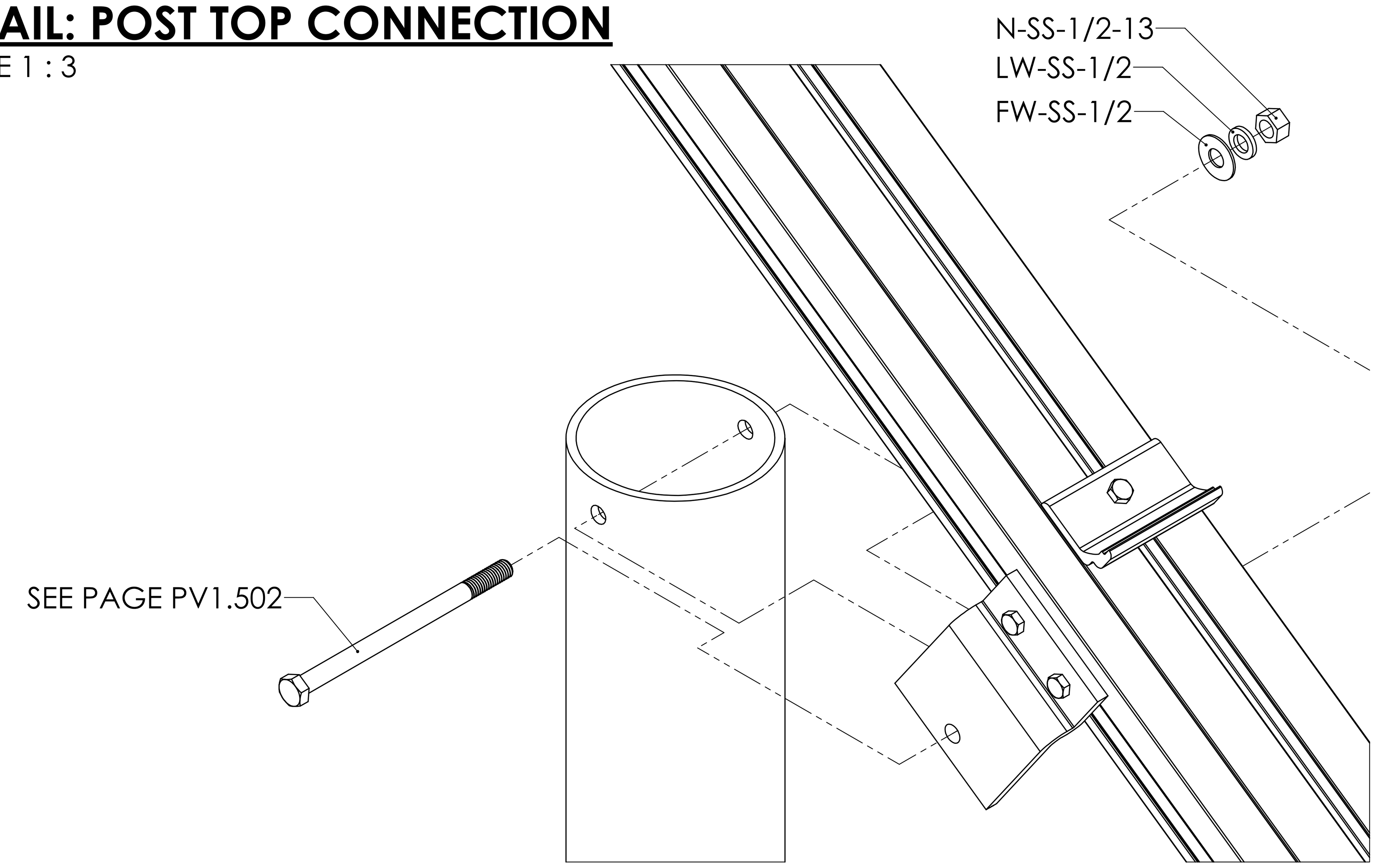
SCALE 1 : 3



(SFN-SS-3/8-16)INCLUDED WITH U-BOLT

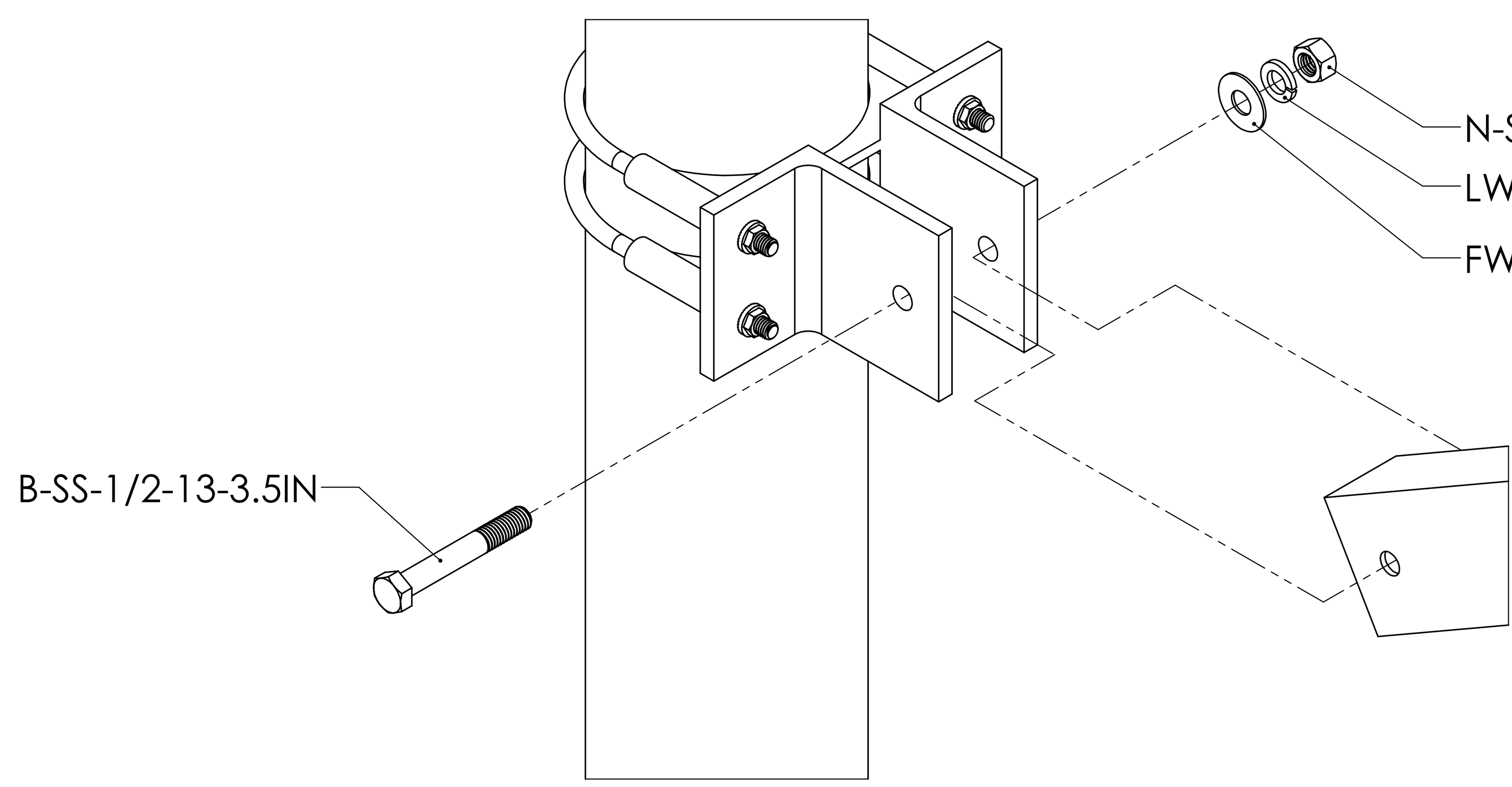
DETAIL: POST TOP CONNECTION

SCALE 1 : 3



DETAIL: U-BOLT CONNECTION

SCALE 1 : 3



SEE NOTE 2.8 PAGE PV0.100 FOR TIGHTENING TORQUES

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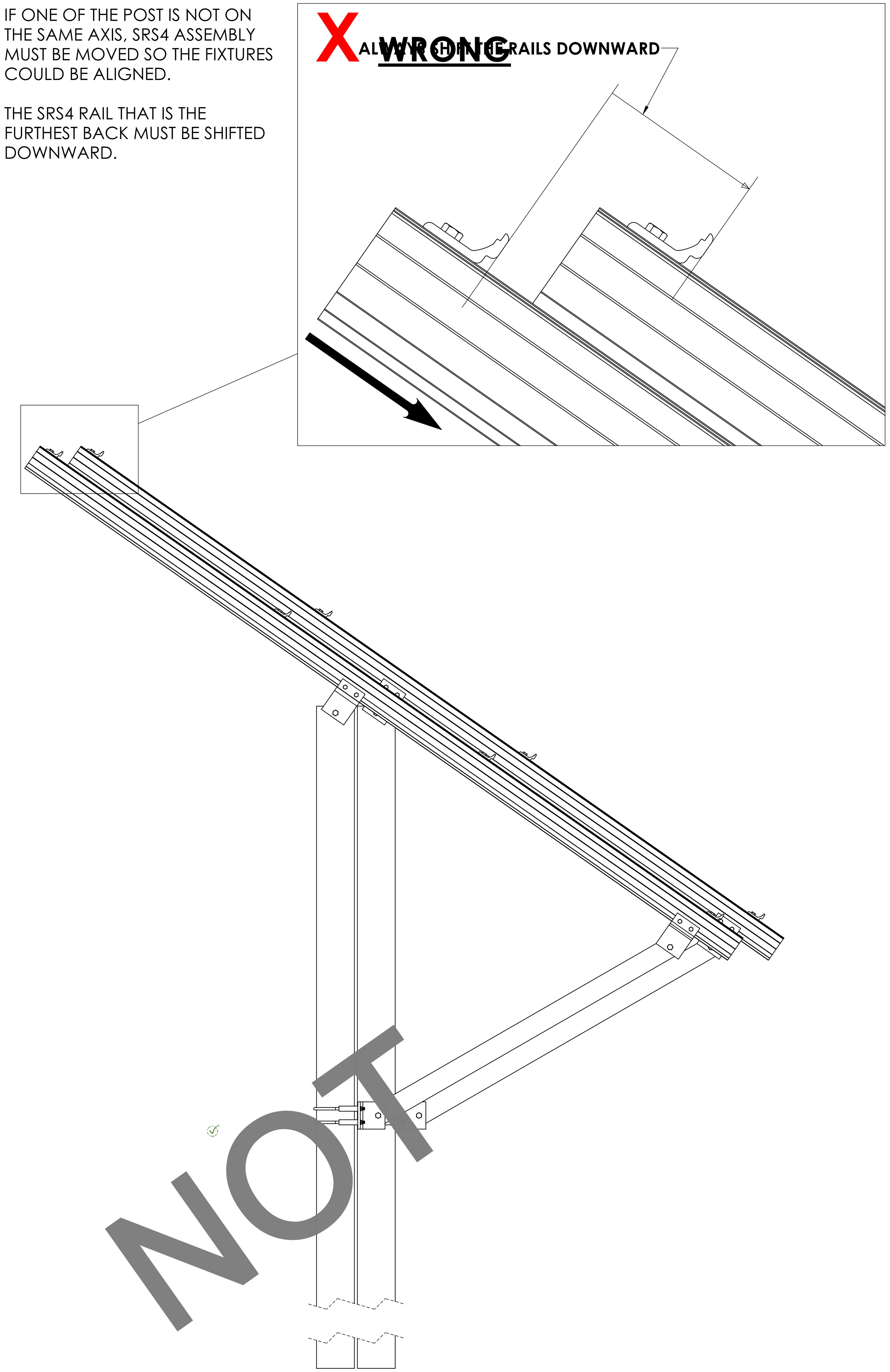
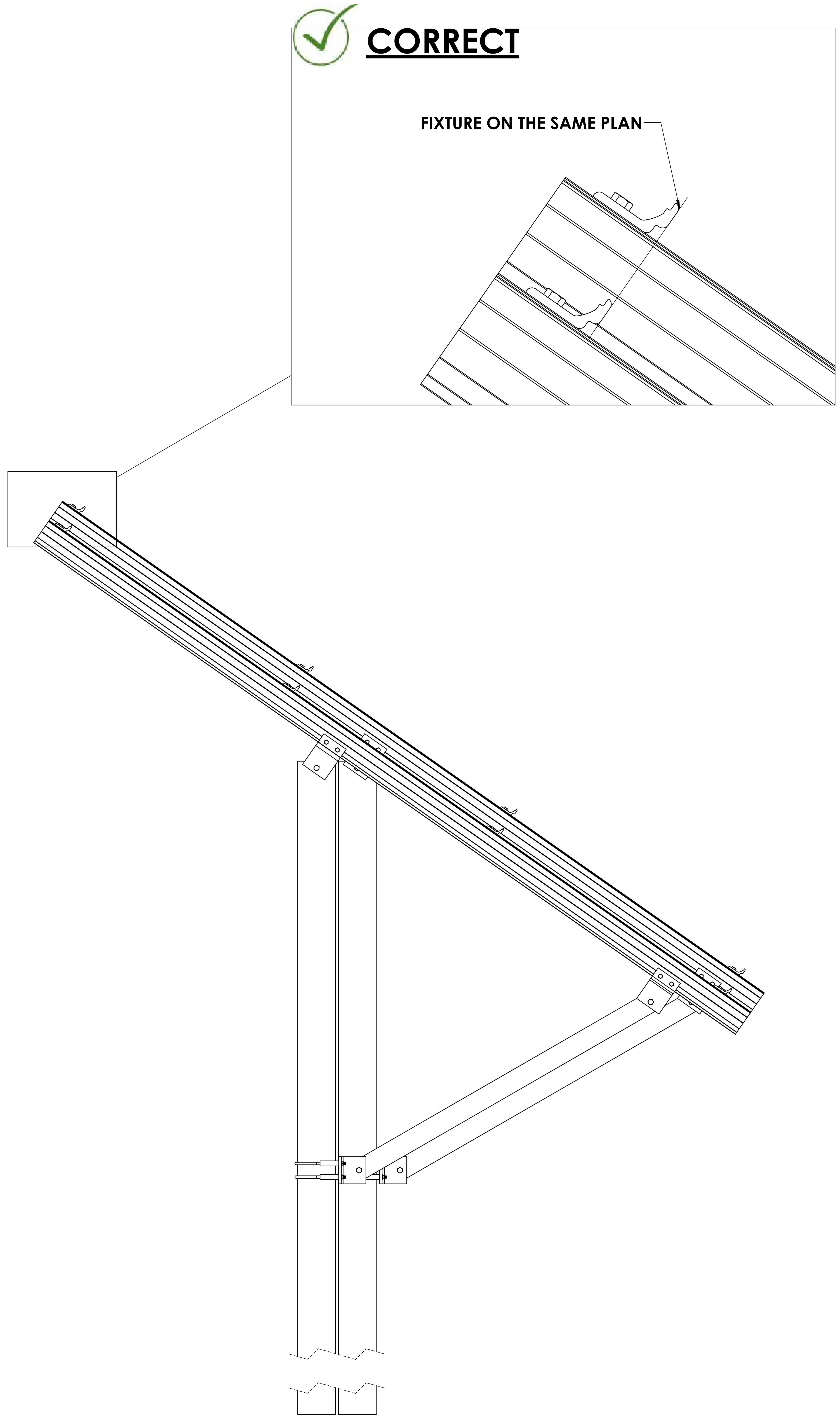
Drawn By: FM	Check By: NL
Drawn Date: 2021-10-12	Rev: 01
Scale: 1:1	Page: PV1.602

