**1.0 PURPOSE:** To assure the effective packaging of incoming material such that goods are protected from damage in transit, storage and handling and to reduce/eliminate waste and unnecessary material costs in packaging.

**2.0 SCOPE:** Sullair, Michigan City

**3.0 RESPONSIBLE PARTIES:** Purchasing, Quality and all Suppliers

**4.0 DEFINITIONS:** NA

**5.0 LABELING PROCEDURE:**

A. Sullair Engineering has identified marking/tagging requirements per part family based on traceability requirements, assembly location in the compressor, and size of component.
B. Marking/tagging requirements are noted on Sullair drawings.
    a. Based on part family, the Sullair drawing may call out specific location for the part marking to be located on individual components (i.e. frames, heat exchangers, fabricated components, and machined components.)
    b. Based on part family, additional part information may be required per Sullair drawing to be included on the part label/tag (i.e. Pressure, Temperature, Part Serial Number, Compliance Information, and Supplier Identification).
C. Marking/tagging requirements will follow one of the following:
    a. Mark/tag component with Sullair Part Number and Revision
    b. Mark/tag container with Sullair Part Number and Revision (if parts are too small to legibly accommodate labeling)
    c. Mark/tag component and/or container with Part Number and Revision
D. During the quoting, initial P.O. process and First Article Process, it is the Suppliers' responsibility to review Sullair drawings for marking/tagging requirements and location on the individual component. If questions or exceptions are noted for the marking/tagging, the Supplier is responsible for contacting Sullair Supply Chain to discuss appropriate next actions (Supplier Deviation, Sullair drawing change, etc.)
E. The method of applying Marking/Tags:
    a. Shall be in a method that is permanent, visual or in accordance with the specifications detailed on the Sullair drawing

**6.0 PACKAGING PROCEDURE:** Group review of procedural requirements by all responsible parties

A. Review options for returnable packaging.
B. Review dimensions of all items being shipped to determine if all items can ship on a standard GMA 48" x 48", 4-way entry pallet. Skids must be designed or built to accommodate four-way entry for forklift. If alternative pallets are required, they must follow the standard pallet dimension guidelines. See Appendix A for Pallet Specifications.
C. To enhance the efficiency and safety of material processing all skids shall be provided as follows:
    - Skids and pallets must be larger than the overall dimension of the part. At a minimum the skid must exceed the part dimension in length and width by 2 inches allowing 1" clearance on all sides and a maximum of 6" longer than the part itself for custom skids.
    - Where practical only one part number should be on a given skid.
    - Where multiple small parts are provided they can be placed on a single skid in separate box or returnable containers, with respective part numbers, so they can be easily dispersed to their respective location within the Sullair production facility.
    - Boxed or containerized material shall not exceed the weight guidelines identified in Appendix B.

D. Build a stable base layer for your pallet by placing heaviest items on bottom with flat edge in contact with pallet (avoids tipping and load shift).

E. Protection and/or separation is required on all parts that are painted, coated, machined, or otherwise critical parts (i.e. sealing surfaces). Parts on the skid must be individually protected to prevent scratches during shipment, storage and handling. Protection can be accomplished on those metal surfaces deemed critical by use of corrugated blocks, rubber channels, rubber squares, foam sheets or Styrofoam corner protectors that provide suitable separation. Foam sheets are required to be secured around the product it is intended to protect to ensure it transfers with the product during handling throughout its storage life to consumption. Also, panels can arrive from suppliers and be received on protective panel carts. The policy allows discretion of the Sullair purchasing agent to determine the most effective and practical material for the varied applications. Buyer will assure that the selected method of packaging is communicated to suppliers for each commodity.

Example: Product separation and machined surface protection

Figure 1

Figure 2


Figure 3

Figure 4

NOTE: Panels should ALWAYS BE STACKED CONCAVE DOWN to prevent water accumulation when outside.

