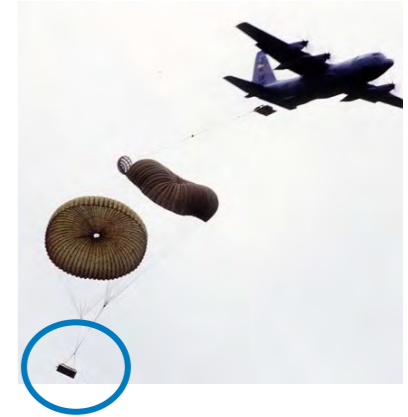


# Assembly Procedures For 24 by 42 LCLA Layout



**Dr. Daryoush Allaei, PE**  
Chief Technology Officer  
QRDC, Inc.

E: [dallaei@qrdc.com](mailto:dallaei@qrdc.com), Office: (952) 556-5205 or Mobile: (612) 380-4433

**Website for more information:**

**[1\) https://www.qrdc.com/library/real-reusable-energy-absorbing-layer/](https://www.qrdc.com/library/real-reusable-energy-absorbing-layer/)**

**[2\) https://www.qrdc.com/](https://www.qrdc.com/)**

August 14, 2025

# READ Me First

## Conditional Warranty for REAL & RUSB

- 1) QRDC provides a conditional warranty for a minimum of 35 airdrops. If REAL or RUSB experience failure related to aerial delivery with fewer than 35 airdrops, QRDC will replace any damaged parts at no cost. Customer is responsible for shipping costs.**
- 2) Customers shall pay shipping costs for warranty replacement parts.**
- 3) Conditional Warranty is void if recommended assembly, loading, or DZ recovery procedures are not followed.**
- 4) Conditional warranty may be void if a customer does not follow the specified (i.e., what not-to-do list) guidelines during assembly, loading, or recovery from DZ (Drop Zone).**

# Overview

- 1) General Assembly of REAL Modules**
- 2) Tiedowns of REAL Modules**
- 3) Mass Airdrop**
- 4) Recovery Procedures**
- 5) Open Discussion and Q/A**

# 24 by 42 LCLA Layout

# Assembly Procedure

**Weight of Product Packages**  
**LCLA Standard Load Capacity**

Layout	Package ID	Parts Included in the Package						Weight [lb]
		Part ID						
		REAL (3" height)			Belt42	RUSB04B-100		
		06M12	23M126	04M06				
24x42	LCLA2442S100BSbBe	6	2	0	1	1	66	

**B: Black**  
**S: Standard Load Capacity**  
**Be: with Belt,**

**REAL is Flexible with application to other platforms:**

# LCLA

**Standard Load  
Capacity: 1,400 lbs  
Weight (no belt): 59 lbs**

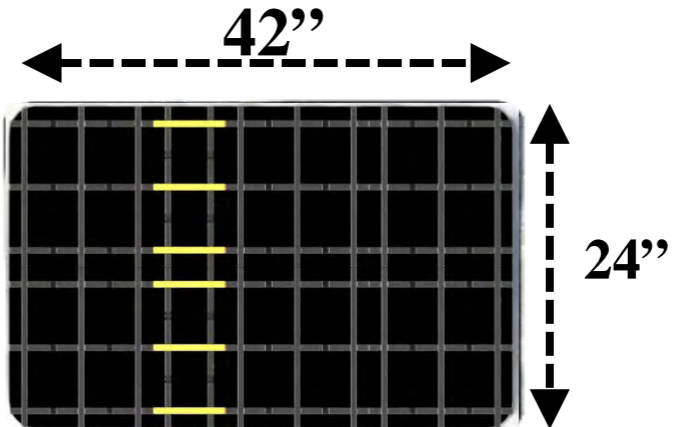


LCLA Layout – 24 by  
42”

REAL Modules

Two rows

Each Row three 06M12+  
one 23M126



## Assembly Procedures for 24 by 42 LCLA Layout using REAL and RUSB

**REAL** (Reusable Energy Absorbing Layer) assembly instructions for one LCLA bundle.

It is assumed the **REAL layout is 24"X42"** on a 24x42" skid.

The entire assembly should take **12 to 15 minutes**.

There are two options to assemble 24 by 42" layout. They are described in this file.

### Use 6 REAL06M12 and 2 REAL23M126

#### Step 1:

This is an optional step if the rigger likes to have a centered and balanced load.

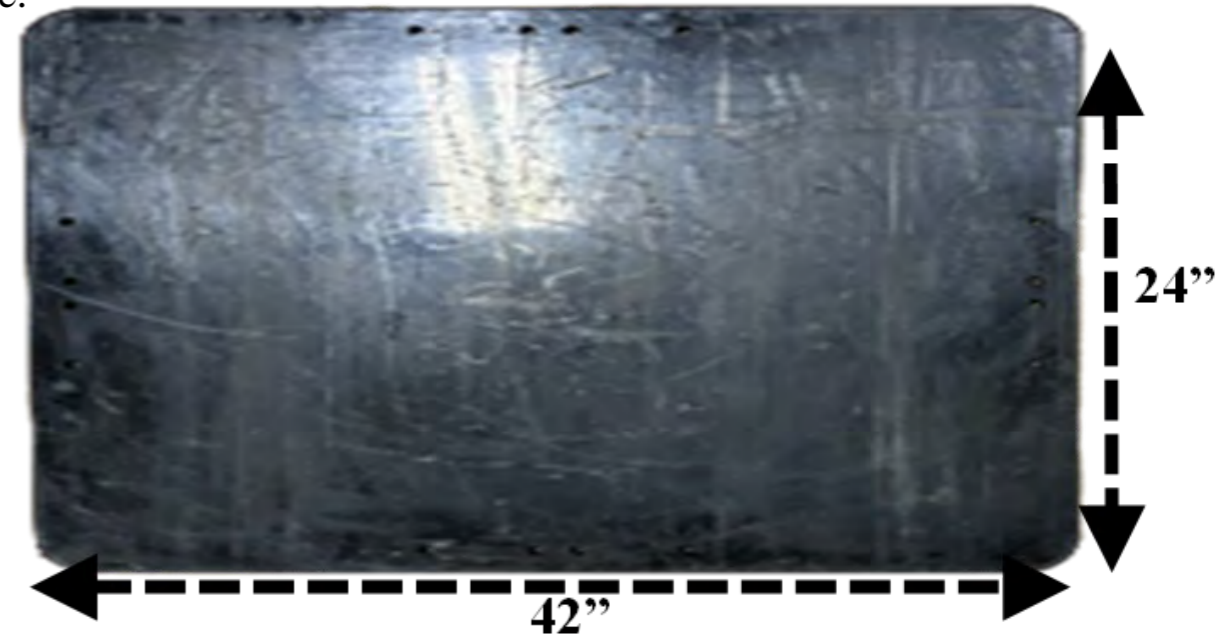
Lay out the 24"x42" skid board without any REAL modules.

Measure and mark center point on skid board. Use this mark for your center module. This center mark will be useful when rebuilding the load.

#### Step 2

Unpack the REAL package and lay on the skid board.

Full image showing REAL package, for 1 CDS bundle, resting on skid board.



