
# THE SECRET LIFE OF CRATES: CRATE EXPECTATIONS AND HACKING THE CRATE

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This report is the result of an initiative by Science North, Kubik Maltbie, and Origin Studios. The survey in the Appendix was posted online and compiled by Kathryn Huneault (Science North) and was available from June 10 to June 23, 2021. The two workshop sessions “Crate Expectations” and “Hacking the Crate” were on June 15 and June 22, 2021, respectively. The workshops were facilitated by Sarah Beam-Borg (Origin Studios) and the report based on the workshops and survey results was written by Robert Evans and Sarah Beam-Borg (Origin Studios).

We wish to thank everyone who participated in the survey and workshops and hope you enjoyed talking about crates as much as we did!

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# Executive Summary

"Crate Expectations" and "Hacking the Crate" were online workshops aimed at improving the planning, production, and use of travelling exhibition crates. Our goal was not only to explore how to innovate and improve the useability of crates, but to aim even higher and look at ways to make crates more sustainable and environmentally responsible. We also wanted to engage with all the touch points in a crate's journey – fabricators, shippers, receivers, installers, etc. – to improve the experience of everyone along the way. The workshops were held on June 15th and 22nd and an online survey was available for invitees from June 10th to 23rd, 2021.

The workshops and survey demonstrated that beyond crates providing dependable protection for travelling exhibitions while they are on the move, there are many different and competing requirements. New materials offer new ways of doing things, but current plywood crates are so well understood by everyone in the industry that replacing them will take time and a positive track record before innovations are accepted by everyone. Standardization to achieve efficiencies in transportation is an often-repeated goal when crating exhibitions, but there is a concern that this will have a negative effect on exhibition visitor experience by restricting the size and shape of exhibitry. Collapsible crates and crating systems would benefit institutions with limited storage facilities, but they come with their own extra initial and on-going financial costs. The one item that most workshop and survey participants agreed upon was that crating must be considered from the launch of any travelling exhibition project. There must be a conversation about the expectations of everyone involved in the development, design, fabrication, and transportation of the exhibition to ensure that crates not only provide protection for the exhibitry while in transport, but that they also do it efficiently with the smallest environmental footprint possible.

> "The one item that most workshop and survey participants agreed upon was that crating must be considered from the launch of any travelling exhibition project."

# Workshop Overview and Methodology

Travelling exhibitions are important features of the North American tourism and cultural landscape. For the museums, galleries, science centres, and non-traditional display centres that create exhibitions, there is the opportunity to maximize the reach of their research, collections, and stories while also expanding connections outside their local communities. Inversely, for the museums, galleries, science centres, and other non-traditional display locations that receive travelling exhibitions, there is an opportunity to offer their local visitorship and communities new and expansive experiences.

A significant but often overlooked aspect of planning and implementing travelling exhibitions is crating. How efficiently have the crates been packed? What are the dimensions of the crates? Where are they going to be stored? What are the cost implications of shipping a poorly packed and crated show? Travelling exhibitions are complex and often expensive undertakings that have considerable departmental interdependencies within the institution that creates the exhibition, but there are also wide-ranging, field-wide interdependencies that are difficult to predict and can have significant impact on the shared successes of the exhibition. Often the success or failure of a travelling exhibition program can be traced back to how the exhibit is packed, crated, and transported.

The intention of the two-session crating virtual workshop was to bring together a cross-section of representatives from all stages in the development and implementation of a travelling exhibition to hear from, and learn from, each other. It was a chance to discuss how the decisions made at each stage in the development and circulation of a travelling exhibition have an effect on the subsequent phases. While the design, interactives, and content of any travelling exhibition act as the "stars of the show," the packing and shipping component of the program is regularly overlooked until it has major cost and scheduling implications for a travelling exhibit program. We can do better.

In addition to the two-day workshop, we also circulated an online survey that asked questions on crating, transportation, storage, and the expectations of different roles in the museum world. The survey results can be found as an appendix in this report.

## WHY DID WE HAVE THIS WORKSHOP?

The workshop was intended to address general efficiencies in crating through three major questions: how can we make crating more cost efficient; how can we make it more environmentally responsible; and how can we improve the experience for everyone who handles, packs, and unpacks crates? In short, how can we make a crate experience a great experience? Crating is often the last thing people think about when developing an exhibition, but it is the mechanism through which touring exhibitions circulate and exist. We need to know what we are doing right, what are we doing wrong, and how we can do better.

## WHERE WAS THE WORKSHOP?

The workshop was held online using video conferencing software. This was done primarily because of the current pandemic, but it also had the advantage of making a small workshop accessible and affordable to a variety of participants from around the world. We had a larger turnout than expected and everyone was eager to discuss and share their knowledge and experiences.

## WHO WAS INVITED?

Players from different sectors of the museum world in Canada, the United States, and Europe were invited to the crate workshops. The one thing that everyone had in common is that they have or have had at some point something to do with exhibition crates and crating. The list of represented roles included:

- Producing institution travelling exhibitions teams
- Exhibition designers
- Exhibition fabricators
- Fine arts and exhibit shippers
- Receiving institution travelling exhibitions teams
- Receiving institution operations teams
- Independent project managers for international exhibition projects

## WHAT DID WE TALK ABOUT?

The two workshop sessions were divided into two broad topics. The first workshop, “Crate Expectations,” considered the big picture of crating and travelling exhibitions. It included leaders in the travelling exhibition field and two representatives from each touchpoint on an exhibition’s journey spoke about their roles and how they felt crates could be better.

“Hacking the Crate” included some of the same participants plus the people who deal with crates on regular basis in their roles at museums (packers and installers), shipping companies, and fabricators. It was an opportunity to hear from the “hands-on team,” the people who have to fix broken crates, load irregularly-shaped crates in a trailer, and unpack and install a crated travelling exhibition.

# Recognizing Current Best Practices

The fundamental basics of crating can be broken down into four main priorities: (1) pack and crate the objects in such a way as to get them from point A to point B without incurring damage, (2) ensure the safety of all the people that handle them at the various touchpoints along the journey, (3) an understanding of the truck, elevator, and shipping areas through which the crates will pass, and (4) determine where the crates will be stored when they are not in use. The nuances that flow from these simple statements are where crates go from being simple protective shells to true examples of best practices in crating.

Working from the interior materials which come in direct contact with the exhibitry or artwork being shipped, decisions need to be made based on the chemical composition of materials as well as their shock-absorption and volume. Materials that have low VOC ratings and are chemically neutral have been approved by international museums and are typically used for artworks, but the same protective qualities can be useful for exhibitry as well, which is often unique and benefits from the same care and attention. Shock absorption materials should be used efficiently to avoid overly-large crates and/or a travel frame structural support can be used to both stabilize and protect the contents. The external layer, the "crate proper," is usually industry standard ISPM-15 compliant wood panels with reinforced corners, handles, and skids. Understanding the contents and the journey the crates will have on their way to their destination dictates the final details such as handles, footing, labelling, and security hardware.

For a detailed statement on current best practices of crates and crating, please see the Smithsonian Institution Traveling Exhibition Services's "Crate Specifications" included as an appendix in this report.

# Fundamental Crating Issues Identified

In general, we wanted to know:

- What are we currently doing right with crates?
- What can be improved?
- What should we stop doing?

There was a long list of issues and numerous anecdotes regarding what we should stop doing but changing the way we do crating is not easy. The current standards have been embraced by large lending institutions and, just as importantly, insurance companies, and it will take substantial work to change the current design of crates, which was described by one workshop participant as "building to a standard rather than a need." In other words, how can we do crating better if we focus on the need rather than simply repeating the current standard. The need for crating was summarized by another participant as three simple but substantial functions: (1) the crate must stay together, (2) the crate needs to pack and travel efficiently, and (3) the crate needs to protect its contents. In addition – as noted above in Recognizing Current Best Practices – there are other issues related to crating ranging from safety to storage that were identified in the workshops as fundamental.

In the workshop online survey, "weight and dimensions" were listed as the most important factor in temporary exhibition crates by half of the respondents. Combining this response with "handles and skids" and "hardware and loading panels," the concerns of crate construction were the most important factor for 65% of respondents. In addition, the majority of respondents (75%) said that "collapsibility" and "alternative materials" were innovations they wished the industry would embrace. Apparently, our current crates are already fulfilling their three basic functions – to stay together, travel well, and protect the contents – but they are not doing it efficiently.

With that in mind, the discussion around crating coalesced around the following themes:

- long- and short-term costs
- dimensions
- storage, or what to do with a crate when you're not using it
- the environmental footprint of crates

Each theme elicited numerous stories and anecdotes about crates and touring exhibitions, mostly horror stories, and discussion on whether these issues can be addressed through new materials and modular design. Summaries of the discussions follow below.


Plywood crates are standard protection for travelling exhibitions. Photo courtesy of Science North.

## DIMENSIONS AND DESIGN

In the written responses to the online survey, the majority of respondents, when asked what one thing they would change about temporary exhibition crates, suggested improvements that can be broadly categorized as "standardization." Standard crates are easier to transport, easier to move and store at the museum, and easier to repair. Presumably, the standardization would include some of the other comments, including high-quality casters, better labelling, use of lighter weight and green materials, and the ability to re-use crates.

Indeed, as discussed in the online workshops, non-standardized crates can lead to many problems. Odd-shaped crates may be required to accommodate exhibitry, but protrusions are primary spots for breakage and can also be safety hazards. Highly custom crates are also difficult to repair with the standard hardware and materials that most museums have on hand. Therefore, if crates are not highly customized then they can be repaired easily and quickly: a common sized stripped bolt is easy to replace, and plywood is a standard building material that can be purchased internationally at any building supply store.

The maintenance of crates, then, is made easier by using standard materials and hardware that can be sourced locally by even the smallest museum. New and innovative materials and design may have many advantages, but a well-constructed wooden box works, and we need to be mindful not to lose the more or less universal accessibility of a wooden crates. Not that they are without issues – more on those below – but there is a certain DIY factor with respect to wooden crates that makes them very flexible, repairable, and approachable.