Examples: Authorized panel stacking orientation – Prevents water from collecting inside the panels

Ensure that a cardboard layer be placed on the top panel to prevent shrink wrap for bonding to the painted surface.

Figure 5

Figure 6

Not pictured (required) – cardboard layer on the top panel to prevent sun damage and shrink wrap from bonding to painted surface.

Examples: Unauthorized panel stacking – Inverting panels to maximize height is not permitted without express permission from Sullair.

Figure 7

These panels save on skid height and dividers but the bottom panels will collect water

Figure 8

These panels are easier to stack in this manner but all these panels will collect water

NOTE: Small and Medium frames should ALWAYS BE STACKED CONCAVE UP to prevent the need to FLIP the frames during Operations.

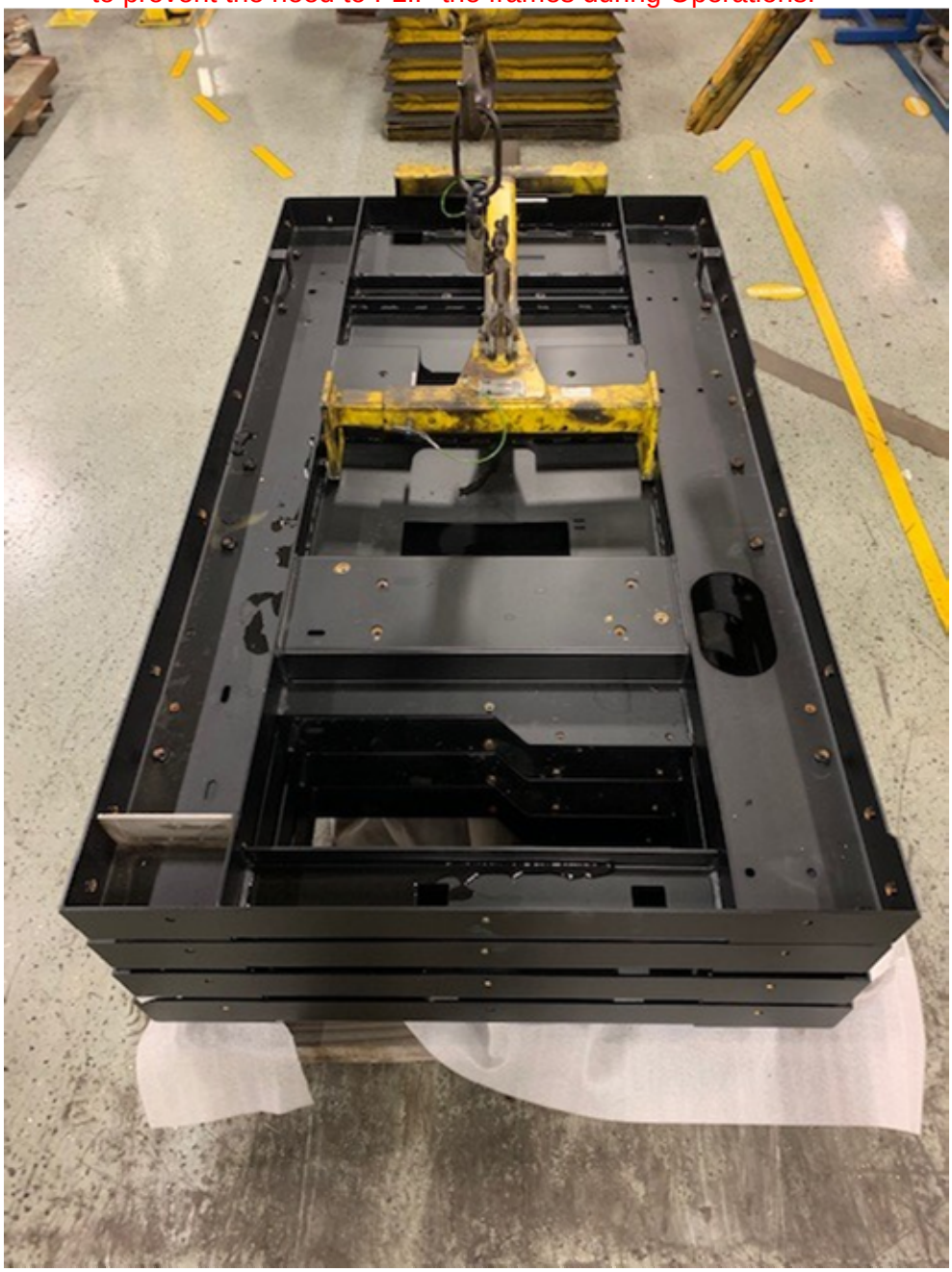


Figure 9

Example: Separated freestanding mufflers with robust wooden box to prevent fall hazard, separated lift bails and axles to prevent tipping after banding is removed.

Figure 10

Figure 11

Figure 12

Example: Individually wrapped painted product with foam sheets

Figure 13

Figure 14

## Suppliers - If Questions arise on packaging please contact your buyer



F. Sharp edges must be covered or protected to assure that there is no damaging contact between the parts in the package and to minimize safety hazards to those handling the material.

G. Parts must be positioned on a skid in a manner that will minimize water retention should the skid be exposed to the weather for any length of time (i.e. concave down) unless specifically noted on the DWG or in this document. The water retention can bring damage from rust and corrosion, which results in expensive rework or scrap.
    a. Sample exception – Frames shown in Figure 9.

H. Skids must be identified as to the owner / supplier to assure they are returned to the proper place when empty. This will enhance our ability to recycle packaging and handling material as well increase the useful life of the skid.

I. When to use Stretch Wrap vs Banding?
    a. Stretch Wrap
        i. Light to Medium weight pallets (0 to 750 lbs)
        ii. Pallets with many small to medium sizes boxes that could slide out of place
        iii. Secure uneven layers/loads
    b. Banding
        i. Medium to Heavy Weight pallet (751 & over)
        ii. Pallets with corrugated pallet bins or sleeves to contain the boxes.
        iii. Odd shaped items on pallets