GM-S-VT3555-P-LON03-SRS3-SRS4-10.5FT-2X20-7F-D5.56

SRS4 AJUSTEMENT

- IF ONE OF THE POST IS NOT ON THE SAME AXIS, SRS4 ASSEMBLY MUST BE MOVED SO THE FIXTURES COULD BE ALIGNED.
- THE SRS4 RAIL THAT IS THE FURTHEST BACK MUST BE SHIFTED DOWNWARD.





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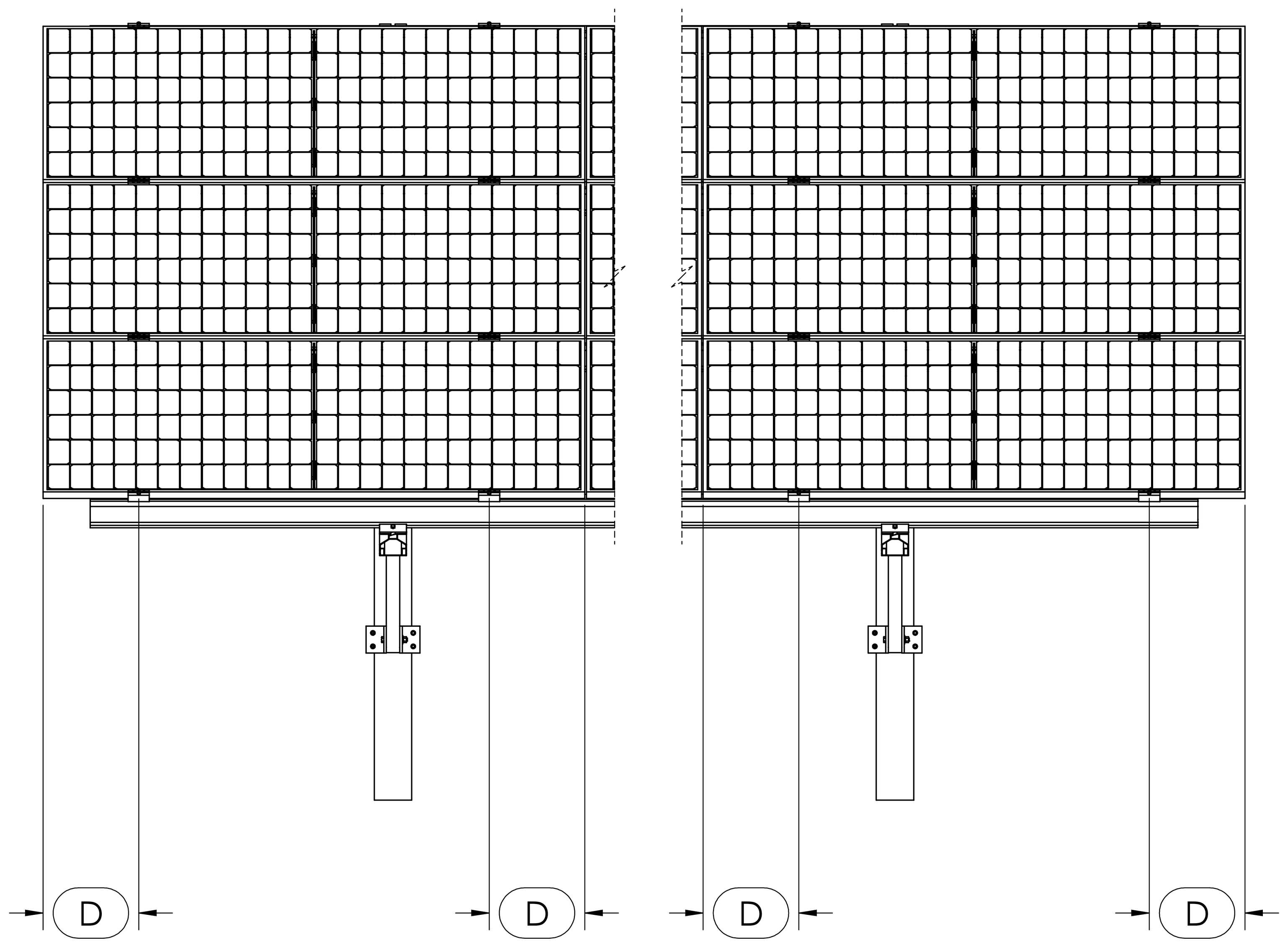
Project Address: 25 Game Farm rd, Independence, MN, 55359

Title: SRS4 ADJUSTEMENT

Drawn By: FM	Check By: NL
Drawn Date: 2021-10-12	Rev 01
Scale: 1:60	Page: PV1.603