Crates have two aspects: (1) the exterior, the form that is packed into trucks, moved by palette jacks, and squeezed into freight elevators; and (2) the interior, which is divided into compartments and shelves to protect exhibitry, artifacts, and artworks. Each of the aspects has their own criteria for efficiency. The exterior of the crate is most efficient when it can be packed into a truck using a simple load plan, fits into a freight elevator, and is movable by jack pumps – only 25% of survey respondents have a forklift, but 91% have a jack pump for moving crates. The interior is efficient when the contents are well protected, but also easy to unpack and repack. One workshop attendee suggested, given the importance of transporting crates, why not make the exterior dimensions more standard and the insides more modular and customizable?

Workshop participants from the shipping and exhibition transport business suggested that a 48" x 40" crate standard footprint would be ideal. It would fit snuggly with minimum wasted space in either a truck trailer or a container. However, exhibition design would then need to take into account the maximum interior dimension of the standard-sized crates for all exhibitry and displays (please see **Exhibition Design** below). Assuming this is not a problem and an exhibition can be accommodated in a standard crate size, what efficiencies could be achieved, with understanding that "efficiencies" are expressed in time, money, and environmental impact?

A standard crate size would mean spending less time on load plans – sometimes, creating a load plan is like a game of Tetris® in which the planner must maximize the number of crates in the truck and ensure that there is lift access for all the crates – faster loading and unloading of trucks, and immediate knowledge by all parties on what size crates to expect and whether their transport/receiving/storage facilities can accommodate them.

The dream of a standard crate for every piece of a travelling exhibition is probably beyond the practical reality for most unless the crate size is established at the beginning of the exhibition design process and dictates the maximum dimensions of exhibitry. (There are standard prefabricated crates available for artworks that come in a range of sizes and have customizable interiors, but they are focussed on transporting traditional two-dimensional artworks.) However, as one survey respondent noted, "basic [standard] crates can work for parts of the exhibit but not all." Therefore, one way to achieve efficiencies is to use as many standard-sized crates as possible and non-standard crates would be outliers, special cases, literally.

Another discussion in the workshop considered the possibility of developing a truly modular case system that would incorporate sliding corners and removable panels, something similar in terms of modularity and customization to the Mila-Wall or FRANK showcase systems that are already used in the museum world. While this would not necessarily result in a standard crate size, it would promote standard crate "construction" (or assembly) that could, if widely adopted, make all crates a known quantity before they show up. They would also potentially be easier to store because they could be disassembled and reassembled by the host venue. This would, however, be an extra time expense for the host institution at both ends of their display window (demounting the crates once the show was installed and remounting the crates in preparation for tear-down) and would have to be weighed against the cost of storing the crates for the duration of the exhibition.

Dimension and Construction are intricately connected to the next four themes: **Materials and Fabrication, Environmental Footprint, Exhibition Design**, and, of course, **Storage**.

> "... crates need to be more than a line item in the budget at the beginning of a project; consideration should be given to their design and fabrication as early as possible."

## MATERIALS AND FABRICATION

The vast majority of crates today are constructed with lumber and plywood. A quick check in the storage space of a shipping company that attended the online workshop revealed that they had only one crate in storage that was *not* made of wood. Wood clearly dominates crating. Fabricators are usually given parameters for crates – the dimensions of the items to be crated and the protection requirements – near the end of a project. They wind up building a lot of wooden boxes because they do a good job getting items from place to place safely, and they hold together for a long time. Some fabricators have experience with collapsible wooden crates, but they never seem to go back together properly, and parts are often lost when they are put in storage resulting in extra work and cost.

So what innovations, if any, are we seeing in other fields that could be applicable to exhibition crating? Currently, during the Covid pandemic, the cost of plywood and lumber has at least tripled in some locations. This is leading to more consideration of alternative materials. What materials are out there that the crating industry is not using, and how do we introduce these new materials? Is there a way to make robust lightweight and maybe even collapsible crates that save space and reduce haulage costs?

One workshop participant demonstrated a new "crating" system comprising lightweight foam and straps that can accommodate a variety of exhibitry and provide full protection with very little weight penalty. The starting point for this innovative system was the observation that plywood is the skin of a crate. It is not essential for protecting the stuff inside, which is usually packed in foam. So, can we replace wood with just the foam if we provide the foam with a protective skin? The initial results are promising, but it raises the question of host institutions needing to learn how to handle new materials and new methods for crating.

New materials also bring concerns from conservators regarding off-gassing and other qualities that may have detrimental effects on the long-term conservation of artifacts. One suggestion to take advantage of new materials in the context of those concerns is to break crates into two streams: artifacts and artworks could be handled differently than exhibit furniture and other exhibitry, which are less sensitive to VOCs, acidic materials, etc. Less sensitive and fragile items could be crated in lighter crates using currently non-standard materials, and the sensitive and precious items could be crated with more robust and traditionally trusted materials. A hybrid model is worth considering if shippers are willing to take a group of mixed crates.

Another factor to consider is insurance. An insurer for travelling exhibitions who was contacted for this report noted that they would need to see long-term studies utilizing new materials and techniques to commit to keeping insurance pricing at its current level. If museums choose to experiment, they should be prepared to pay more for their premiums until new materials and ideas are embraced by the entire field. In short, the attitude of insurance companies is that they trust plywood, they trust the current practice, which is relatively unchanged from the 1970s, and "disrupting" an industry is risky. Insurance companies are averse to risk.

## ENVIRONMENTAL FOOTPRINT

Increasingly, both exhibit producers and borrowers are concerned with the environmental footprint of travelling exhibitions. Two concerns were emphasized: (1) how can we use fewer trucks, and (2) how can we reuse/recycle crates to extend their lifespan?

It wasn't long ago that people talked about touring/hosting eight-truck exhibitions as a badge of honour. The bigger, the better. However, this is changing in response to desires to cut costs and reduce the carbon footprint of touring exhibitions. In addition to making the actual exhibition smaller, how can we reduce the amount of space taken up in trucks by exhibitions? More efficient loading of trucks is one way, and this can be driven by standardized crate design, or, at the very least, considering the parameters of truck trailers during crate design and working with the shipper at the beginning of project to achieve this efficiency. Shippers in the workshop noted that they prefer to do their own load plans and working with them from the beginning of the project will help to achieve the most efficient load.

How do we innovate and improve the crates themselves to make them more environmentally responsible? New materials seem to offer solutions in terms of weight and durability but are rejected by some institutions for various reasons. One workshop participant had a birch plywood sample that was extremely light but included adhered foam to provide a layer of protection. The material was rejected for crate construction because the foam was considered a non-sustainable material. However, using this light hybrid plywood would reduce the weight of the crates and, probably, the carbon footprint associated with shipping the exhibition. Would this have been a net benefit environmentally? The plywood sample points to a basic question around environmental concerns: how do we define sustainability?

Can we reuse crates? Reusable crates need to be built to a high standard and from top-grade materials to be used multiple times. This increases initial cost but offers potential long-term monetary savings and reduced environmental costs. However, many museums don't want reused materials in a crate; they want new crates. There are crate rental programs wherein clients can rent a basic crate that can be customized. However, these programs tend to be better for small exhibitions.

Can we recycle crates? Some companies are making crates out of hard composite materials that can be recycled at the end of life, but what do we do with old wooden crates? The Victoria & Albert Museum tried to give away old crates to other museums but were prevented from doing so by the museum's legal department, who were concerned about various liabilities. There are also programs that offer crates as materials for other uses, for example, as art materials. While programs like this do not reduce the short-term environmental cost of touring an exhibition, they do provide a second life for crating materials.

## EXHIBITION DESIGN

Crate standardization is a common theme throughout this report. There is, however, a tension between absolute modularity and the needs of exhibition visitor experience: a standardized crate may limit exhibition design because of the constraints of the crates and introduce a sameness, a uniformity to the exhibition components that may have a negative impact on visitor experience. In general, nobody wants exhibit design and visitor experience to be dictated by high efficiency in crating; however, one workshop participant who runs a touring exhibition company that specializes in modular systems using aluminum, no MDF, and little paint, said complete modularity works for him. It pushes exhibition designers to be creative within well-defined parameters. Another approach is to consider the maximum crate size when designing an exhibition and ensure that large exhibitry can be disassembled into pieces small enough to fit inside the crate.

Another option that was discussed and has been tried many times is incorporating crates into the exhibition design. It works, but, ultimately, the crates get quite marked up from being loaded, transported, and unloaded multiple times. Indeed, as a designer of children's exhibitions noted, kids are tough on exhibits; however, most damage occurs during transportation, not at the hands of the children.

## STORAGE

The majority of museums have crate storage issues, that is, they don't have enough space to store touring exhibition crates. Storage spaces need to be secure, pest-free, indoor, climate controlled, and large enough for the crates. Indeed, some museums won't store crates, in which case the travelling exhibition organizer needs to find a location in the host city to store them or ship them back to the source increasing transportation and environmental costs. More common are museums that use off-site storage for crates or they build false walls in the exhibition space and store the crates behind them.

As noted above, one solution for storage is to integrate the crates into exhibition design. An example presented in the workshop was "Sure Beats Walking: A Short History of the Bicycle." The shipping crates were integral to the display. The inside of the crates provided the support for interpretive graphic panels and the bicycles were both transported and displayed in the same crate. The exhibition was at a velodrome and the crates were lifted into centre of track and left there. There was no room to store crates. In addition to being an easy load-in and load-out, the exhibition was installed by non-museum staff. However, the success of this project was the exception, not the rule, for incorporating crates into an exhibition.


Model and prototype of crates for “Sure Beats Walking: A Short History of the Bicycle.” Courtesy of Meredith Leonard.

## COST

It was a common statement throughout the two workshop sessions that crates need to be more than a line item in the budget at the beginning of a project; consideration should be given to their design and fabrication as early as possible. Crating costs are almost never deal breakers for touring exhibitions, but, as one participant noted, they often feel like a hidden cost and are always an issue later. It is worth having a discussion early in the process and ensure that project sponsors understand that while crating costs are not seen "on the floor" of the exhibition, they should not be weighed against the remaining project budget for visitor experience. This is sometimes a hard sell when budgets are tight.