    c. Banding & Wrap
        i. Air shipments
        ii. Heavy weight shipments of many small boxes that cannot be secured by banding

J. Stretch Wrap Requirements:

    a. Wrap used must be transparent.
    b. Wrap must prevent the load from sliding off of the pallet base.
    c. A minimum of two wraps at the base and the top of the pallet should be used.
    d. Wrap should overlap to secure all boxes from shifting.
    e. See additional information below for reference on gauge of shrink wrap

| Thickness | 12"-20" Hand Grade |
|---|---|
| 37 Gauge | Great for bundling two light uniform objects together. Users can easily apply the film with minimal exertion |
| 47 Gauge | No products with sharp edges or corners. Excellent for box and case wrapping up to 1800 lbs. |
| 60 Gauge | Ideal for lighter, smaller objects, small boxes, and banding light items together. Ideal for loads up to approx. 1800 lbs. |
| 63 Gauge | Bundle and wrap heavier products with minimal sharp edges. Products up to 2200 lbs with minimal sharp edges. |
| 70 Gauge | Often used to bundle multiple long cylindrical products. For loads up to approx. 2200-2400 lbs. |
| 80 Gauge | The most common gauge in all stretch wrap. Known to be very versatile and handle a variety of applications. Ideal for loads up to approx. 2200-2400 lbs. |
| 90 Gauge | Used to wrap bundle firewood, angle iron, and a variety of other heavier objects. Ideal for loads up to approx. 2400-2600 lbs. |
| 100 Gauge | Medium-heavy boxes and medium-heavy items such as light lumber are ideal. Ideal for loads up to approx 2800-3000 lbs. |
| 115 Gauge | Used for smaller heavy objects, commonly used for banding sets of heavy products together. Ideal for loads up to approx. 3000-3200 lbs. |
| 150 Gauge | Greater strength and puncture resistance, great for regular and irregular shaped boxes. Ideal for securing steel, metal, and other heavy-duty items. |

K. Banding Requirements
   a. When parts are banded, vinyl banding is preferred over metal except where the weight and/or balance of the parts will cause the vinyl to stretch and loosen the packaging. All parts should be protected from damage at stress points when the banding is tightened. Foam, cardboard, plastic or other appropriate material shall be placed between the band and the part. If it is a viable option due to material used and location of the Supplier, Sullair will work with the supplier to return dunnage to the supplier for re-use.

