



**TURTLE PLASTICS®**  
Safety & Stabilization Product Solutions



Fundamental Principles of Equipment Cribbing & Blocking  
Best Practices  
2024

# ABOUT US



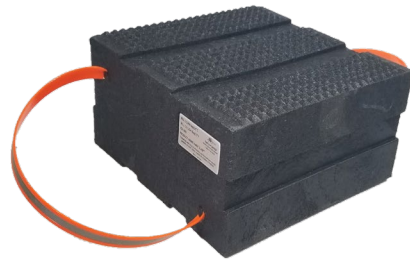
- ❖ Turtle Plastics is a privately owned company that designs and manufactures life saving, environmental, health, and safety stabilization products made in the USA from 100% recycled plastic.
- ❖ We manufacture four product brands; Dura Crib®, Dura Stat®, Dura Blend Lumber, and Turtle Tile®.
- ❖ Our Dura Crib® block products, have interlocking facades that are OSHA compliant when containing hazardous energy created from the use of hydraulic or pneumatic tools during stabilization applications of vehicles, equipment, and machinery during rescue operations, maintenance, or repair.
- ❖ Our products are used world-wide in many industries including agriculture, aerospace, automotive, industrial, material handling, transportation, rescue, and rail.

# OUR PILLARS

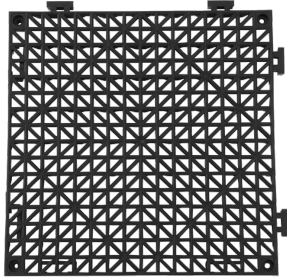


# OUR PRODUCT BRANDS

ALL TURTLE PLASTICS® PRODUCTS  
**MADE IN USA**



**Dura Crib  
Blocks, &  
Pads** (pyramid  
or step design  
facades that  
can stack and  
support an  
active load)



**Turtle Tile**(interlocking  
modular tiles and ramps)



**Dura Stat** (smooth profile  
facades – no stacking)



**Dura Blend  
Lumber**  
(smooth  
façade blocks)








Before starting cribbing and blocking maneuvers, there are basic terms and three fundamental principles to understand.





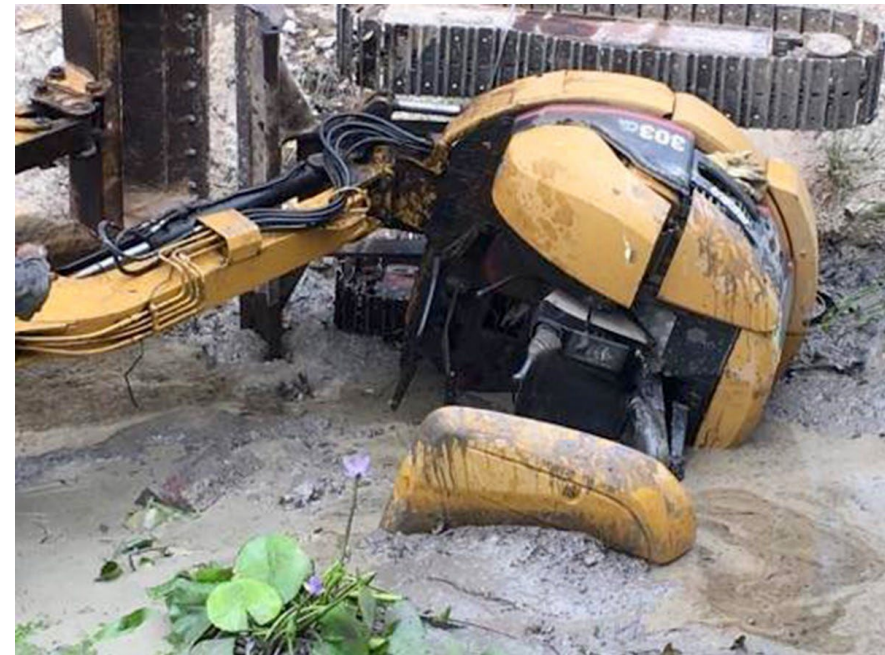
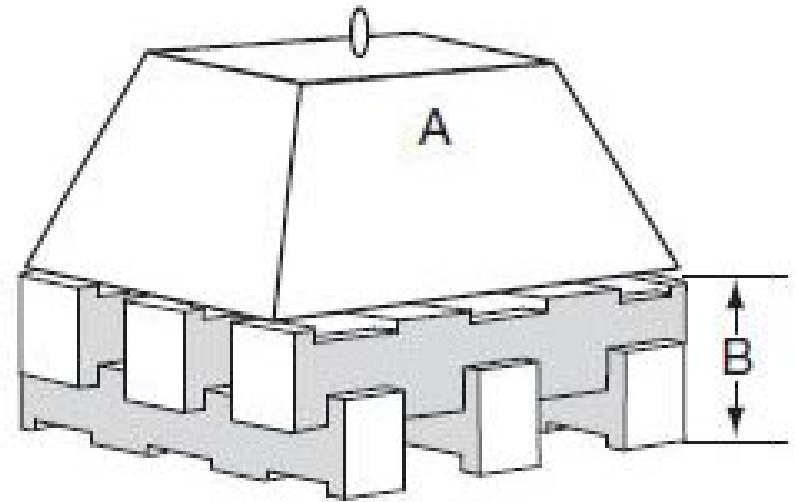
# BASIC TERMS