**Step - 3:**

**Start assembly of one REAL06M12 module.**

**The actual color is black, or a color requested by customer.**



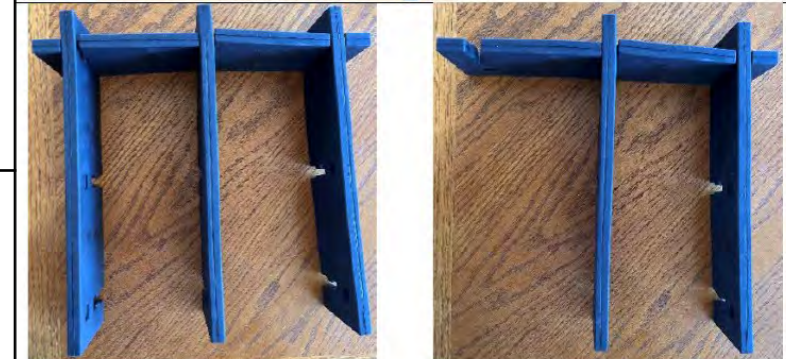
**Step - 4:**

**Start with two REAL parts and attach as shown in this image. It would be helpful to use a hand/fist (or a hammer with elastic head) to pound the REAL into place. You want it to fit snugly and be flat on the top and bottom.**



**Step - 5:**

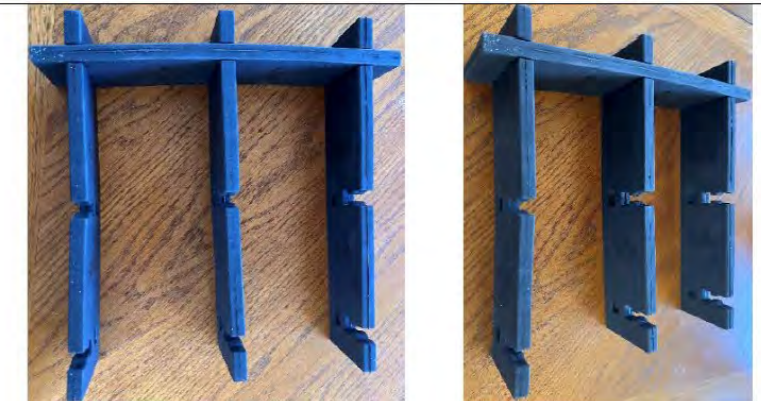
**Repeat Step - 5 for an additional 2 REAL parts. Now three REAL parts are bridged with one part. Two views are shown.**



**Step - 6:**

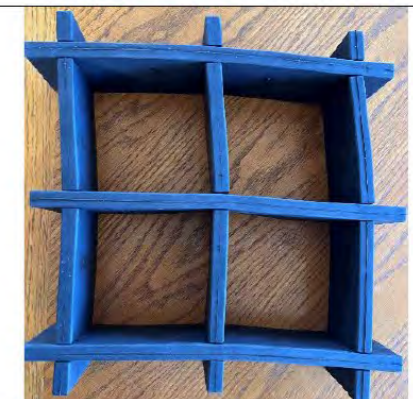
**Flip over the assembly shown in Step - 6.**

**Two views are shown.**



**Step - 7:**

**Connect the remaining 2 REAL parts as shown in the figure. Now one REAL06M12 module is assembled. This module has six (6) 12" leaves.**



# Assembling REAL06M12

**(Video is not available  
in PDF format)**

**To View the assembly video, use the  
below link on YouTube**

**<https://www.youtube.com/playlist?list=PL-DXOhMVuaWY9YC3g2SbLwu56qvHx-pJD>**



**Step - 8:**

**Assemble REAL23M126 Modules**

**You need two 12” and three 6” REAL**

**Start assembly of one REAL23M126 module.**

**The actual color is black, or a color requested by customer.**



**Step - 9:**

**Start with two one 12” REAL parts and one 6” REAL attach as shown in these images. It would be helpful to use a hand/fist (or a hammer with elastic head) to pound the REAL into place. You want it to fit snugly and be flat on the top and bottom.**



**Step - 10:**

**Repeat Step - 10 for an additional 12 and the same 6” REAL parts.**

**Now two 12” REAL parts are bridged with one 6” REAL part. .**

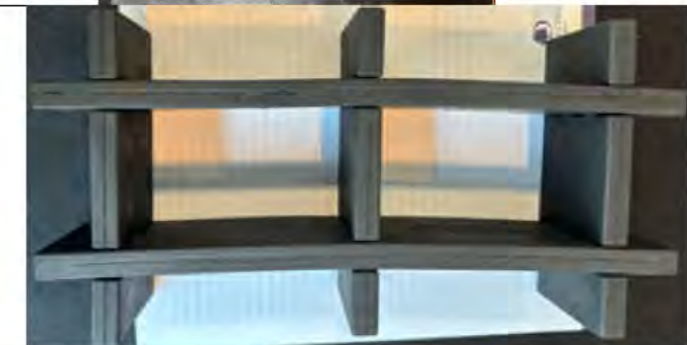


**Step - 11:**

**Repeat Step - 11 for the same 12” REAL parts and an additional 6” REAL parts.**

**Step - 12:**

**Connect the 3<sup>rd</sup> 6” REAL parts as shown in the figure. Now one REAL23M126 module is assembled. This module has two (2) 12” and three (3) 6” leaves.**