L. All shipments that do not meet these requirements will be entered into Gensuite for tracking and assigned to the buyer for corrective action.

**6.0 RECORDS:** NA

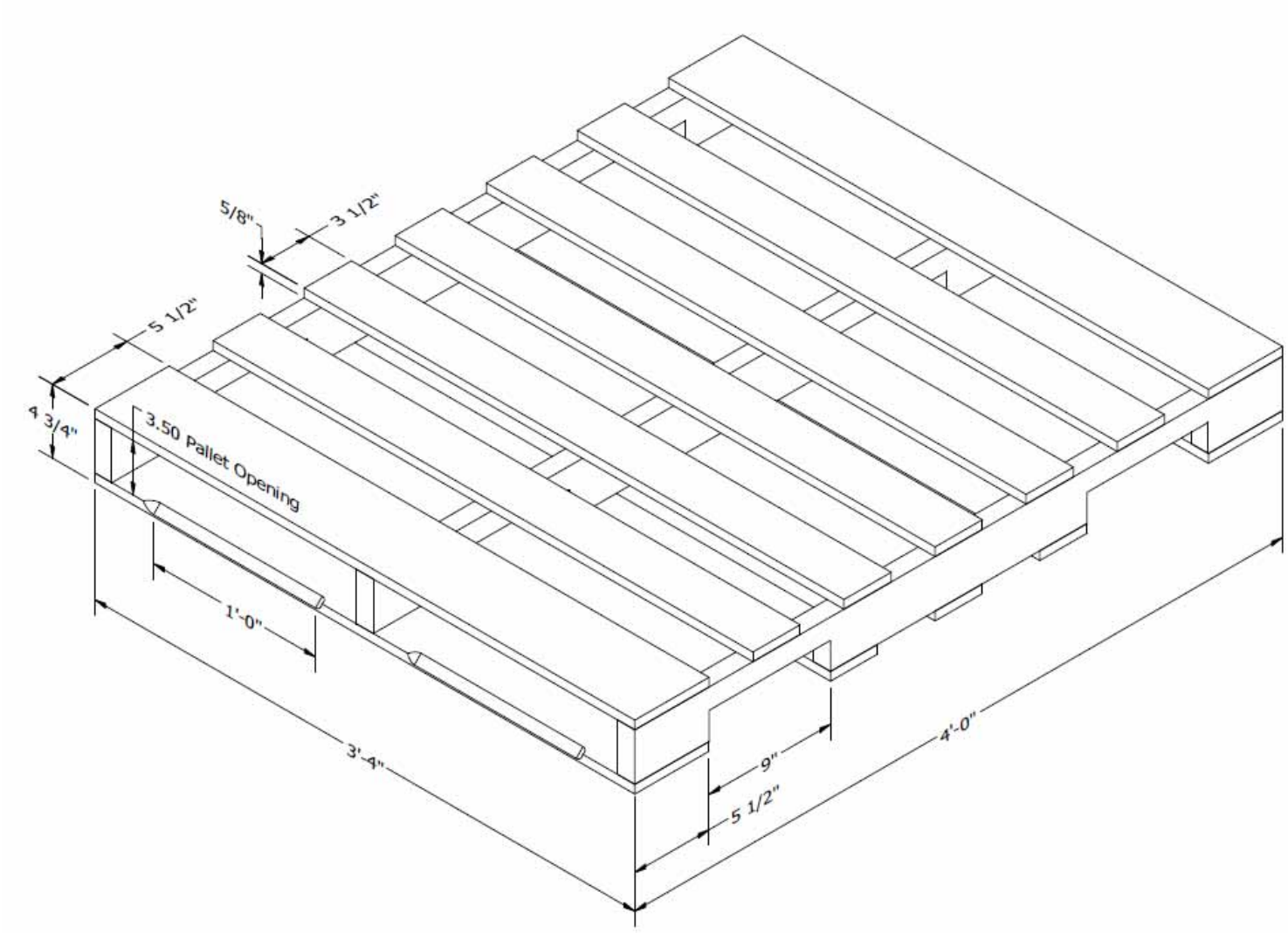
**7.0 FORMS:** NA

**8.0 REFERENCES:** NA

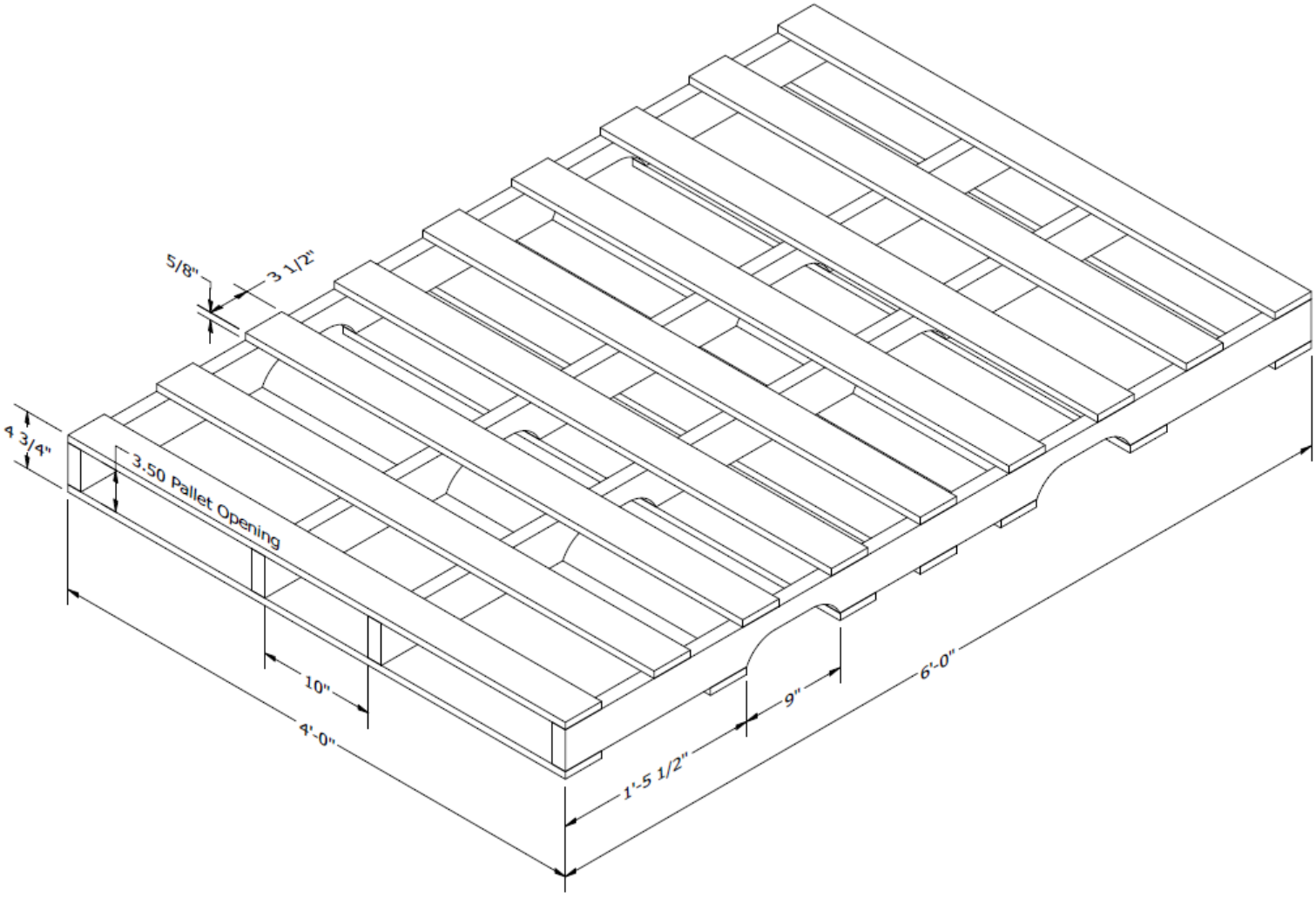