- ❖ **BLOCKING** - Also referred to as “cribbing,” is a stabilization method which has traditionally been wood or another material used to create a configuration (usually a platform) to help support machinery and equipment.
- ❖ **WORKING LOAD** - Also known as "design load" or "safe load", is generally a fraction of the "ultimate strength." “Ultimate strength” refers to the force required to cause complete failure of a supporting structure. “Workload” determines the size and number of box cribs required. “Workload” should be no more than 1/3rd of the "ultimate strength.”
- ❖ **CENTER OF GRAVITY** - The center of gravity (CoG) is a theoretical point of an object, which engineers use for convenience in calculations, as the single point where all of that object’s weight is concentrated.

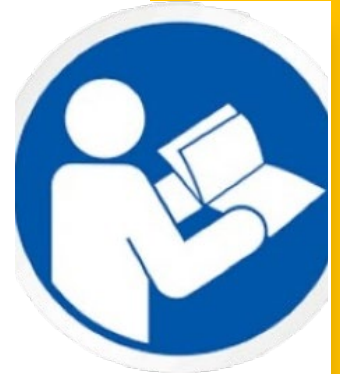
**WE MUST KNOW THE LOAD RATINGS OF EACH BLOCK THAT IS USED TO CREATE A CRIB STACK AS COMPARED TO THE LOAD/WEIGHT REQUIREMENT OF EACH MACHINE OR EQUIPMENT IN ORDER TO UNDERSTAND CRIBBING FEASIBILITY.**

# BASIC TERMS

- ❖ **BOX CRIB** - Commonly constructed using a “3 point” crisscross of cribbing blocks positioned at 90-degree angles. The arrangement may be square or rectangular. Whenever possible, crib blocks should be built in a square or rectangular shape to maximize load capacity, stability, and safety. When properly built, cribs transfer the load perpendicular to the cribbing blocks, resulting in an even compressing of the crib.
- ❖ **POINT SOURCE LOADING** - When energy of an object bearing down onto the crib stack is uneven or isn't positioned in a manner where weight is distributed evenly across the box crib. Point source loading can cause the crib block or crib stack to fail irrespective if the block is made from wood or engineered material. Another example of point source loading is placing the block under a single point of contact where there is a sharp object such as a screw or bolt which then pierces the cribbing block causing the block to fail.



# FUNDAMENTAL PRINCIPLE #1 OF PROPER CRIBBING AND BLOCKING



Know when the equipment is the **"IDEAL CANDIDATE"** for blocking and cribbing maneuvers.

- \*Read and understand the equipment manufacturer's operator's manual.

- \*Understand your organization's guidelines/policies for repair and maintenance of the equipment.