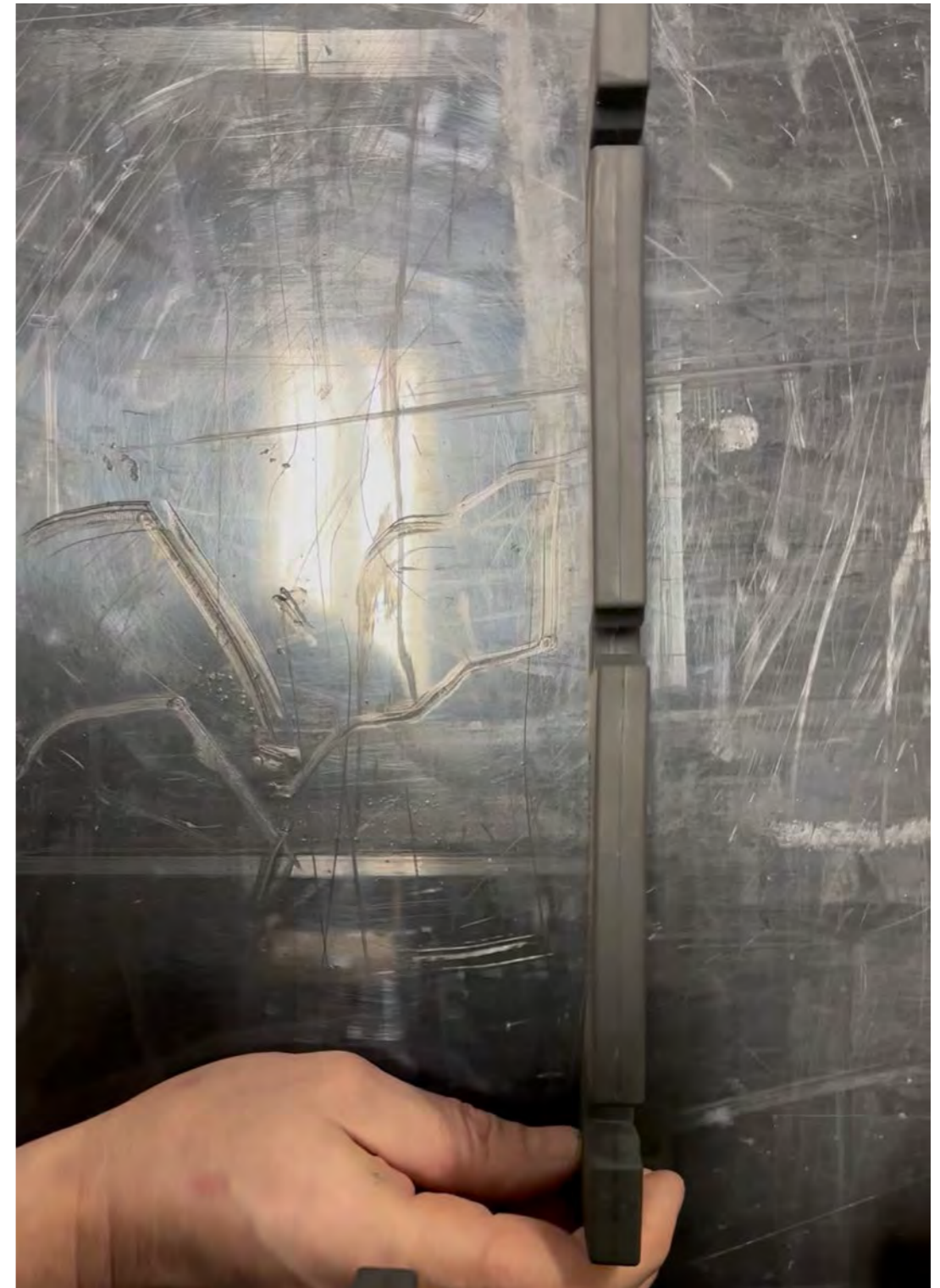


# Assembling REAL23M126

**(Video is not available in  
PDF format)**

**To View the assembly video, use the  
below link on YouTube**

**<https://www.youtube.com/playlist?list=PL-DXOhMVuaWY9YC3g2SbLwu56qvHx-pJD>**



**Step 13: 24 by 42” LCLA Layout.**

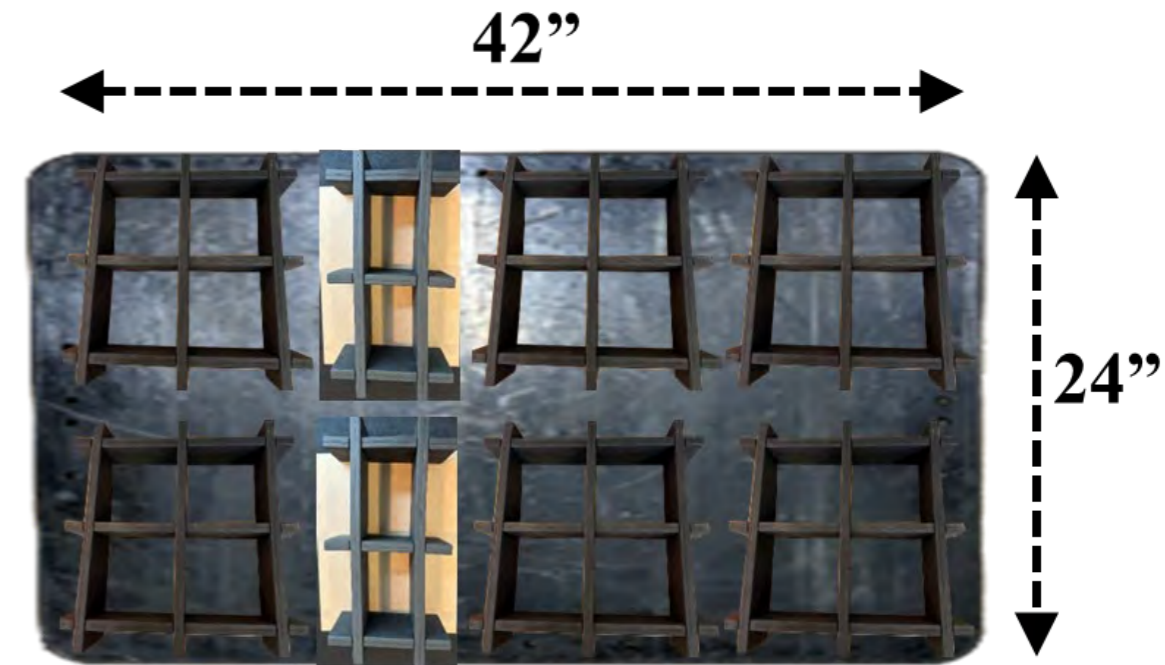
**Repeat above steps to assemble 1 more 126” REAL module.**

**Lay out all 12” and 126” REAL modules on skid board as shown in this figure.**

**You will have six (6) 12” and two (2) 126” REAL modules for 1 LCLA bundle. They should be evenly spaced from the edges.**

**Note that this is one of the many options how you can lay out 126” REAL to make a full 24 by 42” layout.**

**Load Capacity: 1370 lbs**



# Assembly Procedures for 24 by 42 LCLA Layout using REAL and RUSB

Step 14: (the following steps are optional)

- 1) Wrap the belt around the layout.
- 2) Tension the belt and overlap the extra sections.

The first image shows tensioning the belt.

**Works for 36X36", 36X42", 42X42", & 24X42" Layouts.**



This image shows the belt and buckle.

The second image (right side) shows the part of the belt sections overlapped.



The third image shows the belt around the entire assembled layout.

As an example, this image shows 24X42" layout.

**The belt is long enough to work with 36X36", 36X42", 42X42", & 24X42" Layouts.**

**It is recommended that you do not tighten the belt until load is placed on REAL layout** (see the next page)

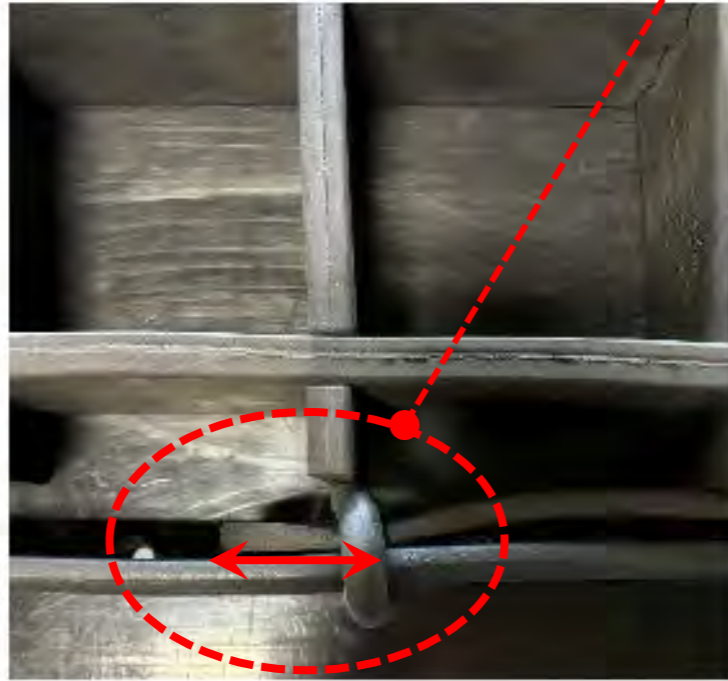
Place the belt around the assembly and tighten enough to barely touch the edges of REAL. Place the buckles in the right locations over the overlapped section.