## Appendix A: Pallet Specifications

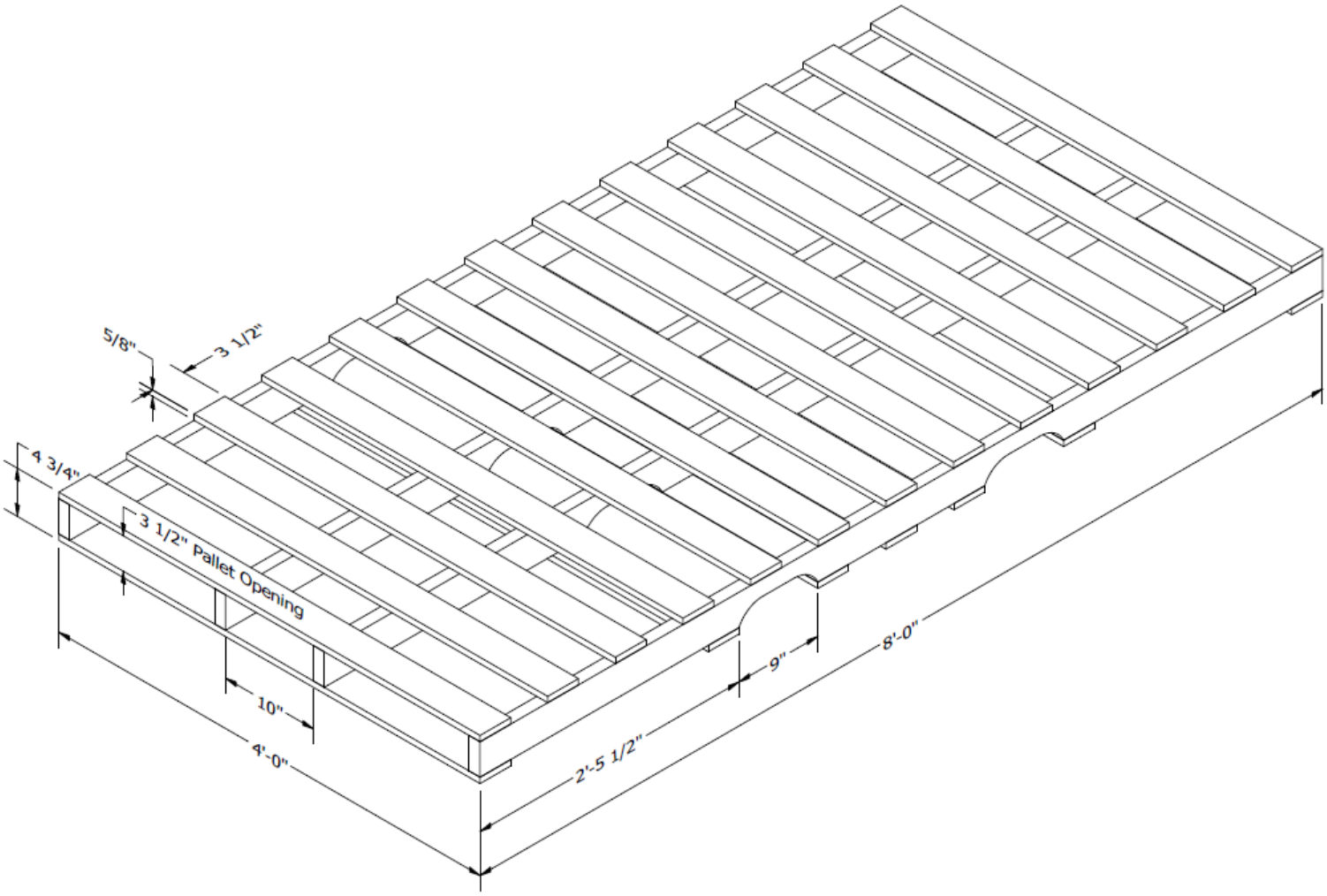
### Standard Pallet is GMA wooden pallet, 40” x 48”, with 4-way entry required