PV INSTALLATION

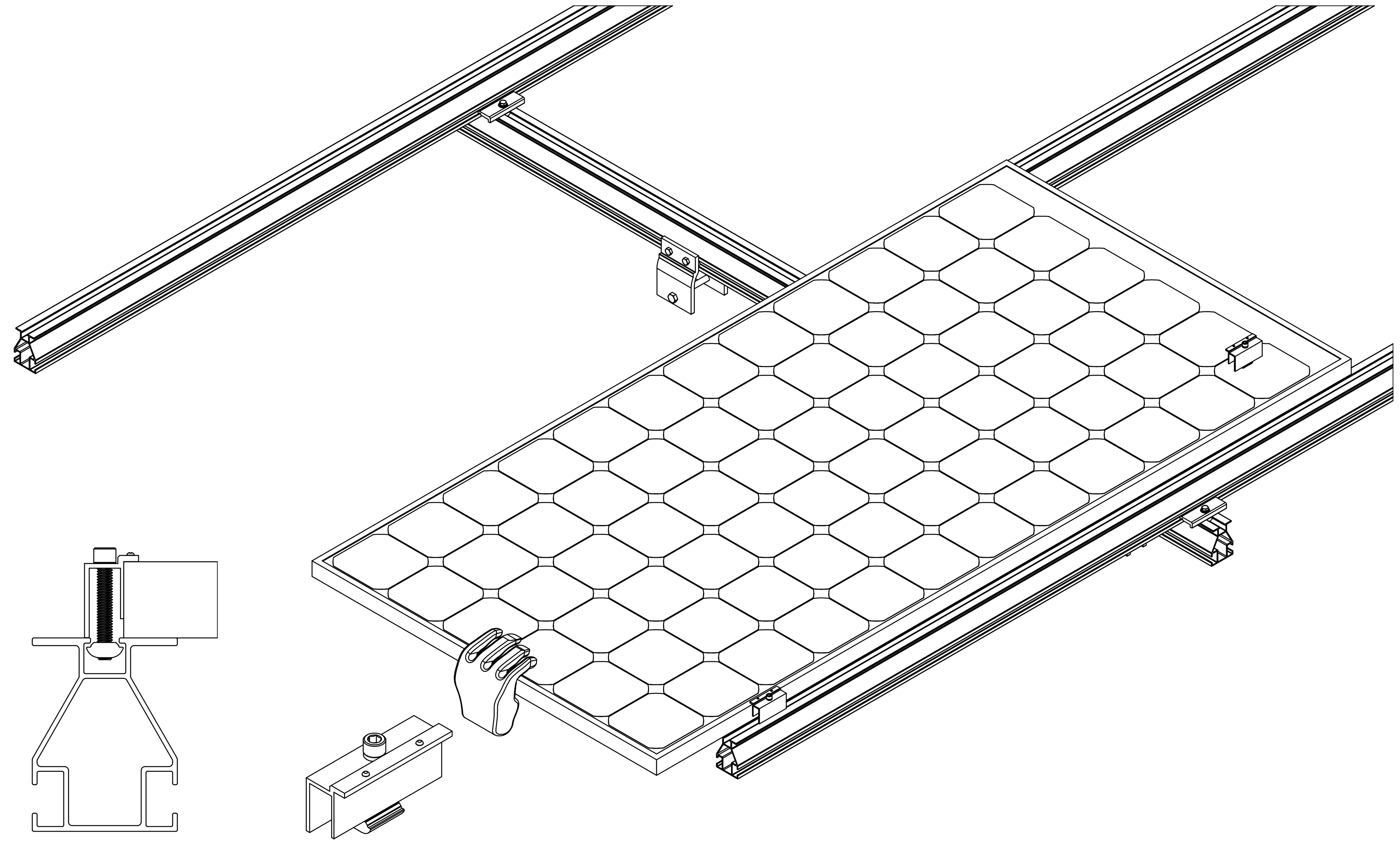
PV PANELS POSITION



(D) : SEE PAGE PV1.500

STEP 1

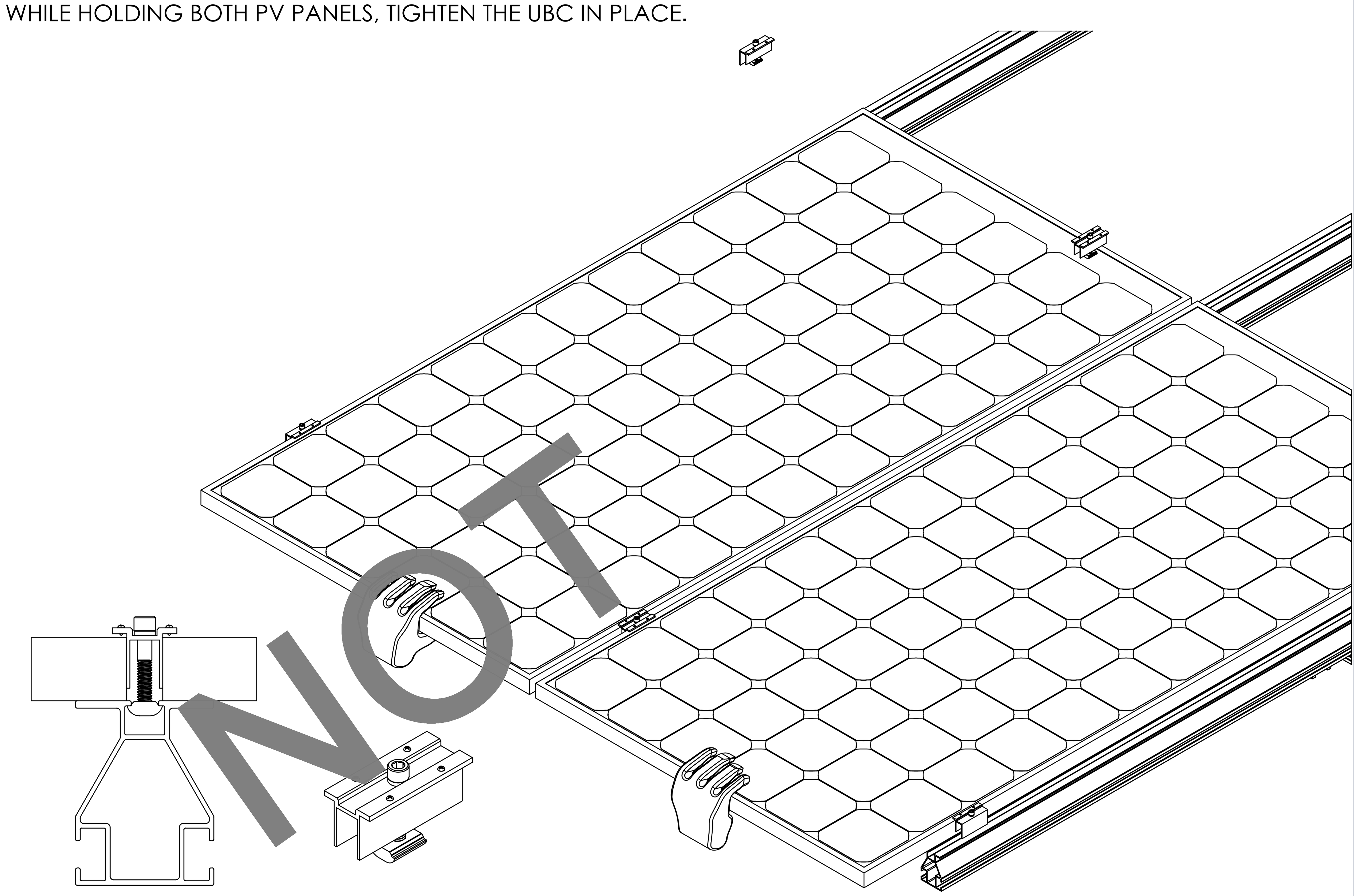
- WITH A HAND UNDER THE PANEL, TIGHTEN THE BOLT OF THE BOTTOM TWO(2) ZBC.



TILT THE ZBC FOR AN EASY INSTALLATION, THEN TIGHTEN THE BOLT TO LOCK IT IN POSITION. (SEE NOTE 2.8 PAGE PV0.100 FOR MORE DETAILS)

STEP 2

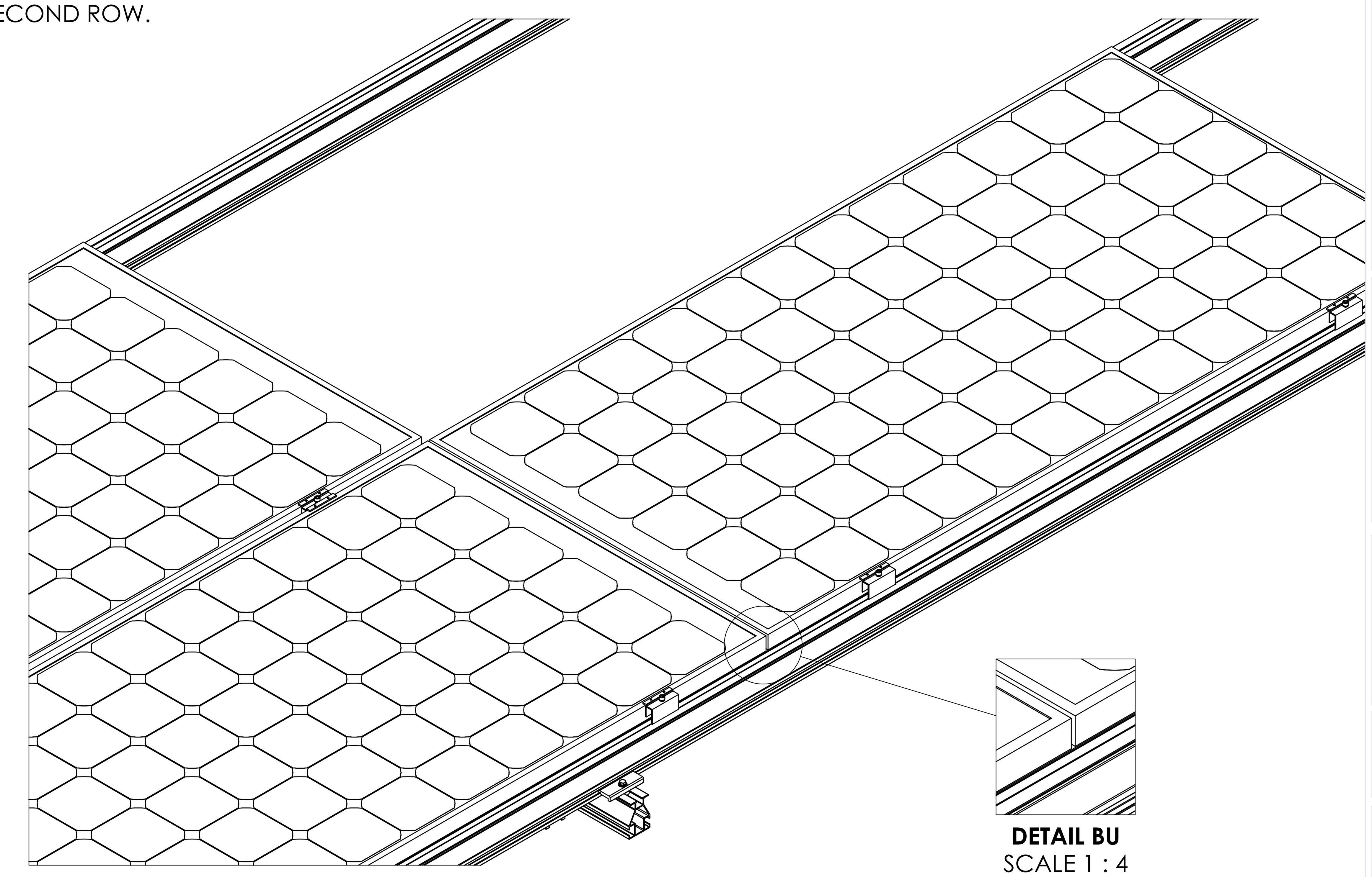
- WHILE HOLDING BOTH PV PANELS, TIGHTEN THE UBC IN PLACE.



TILT THE UBC FOR AN EASY INSTALLATION, THEN TIGHTEN THE TORX BOLT TO LOCK IT IN POSITION. (SEE NOTE 2.8 PAGE PV0.100 FOR MORE DETAILS)

STEP 3

- REPEAT STEP 1 AND 2 FOR THE SECOND ROW.
- LEAVE A GAP OF 1/4" (6mm) BETWEEN THE FIRST AND SECOND ROW.



DETAIL BU
SCALE 1 : 4

OPSUN SYSTEMS INC.
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Quebec, Quebec G1W 2L4 Canada