One workshop participant who regularly creates touring exhibitions noted that crates usually account for approximately about 10% of fabrication costs for their travelling exhibitions. Good crates are expensive, but they will last longer and potentially cost less in the long run of an exhibition.

One participant noted that from a cost perspective, collapsible crates add labour costs to both the install and tear down. In terms of financial cost, the benefit of easier and probably cheaper storage of collapsible crates must be weighed against these additional costs, as well the costs of repairs to the crates due to the normal wear and tear of disassembly and re-assembly.

## COMMUNICATING ABOUT AND WITH CRATES

In addition to discussions about standardization of crates, the other big take away from the workshop sessions was that everyone should be speaking with shippers much earlier in the project so that transport parameters can be shared – even an extra centimetre or two can make a huge difference when it comes to transporting crates. As one shipper noted, other customers usually invite them into the process quite early and have discussions about venue access, truck size, container size, etc. – but museums rarely do this. Museums and exhibition designers also talk to the fabricator late in the process, usually after the exhibition has been designed. Late communication with both the fabricator and the shipper results in them reacting to given parameters without much opportunity for input in making the travelling exhibition more efficient.

With respect to communicating *with* crates, the issue of labelling was brought up by both museums and shippers. As a shipper noted, labelling on the exterior of the crate should be straightforward and informative. Crate numbers should be simple, preferably a letter and a couple of numbers, not super complex, and labels should appear on all sides. Also mark heavy and light ends of the crates, and mark the side of the crate that should be opened. If there is any information a shipper or installer needs for handling or opening the crates, it should be included on the exterior on as many sides as required.

Lending and receiving institutions also need to be clear about what is being sent and what can be accommodated at the host venue. Lending institutions need to provide clear details of the number and size of crates for the exhibition. Host institutions need to provide facility reports that emphasize limitations such as loading docks, elevators, and narrow/short passageways – and designers and fabricators need this essential information as well. Ideally, both lender and host exchange information to determine if extra arrangements need to be made to receive the exhibition. There is a continuum of museums, from large national facilities to small regional and municipal galleries, and they do not all have the same capacity for unloading and storing large crates even if they do have the space to host the exhibition.

> “Shippers in the workshop noted that they prefer to do their own load plans and working with them from the beginning of the project will help to achieve the most efficient load.”

## COMMUNICATING ABOUT INSTALLATION AND REPACKING

In the age of Covid and beyond, we may not be sending couriers with loans and installers with exhibitions as often as we did before March 2020; therefore, everything needs to be well labelled and trackable from the source, for example, with live trackers. We will need to provide robust installation manuals, ideally with links to videos that show how to unpack a crate, how to install items, and/or how to repack the crate when the exhibition is done. Exhibition manuals need to be written from the host institution’s perspective, that is, from the perspective of someone who hasn’t already unpacked, assembled, and repacked the exhibition. Many installers rely on instinct – many have been doing this for a long time – and regardless of the quality of documentation, sometimes they don’t read it. A preparation meeting between the source venue and the installers at the host venue is a good idea to walk the installation crew through the crates explaining how and why things go together and come apart the way they do.

Communication must also accompany the repacking of crates. Sometimes installers repack contents using fewer crates than is on the original shipping manifest, and even if all the crates continue to the next venue it’s rarely the same packing that was received by the first venue. The first pack is always good, the second, third, and subsequent repacks are always different. Lending venues need to be involved in the repacking (and even unpacking) of crates by having someone present at the site or through online video.

# Conclusion: Shared Responsibility

The subject of crates and crating is defined by complexity, interdependencies, and shared responsibilities. Through the workshop and survey there was no agreement on what constitutes a "perfect crate," but standardization ranks high among desired qualities. Real-world circumstances, however, often make rigid standardization difficult. Crating could benefit from new materials, but there are environmental and conservation concerns from institutions and a fear of the unknown from insurance companies. Collapsibility is desirable for venues that have limited storage for crates, but there are added demands on time and durability with any such system. While there is no formula for creating the perfect crate, there was general agreement on the importance of communication from the very beginning of any project to its initial installation and then to subsequent repacks and unpacks.

Crates need to be more than a line item in a budget. They must be deliberately considered from at least exhibition concept design onward so that they can accommodate exhibitry, transportation, unpacking, storage, and repacking. Crates should not be designed and built at the end of the fabrication process in reaction to the parameters of the exhibition. There are many players in the narrative of crating and each must consider not only how crates function for them, but how they function in the context of the larger story, and this can only be accomplished through communication and shared responsibility.

> "While there is no formula for creating the perfect crate, there was general agreement on the importance of communication from the very beginning of any project to its initial installation and then to subsequent repacks and unpacks."


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# Appendix

## Crate Survey Summary

# Crating:
# It's Time to Think Outside the Box

The "Crating: It's Time to Think Outside the Box" survey was available online to workshop invitees from June 10 to June 23, 2021. The respondents encompassed a wide range of museum and museum-related professionals from every part of a crate's journey. Thank you to everyone who took the time to share their experiences and opinions.

## SURVEY QUESTIONS

The following questions were asked of each respondent. The anonymized raw data and full responses follow at the end of this appendix.

**Multiple Choice Questions:**

1. What factor is most important to you in temporary exhibition crates?

- Weight and Dimensions
- Handles and Skids
- Hardware and Loading Panels
- Stenciling/Signage/Tray Notation
- Other – please describe

2. What factor is least important to you in temporary exhibition crates?

- Weight and Dimensions
- Handles and Skids
- Hardware and Loading Panels
- Stenciling/Signage/Tray Notation
- Other – please describe

3. What innovations in crates have you seen that you wish the industry would embrace?

- Collapsibility
- Alternative Materials
- QR/Virtual Instructions
- Other – please describe

4. No question number 4.

5. What tools do you have for use at your site?

- Forklift
- Pallet Jacks/Pump Trucks (manual or powered)
- J-Bars/Lever Dollies
- Dollies/Carts
- Hand Trucks/Platform Trucks

**Yes/No Questions**

6. Does your site have the following?

- Raised Shipping & Receiving Bay
- Street-Level Shipping & Receiving
- Freight Elevator
- None of the above

7. Does your site have room onsite to store empty crates?

8. If yes: Description of onsite storage

9. Is crating with improved environmental responsibility an important factor for your organization's decision-making?

10. Are you often concerned about the safety of staff and crate contents while handling temporary exhibition crates?

**Open-ended Questions**

11. If you could change one thing about temporary exhibition crates, what would it be?

12. What do you wish travelling exhibition creators would think about with relation to crates?

13. What do you wish exhibition designers would think about with relation to crates?

14. What do you wish fabricators would think about with relation to crates?

15. What do you wish shippers would think about with relation to crates?

16. What do wish the exhibition hosts would think about with relation to crates?

**Demographic Questions**

17. What is your role in your organization?

- Exhibition Coordinator
- Exhibition Manager
- Installation Team Member
- Installation Manager/Team Lead
- Other

18. How many years have you been working in the field of temporary exhibitions (in any capacity)

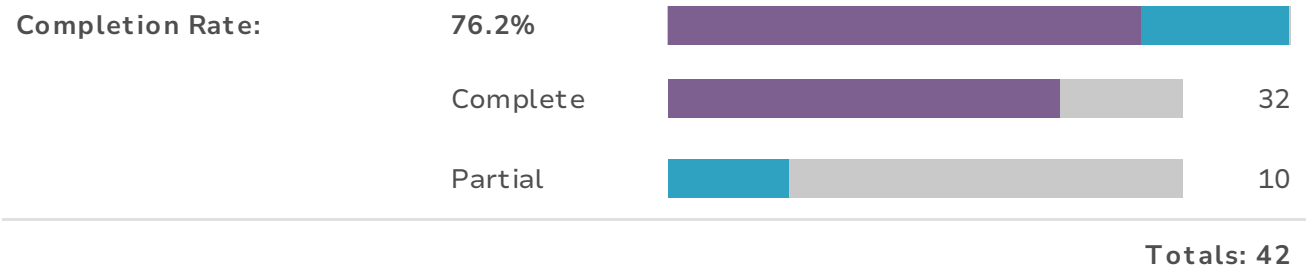
- 1 to 5
- 6 to 10
- 11 to 15
- 16 to 20
- 21+

19. How many people are on your on-site team while receiving, moving, un-packing and storing crates?

- 1 to 5
- 6 to 10
- 11 to 15
- 16 to 20
- 21+

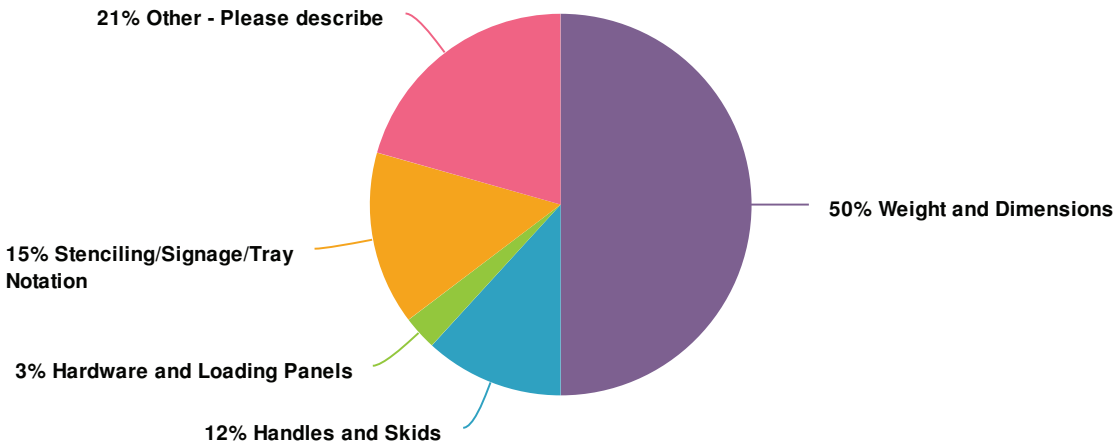
# Report for Crating: It's time to think outside the box