The construction of the pallet must be accessible for all forklift equipment to facilitate handling throughout the entire distribution process.




Acceptable Standard Pallet Definition and Example
(see below additional examples of larger skids that should follow the same design specifications)


5/8"
3 1/2"
4 3/4"
3.50 Pallet Opening
10"
4'-0"
1'-5 1/2"
9"
6'-0"


5/8"
3 1/2"
4 3/4"
3 1/2" Pallet Opening
10"
4'-0"
9"
2'-5 1/2"
8'-0"

Definition:

- 4-way entry only
- Pallet has 7 top deck boards (none broken)
- Pallet has 5 bottom deck boards (none broken)
- Reworked Pallets utilizing metal plate repairs or stringer repairs that provide sufficient protection and safety are acceptable.
- Skids used on shipments identified for export must be of heat-treated or hardwood lumber.
- Shipments arriving on pallet of unacceptable quality may be refused and returned to vendor at vendor's expense or if reworked by Sullair due to production needs there will be a charge back to the supplier.

  For materials that do not fit this standard model, exceptions will be approved on an individual basis.

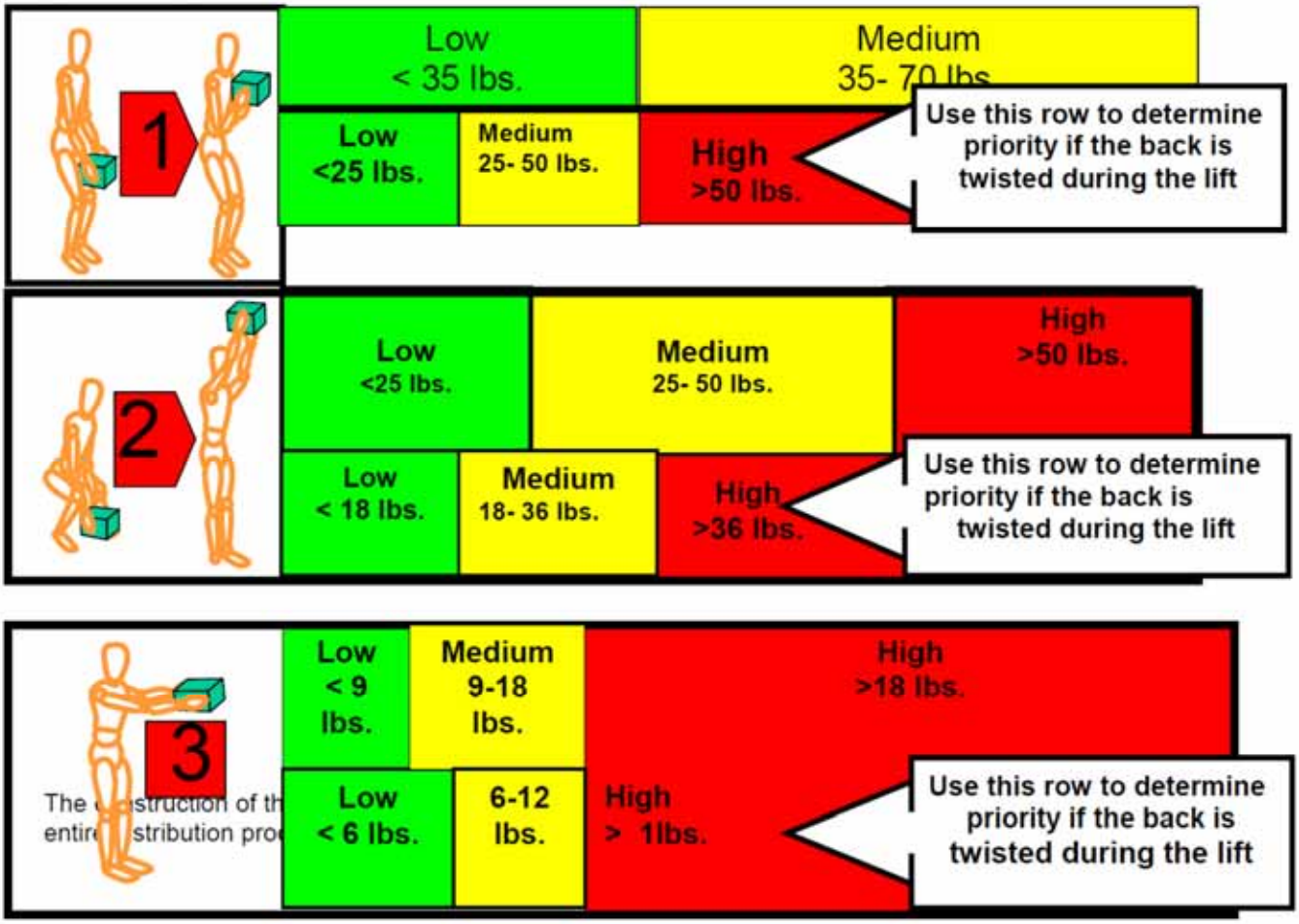
Example of an Unacceptable Pallet

Figure 15

## Appendix B - Packaging Ergonomics Risk Levels

### The Lifting Chart

This chart is used to establish priorities for redesigning lifting tasks. The priority for redesign is based on the weight and the way an object is lifted. Note that there are two rows for each type of lift on the chart. Use the bottom row as marked when a lift requires twisting the back during lifting or lowering of an object.




**Approval Signatures On File**

(Note: Approval by a Manager or designate from all functional areas listed in section #3 Responsible Parties is required)