Phone : 1 (418)-651-4040
E-mail : projects@opsun.com
www.opsun.com

Note

Revision

Rev.#	Review	Date
01	For Coordination	2024-08-22

Customer Info

CHAMPION SOLAR

Phone:
Email:
amy@championsolar.com

Project Info

Project Name:
GAME FARM RD

Project Number:
CMN-24080505

Project Address:
25 Game Farm rd.
Independence, MN, 55359

Title
PV PANEL INSTALLATION

Drawn By:	Check By:
FM	NL
Drawn Date: 2021-10-07	Rev 01
Scale: 1:8	Page: PV1.801

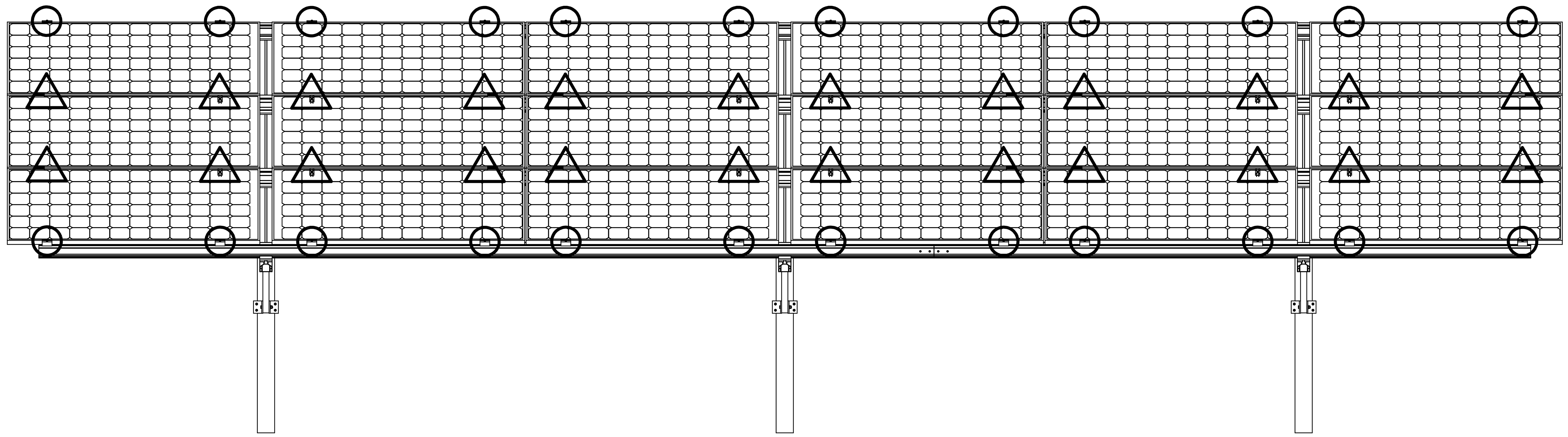
VA-GM-PV-INSTALLATION-LANDSCAPE-FRAMER-BI-NOT OPTIMISE

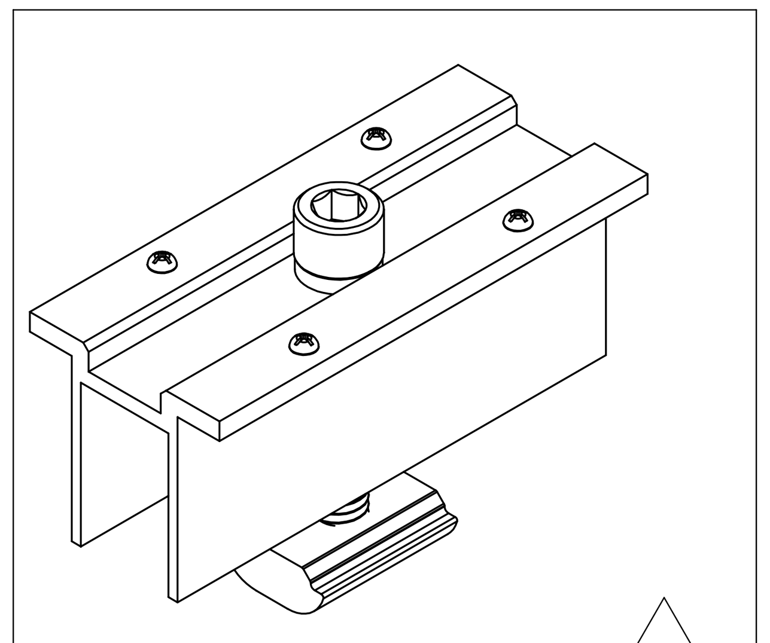
GM ELECTRICAL DETAILS

CONFIGURATION FOR INFORMATION ONLY

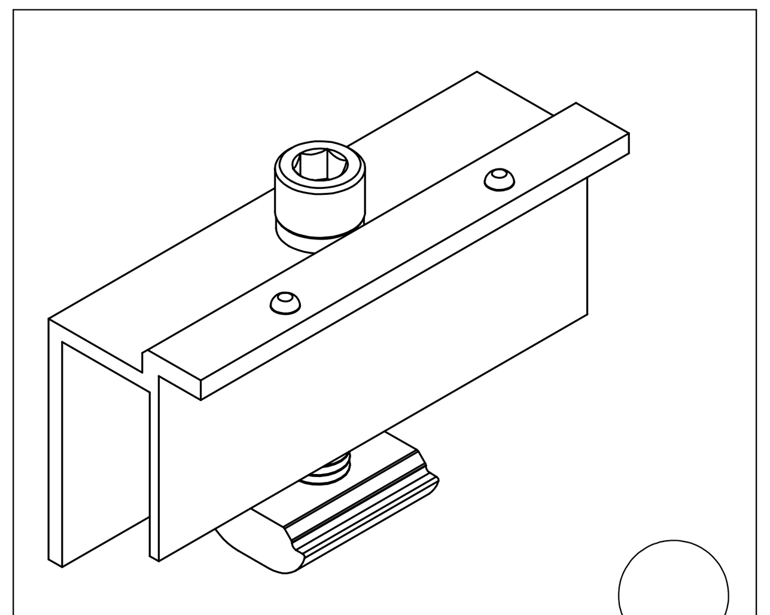
△ - USE UBC FOR EVERY CONNECTION BETWEEN TWO PANNELS

○ - USE ZBC FOR EVERY ENDROW CONNECTION



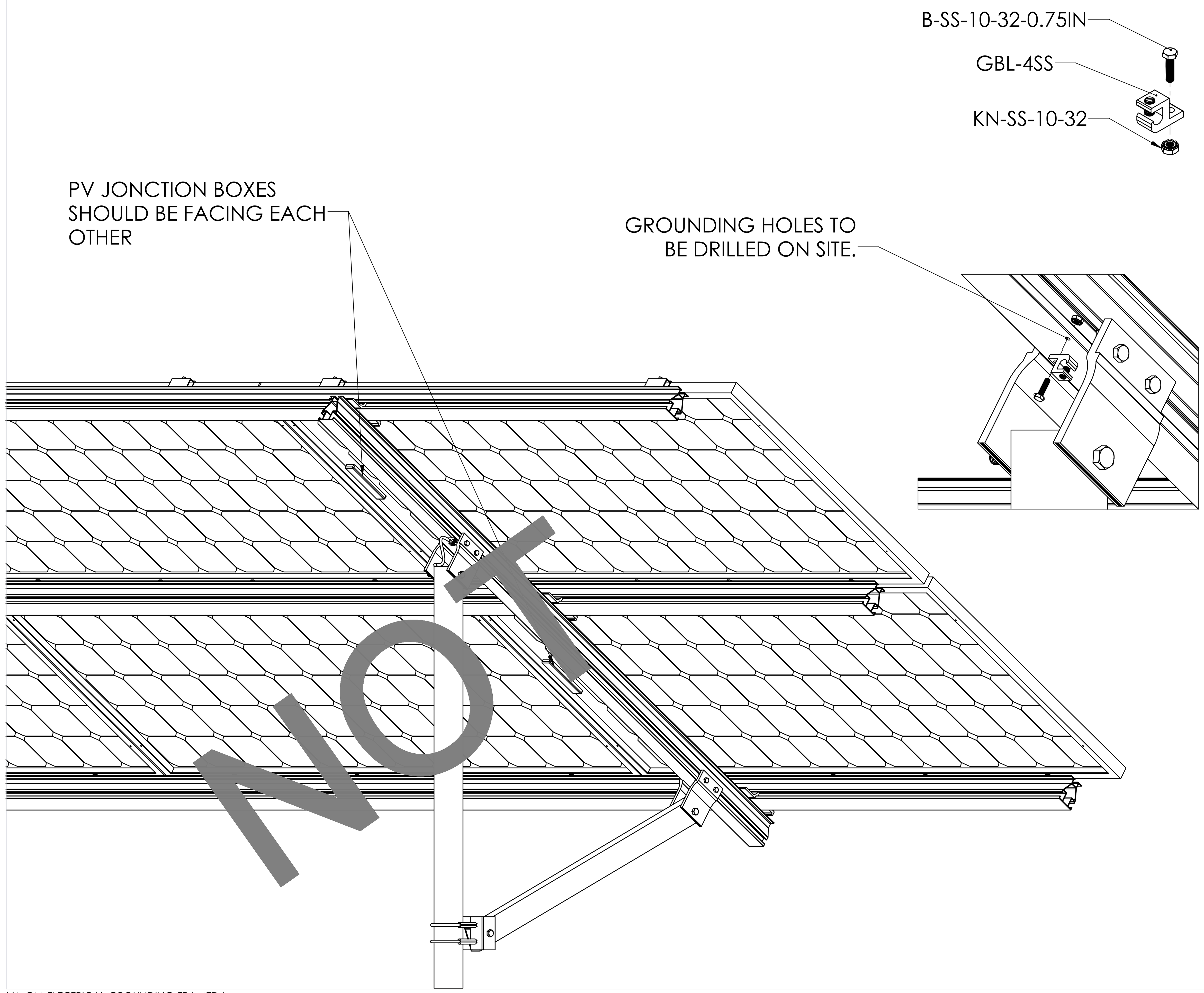


UBC



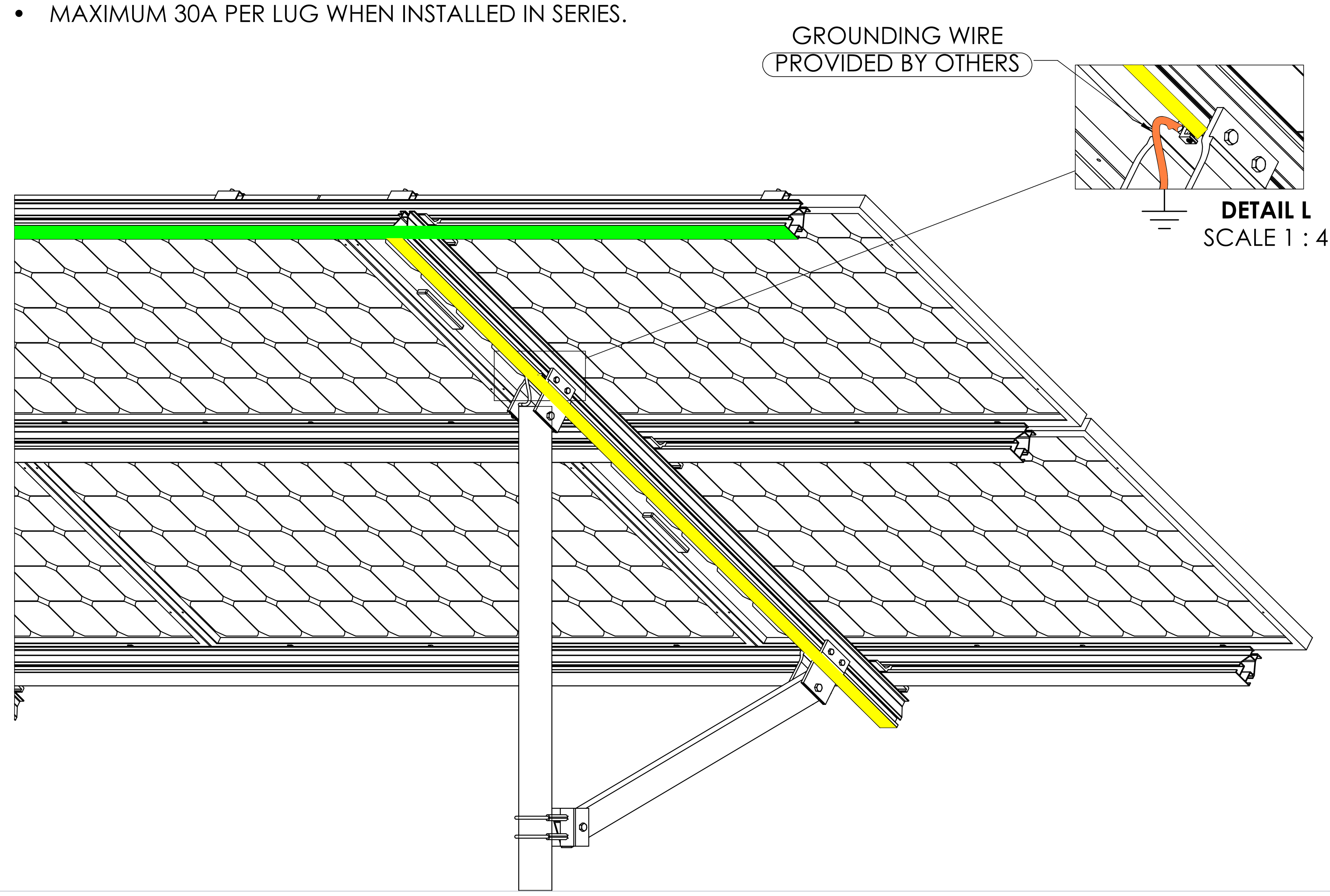
ZBC

GROUNDING



BONDING PATH

- MODULE CLAMPS CARRY CURRENT TO THE CROSS RAIL(SRS3)(SEE NOTE 5.1 PAGE PV01-1 FOR MORE DETAILS).
- RL-RL3 (RAIL LINKER FOR SRS3) CARRY THE CURRENT FROM CROSS RAIL TO CROSS RAIL. CURRENT IS CARRIED OVER TO THE VERTICAL BEAM (SRS4 PREASSEMBLY) FROM THE CROSSRAIL THROUGH STRONGLY CLAMPED MILL FINISH ALUMINUM COMPONENTS.
- THE VERTICAL BEAM (SRS4 PREASSEMBLY) CARRY THE CURRENT TO THE POST THROUGH A GROUNDING WIRE.
- CURRENT IS CARRIED TO GROUND THROUGH GROUND LUG.
- ONLY ONE GROUND LUG IS REQUIRED PER CONTINUOUS ARRAY.
- ONE GROUNDING POINT IS REQUIRED PER CONTINUOUS ARRAY, NOT EXCEEDING 150FT, IN ANY DIRECTION
- MAXIMUM 30A PER LUG WHEN INSTALLED IN SERIES.