## Response Counts




**Totals: 42**

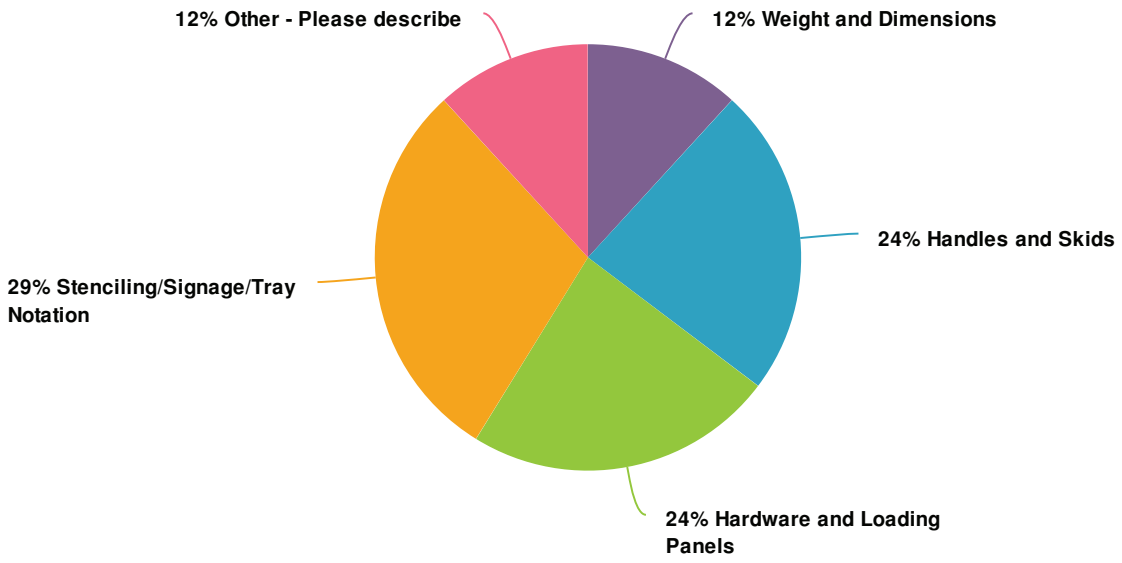
## 1. What factor is most important to you in temporary exhibition crates?




| Value | Percent | Responses |
|---|---|---|
| Weight and Dimensions | 50.0% | 17 |
| Handles and Skids | 11.8% | 4 |
| Hardware and Loading Panels | 2.9% | 1 |
| Stenciling/Signage/Tray Notation | 14.7% | 5 |
| Other - Please describe | 20.6% | 7 |

**Totals: 34**

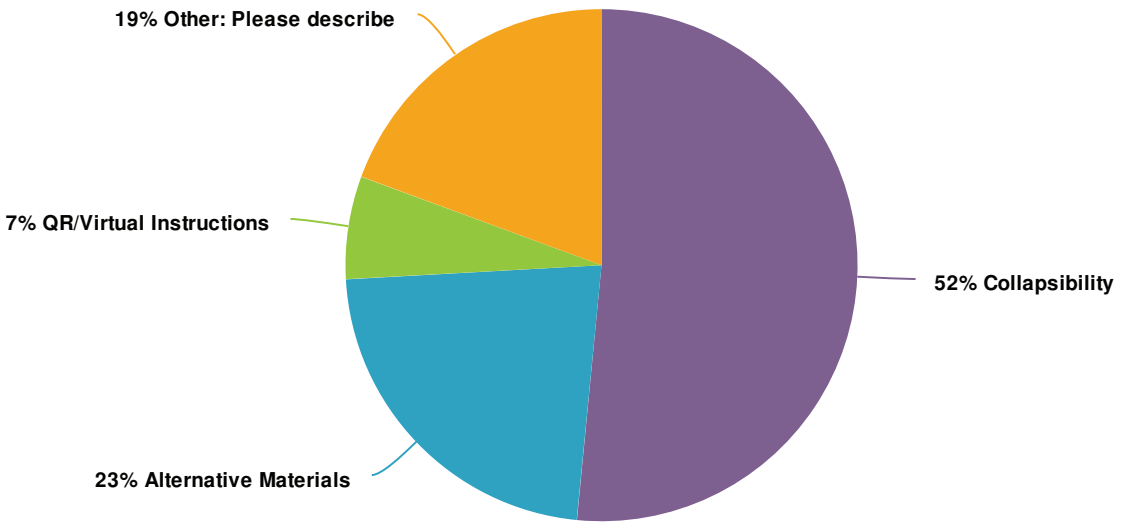
## 2. What factor is least important to you in temporary exhibition crates?




| Value | Percent | Responses |
|---|---|---|
| Weight and Dimensions | 11.8% | 4 |
| Handles and Skids | 23.5% | 8 |
| Hardware and Loading Panels | 23.5% | 8 |
| Stenciling/Signage/Tray Notation | 29.4% | 10 |
| Other - Please describe | 11.8% | 4 |

**Totals: 34**

## 3. What innovations in crates have you seen that you wish the industry would embrace?




| Value | Percent | Responses |
|---|---|---|
| Collapsibility | 51.6% | 16 |
| Alternative Materials | 22.6% | 7 |
| QR/Virtual Instructions | 6.5% | 2 |
| Other: Please describe | 19.4% | 6 |

**Totals: 31**

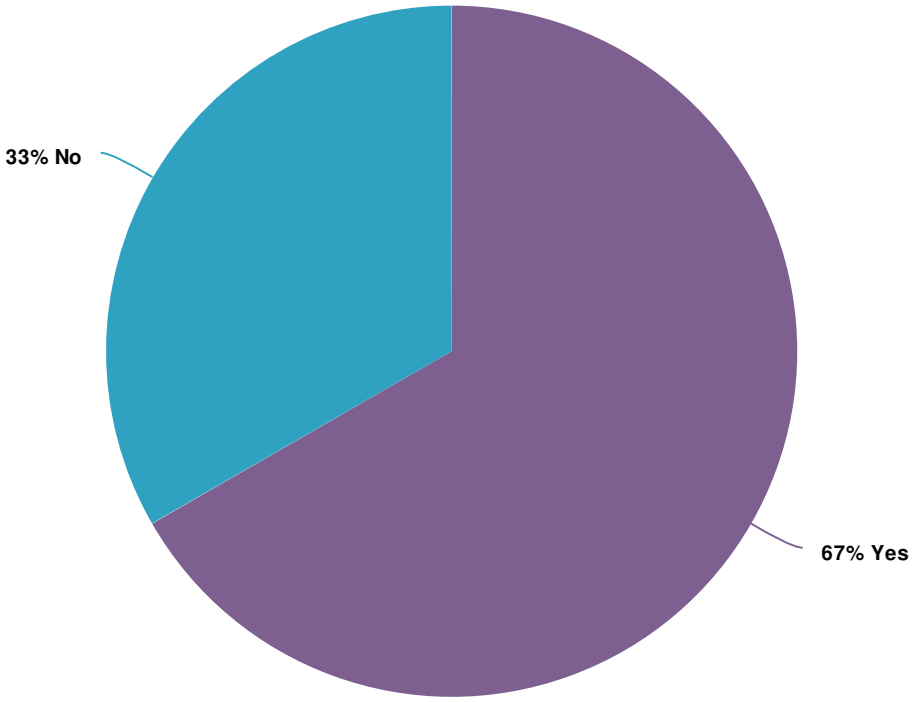
## 5. What tools do you have for use at your site?

| | Yes | No | Total Checks |
|---|---|---|---|
| Forklift | | | |
| Checks | 24 | 8 | 32 |
| Row Check % | 75.0% | 25.0% | |
| Pallet Jacks/Pump Trucks (manual or powered) | | | |
| Checks | 30 | 3 | 33 |
| Row Check % | 90.9% | 9.1% | |
| J-Bars/Lever Dollies | | | |
| Checks | 29 | 4 | 33 |
| Row Check % | 87.9% | 12.1% | |
| Dollies/Carts | | | |
| Checks | 32 | 1 | 33 |
| Row Check % | 97.0% | 3.0% | |
| Hand Trucks/Platform Trucks | | | |
| Checks | 24 | 6 | 30 |
| Row Check % | 80.0% | 20.0% | |
| Total Checks | | | |
| Checks | 139 | 22 | 161 |
| % of Total Checks | 86.3% | 13.7% | 100.0% |

## 6. Does your site have the following?

| | Yes | No | Total Checks |
|---|---|---|---|
| Raised Shipping & Receiving Bay | | | |
| Checks | 15 | 17 | 32 |
| Row Check % | 46.9% | 53.1% | |
| Street Level Shipping and Receiving | | | |
| Checks | 27 | 2 | 29 |
| Row Check % | 93.1% | 6.9% | |
| Freight Elevator | | | |
| Checks | 17 | 12 | 29 |
| Row Check % | 58.6% | 41.4% | |
| None of the above | | | |
| Checks | 3 | 3 | 6 |
| Row Check % | 50.0% | 50.0% | |
| Total Checks | | | |
| Checks | 62 | 34 | 96 |
| % of Total Checks | 64.6% | 35.4% | 100.0% |