| Department: (include all depts. listed in section #3) | Manager/Designate Approval: | Date: |
|---|---|---|
| Purchasing/Sourcing | Mike White | 8/16/2021 |
| | | |
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| | | |
| | | |
| | | |

# *ISO Revision Log*

| Rev | Date | Revised By | Approved By | Description |
|---|---|---|---|---|
| 02 | 03/04/2008 | S. Kosakowski | G. Kelly | Added Pictures and updated to current process |
| 03 | 12/03/2014 | J. Downs | M. Bubik | Updated to include pallet requirements |
| 04 | 01/09/2018 | J. Downs | B. Dowsett | Updated to include additional requirements for the allowable size of pallets, see Item C bullet 1, to include a maximum of 6 inches longer than the part itself, for a custom skid. |
| 05 | 01/09/2018 | J. Downs | B. Dowsett | Updated to include additional requirements for the allowable size of pallets, see Item C bullet 1, to include a maximum of 6 inches longer than the part itself, for a custom skid. |
| 06 | 09/11/2020 | Michael Mitchell | Shelley Kaser | Added 6' and 8' examples of properly supplied skids to ensure standard packaging is adhered to for optimal storage and EHS concerns. Added additional information on shrink wrap vs. banding. |
| 07 | 12/10/2020 | Michael Mitchell | Brad Nusbaum | Added clarification on the requirement to secure foam sheets around painted product to ensure consistency within vendors. Added requirement to stack ALL panels that can hold water to be concave down. |
| 08 | 08/16/2021 | Michael Mitchell | Barb Kopko | Added Frame stacking requirement and added Figures # 's to photos. |