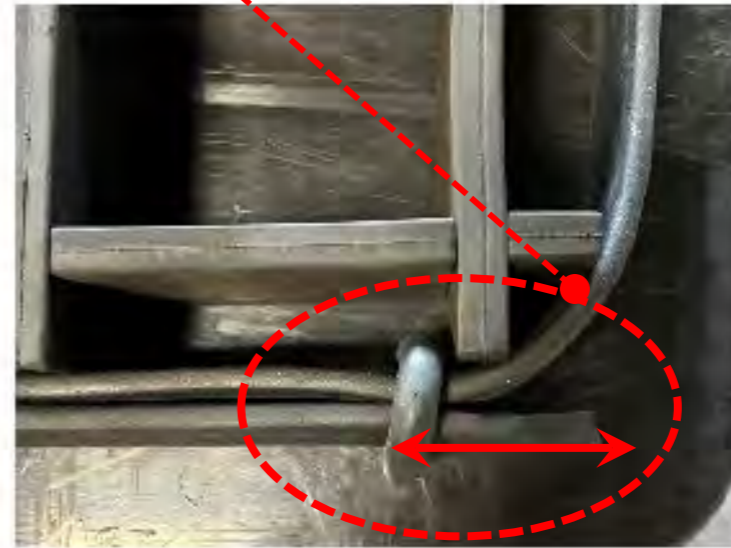
**Zoomed images of Belt & Buckles**

**The slack part of belt  
should not exceed**

**3 or 4''**



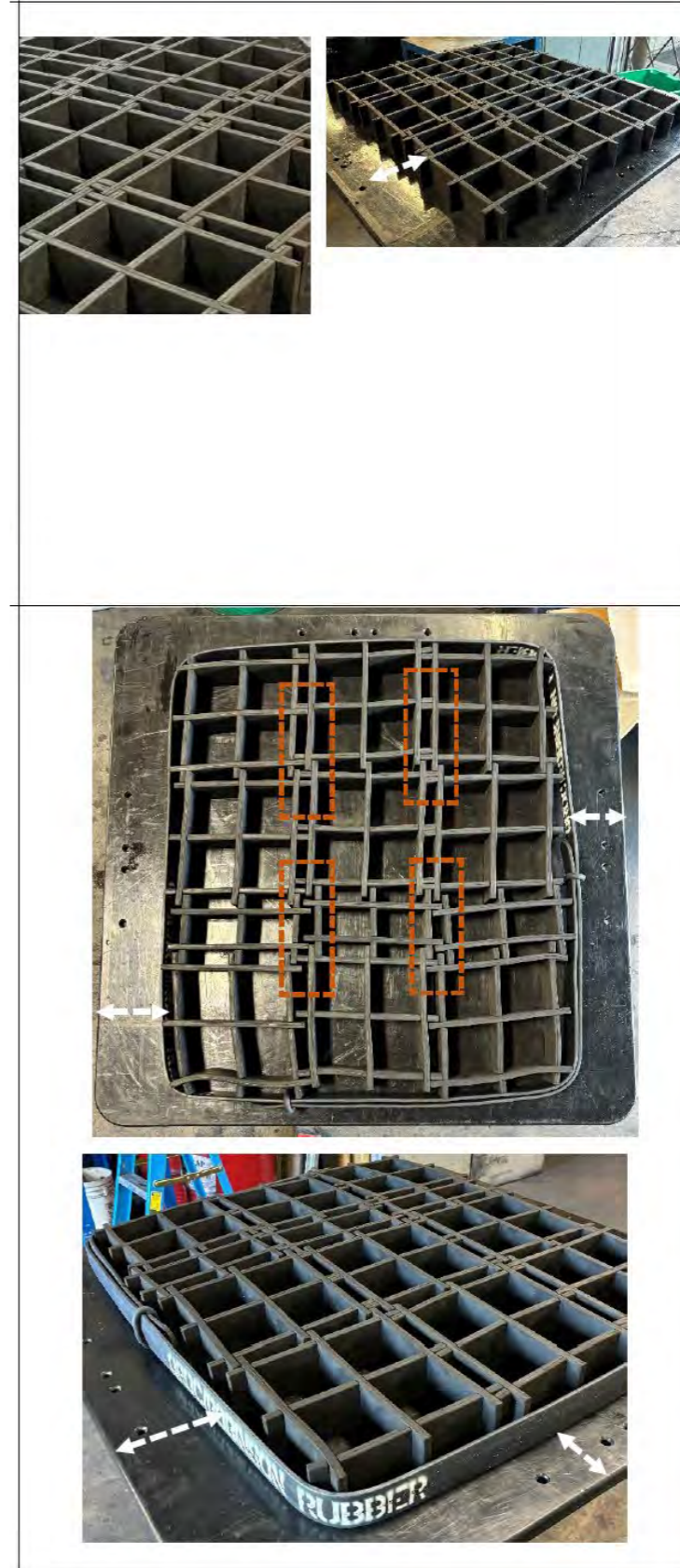
**3 or 4''**



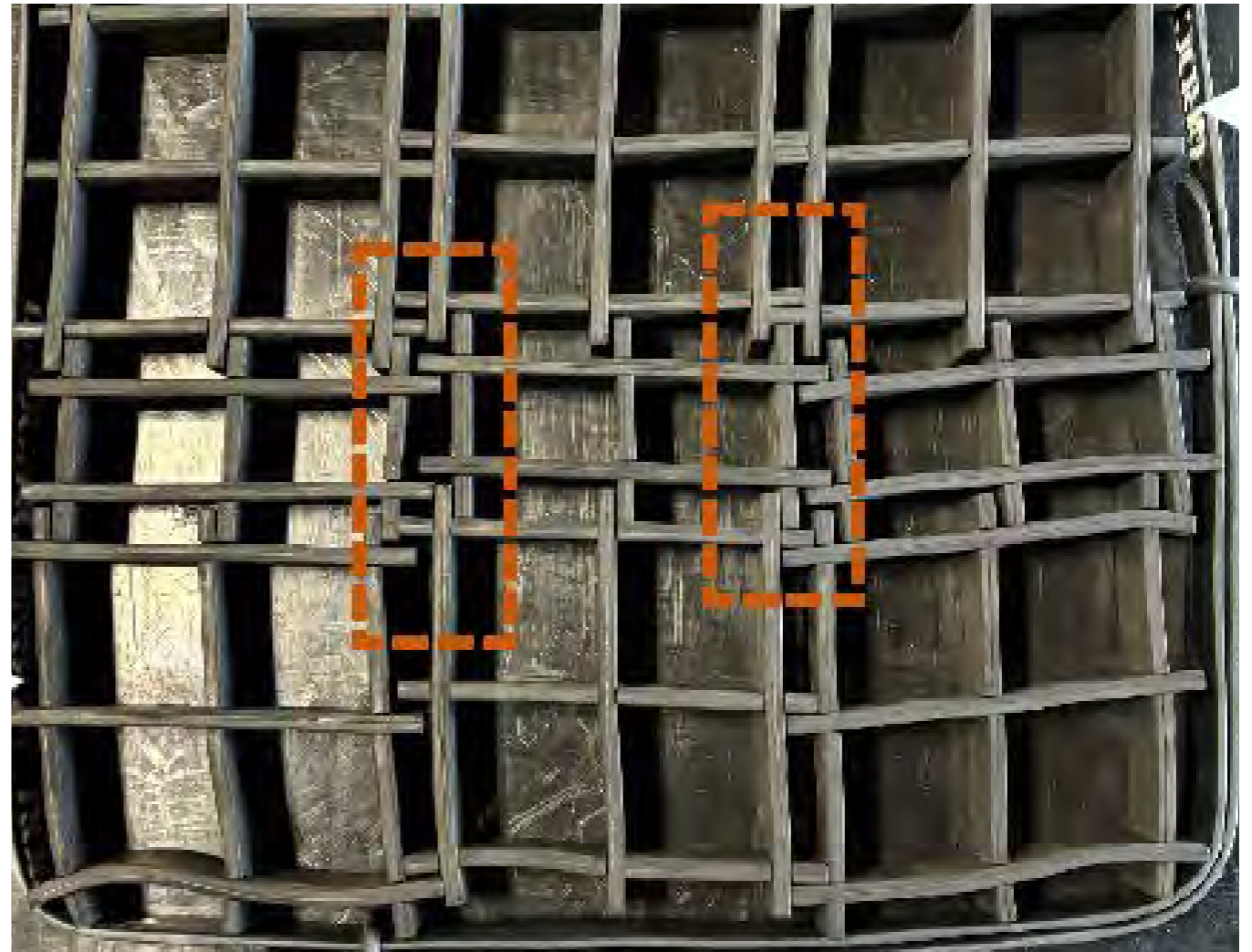
**3 or 4''**

### Step 14A: (Compacting)

- 1) As an option, to further reduce any movement, one can interlock REAL modules as shown in the picture.
- 2) The images shown in orange boxes show sample areas where REAL modules are compacted (i.e., overlapped and interlocked).
- 3) This makes the layout smaller (by 3 inches) on all 4 sides, but it makes the layout much more stable once it hits the ground in an odd orientation, such as corners.