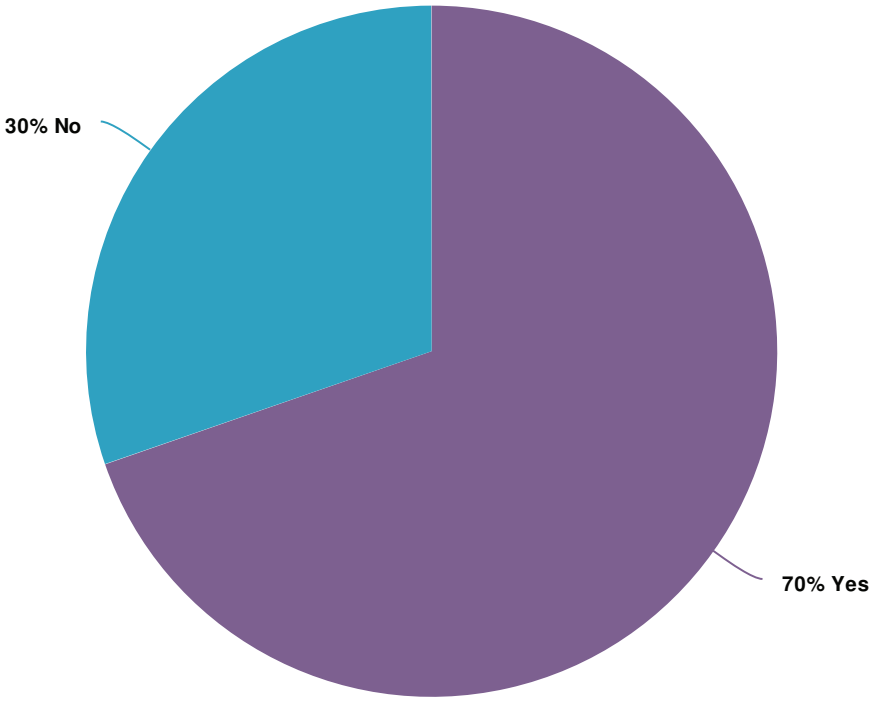
7. Does your site have room onsite to store empty crates? Please describe.




| Value | Percent | Responses |
|---|---|---|
| Yes | 66.7% | 22 |
| No | 33.3% | 11 |

Totals: 33

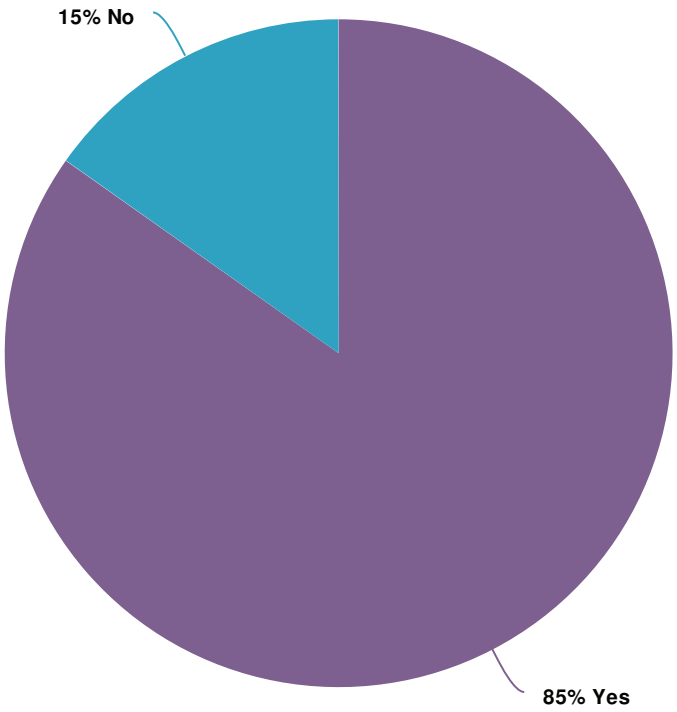
9. Is crating with improved environmental responsibility an important factor for your organization's decision-making?




| Value | Percent | Responses |
|---|---|---|
| Yes | 69.7% | 23 |
| No | 30.3% | 10 |

**Totals: 33**

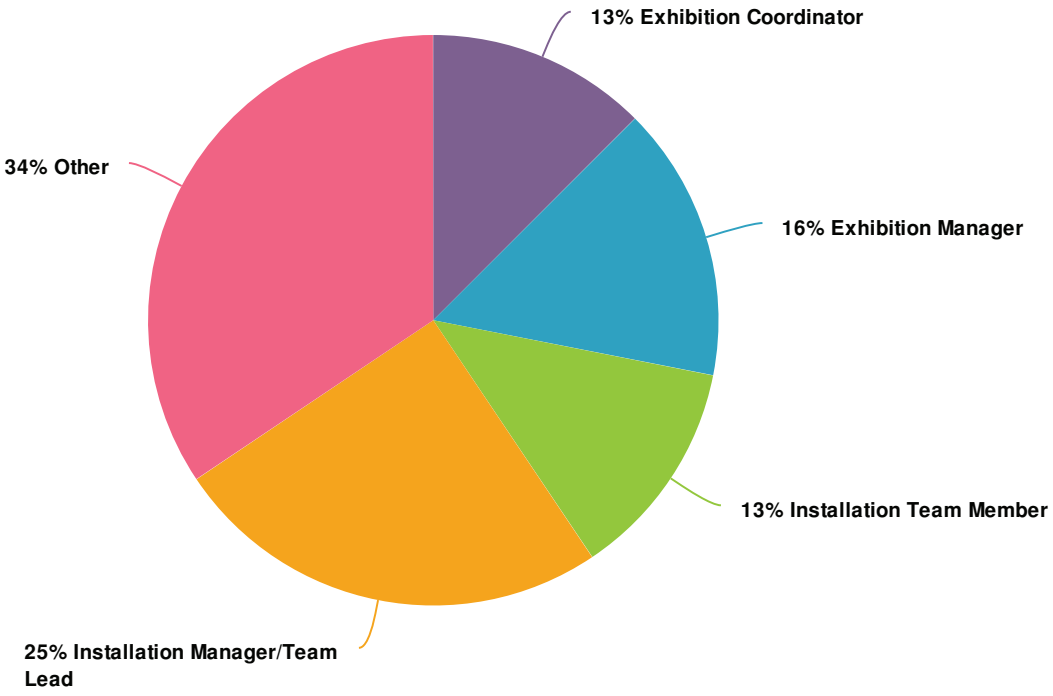
10. Are you often concerned about the safety of staff and crate contents while handling temporary exhibition crates?




| Value | Percent | Responses |
|---|---|---|
| Yes | 84.8% | 28 |
| No | 15.2% | 5 |

**Totals: 33**

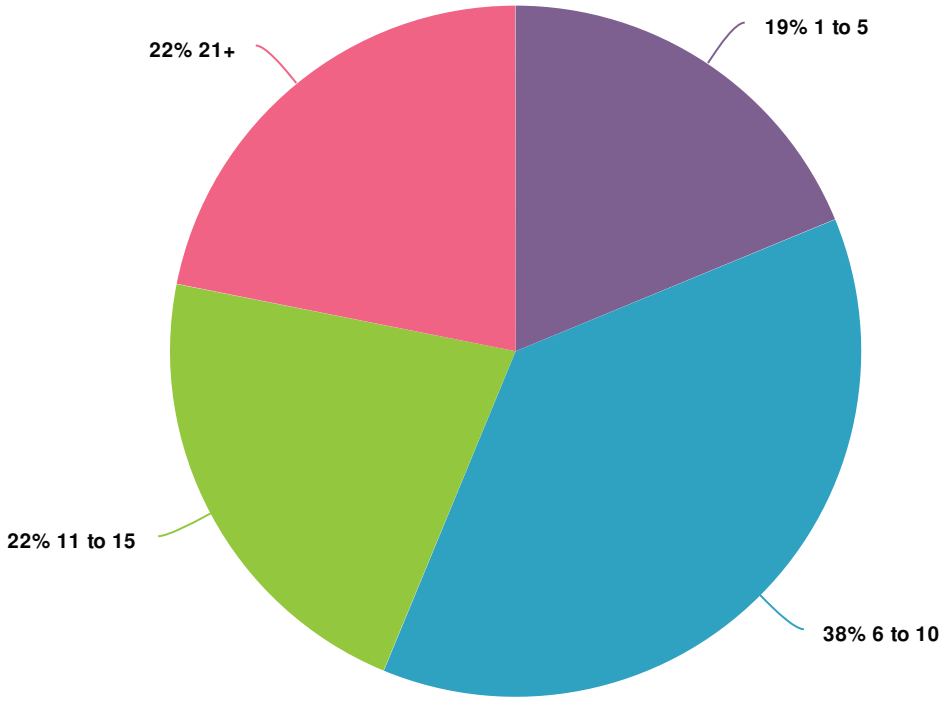
## 17. What is your role in your organization?




| Value | Percent | Responses |
|---|---|---|
| Exhibition Coordinator | 12.5% | 4 |
| Exhibition Manager | 15.6% | 5 |
| Installation Team Member | 12.5% | 4 |
| Installation Manager/Team Lead | 25.0% | 8 |
| Other | 34.4% | 11 |

**Totals: 32**

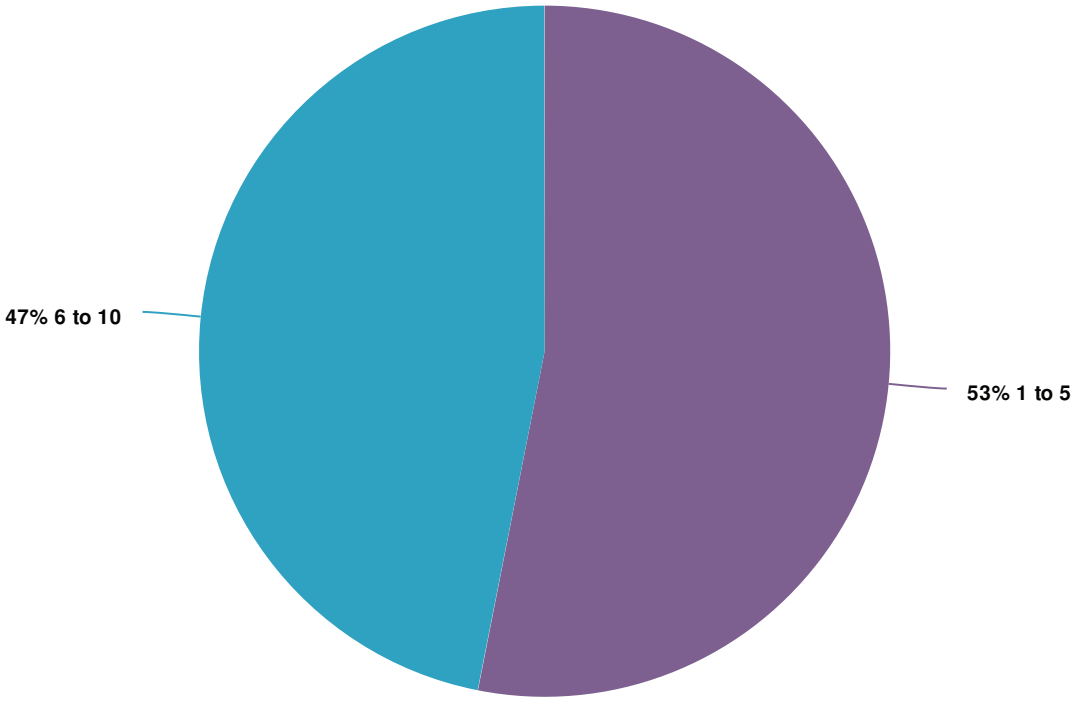
18. How many years have you been working in the field of temporary exhibitions (in any capacity)?