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Note

Revision

Rev.#	Review	Date
01	For Coordination	2024-08-22

Customer Info

CHAMPION SOLAR

Phone:

Email:
amy@championsolar.com

Project Info

Project Name: GAME FARM RD

Project Number: CMN-24080505

Project Address: 25 Game Farm rd. Independence, MN, 55359

Title: GM ELECTRICAL DETAIL

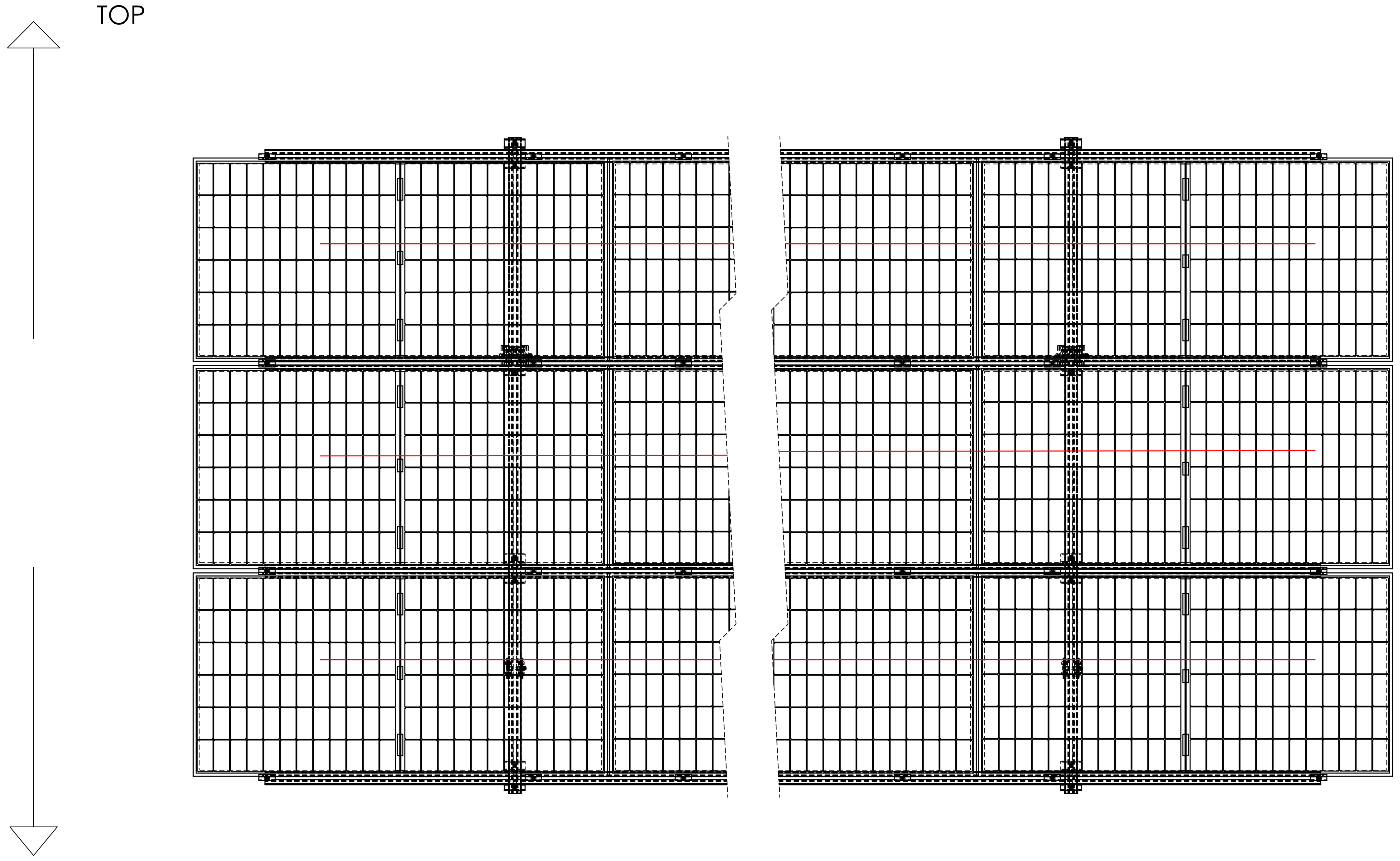
Drawn By: NL	Check By: FM
Drawn Date: 2024-08-23	Rev 01
Scale: 1:10	Page: PV1.811

PV PANELS WIRE MANAGEMENT

ELECTRICAL CONNECTION

- MAKE SURE ALL THE JUNCTION BOXES FACING EACH OTHER.
- IN RED IS A SUGGESTED PATH FOR CONNECTING THE PV PANELS. (MUST BE DESIGNED ACCORDING TO INVERTER MANUFACTURER SPECIFICATIONS)