**Zoomed image of interlocking REAL modules, shown in red boxes.**



# **Step by Step Tiedowns**

## **24x42” LCLA Layout using**

**Each RUSB needs**

**Two (2) REAL23M126 modules**

**+**

**Six (6) REAL06M12 modules**

# LCLA 24x42” layout using REAL06M12 & REAL12M126 Modules

## Legend:

**Light Blue:** Belt

**Dark Blue:** REAL06M12

**White:** REAL23M126

**Black:** RUSB

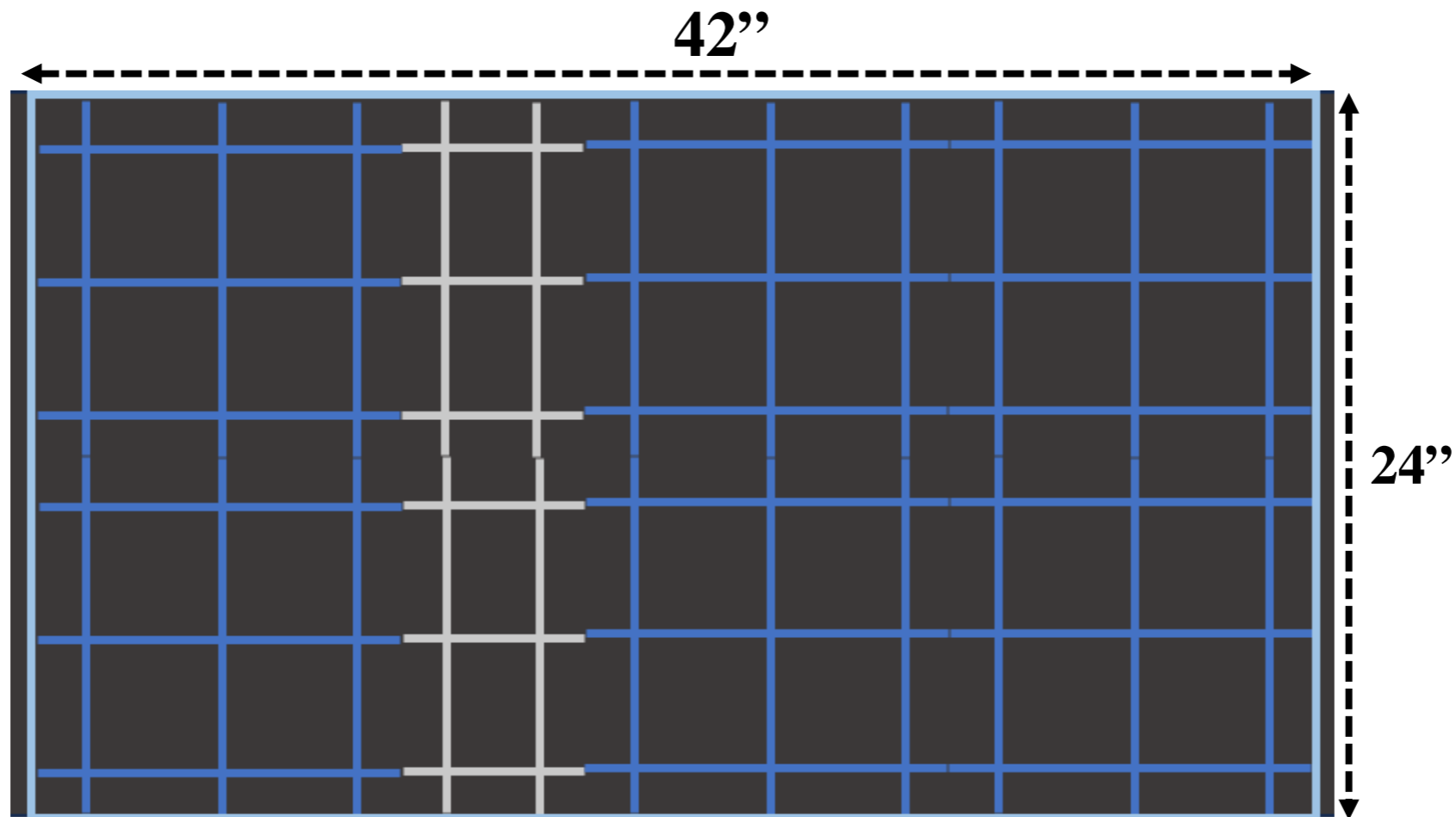
**Yellow & Orange** 2G ties strings: Line Tiedowns

## 2G Ties Required:

**You need seven (7) 96” 2G ties along the 42” length**

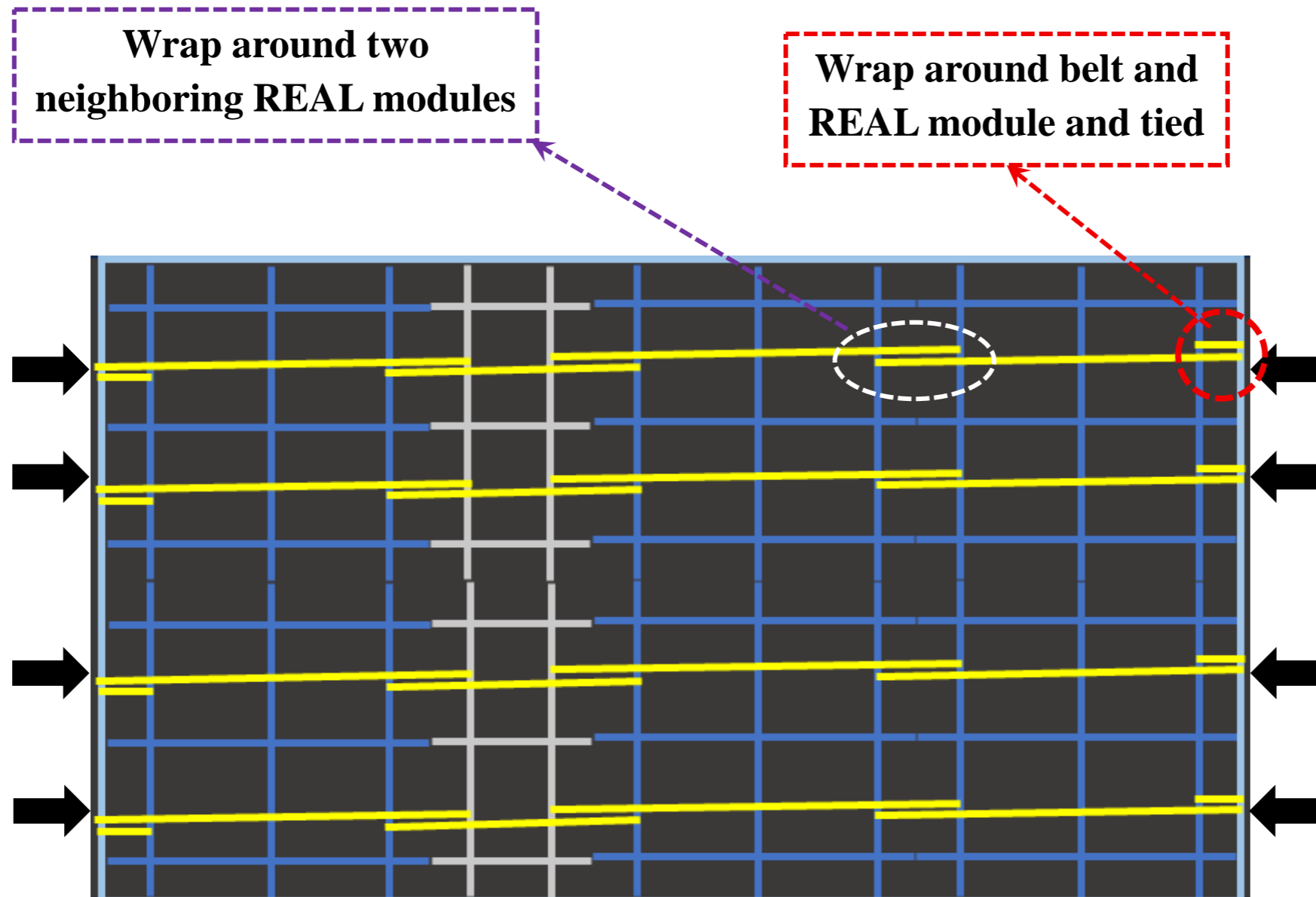
**You need four (4) 62” 2G ties along the 24” width**