| Value | Percent | Responses |
|---|---|---|
| 1 to 5 | 18.8% | 6 |
| 6 to 10 | 37.5% | 12 |
| 11 to 15 | 21.9% | 7 |
| 21+ | 21.9% | 7 |

Totals: 32

19. How many people are on your on-site team while receiving, moving, un-packing and storing crates?




| Value | Percent | Responses |
|---|---|---|
| 1 to 5 | 53.1% | 17 |
| 6 to 10 | 46.9% | 15 |

Totals: 32

**Crating Survey**

| 1. What factor is most important to you in temporary exhibition crates? | 2. What factor is least important to you in temporary exhibition crates? | 3. What innovations in crates have you seen that you wish the industry would embrace? | 5. Forklift on Site? | 5. Pallet Jacks/ Pump Trucks on Site? | 5. J-Bars/ Lever Dollies on Site? | 5. Dollies/ Carts on Site? | 5. Hand Trucks/ Platform Trucks on Site? | 6. Raised Shipping & Receiving Bay on Site? | 6. Street Level Shipping and Receiving on Site? | 6. Freight Elevator on Site? | 7. Room onsite to store empty crates? | 8. Description of onsite storage, if applicable | 9. Is crating with improved environmental responsibility an important factor for your organization's decision-making? | 10. Are you often concerned about the safety of staff and crate contents while handling temporary exhibition crates? | 11. If you could change one thing about temporary exhibition crates, what would it be? | 12. What do you wish travelling exhibition creators would think about with relation to crates? | 13. What do you wish exhibition designers would think about with relation to crates? | 14. What do you wish fabricators would think about with relation to crates? | 15. What do you wish shippers would think about with relation to crates? | 16. What do wish the exhibition hosts would think about with relation to crates? | 17. What is your role in your organization? | 18. How many years have you been working in the field of temporary exhibitions (in any capacity)? | 19. How many people are on your on-site team while receiving, moving, un-packing and storing crates? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Weight and Dimensions | Handles and Skids | Collapsibility | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | No | Have off site storage | Yes | Yes | The way they are constructed and materials used | Fixings and skids | How the crates are made | Ease of use | Stacking heavy crates | Storage of empty crates | Installation Manager/Team Lead | 21 | 1 to 5 |
| Weight and Dimensions | Stenciling/Signage/ Tray Notation | Collapsibility | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | We work in different venues installing touring exhibitions, so sometimes crates are store offsite - it depends on the venue | No | Yes | Sometimes crates are constructed using really cheap wood, and nails. These crates degrade very quickly. I would encourage my clients to spend a little more on their crates, which would pay them back by protecting their exhibition more while in transit and during packing / unpacking. | More even weight distribution. Stability: sometimes they can have a base that's too small and can be too tall, making them unstable. More universal sizing: if they just rounded up the dimensions slightly there would be more flexibility in how they're packed. | Often designers are good at this, but sometimes they don't consider the maximum dimensions of a crate that can fit into a shipping container when designing the individual elements for an exhibition. | I have had crates in the past that have been fabricated with bases that don't allow standard pallet trucks/jacks to fit under the base to lift them -either because they've completely blocked access to one side of the base, or because they've made the base supports too wide (over 200mm) to allow a standard pallet Jack to enter the base. The worst example of this was an exhibition where the crate manufacturer had set the base supports off-centre, which made lifting the crates using pallet jacks impossible! | Shippers generally do a good job. However, occasionally they stack crates into a container using fork trucks in a way that makes it very difficult for us to unload at the venue without specialist equipment. An example is when they have very long forks, so load a long crate into a container short-side first, making it very difficult for us to unload from the container if we don't have the same length forks as they have (which we often don't have). | Having access to covered areas (or at least tarpaulins) out of the weather when unloading, so crates don't sit outside getting wet if it's raining. Otherwise venues are pretty good. | Installation Manager/Team Lead | 11 to 15 | 6 to 10 |
| Handles and Skids | Weight and Dimensions | Alternative Materials | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | We often incorporate crate storage into our temporary gallery design. At times, crates are stored offsite. | Yes | Yes | Ensure more universal standards. Some crates we have are excellent - Field Museum, AMNH, etc. And others are simply a wooden box with ethafoam as dividers. | Usability from an artifacts perspective - not having to take out all the trays to access one object for condition reporting. | How their designs can be adapted for crate travel. | Weights of objects plus the weight of trays. Consider the end user of the artifact crates - often female registrars/collections managers. | The care of artifacts within - that crates are not made equal so to handle with care. | Proper storage plans. | Installation Team Member | 6 to 10 | 6 to 10 |
| Weight and Dimensions | Hardware and Loading Panels | Collapsibility | No | Yes | No | Yes | No | | | | No | We program several historic house venues that have absolutely no storage or capacity to receive exhibition crates, which makes it really challenging to rent any travellers. We do sometimes program larger facilities that have loading docks but storage is always a major issue. Collapsable crates sound like the best solution for our situation. | Yes | Yes | Make them lighter, collapsable and easier to handle by any museum staff. | The host destinations - what does the typical community museum venue look like? Most Ontario museums are smaller venues that don't have loading docks or access to forklifts, consider that when designing the crates to allow for more museums to rent travellers. | Design exhibitions that are lighter weight to begin with so we don't end up with a heavy exhibit in a heavy crate. | The end-users - many museums in Ontario have few staff that are not trained in operating forklifts. How can you design the crate and exhibition to be easier to hand off to smaller museum venues with staff who don't have technical operations staff? | The end-user - again, many museums don't have the capacity to rent or operate forklifts. Can the shippers bring the machinery required to remove the crates from the truck with them? | NA, I am always the host | Exhibition Coordinator | 6 to 10 | 1 to 5 |
| Weight and Dimensions | Handles and Skids | Collapsibility | Yes | Yes | No | Yes | No | No | Yes | No | Yes | very limited | No | No | weight | collapsibility | size and weight | materials | | remember they have to store the empty crates | Other | 11 to 15 | 1 to 5 |
| Other - Please describe: condition above all, many crates are in bad shape when they arrive, though all these listed are important as well | Other - Please describe: again, each of these is a huge help in their own way. Weight and dime sions would be top though, as long as it's within reasonable parameters. | Collapsibility | No | Yes | Yes | Yes | Yes | No | Yes | No | Yes | Our space is very limited, though we can usually hide a truck's worth of pallets with some very clever stacking | Yes | Yes | better maintained / more robust crates. Damaged crating is difficult to move safely, difficullt to open/ unpack, difficult to store, and full of other potential hazards | stackability/stowability when not in use. | complete (accurate) contents list and stowage photos/ instructions within each case. | load dispersal | just get 'em to me on time! | | Other | 6 to 10 | 6 to 10 |
| Other - Please describe: wheels | Stenciling/Signage/ Tray Notation | Other: Please describe: wheels | Yes | Yes | Yes | Yes | | Yes | Yes | | Yes | Large, wide hallway in back | Yes | Yes | | | | | | | Installation Team Member | 1 to 5 | 1 to 5 |
| Other - Please describe: What it's made of | Handles and Skids | Collapsibility | | Yes | Yes | Yes | Yes | No | Yes | No | Yes | VERY limited space that when used sacrifices meantime flexibility | Yes | Yes | I would clearly mark the centre of load both in depth and height. This facilitates ease of loading for lift trucks and fork lifts | Durability/ universal fasteners/ THIS END UP / Clear markings/ long lasting materials | Exhibit designers should think about: Assembly/ disassembly Getting the exhibit in and out of the crate Ensuring the crate contained all pertinent accessories. The designer's absolute focus should be on the end user and function of the exhibit. However, If they involved the thought process for crating in the creative thought process, most of the problems we currently experience would evaporatee. | Overall weight | Respect the signage | Respect/ handle with care | Other | 6 to 10 | 6 to 10 |
| Weight and Dimensions | Stenciling/Signage/ Tray Notation | QR/Virtual Instructions | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Constant shuffling of empty crates is a necessity | Yes | Yes | Weight/ size and greener material construction | I wish we would rethink the Often shipped and seemingly unnecessary materials not essential to the central thesis of an exhibition. ex. Display furniture or marketing materials which could easily be re-sourced at destination. | | Weight and size, maneuverability also | Increased attention to signage on crates | Storage | Installation Team Member | 11 to 15 | 6 to 10 |
| Weight and Dimensions | Hardware and Loading Panels | Collapsibility | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | We are a provider so we have a warehouse to store our exhibitions when not on display. | Yes | Yes | We are a provider. A lot of time, planning and funds go into designing and building our crates and carts. We like for them to take up as little space as possible, move easily, collapse for storage and fit onto trucks and containers easily with no wasted space. | N/A-we are a provider, see #9 above | N/A-we are provider and design our own crates and carts. | Our fabricators build crates and carts according to our specifications. | n/a | Making sure that there is room onsite or offsite for the empty crates that is weather proof and do not move them after the installation is complete. | Exhibition Manager | 21 | 6 to 10 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stenciling/Signage/ Tray Notation | Weight and Dimensions | Collapsibility | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | We have an onsite storage building that is usually available for traveling exhibit crate storage. | Yes | Yes | Whenever possible, find a way to reduce huge crates with one component into two or more crates with components that can be connected to one another during set up. | Better outer marking of crates for staging purposes upon receipt. Also, packing lists mounted on the inside of the crates that list every item that should be housed therein. Also, stackability and uniform sizes when possible. | Think about ways to increase modularity that would reduce weight per crate, by creating sectional components.. | I wish fabricators would keep mobility and safety of fabrications in mind from front end to finishing. Maybe this awareness would inspire them to think of weight issues and surface trouble spots that could cause injury. | Shippers usually do a good job in packing their trailers. However, we often receive crates with broken or unstable feet. | Clarity in labeling and marking contents, whether with separate documents or better descriptions written on or inside crates. | Exhibition Manager | 6 to 10 | 6 to 10 |
| Weight and Dimensions | Stenciling/Signage/ Tray Notation | Collapsibility | Yes | Yes | Yes | Yes | | Yes | | | Yes | storage warehouse | No | Yes | Time to design and revise them as the objects/sets they will be carrying are designed and built. And all should be on wheels. | truck and air freight size limitations crates/carts that break down for storage | Design sets to break down into pieces that fit in the max crate sizes. | Compact and secure, that break down for storage. | Communicate the max size, treat them like special objects because you don't know what's inside, but it is important enough to be crated and toured. | That they need appropriate storage: secure, pest-free, indoor, temperature and humidity controlled, and large enough for crates. | Other | 21 | 1 to 5 |
| Handles and Skids | Hardware and Loading Panels | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | we stage temporarily, then shift offsite I hate required questions when there is no answer or none needed | No | Yes | when institutions do not use standard practices/craters | I think most professionals do good crates | I do not want exhibition designers involved | Height & spacing for wheeled devices, handles | Our shippers do very well | What is an "exhibition host" ? | Installation Manager/Team Lead | 21 | 6 to 10 |
| Hardware and Loading Panels | Stenciling/Signage/ Tray Notation | Alternative Materials | No | No | Yes | Yes | No | No | Yes | No | No | we have 7 different historic building across the city - most of which have dubious or no crate storage. | Yes | Yes | better rugged castors and flat pack. | storage, storage, storage | storage and moving the crate over gavel surfaces = spend the money of quality castors!....and the correct size of castor - 2 inch castors on a crate 4x6x8 = thumbs down | road rash and vibration | 'this side up*....ya know?! | Crates are equally as important as the exhibit it self. Respect the crate and the packing system -going in and out. | Exhibition Coordinator | 1 to 5 | 1 to 5 |
| Weight and Dimensions | Hardware and Loading Panels | Collapsibility | No | No | Yes | Yes | No | No | Yes | No | No | Our shipping and receiving area is too small to house any substantially sized crate so we often need to store them offsite | No | Yes | How bulky they are - of course having the proper padding in the crate is paramount, but the storage is our biggest headache | Storage of crates and clearer labelling with regards to contents | How many crates the specific designs will require | Re-use: we've seen crates that have dividers integrated into the design which is great when they're for a specific show, but a pain when you want to reuse it | To be gentle! Just because things are in crates doesn't mean things can't happen to the contents! | Loading and storage plans | Exhibition Coordinator | 1 to 5 | 1 to 5 |
| Handles and Skids | Hardware and Loading Panels | Collapsibility | No | Yes | Yes | Yes | Yes | No | Yes | No | No | Depends on the size of the show. Any show over 4000 square feet we need to store crates off-site. | No | Yes | Whenever possible have the crates on wheels and make sure the skids are wide enough for a standard pallet jack. | What recipients are going to do to have to move them around. | Modularity. | Uniform use of hardware. | | | Exhibition Coordinator | 21 | 1 to 5 |
| Weight and Dimensions | Other - Please describe: not enough experience to comment | Other: Please describe: All of the above | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | No | Typically off-site storage is used | Yes | Yes | Re-useable materials Standard design for ease of packing | Storage and durablity | Keeping all components of one exhibit together so it can be assembled as unpacked | How they open, durable materials, ease of packing in truck, ease of getting exhibits in and out | Be gentle! | N/A | Other | 1 to 5 | 1 to 5 |
| Other - Please describe: Interior design/how objects will be packed | Weight and Dimensions | | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | Yes | Designated crate storage room, large collection area that can be used for crate storage | Yes | Yes | Having them be less object-specific and more easily adaptable for future uses | Durability, ease of use/safety of staff handling crates at different venues, ability to be moved easily with proper feet/pallet-base through multiple transports | | | | | Other | 6 to 10 | 1 to 5 |
| Weight and Dimensions | Other - Please describe: All of these are equally important. tant | Other: Please describe: All of these are equally important. | | | | | | Yes | | Yes | Yes | I think that all onsite storage spaces in museums should be thought of as "limited". we literally have to pass onshows that we want because we can handle the storage capacity. | | | creating them as collapsible stackable crates | the quality of the building materials used needs to be checked out while they are being fabricated. I literally spent almost a month rebuilding a show's crates because they had fallen to pieces. | I would like to see innovations such as construction with alternate materials, collapsibility and "Smart Crates" that have links to loading information, like weight, dimensions and exhibit installation instructions. | | | | | |
| Weight and Dimensions | Stenciling/Signage/ Tray Notation | Alternative Materials | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | We are a service provider, with storage. | Yes | Yes | Often there is a perception that crates need to be brand-new, customized, with new materials. Depending on the contents of the crate, more consideration should be given to re-use of (clean/ appropriate) materials, or entire crates. | The potential route of the exhibition - there are general restrictions around dimensions that apply to ground, air and sea transfer. Building with possible routing in mind can save headaches later. | | Keep conversations open ended with your client - make recommendations based on experience about what works and what doesn't. | Be clear with your client about restrictions and limitations of available vehicles (whether air, ground, or sea). Indicate areas of efficiency where possible. | | | | |
| Other - Please describe: Configuration | Stenciling/Signage/ Tray Notation | Collapsibility | Yes | Yes | Yes | Yes | Yes | No | Yes | No | Yes | We have two warehouses to store crates. | Yes | Yes | A strong base. | Making sure all crates can accomodate pallet jacks | Maximising trailer sq/ft | Strength and longevity. | Taking care of them! | Safe storage | Other | 1 to 5 | 6 to 10 |
| Weight and Dimensions | Stenciling/Signage/ Tray Notation | Alternative Materials | No | No | No | No | No | | | | | Not applicable - we are not a site | Yes | Yes | Lighter weight and reusable, using standard sizes. | | I am an exhibit designer. | Reducing weight and material use. | Offering solutions to lower weight, reduce waste. | NA | Other | 21 | 1 to 5 |
| Handles and Skids | Hardware and Loading Panels | Alternative Materials | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Large dedicated basement storage area for loans and travelling exhibitions. | Yes | No | It would be ideal if all crates could be made with spring-loaded latches/hasps rather than self-retaining screws. | Within reason, it would be ideal if travelling crates could be collapsible or at least easily stackable. I am fortunate that the institution that I currently work at has plenty of room for travelling crates, but this has not always been the case. | Works/objects that cannot neatly fit within a crate inside a standardised airline cargo pallet/container should be removed from the tour list early in the process. | More options for modular and adaptable design, with a greater emphasis on environmentally friendly materials. | Not all crates are created equal. No matter how robust a crate looks, it should be handled with the same care as a soft-wrapped painting. | Storage solutions for crates whilst an exhibition is on display, and ease of access to said crates during install/ deinstall. | Other | 6 to 10 | 6 to 10 |