**AN  
IDEAL CANDIDATE**

**MOST  
CONSTRUCTION  
& AGRICULTURAL  
EQUIPMENT**

**MOST MATERIAL  
HANDLING  
EQUIPMENT**

**SOME  
AEROSPACE  
APPLICATIONS**

**SOME RAILROAD**



## FUNDAMENTAL PRINCIPLE #2 OF PROPER CRIBBING AND BLOCKING



Know when the equipment is the **"IDEAL SITUATION"** for blocking and cribbing maneuvers.

- \*The "Ground up Principal"  
Identify ideal ground conditions.
- \*Establish there is firm and solid ground conditions to support the blocking.
- \*Will the crib be level on this ground condition ***before and after*** the blocking maneuver?

## THE DEAL SITUATION

**EVEN GROUND  
SURFACE WHETHER  
INDOOR OR OUTDOOR.**



**DRY GROUND  
CONDITIONS.**



**EQUIPMENT LOAD  
COMPORTS TO  
WORKING LOAD OF  
BLOCKS OFFERED BY  
TURTLE PLASTICS.**



**SHORT TERM CRIBBING  
TASK <30 DAYS ON LIFT.**



## FUNDAMENTAL PRINCIPLE #3 OF PROPER CRIBBING AND BLOCKING



Follow **“LOCK OUT/TAG OUT” (LOTO)** recommendations for the equipment before starting any cribbing/blocking maneuver.





## DURA CRIB® BLOCKS - OSHA COMPLIANT FOR “LOCK OUT/TAG OUT”

“WHEN USED CORRECTLY, DURA CRIB® BRAND OF PRODUCTS CAN CREATE A COMPLIANT AND SAFER WORK ENVIRONMENT BY PROVIDING TECHNICIANS WHO REPAIR EQUIPMENT WITH A PROPER ‘LOCK OUT TAG OUT’ OF STORED ENERGY. THIS TYPE OF HAZARDOUS ENERGY IS CREATED WHEN HOISTED OR JACKED EQUIPMENT IS NOT GIVEN A SECURED PLATFORM. WOOD CRIBBING DOES NOT INTERLOCK, IS NOT TESTED, AND IS SUBJECT TO UNSEEN DEGRADATION VIA ENVIRONMENTAL FACTORS OR ABSORPTION OF FLUIDS. ALL THESE FACTORS CREATE AN UNSAFE AND UNPREDICTABLE WORK SURFACE THAT CANNOT CONTAIN STORED ENERGY. UNDER 29 CFR 1910.147 LOTO, FOR STORED ENERGY NOT BEING CONTROLLED AND ‘LOCKED-OUT’ CAN ALSO BE USED AS THE BASIS OF A CITATION.”

ANGELIQUE BRACER, COHC, SHS

# WHY WOOD IS NOT IDEAL FOR LOCK OUT/TAG OUT



- ❖ DOESN'T INTERLOCK WHEN CREATING A STABILIZING PLATFORM TO RELIABLY CONTAIN HAZARDOUS ENERGY.
- ❖ INCONSISTENT LOAD RATING OF WOOD BLOCKS BASED ON SPECIES.
- ❖ INCONSISTENT LOAD RATING OF WOOD BLOCKS BASED ON ENVIRONMENTAL FACTORS.
- ❖ SPLINTERS, ROTS, DEGRADES WITH AGE.
- ❖ CAN CONTAIN CREOSOTE OR OTHER HAZARDOUS FLUIDS.
- ❖ CAN NOT BE DECONTAMINATED WITHOUT COMPROMISING INTEGRITY OF WOOD.





## WHAT CAN GO WRONG...

A tire contractor was seriously injured when the front-end loader he was repairing fell on him. The front-end loader had been lifted and placed on wood cribbing to repair a flat tire. The contractor was underneath the loader to adjust one of the lifting jacks when the wood cribbing shifted, causing the loader to fall. The tire contractor was struck, and his hard hat became wedged between the cribbing and loader frame.



Photo from the Mine Safety and Health Administration – April 2018.