# Step 1: Complete REAL layout on RUSB plus belt



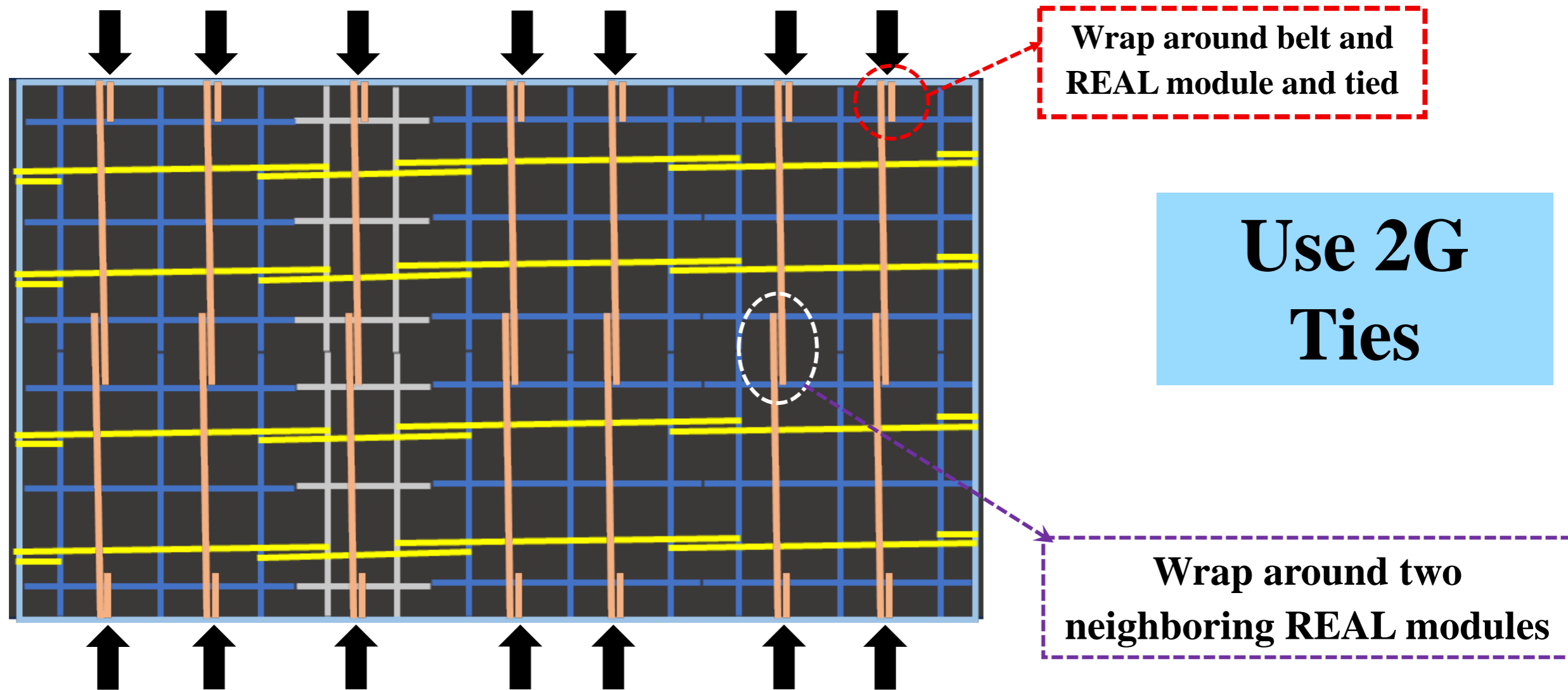
## Step 2:

Four (4) line tiedowns start from belt, connecting each REAL module until reaching belt on the other side. Both ends tie belt to REAL modules. REAL modules & Belt along the horizontal lines (yellow) are shown by arrows. Each 2G tie is 96”.



### Step 3:

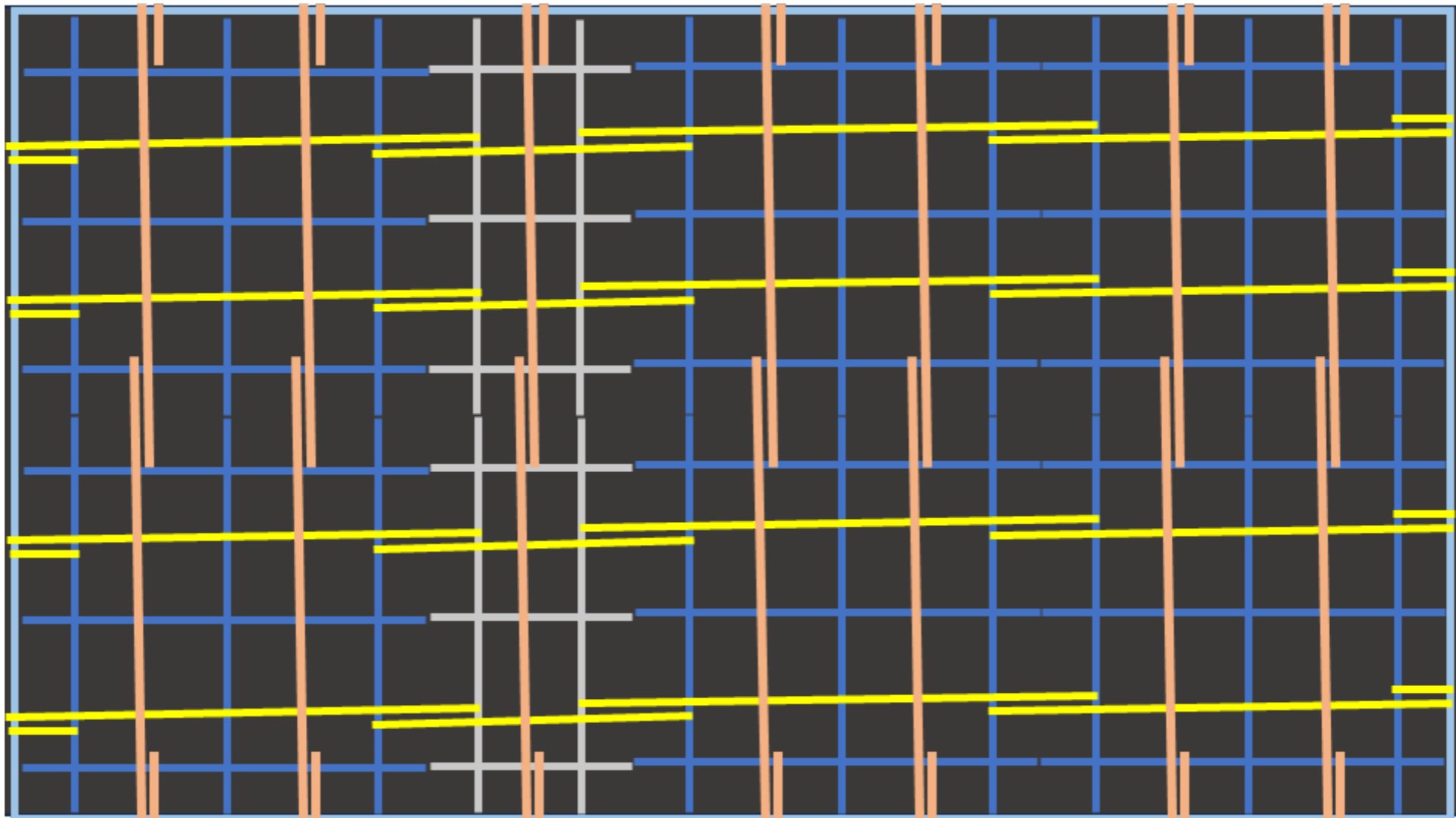
Seven (7) line tiedowns start from belt, connecting each REAL module until reaching belt on the other side. Both ends tie belt to REAL modules. REAL modules & Belt along the vertical lines (orange) are shown by arrows. Each 2G tie is 62". Note that ends are tied to belt and REAL (see red circle) and two neighboring modules are wrapped around (see white elliptical).



## Step 4 & Final:

## Use 2G Ties

After all line ties are completed, the finished layout should resemble the image shown below. There is no single method for these tiedowns. It is essential to ensure all modules are interconnected to make the layout one piece.

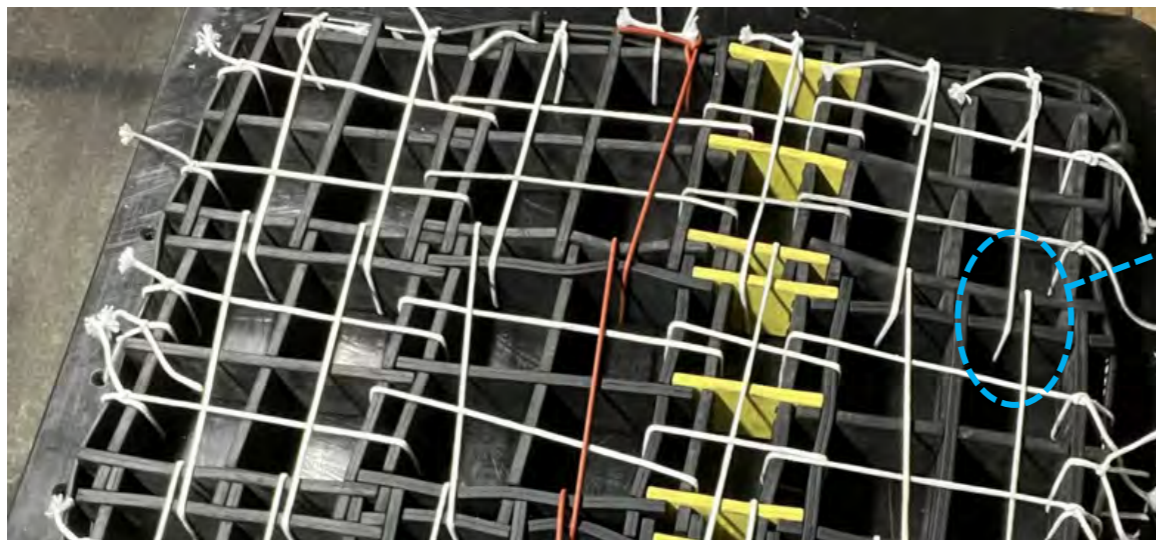


## Stage 4 & Final (actual picture):

Pictures below show the actual tiedowns on LCLA layout (24 by 42"). The top figure shows all the tiedowns except for the middle tiedown that is shown in red in the lower picture. The lower picture shows all eleven (11= 7 + 4) line tiedowns. The row of REALM23126 is shown in yellow.