| 1. What factor is most important to you in temporary exhibition crates? | 2. What factor is least important to you in temporary exhibition crates? | 3. What innovations in crates have you seen that you wish the industry would embrace? | 5. Forklift on Site? | 5. Pallet Jacks/ Pump Trucks on Site? | 5. J-Bars/ Lever Dollies on Site? | 5. Dollies/ Carts on Site? | 5. Hand Trucks/ Platform Trucks on Site? | 6. Raised Shipping & Receiving Bay on Site? | 6. Street Level Shipping and Receiving on Site? | 6. Freight Elevator on Site? | 7. Room onsite to store empty crates? | 8. Description of onsite storage, if applicable | 9. Is crating with improved environmental responsibility an important factor for your organization's decision-making? | 10. Are you often concerned about the safety of staff and crate contents while handling temporary exhibition crates? | 11. If you could change one thing about temporary exhibition crates, what would it be? | 12. What do you wish travelling exhibition creators would think about with relation to crates? | 13. What do you wish exhibition designers would think about with relation to crates? | 14. What do you wish fabricators would think about with relation to crates? | 15. What do you wish shippers would think about with relation to crates? | 16. What do wish the exhibition hosts would think about with relation to crates? | 17. What is your role in your organization? | 18. How many years have you been working in the field of temporary exhibitions (in any capacity)? | 19. How many people are on your on-site team while receiving, moving, un-packing and storing crates? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Other - Please describe: Content protection, organization and documentation. After this would be weight and dimensions. | Hardware and Loading Panels | Other: Please describe: Internal crate compartmentalization (every piece has a specific home from show to show). This is not new but not often employed regularly. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Most times, a site will not have the capacity to store crates on site so secondary locations are required or rental trailers can be options. | Yes | Yes | The crate considerations should be an important part of the original planning and bid process. This is often left to the discretion of the exhibit house and funds are usually not adequate to cover the costs for proper crates. Crates are a soft cost for a touring/temporary exhibit but really should have much more significance applied. | Traveling exhibit crates are specialty pieces and as noted above, need to be considered as part of the complete bid package. These will protect the exhibit from show to show as well as while in storage. They must be robust, functional and well-thought out to cover how they hold and protect their content as well as how the crates will be easily loaded, shipped and offloaded from trucks. | I personally don't believe that it is the role of the exhibition designers to 'design' specialty crates as this is not their expertise. The primary role should fall on the exhibit fabricator. However, there needs to be a clear direction and understanding between the ED, EF and client as to the expectations required for any particular project. | In general, fabricators need to properly plan out the crate construction, layouts and documentation requirements for overall needs of a specific traveling exhibition. One size does not fit all. They have to consider the contents, the related hardware for each piece, tools, disposable materials, the fragility of some pieces, crate sizes and weights for both shipping and navigation on site. Using basic crates can work for parts of the exhibit but not all. | Shipment planning and the use of appropriate crate designs, sizes and weights depending on the type of transportation that will be used. | Crate storage and site size limitations as far as move in/ move out sizes of corridors, doors, elevators, loading docks, etc. This information would be very helpful to have in advance prior to contracting a fabricator if at all possible. | Other | 21 | 6 to 10 |
| Weight and Dimensions | Hardware and Loading Panels | | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | To move from the gallery to the storage space you have to navigate through another gallery that is open to the public daily or go outside and around the building. Not ideal to move inbetween, but at least we have it! | No | Yes | Every crate, regardless of size should be able to be moved with a pallet jack. And just because there's less crates, but now they are large and heavy actually increases the likelihood of a major accident versus a minor one. | That moving objects/ materials in and out of crates is one of the moments in time with the highest likelihood of damage. So don't make it overly complicated. Installing and deinstalling a traveling exhibit is usually done under a time crunch and the team is exhausted. Keep it simple, keep it light, make it easy to move. | | That fasteners have to be used repeatedly. After a few installs, the hardware should not be stripped. | That there's a difference between the crates being strapped and "unable" to move versus being packed close together and "not moving much." | That just because they are empty does not mean that they shouldn't be cared for. They have to last a while, unless you're the last venue. | Exhibition Manager | 6 to 10 | 6 to 10 |
| Stenciling/Signage/ Tray Notation | Handles and Skids | Collapsibility | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | But constantly competed over | Yes | Yes | The lack of standardization and the thinking that everyone has everything available logistically all the time. | Storage space and handling. | Size of object when crated | Accessibility for all bodies. Many places don't have multiple large folks to drag and pull larger crates and materials. It is certainly a masculine centered environment. | How to get a truck unloaded and loaded safely within an hour of docking. | Securing the storage from elements and vandalism. | Exhibition Manager | 11 to 15 | 1 to 5 |
| Other - Please describe: Forklift friendliness(eg, not 16 ft long with all the weight on the far end) | Other - Please describe: Paint job. | Collapsibility | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Onsite very limited space is loading hallway. Ok to store a few narrow crates(less than 48" wide). Sometimes we put up a wall and use the back of the gallery to store crates on smaller exhibits. For larger exhibits we ship off site on 24' box trucks and pay by the sqft for storage. Stacking crates at the storage warehouse can save money. I've seen large empty crates stacked 5 high. Many crates are not built strong enough to stack this high, nor do they come apart. | Yes | Yes | All crates should break down for efficient storage. | Loading/unloading the truck with a forklift. Many assume they will always have a dock. | Keep exhibit elements to a reasonable size or design them with easy break points. | Minimize weight where it's not needed. Use over sized bolts that are less likely to get damaged threads. Don't use too many bolts as over time people tend to leave them out or leave them loose and the fall out on the road. Make the crate ridged enough that it only needs two or three bolts per edge. On heavy crates plate the bolt holes so the bolts/ washer don't get pulled through. Use large alignment pins or tongue and groove for alignment rather than bolts. Pins should be ball end and tapered for easy alignment and be received by metal plates. Make crates that you can get into ends and sides with standard pallet jacks. Avoid flat/skinny crates that are very unstable on forklifts. Stick to a standard crate size rather than custom for every element. Make the crates easy to reuse for future exhibits. Build them to last. They should tight pack easily into trucks. Don't put castors on crates. I've yet to see castors that don't get damaged over time. Glue or screw in thread inserts so they can't fall out. | Don't put forks through the side of the crates. That should go without saying. | | Installation Manager/Team Lead | 11 to 15 | 1 to 5 |
| Weight and Dimensions | Handles and Skids | Alternative Materials | Yes | Yes | Yes | Yes | No | No | Yes | Yes | No | We have very little extra space on site to store empty crates. If the exhibit doesn't take up the entire exhibit hall, we sometimes close out an area with temporary walls. Most of the time we have to pay for offsite storage. | Yes | No | To have them better retrofitted and not oversized when unnecessary. | I wish the crating wasn't just an afterthought once the exhibit has already been designed/built. I wish the crating was taken under consideration from the start. | How pieces can be taken apart to utilize the space in the crates. | That the crates need to be built in a fashion that will be able to withstand years of traveling and handling. That the materials and hardware chosen does matter. That all crates need to be able to be moved around using a pallet jack. | | The possibility of having to rent storage resulting in extra costs. Weight shift in crates when loading/unloading from a truck. | Installation Manager/Team Lead | 6 to 10 | 1 to 5 |
| Weight and Dimensions | Stenciling/Signage/ Tray Notation | Alternative Materials | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | We have a small room to store empty crates but it fills up regularly and we have to store crates in work areas which is less than ideal. | No | Yes | The ability to easily stack the crates, having a uniform design, sticking to a single fastener type | Better instructions to help with opening them safely. Custom interiors that fit the object without loose fill. | I like when the crates can be incorporated into the exhibition but I realize it isn't appropriate for many exhibitions. | That many facilities do not have the same freight handling tools as they do. Having obvious places to tie down the crates in trucks. | no comment | Think about safe storage as part of the planning. | Installation Manager/Team Lead | 11 to 15 | 6 to 10 |
| Weight and Dimensions | Stenciling/Signage/ Tray Notation | Other: Please describe: sustainability/multi function | No | Yes | No | Yes | Yes | No | Yes | No | No | we use off site storage | Yes | Yes | Multi functional. Make the crate the display surface. | Size. make the crates manageable with minimal equipment and minimize number of trucks needed to transport. | Size and maneuverability. The more compact the crate the more venues can except the exhibition. The more education and outreach the exhibition will have. | sustainable, renewable, and recyclable materials. | | Storage and appreciation when crating is minimal. | Other | 6 to 10 | 1 to 5 |