# UNDERSTAND POINT SOURCE LOADING AND THE IMPORTANCE OF THIS CONCEPT IN CRIBBING APPLICATIONS

- ❖ Examples of Point Source Loading:
  - ❖ When an object is placed onto or under a crib block or crib stack and positioned in a manner where the weight of the object is not distributed evenly across the block/stack resulting in a single point of energy bearing down.
  - ❖ Not placing crib blocks to the center of gravity of the equipment.
  - ❖ Placing too much weight of the equipment onto one block/stack.
  - ❖ Placing the block or stack under or over a single point of contact where there is a sharp object such as a screw or bolt which then pierces the cribbing block/stack causing the block/stack to fail.
  - ❖ When different cribbing blocks with differing working loads are used to create the box crib. The load strength of the box crib goes to the lowest working load crib block. Therefore, if the weight of the load being lifted exceeds the lowest block working load, then the force of the load will gravitate to the lowest load bearing block causing the crib stack to fail.

***Point source loading can cause the crib block or crib stack to fail irrespective if the block is made from wood or engineered material.***

# BENEFITS OF TURTLE PLASTICS' PRODUCTS FOR CRIBBING AND BLOCKING

- ❖ ENGINEERED WITH A RELIABLE AND REPEATABLE FORMULA FOR CONSISTENT PERFORMANCE
- ❖ BLOCKS HAVE AN INTERLOCKING FACADE
- ❖ LAB TESTED AND LOAD RATED
- ❖ SAFELY DECONTAMINATE PRODUCTS WITH EPA LIST-N AGENT
- ❖ DOESN'T SPLINTER OR ROT
- ❖ WARRANTIED
- ❖ OSHA COMPLIANT
- ❖ SUSTAINABLY-MADE IN THE USA FROM 100% RECYCLED PLASTIC
- ❖ MATERIAL IS PROP 65 AND REACH COMPLIANT FOR EUROPEAN STANDARDS









# RESOURCES OF TECHNIQUES FOR PROPER CRIBBING AND BLOCKING

**01**

US Army Corps of Engineers Field Operations Guide – July 2016 – Edition 8.1

Field Guide for Building Stabilization and Shoring Techniques – Department of Homeland Security

<https://www.dhs.gov/science-and-technology/bips-08-field-guide-building-stabilization-and-shoring-techniques>

**02**

Rigging Handbook by ACRA Enterprises, Inc.

**03**

Convergence Training by Vector Solutions

Coggnos, or other online educational associations

**04**

Tire Industry Association

Fire Department Instructors

Industrial Training International

OSHA



# CRIBBING GUIDELINES

The US Army Corp of Engineers States to never crib higher than 2-3 times the base width of crib base.

FORMULA = i.e., Super Crib = 6"x7"x24" nominal

3 CRIB BLOCK BASE with platform base= 20"

CRIB STACK HEIGHT = 60" Max  
– Recommend no higher than 48" when possible.

Blocking shall be of sufficient thickness, width, and length to prevent shifting, toppling, or excessive settlement of the load.

Blocking shall be of sufficient strength to prevent crushing, bending failure or shear failure, and to adequately transmit the load's weight to the supporting surface.

Use a ground pad and top cribbing stack pad to help dissipate load and reduce the risk of "point source loading."