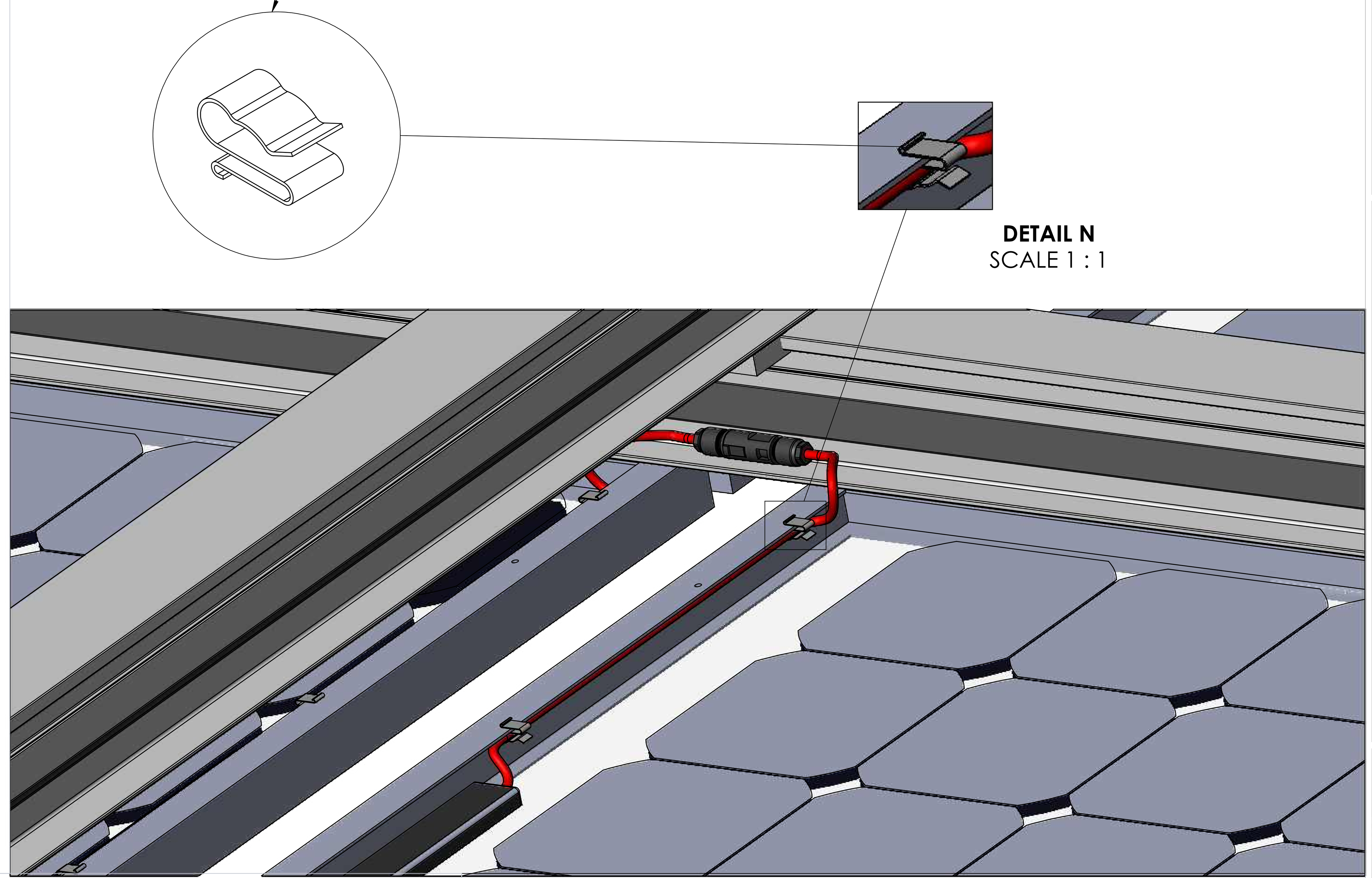
TOP



BOTTOM

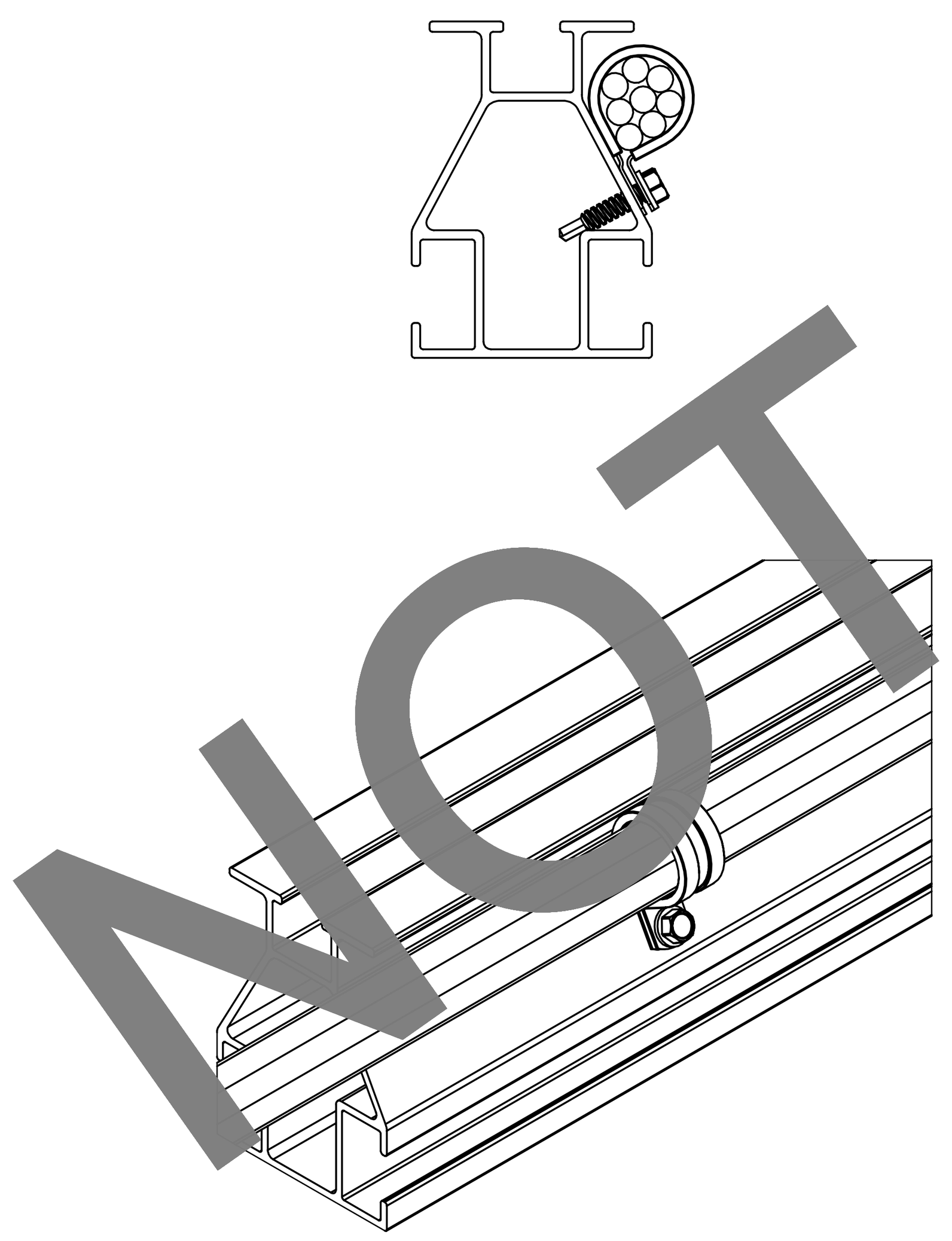
PV PANELS WIRE MANAGEMENT

USE WIRE CONNECTORTO HOLD THE WIRE IN PLACE.
OPTIONAL



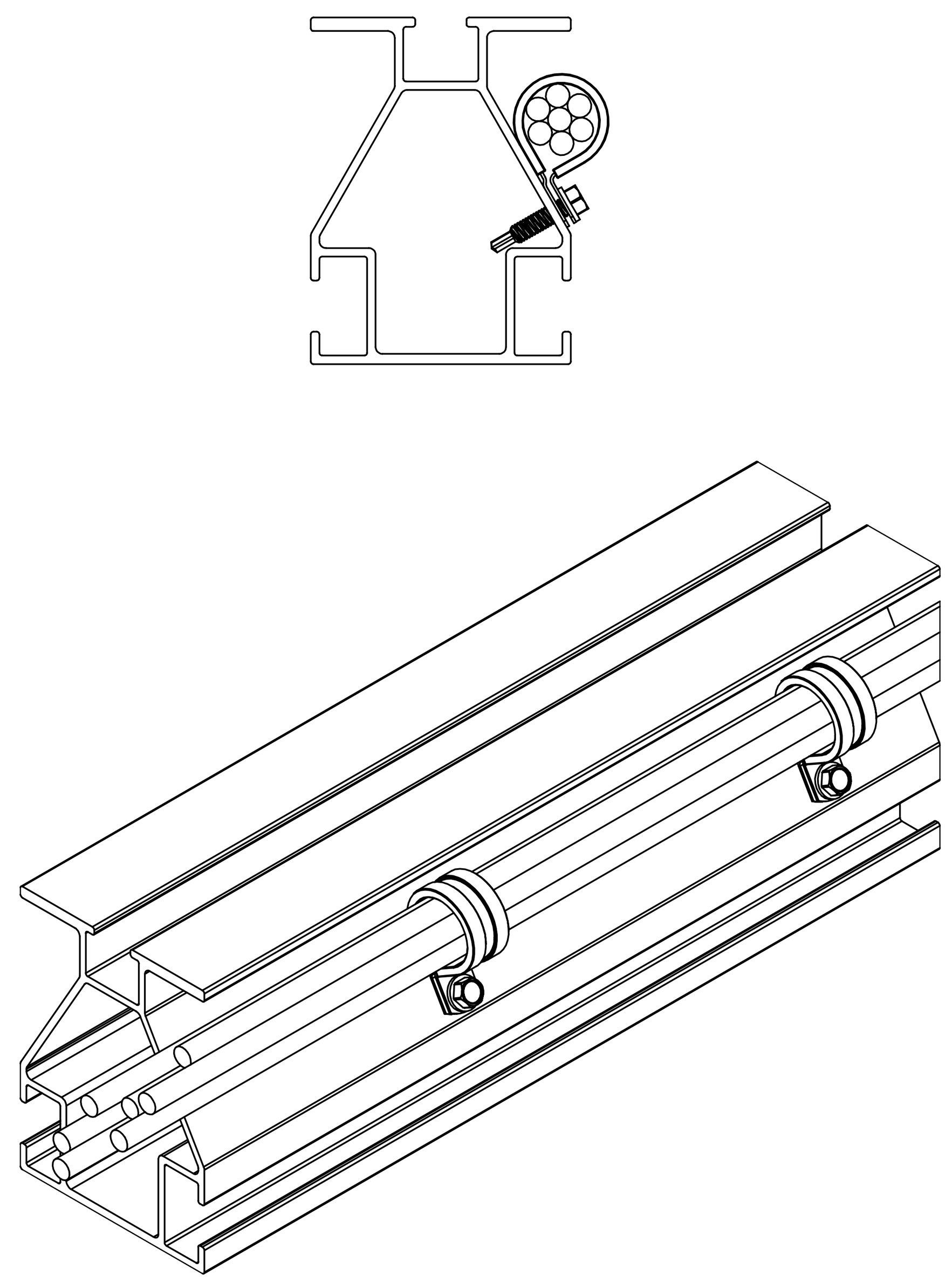
WIRE MANAGEMENT SRS3

WIRE CLAMP
PROVIDED BY OTHERS



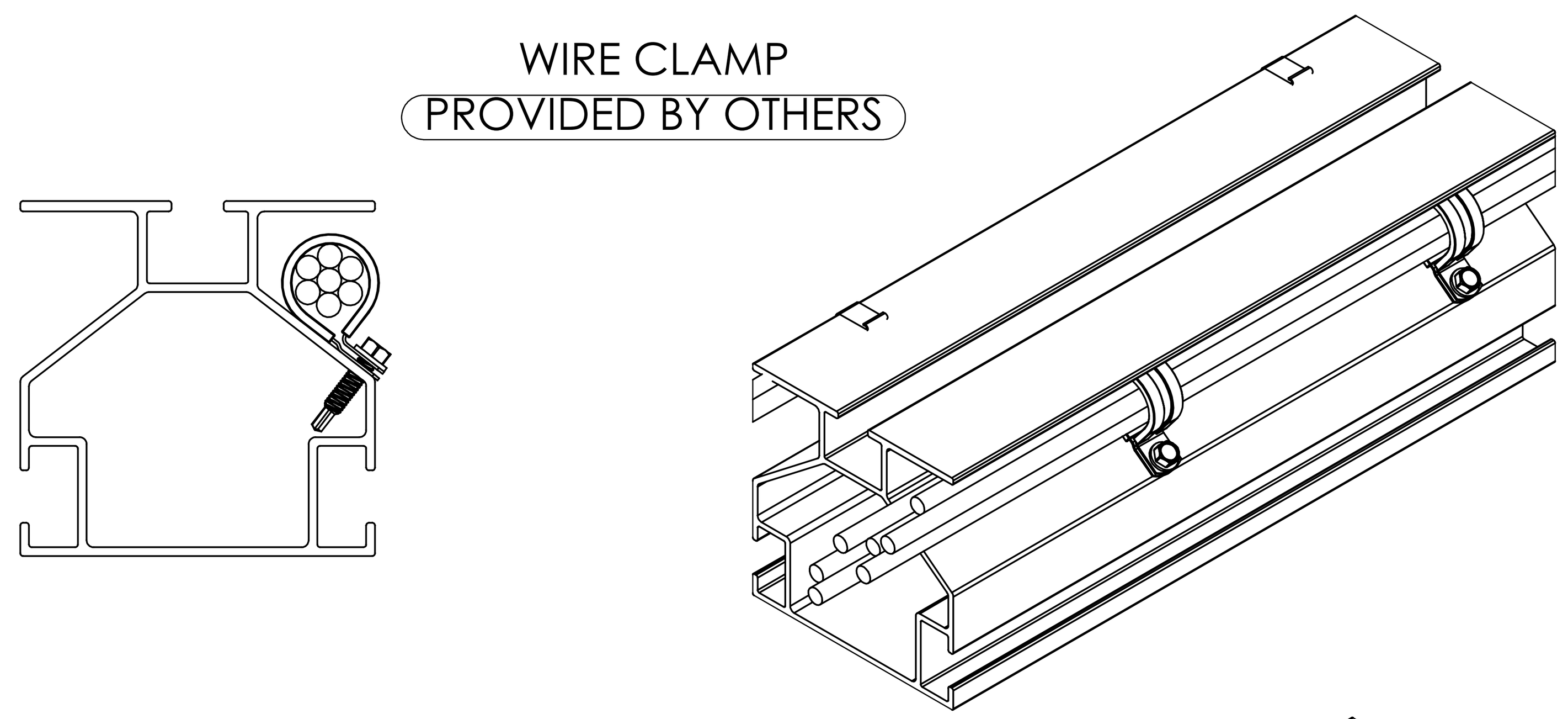
WIRE MANAGEMENT SRS34

WIRE CLAMP
PROVIDED BY OTHERS

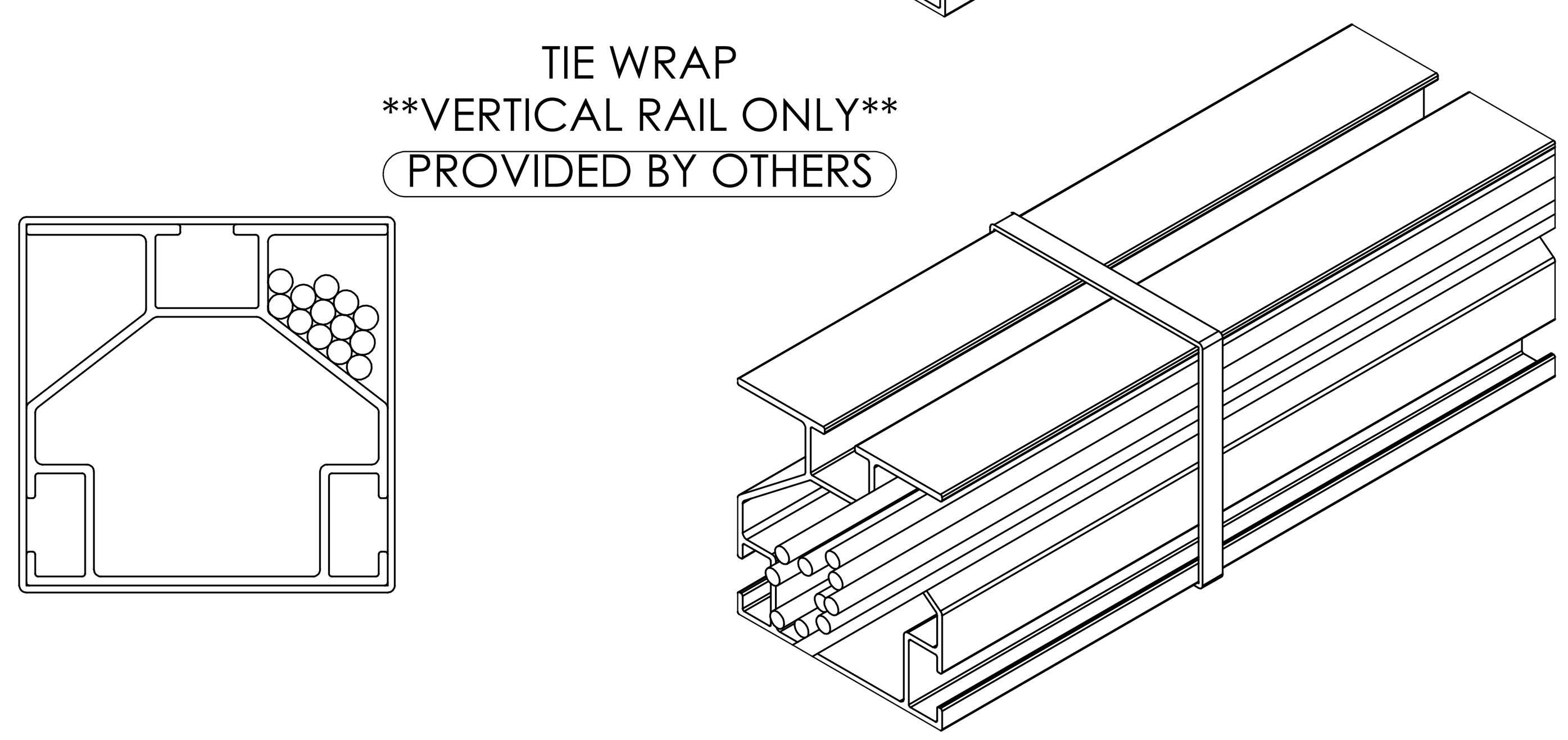


WIRE MANAGEMENT SRS4

WIRE CLAMP
PROVIDED BY OTHERS



TIE WRAP
VERTICAL RAIL ONLY
PROVIDED BY OTHERS



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Note

Revision

Rev.#	Review	Date
01	For Coordination	2024-08-22

Customer Info

CHAMPION SOLAR

Phone:
Email: amy@championsolar.com

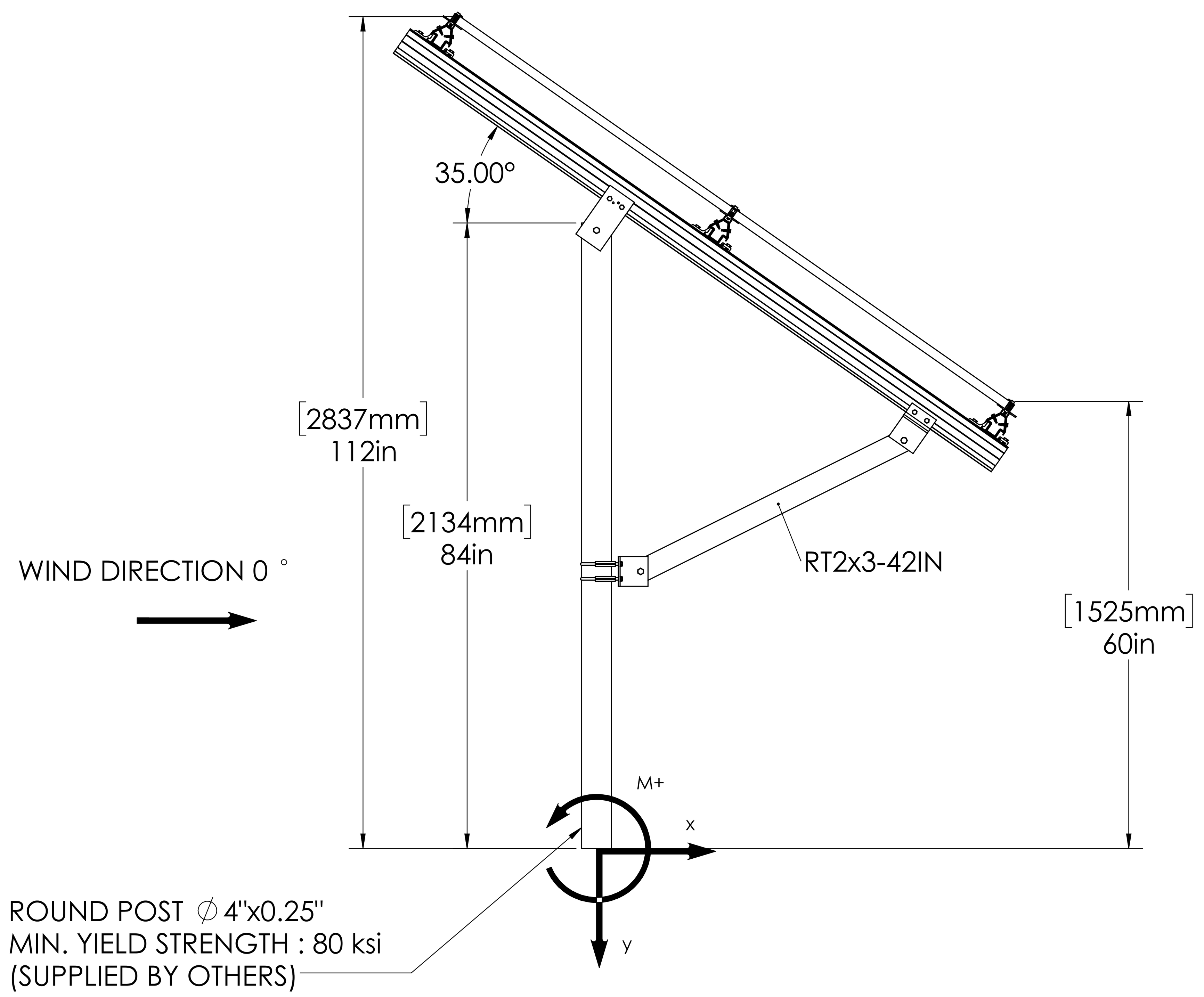
Project Info

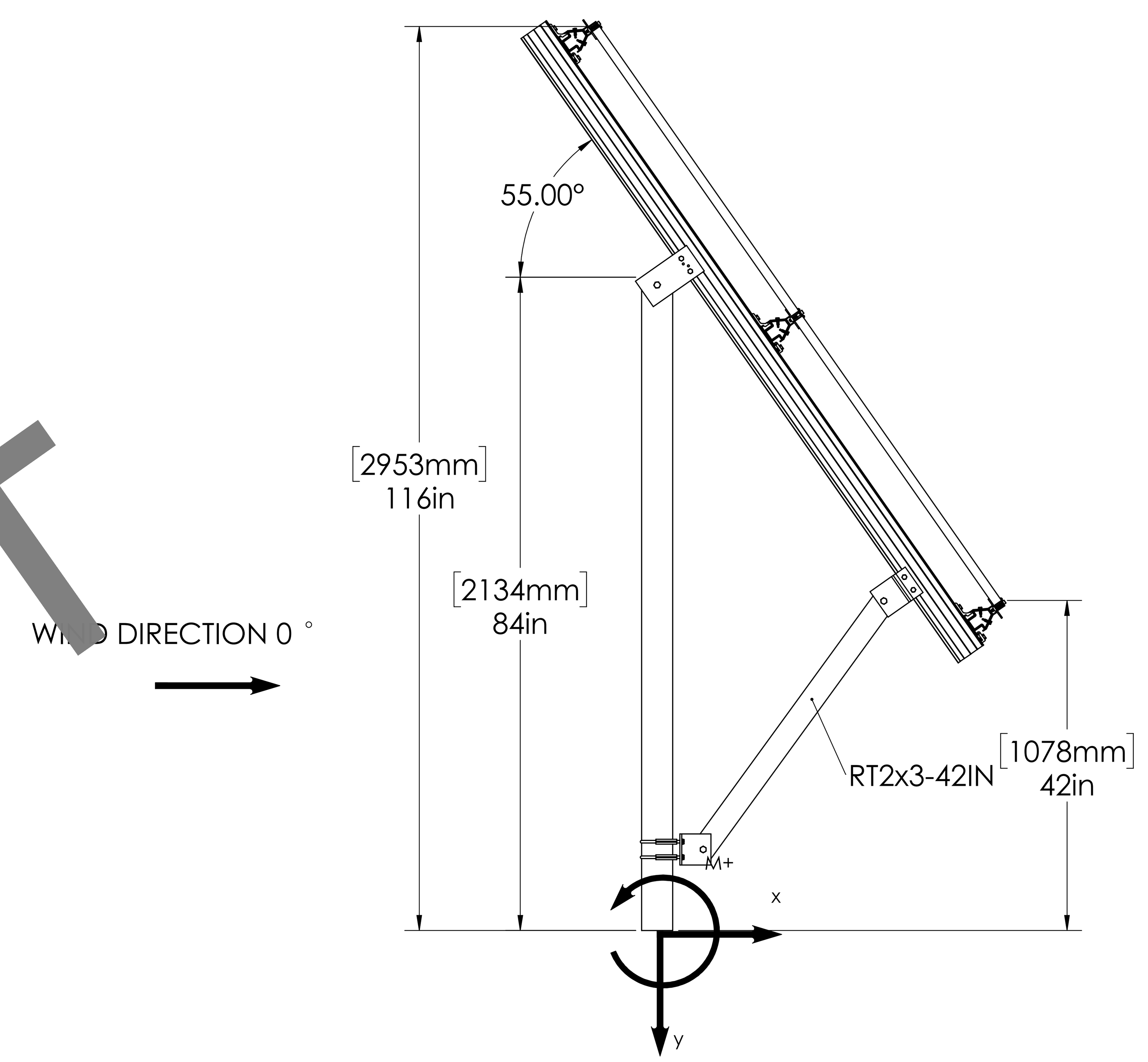
Project Name: GAME FARM RD
Project Number: CMN-24080505
Project Address: 25 Game Farm rd. Independence, MN, 55359

Title: PV PANELS WIRE MANAGEMENT

Drawn By: NL	Check By: FM
Drawn Date: 2024-08-23	Rev: 01
Scale: 1:20	Page: PV1.812

SRS3-GM-BS-L-CSI12-11FT-3x8-5F-D3.5IN





UNFACTORED LOAD (PER PV PANEL)	
DEAD LOAD, D (PV PANEL ONLY)	70.55 lbf
SNOW LOAD, S	35° : 429.3 lbf 55° : 128.8 lbf
WIND LOAD, W (WINDWARD/LEEWARD)	WIND DIRECTION 0° LOAD CASE A - 35°: -901.9/-901.9 lbf LOAD CASE B - 35°: -1219.3/-283.9 lbf LOAD CASE A - 55°: -801.7/-901.9 lbf LOAD CASE B - 55°: -1152.4/-350.7 lbf WIND DIRECTION 180° LOAD CASE A - 35°: 1052.2/1085.6 lbf LOAD CASE B - 35°: 1336.1/534.5 lbf LOAD CASE A - 55°: 1102.3/1252.7 lbf LOAD CASE B - 55°: 1302.7/701.5 lbf