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| Stenciling/Signage/ Tray Notation | Weight and Dimensions | QR/Virtual Instructions | Yes | Yes | Yes | Yes | | No | Yes | No | Yes | warehouse--not environmentally controlled small closet in AC | No | No | improve accuracy of content labelling and crate packing instructions | a place for everything, everything in its place | modular assembly | durable heavy duty finishes or “soft” interiors on crates to reduce wear and tear on components | | a place for everything , everything in its place and/or document any changes | Exhibition Manager | 11 to 15 | 6 to 10 |
| Stenciling/Signage/ Tray Notation | Handles and Skids | Other: Please describe: jigging and packing instructions | Yes | Yes | Yes | Yes | Yes | No | Yes | No | Yes | we do have room for storage in our warehouse for about 3 full truck shipments | No | Yes | that every crate have feet on them for easy forklift access. | Proper jigging and installation instructions included. | how to move them if they were alone. | making sure it’s easy to remove from crate. secure lift points. | straps for shipment, stabilizer bars. pallet jack. | a healthy amount or respect for the crate and contents. | Installation Manager/Team Lead | 6 to 10 | 1 to 5 |
| Weight and Dimensions | Handles and Skids | Collapsibility | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Collapsible carts make the most of limited storage space. Stacking and nesting crates are also helps. | Yes | No | Construction consistency. Some are screwed with wood screws only. Some use bolts and threaded inserts, some use clips. | Simple is best. Providing packing instructions for complex pieces is always helpful. | Ease of use and clear documentation for loading items. Packing/unpacking documentation should be clear to someone who has never seen the crate before. | Keeping things as simple as possible and keeping weight in mind when designing and fabricating pieces. | Clear load plans and proper crate identification. | Reducing the number of times a crate has to be handled or moved and ease of storage. | Installation Manager/Team Lead | 6 to 10 | 6 to 10 |
| Stenciling/Signage/ Tray Notation | Handles and Skids | Collapsibility | No | Yes | Yes | Yes | Yes | No | No | No | No | Having no storage for crates makes the installation and tear down of the exhibit that much more complicated. Integrating the crates into the exhibit would be optimal. | Yes | Yes | More thought should go into them. Not only do they need to safely transport an exhibit, but they should also be square and be designed to fit into their mode of transportation. There should also be more thought about the longevity of the crates, as well as how they could better be stored, perhaps even in the same hall that the exhibit is housed in. | Labelling, and storage. Labelling crates for techs who are not familiar with the exhibit is critical. Often times referring to a manual for every tiny detail is tedious and time consuming, especially when there is a room full of eager helpers. It has to be clearly labelled and communicated so that the person in charge has the flexibility of directing while also comprehending the next steps. Storage is another big one. Paying through the nose to store huge crates that don’t fit into a standard container is stressful, annoying and time consuming. | Storage | Durability, transportation and labelling. | Choosing the correct mode of transportation in order to keep all of the moving pieces together. | To have a plan to store them, and to have a team of people capable of lifting, sorting, and moving the crates. A body does not equal a body, and this should be clearly communicated to the site manager. | Installation Team Member | 1 to 5 | 1 to 5 |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | **YES** | 24 | 30 | 29 | 32 | 24 | 15 | 27 | 17 | 22 | **YES** | 23 | 28 | **YES** | | | | | | | | |
| | | **NO** | 8 | 3 | 4 | 1 | 6 | 17 | 2 | 12 | 11 | **NO** | 10 | 5 | **NO** | | | | | | | | |
| | | **TOTAL** | 32 | 33 | 33 | 33 | 30 | 32 | 29 | 29 | 33 | **TOTAL** | 33 | 33 | **TOTAL** | | | | | | | | |
| | | **% YES** | 75.0% | 90.9% | 87.9% | 97.0% | 80.0% | 46.9% | 93.1% | 58.6% | 66.7% | **% YES** | 69.7% | 84.8% | **% YES** | | | | | | | | |
| | | **% NO** | 25.0% | 9.1% | 12.1% | 3.0% | 20.0% | 53.1% | 6.9% | 41.4% | 33.3% | **% NO** | 30.3% | 15.2% | **% NO** | | | | | | | | |

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