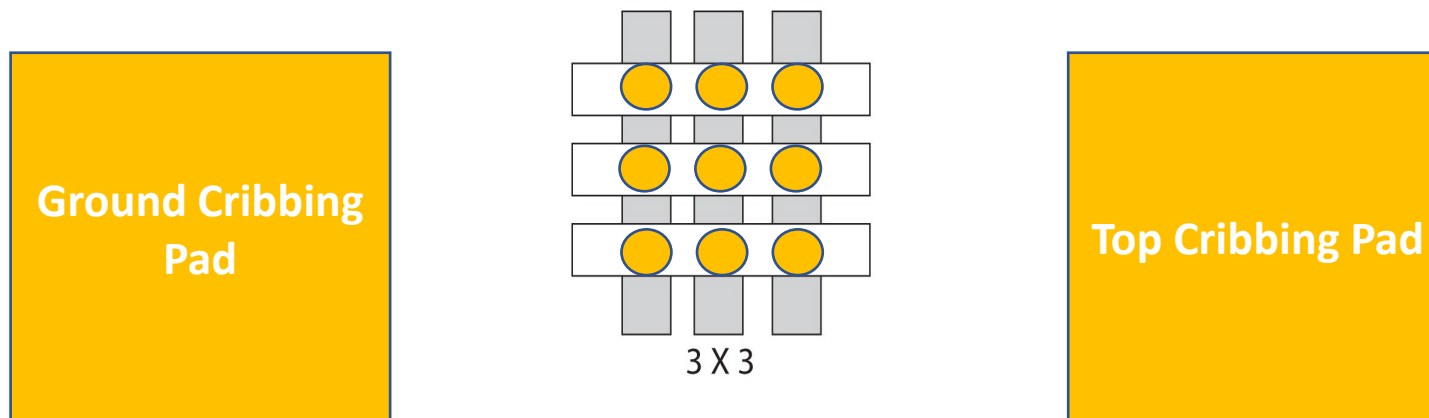
# US ARMY CORPS OF ENGINEERS GUIDELINES DURA CRIB® BASIC STACKING CONFIGURATION

The 3x3 also known as a  
“9-point” box crib stack.

Consists of 3 Dura Crib® blocks  
laid as a base or preferred  
technique is to lay 3 blocks  
onto a bottom plate of solid  
material.

Lay 3 additional Dura Crib®  
blocks perpendicular to base  
blocks forming 9 points of  
contact onto the stack (at the  
intersection of base blocks to  
top blocks).

Use a ground pad and top  
cribbing stack pad to help  
dissipate the load and reduce  
the risk of “point source  
loading”.



# KEY POINTS

Understand load requirement per each piece of equipment from user's manual.

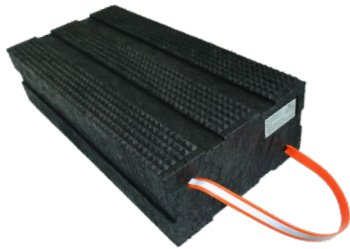
Understand height needed for the lift.

Understand surface area required for uniform placement of the equipment onto the block.

Understand ground conditions to the lift and equipment to determine if a crib pad is required. Do you require a bottom crib pad, top crib pad or both?

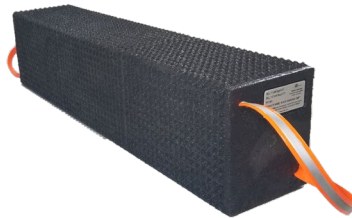
## The Slab®

- ❖ Dimensions: 6" x 12" x 24"
- ❖ Working Load: 110,000kg / 242,508lbs.



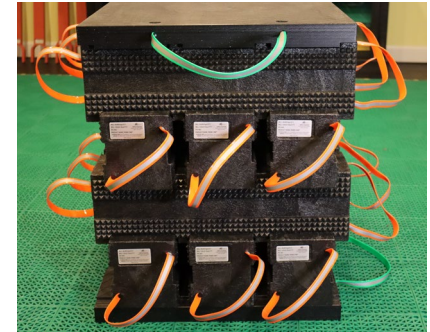
## Black Diamond Crib®

- ❖ Dimensions: 6" x 7" x 30"
- ❖ Working Load: 71,600kg / 157,850lbs.



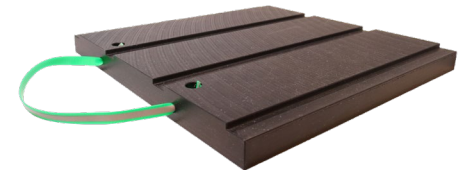
## Prime Crib®

- ❖ Dimensions: 6" x 7" x 24"
- ❖ Working Load: 58,000kg / 169,631lbs.




**ALWAYS** use an interlocking facade Dura Crib® block when crib stacking,  
**NEVER** use the smooth profile Dura Blend Lumber block to create a crib stack.  
**NEVER** use a Dura Crib® block on its vertical side (short side).