MAXIMUM REACTION AT POST BASE	
PANEL INCLINAISON	35-55°
LOCATION	INDEPENDENCE, MN
CODE(S)	ASCE 7-16
UPLIFT (0.6D+0.6W, 0°-A @ 35)	-1120 lbf
COMPRESSION (D+0.75(0.6W)+0.75S, 180°-A @35°)	2190 lbf
SHEAR (D+0.6W, 180°-A @ 55°)	1580 lbf
MOMENT AT BASE (D+0.6W, 180°-A @ 55°)	9083 lbf-ft

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Note

NOT FOR CONSTRUCTION

Revision

Rev.#	Review	Date
01	For Coordination	2024-08-22

Customer Info

BayWa r.e. (BAY)
Phone:
Email:
amy@championsolar.com

Project Info

Project Name:
GAME FARM RD
Project Number:
cmn-24080505
Project Adress:
25 GAME FARM RD
INDEPENDENCE, Minnesota, 55359
Title
REACTION LOAD

Drawn By: NL	Check By: FM
Drawn Date: 2022-05-02	Rev 01
Scale: 1:50	Page: PV1.901

November 15, 2024

To whom it may concern:

We are Kenneth and Linda Cooksey who live at 65 Game Farm Rd N, Independence, which attaches to the northern and western part of Jeremiah Staples property, 25 Game Farm Rd N. We are in Independence so thought we would share our opinion of the solar installation Jeremiah Staples wants to install. We have seen the plans of where the solar will be placed. We would rarely be able to see, if at all, through all the trees and bushes. Even if we were able to see it, it is right over by our large pole barn which is just to the north, so the solar array would in no way interfere with our views or enjoyment of our property. We fully support the Staples being allowed to install this solar installation.