Wrap around belt and REAL module and tied



Wrap around two neighboring REAL modules

**Step 15:**

- 1) After the REAL assembly is completed and belt is placed around the assembly, apply load. Once the REAL assembly is completed and the belt is positioned around it, apply the load.**
- 2) The load should be centered.**
- 3) In this case, the load includes 6 fuel-like tanks (but it can be any load that fits).**
- 4) After load is applied, tighten the belt to the desired tension. Check to see if any of the REAL modules are buckled. If so, tension is too much.**

**Tip:**

- 1) Moving rubber (buckle) over rubber (belt) can be hard due to sticky friction. To move the buckle easier so the belt can be tightened, one can spray small amounts of silicone, graphite, or liquid soap under the buckles. Spraying water will help.**



# Things not to do during assembly



**Nooooo!**



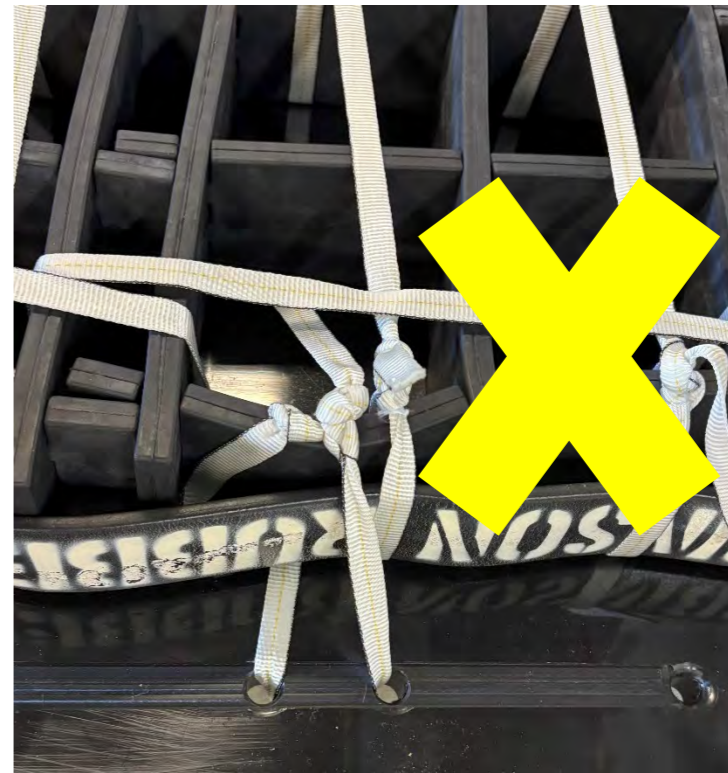
**Not Recommended!**

**Recommended!**





**No!**



**Not Recommended!**

**Recommended!**



# Mass Airdrop

# **Intermixing RUSB and Plywood in Mass Airdrop**

- 1) It is noted that CDS or LCLA bundles using RUSB exit aircraft faster than plywood bundles.**
- 2) If RUSB and Plywood bundles are used in mixed mass airdrop, it is strongly recommended, RUSB bundles exit first (placed closest to the exit door).**
- 3) When intermixing RUSB and plywood bundles in mass airdrop, lead RUSB bundle as after most bundle.**



# AFSOC FCIF 25-112

**UNCLASSIFIED**

*(When Filled In)*

AMPLIFYING INFORMATION:

1. This AFSOC FCIF applies to units operating the MC-130J; all others take for information only.
2. The Reusable Universal Skid Board (RUSB) is a composite, reusable Container Delivery System (CDS) skid board with the potential to significantly reduce the cost of conventional plywood skid boards. Additionally, RUSB is designed to be utilized with Reusable Honeycomb (REAL/REAP), but can be used with traditional Energy Dissipating Material (EDM) honeycomb.
3. RUSB is approved for use for unilateral training airdrops; however, a full restraint evaluation of the RUSB is pending and has not been completed. Until a full restraint evaluation is completed, vertical restraint will be applied utilizing aircraft CGU 1/B straps to all CDS bundles rigged with the RUSB. This includes bundles restrained by the Center Vertical Restraint (CVR). Straps used as additional restraint will be placed and secured in a manner that does not interfere with the parachute and/or bundle rigging.
4. User reports indicate the RUSB exits faster than a plywood skid board. To prevent malfunctions caused by bundle interaction among mixed RUSB and plywood skid boards, all bundles rigged with RUSB in a mass configuration will be loaded to exit the aircraft before any bundles rigged with plywood boards exit. If a bundle rigged with RUSB is the first to exit the aircraft--and until RUSB exit times have been fully evaluated and published--aircrews will subtract one second from the calculated CDS exit time to correct for faster exit. This corrected exit time will be overwritten into the aircraft's CARP computer or manually computed CARP.
5. Aircrews will report any problems encountered when using the RUSB to AFSOC/A3FW/A3V.
6. The FCIF will remain in effect until the TO 13C7-1-11 is revised/published and additional guidance is incorporated.
7. Post this FCIF within 2 days of receipt to Volume 1, Part B of the FCIF. AFSOC/A3V is the POC, DSN 579-4880.

# AFSOC FCIF 25-112

UNCLASSIFIED

(When Filled In)