**TIP:** Use one pad as ground cribbing pad and one as top cribbing pad.









# KNOW PRODUCT WARNINGS ASSOCIATED WITH LIFTING OPERATIONS



## WARNING

CRUSH HAZARD

	<ul style="list-style-type: none"> <li>BEFORE USING PRODUCTS, READ YOUR EQUIPMENT OWNER'S GUIDE AND YOUR ORGANIZATION'S POLICIES AND PROCEDURES FOR THE USE OF THESE PRODUCTS AND FOR ANY WARNINGS OR SIGNAGE THAT NEEDS TO BE POSTED WHILE PRODUCTS ARE IN USE.</li> </ul>
	<ul style="list-style-type: none"> <li>DO NOT USE PRODUCTS FOR CRIBBING, SHORING OR STABILIZATION APPLICATIONS IN ANY MEDIUM TO HEAVY-DUTY CRANE EQUIPMENT.</li> </ul>
	<ul style="list-style-type: none"> <li>AN UNEVEN GROUND SURFACE CAN CAUSE PRODUCTS TO SHIFT DURING AN APPLICATION CAUSING DAMAGE TO EQUIPMENT AND/OR INJURY/DEATH TO WORKER.</li> </ul>
	<ul style="list-style-type: none"> <li>ENSURE THAT THE WEIGHT OF THE LOAD BEING LIFTED IS EVENLY DISTRIBUTED ACROSS THE BLOCK OR CRIB STACK - AVOID LOADING ONTO A SINGLE POINT OF CONTACT ON THE CRIBBING BLOCK.</li> </ul>
	<ul style="list-style-type: none"> <li>DO NOT OVERLOAD PRODUCTS.</li> <li>INSPECT PRODUCTS FOR ANY DAMAGE PRIOR TO USING.</li> <li>DO NOT DRILL INTO OR MODIFY PRODUCTS.</li> </ul>

- Do not overload Turtle Plastics® cribbing products.
- Do not cut, drill, or bolt into products.
- Ensure the Manufacturer's Working Load Limit identification tag is affixed to the product at all times. Request a complimentary tag from Turtle Plastics® or your distributor if needed.
- When applicable, check that the product lanyard is intact before lifting the block by the lanyard.
- Use the correct personal protective equipment when conducting lifting or stabilizing maneuvers.
- Whenever possible, avoid intermixing cribbing materials. Due to the differences in material compression and coefficient of friction, extreme care must be exercised when intermixing wooden or other types of plastic or metal cribbing with Dura Crib® products.
- Use caution on uneven surfaces.
- Do not replace damaged component parts with component parts other than those made by Turtle Plastics®.
- Do not leave Dura Crib® products unattended during active load or lifting operations.
- Do not leave Dura Crib® products in an actively loaded stacked configuration for longer than 30 days. Always check to ensure blocks are sustaining load.
- Do not clean products with any product other than a cleaning solution from EPA List N for plastic.

# BEST PRACTICES

- ❖ Box cribs are a temporary, short-term means of creating safety redundancy to jacks and stands in lifting operations.
- ❖ If cribbing products are the primary stabilization mechanism, ensure that whatever is on the crib stack is not left unattended or for prolonged periods of time.
- ❖ Ensure that blocking material is competent, substantial, and adequate to support and stabilize the load.
- ❖ Understand that temperature can affect working load (always reducing it).
- ❖ Establish and discuss safe work procedures.
- ❖ Ensure ground is level and solid.
- ❖ Examine work areas and identify and control all hazards before starting any work.
- ❖ Read and become familiar with equipment manuals.
- ❖ Post the working load guide in an area where blocks are being used.
- ❖ Always inspect cribbing prior and during use.
- ❖ Whenever possible, do not place yourself in a position that will expose you to hazards during the lift or performing the maneuver.
- ❖ Monitor personnel routinely to determine that safe work procedures are followed.
- ❖ Maintain good communication between co-workers.
- ❖ Ensure that your operators have the appropriate training.





# LET'S WORK TOGETHER

- ❖ Help to identify right products.
- ❖ Create a “Kick-off Campaign” or “Roll-out” program.
- ❖ Create product safety/training opportunities.
- ❖ Integrate products into company's Standard Operating Procedures.
- ❖ Central billing/Branch approvals.
- ❖ Understand terms and conditions of use.
- ❖ Annual meeting/Creation of industry-based case study.
- ❖ Next steps.



**Thank you for this  
opportunity!**

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## **TURTLE PLASTICS**

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