Sincerely,

Kenneth Cooksey Linda Cooksey

Kenneth and Linda Cooksey

City of Independence

Request for an Amendement to the Conditional Use Permit for the Windsong Farm Golf Club Located at 18 Golf Walk

To:	Planning Commission
From:	Mark Kaltsas, City Planner
Meeting Date:	November 19, 2024
Applicant:	Windsong Farm Golf Club
Owner:	David Meyer
Location:	18 Golf Walk

Request:

PUBLIC HEARING – Jon Dailing/Windsong Farm Golf Club (Applicant) and David Meyer (Owner) are requesting the following action for the properties generally located at 18 Golf Walk and 550 CSAH 92 N. (PID No.s 32-118- 24-13-0001, 32-118-24-42-0001, 32-118-24-24-0001, 32-118-24-31-0002, 32-118-24-42-0030, 32-118-24-43-0002, 32-118-24-42-0031, 32-118-24-42-0029, 32-118-24-42-0025, 32-118-24-42-0036, 32-118-24-34-0001 and 32-118-24-31-0001) in the City of Independence, MN:

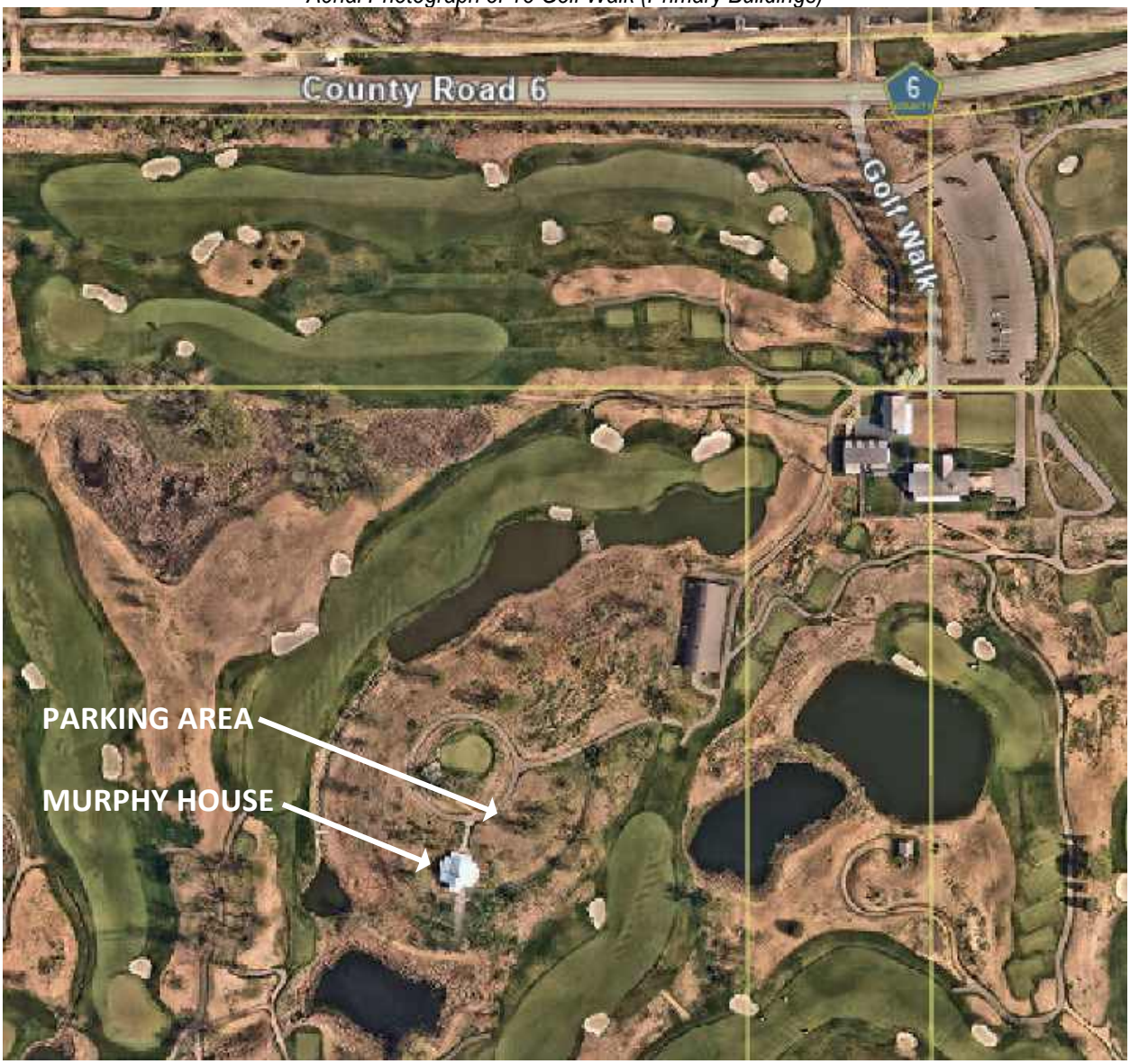
a. A conditional use permit amendment to allow a modification to the vehicle parking area for the out-of-town member guest house and amendment to the approved conditions for use of the house in association with the private golf club.

Property/Site Information:

The subject property is located on the south side of County Road 6, just west of County Road 92. The property is a golf course. The properties have the following characteristics:

Property Information18 Golf Walk
Zoning: *Agriculture*
Comprehensive Plan: *Public/Semi-Public*

Aerial Photograph of 18 Golf Walk (Primary Buildings)



Discussion:

Windsong Golf Club approached the City to discuss an amendment to the conditional use permit to alter conditions relating to the use of the Murphy Guest House. In 2012, the city permitted the construction of the Murphy House for use by national club members who travel into town to play Windsong. The conditions from the 2012 CUP amendment relating to the use of the Murphy House are as follows:

1. The following condition shall be added to the conditional use permit:
   a. In addition to the 18-hole golf course and 29,000 square foot clubhouse, Windsong Farm Golf Club can construct one 5,350 square foot guest house with six sleeping rooms. Use of the guest house will be limited as follows:

1. Use of the guest house shall be limited to members and their non-paying guests.
2. The maximum length of stay for any individual shall be limited to three (3) consecutive nights.
3. Access to the guest houses will be by golf cart only.
4. Access to the existing club house, pro shop and guest house for emergency vehicles shall be maintained at all times.
5. The guest house shall not be equipped with a full kitchen.
6. No meals will be prepared in the guest house.

Windsong would like the city to consider an amendment that would modify two of the six conditions as follows:

2. *The maximum length of stay for any individual shall be limited to three (3) consecutive nights from May 1st to October 31st. The maximum length of stay for any individual shall be limited to fourteen (14) consecutive nights from November 1st to April 30th.*

3. *Access to the guest house will be by golf cart only from May 1st to October 31st. Access to the guest house is permitted by automobile from November 1st to April 30th. Parking of automobiles used to access the guest house from November 1st to April 30th shall be in the designated parking spaces only.*

The existing CUP currently limits the consecutive number of nights that a guest may stay in the guest house to three (3) nights. Windsong has noted that they have national members that would like to utilize the guest house during the off-season for social and business events at the golf club for periods longer than three (3) nights.

The existing CUP also limits access to the guest house via golf cart only. While this works well during the peak golf season, it creates some issues for use during the off-peak season. Windsong is proposing to construct eight (8) parking spaces adjacent to the guest house for use by automobiles during the off-peak season only.

The city reviewed the request with both West Hennepin Public Safety and Maple Plain Fire Department. It was noted that the proposed spaces would actually provide needed space for emergency vehicle parking if needed during peak season when automobiles would not be permitted. Windsong also noted that they would not be able to allow vehicles during the golf season as they could easily be hit by stray golf balls as well as conflict with golf cart traffic using the course.

PARKING PLAN

In order to consider the requested amendments to the conditions, an amendment to the conditional is necessary.

> *520.09 Subd. 8. If a conditional use permit holder wishes to alter or extend the operation or to change the conditions of the permit, the city will evaluate the permit holder's compliance with the existing permit conditions. Any change involving structural alterations, enlargement, intensification of use, or similar change not specifically permitted by the conditional use permit issued requires an amended conditional use permit. An amended conditional use permit application must be administered in a manner similar to that required for a new conditional use permit.*

Commercial golf courses are permitted as conditional uses in the AG - Agriculture zoning district. The golf club has a conditional use permit that was originally approved in 2001 and amended in 2012 and 2013, 2016, 2021, 2022 and 2023 and 2024. The CUP allows two golf courses, their associated club house/pro shop, guest house and parking north of CSAH 6. The initial Golf Course CUP was issued under 530.01, subd. 4(s) which makes "commercial golf course" a conditionally permitted use.

Any amendment to an existing CUP must meet the same requirements established for granting a new CUP. The criteria for granting a conditional use permit are clearly delineated in the City's Zoning Ordinance (Section 520.11 subd. 1, a-i) as follows:

1. *The conditional use will not adversely affect the health, safety, morals and general welfare of occupants of surrounding lands.*
2. *The proposed use will not have a detrimental effect on the use and enjoyment of other property in the immediate vicinity for the proposes already permitted or on the normal and orderly development and improvement of surrounding vacant property for uses predominant in the area.*
3. *Existing roads and proposed access roads will be adequate to accommodate anticipated traffic.*
4. *Sufficient off-street parking and loading space will be provided to serve the proposed use.*
5. *The proposed conditional use can be adequately serviced by public utilities or on-site sewage treatment, and sufficient area of suitable soils for on-site sewage treatment is available to protect the city form pollution hazards.*
6. *The proposal includes adequate provision for protection of natural drainage systems, natural topography, tree growth, water courses, wetlands, historic sites and similar ecological and environmental features.*
7. *The proposal includes adequate measures to prevent or control offensive odor, fumes, dust, noise, or vibration so that none of these will constitute a nuisance.*
8. *The proposed condition use is consistent with the comprehensive plan of the City of Independence.*
9. *The proposed use will not stimulate growth incompatible with prevailing density standards.*

The City will need to find that requested amendments to the conditions relating to the use of the guest house are consistent with the conditional use allowing a commercial (private) golf club on the property. In addition, the City will need to determine if the proposed amendment to the CUP meets the requirements for granting a conditional use permit amendment.

There are several items that should be noted:

- The use of the guest house is limited to members of the golf club or their non-paying guests. The city has historically not had issues relating to the use of the guest house. Windsong does have national members that regularly travel to Independence to play the course and use the club amenities. Windsong would like to allow national members the option to utilize the guest house during the off-peak season for periods longer than three (3) consecutive nights. Due to weather conditions during the non-peak season, the club would also like to allow automobile access/parking to the guest house.

The Planning Commission will need to determine if the requested amendment to the conditional use permit meets all of the aforementioned conditions and restrictions.

Neighbor Comments:

The City has not received any written comments regarding the proposed amendment to the conditional use permit.

Recommendation:

Staff is seeking a recommendation from the Planning Commission for the request for an amendment to the conditional use permit. Should the Planning Commission make a recommendation to approve the requested action, the following findings and conditions should be considered:

1. The proposed conditional use permit amendment meets all applicable conditions and restrictions stated Chapter V, Section 510, Zoning, in the City of Independence Zoning Ordinance.

2. The conditional use permit will continue to be reviewed annually by the City to ensure conformance with the conditions set forth in the resolution.

3. All conditions of the original conditional use permit and all subsequent amendments shall remain in full force.

4. The following condition from the October 16, 2012 conditional use permit amendment shall be amended as follows:

- In addition to the 18-hole golf course and 29,000 square foot clubhouse, Windsong Farm Golf Club can construct one 5,350 square foot guest house with six sleeping rooms. Use of the guest house will be limited as follows:
    1. Use of the guest house shall be limited to members and their non-paying guests.
    2. The maximum length of stay for any individual shall be limited to three (3) consecutive nights *from May 1st to October 31st. The maximum length of stay for any individual shall be limited to fourteen (14) consecutive nights from November 1st to April 30th.*
    3. *from May 1st to October 31st. The maximum length of stay for any individual shall be limited to fourteen (14) consecutive nights from November 1st to April 30th.*
    4. Access to the guest houses will be by golf cart only *May 1st to October 31st. Access to the guest house is permitted by automobile from November 1st to April 30th. Parking of automobiles used to access the guest house*

from November 1st to April 30th shall be in the designated parking spaces only.

5. Access to the existing club house, pro shop and guest house for emergency vehicles shall be maintained at all times.
6. The guest house shall not be equipped with a full kitchen.
7. No meals will be prepared in the guest house.

5. The applicant shall pay for all costs associated with the review of the conditional use permit amendment application.

Attachments: Application
Parking Plan

CITY OF INDEPENDENCE MINNESOTA

Date Submitted: 10-17-2024

Applicant Information

Name:	Jon Dailing
Address:	18 Golf Walk Independence, Minnesota 55359
Primary Phone:	952-797-3727
Email:	jdailing@wsfarm.com

Owner Information

Name:	David Meyer
Address:	18 golf walk Independence, Minnesota 55359
Primary Phone:	763-479-7161
Email:	david.meyer@titanmachinery.com

Property Address:

PID:

Planning Application Type: Conditional Use Permit, Ordinance Amendment

Description:

Supporting Documents: Construction Plans

Signature:

PHONE: 800-328-8949 FAX: (320)978-9900
PO BOX 208 408 SIXTH STREET
PRINSBURG, MN 56281

DUININCK GOLF

Windsong Farm Golf Course
Murphy House Parking
Independence, MN

DATE
October 16th 2024

DRAWN BY:
PD

CHECKED BY:
AH

SCALE
1"=10'

SHEET
1 OF 1