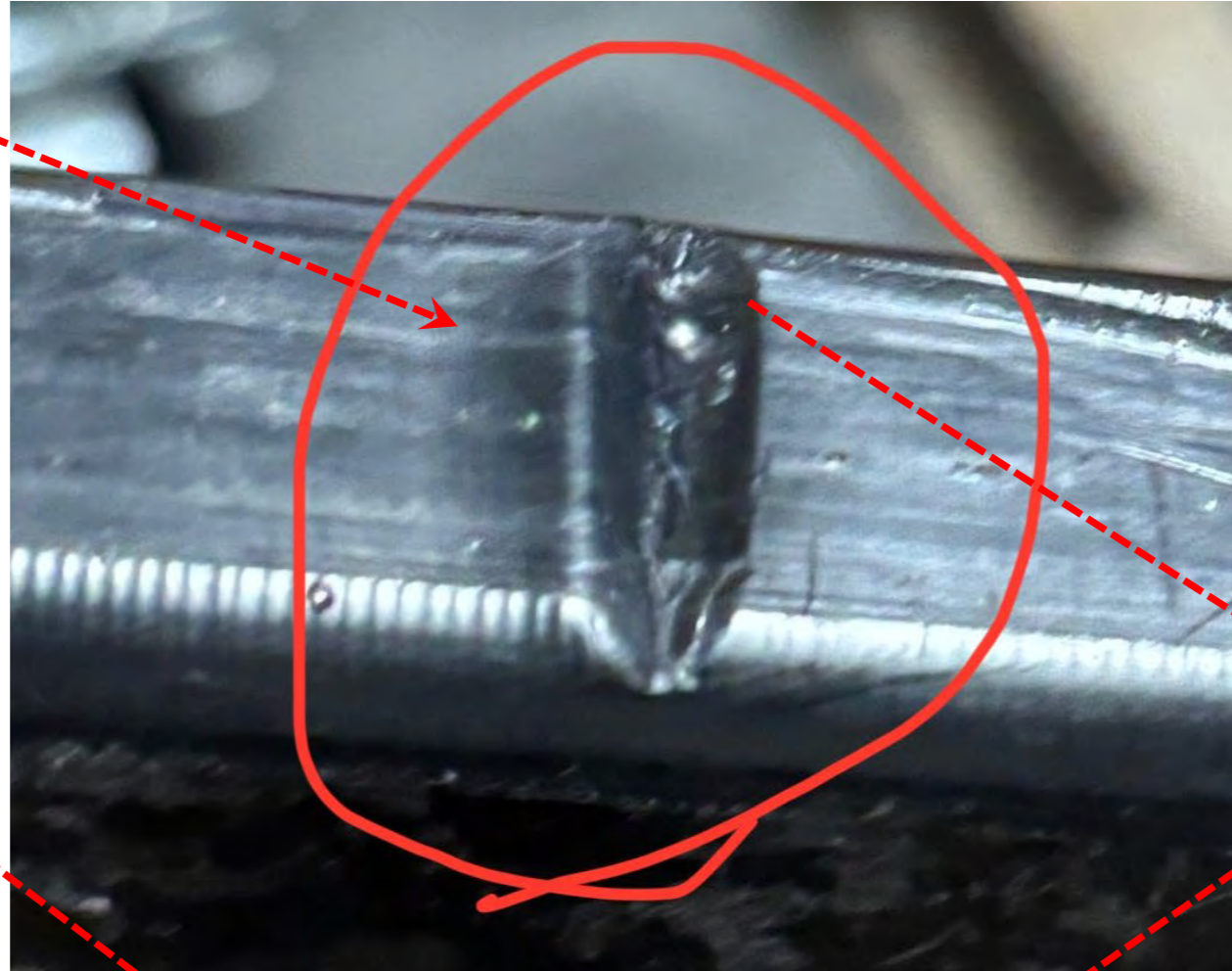
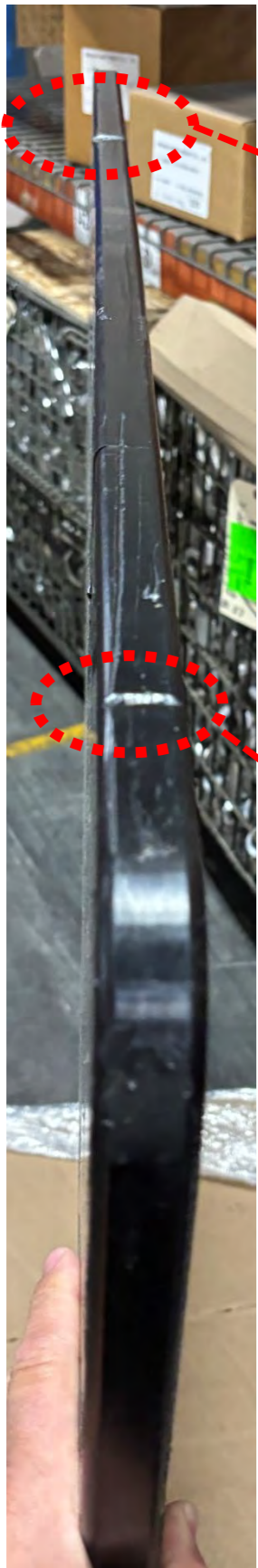
## Zoomed on the most important paragraph of this AFSOC FCIF 25-112

4. User reports indicate the RUSB exits faster than a plywood skid board. To prevent malfunctions caused by bundle interaction among mixed RUSB and plywood skid boards, all bundles rigged with RUSB in a mass configuration will be loaded to exit the aircraft before any bundles rigged with plywood boards exit. If a bundle rigged with RUSB is the first to exit the aircraft--and until RUSB exit times have been fully evaluated and published--aircrews will subtract one second from the calculated CDS exit time to correct for faster exit. This corrected exit time will be overwritten into the aircraft's CARP computer or manually computed CARP.

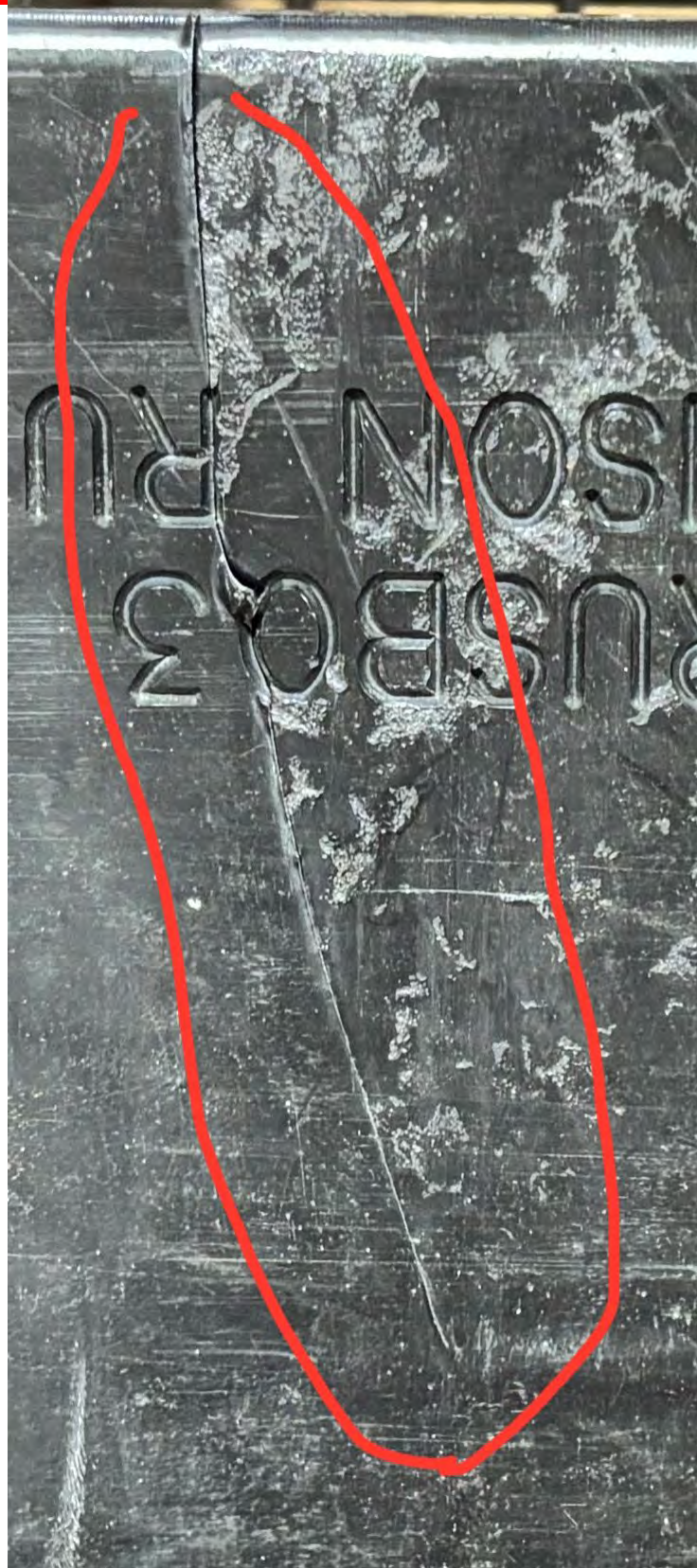
# Recovery Procedures

- 1) REAL and RUSB are reusable aerial delivery products.**
- 2) To last more than 35 to 100 airdrops, recovery procedures should be done with care. Handling should be different than a century-old 1-time use cardboard honeycomb.**
- 3) After each drop, please make visual inspection for any popover or blowouts. If you see any, take pictures and send to QRDC. Your feedback is very important.**
- 4) Using Forklift: lift from under the skid board (RUSB) NOT on the top of skid board to avoid pinching REAL or squeezing the REAL layout.**
- 5) Avoid pushing the forklift against RUSB edges.**
- 6) Alternatively, role each CDS on a flatbed trailer.**

**Example - Forklift Pressure shears RUSB & crack starts**



# Example – Forklift Pressure shears RUSB & crack starts



**Showing shearing effect cracking  
RUSB due to  
hard impact by forklift**