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Cargo Containers 101 Revised May, 2020

There are some important things to consider when purchasing cargo containers for custom design or just simple storage. We are pleased to share a few facts and many experiences with any interested party, and I trust the info provided herein will be of value. As you consider purchasing a cargo container please accept that these informative notes are only part of a continuous work in progress. I will add and-or change the content based on always changing "Do's and Don'ts" and lessons learned. We invite everyone to come to the table and share ideas and accomplishments relating to container use. Our website is SecureSpaceSolutionsInc.com and will often undergo positive changes that will provide important updates concerning the nearly unlimited use of recycled shipping containers.

GENERAL INFORMATION *** LIKM' OR NOT ***

We accept that Cargo containers are not for everyone! Even though they are very secure and versatile some folks just can't agree that a recycled shipping container is a chattel worth having. If you were to record most of my sales conversations, you would often hear me say **"let's face it they are not what you call a thing of beauty when they come off the boat."** Truth is, used boxes have dents, damage, and-or saltwater rust that makes them very unattractive. Another truth is that when they are modified, refurbished and painted most buyers find them very acceptable. Then there are the new units aka. "ONE TRIP UNITS" (details provided later here in) that are as good as you can buy. I guess the old saying **"don't judge a book by its cover"** is applicable for a while yet.

Almost always the buyers first question is **"what are the sizes?"** To begin the subject of sizes I nearly always talk about height first. Shipping containers (aka Conex boxes) have been standardized worldwide to meet mandatory dimension specifications. *Nearly always* and herein, dimension specifications are referenced as outside measure. All common Conex boxes fall under just two categories, **"high cube or standard."** The **standard (STD)** is 8'6" tall outside and **high cube (HC)** units are 9'6"(just one foot taller inside and out). Conex boxes are 8 feet wide outside and are 20', 40', and 45' feet long. There are numerous uncommon and-or rare boxes that are exceptions to the rules I have stated above. For example, 45' foot boxes are common however I've never seen a standard 45-foot box. The inside usable length of all shipping is about 6" less than its outside length. FYI there is a size chart on the last page of this 101 but DO call and we'll always do our best to help.

Most often I recommend the high cube units to anyone considering them for housing, cabins, garages, shops or other uses where people will be living or working inside. The high ceiling allows for lights, fans, hanging hooks, etc. and most importantly a little extra room for insulation. They say (and I don't know who *they* are) it's been proven that **people do better** (I assume do better means happier) when they have more headroom. To that I recall that on a few occasions I worked under low ceilings

and it was indeed unpleasant in numerous ways. I recall the feeling of having to stay bent over and that was unacceptable for sure.

ABOUT THE NEW *****ONE TRIPPERS*****

Appearance and size are most often the first considerations. Yet numerous factors can have a significant impact on how the unit will fit the buyer needs and goals. What modifications are available, affordable, and effective for the buyer's intended use? As you read and consider the one trip units please accept that 1000s of used units are being used very effectively and for a lot less cost.

In early 2014 new one trip units started filtering into the West Coast of the United States. These units are made in China and used only one time (one trip across the ocean) and then sold on the American domestic market as a "new one tripper." Quite factually these units are exceptionally nice and are normally only a few months old. Containers have a stainless-steel ID Plate on the left door that has info about the manufacture and the date (normally the Month & Year) when it was made. These are as good as you can buy. They come in 20 and 40ft standard and high cubes. Often, we have or can order 45ft high cube one trip units and for sure they are extra nice, but they sell for a little over \$8000. plus, delivery.

Many of the one trip units have unique patented features that are very desirable such as a single handle easy open door. Some have double doors on each end others have factory side doors. Special order units can also be 7ft, 8ft, and 10ft long. Most often it takes several months to get them here. If these are attractive to you, I strongly suggest that you do not wait to buy. We have several units in stock and more on the way.

Call our office and we will do our best to supply your needs.

SECURE SPACE MFG. LLC *****WE ARE THE ROUGHNECKS*****

Containers are constructed of corrugated steel designed and built to transport secure dry cargo through every kind of inclement weather across every ocean in the world. Just think for a minute, in ports and depots and on huge ships they are stacked 7 high with nearly 70,000 lbs. in each one!! That means the one on the bottom of each stack is holding 420,000 lbs. **that's 210 tons!** When I say they are incredibly strong and versatile that is truly an understatement.

Except for the 53ft units they have a rugged sub-frame 6 inches deep that allows for steel joists under a very tough and expensive 18 ply plywood floor. In that sub-frame, there is room for plumbing, wiring, insulation etc... One of our Buyers designed a secret steel floor safe that we welded in under a hinged wood floorboard that he covered with a common carpet. He kept cash, guns and ammo etc. etc. "out of sight out of mind. When completed you'd never know it was there. I share that as only one small example of some of the creative things people have come up with. Numerous factors can have a significant impact on how the unit will fit the buyer needs and goals. What modifications are available, affordable, and effective for the buyer's intended use? I'm an old school kind of guy that was never taught I can't do something, so please accept that I am very sincere when I ask, what can we do for you? At SECURE SPACE SOLUTIONS we like a creative challenge even if it takes us past our comfort zone. I am truly proud of our shop team that always gets the job done. Bring us a new challenge and expect results.

The possibilities for domestic use seem endless. However, if you're going to build a dwelling, shop cabin, etc. you will soon learn that cargo containers are a little different compared to conventional construction. Most buyers purchase containers from us, and we do the rough-in work and they finish

the project their way. I define “rough-in or roughneck work” as we weld in door and window frames, vents, air conditioning brackets, partitions, etc. etc. Buyers need to keep in mind the thin corrugated steel walls and how to attach and-or apply conventional building materials to them.

For example, we weld in a steel door jamb to fit a pre-hung wood door jamb. Also weld in a steel window jamb to fit a vinyl window. I’ve seen some good work people have done themselves like installing wood pre-hung doors to the steel wall with metal screws and lots of caulking. I don’t fault them and often complement them but keep in mind our name “SECURE SPACE.” We build every project to be far stronger and more secure than the average home or business. We often install steel studs and closed cell spray foam insulation so buyers can sheet rock or panel the inside to suit themselves.

Did I mention insulation? I sure did....! *****A VERY IMPORTANT ISSUE*****

Container insulation is a very important topic. Containers are a steel box and in the hot sun that can be compared to an oven and in extreme cold a refrigerator. I am aware of certain events where a container set directly in the hot sun and the inside temperature reached 140°. Also, I have firsthand knowledge of inside container temperatures only 2° higher than the actual outside temperature below 0° in winter. Even more important than temperatures are the fact that closed cell spray foam insulation and ventilation is the most economical way to control the moisture issue related to container use. You might say, Wow how did the insulation issue explode so quick? The term insulation now is tied to ventilation, temperature, and moisture control....!

Here on the West Coast we have a strong complement of worthy container suppliers that will share their knowledge so the unit you select will be right for you. Beware of those who “FLIP” boxes AS-IS for a quick buck. In the following paragraphs I will share some very important info with you to keep in mind if you use Conex boxes.

Now back to facts, ****insulation now is tied to ventilation, temperature, and moisture control..!**** My intended goal here is to impress upon you the importance of this topic even to the extent of a possible serious health risk! before I cause any more alarm, if you are buying or renting a container to Secure/Store almost anything for a short time you need not concern yourself with the moisture issue and the temperature issue is most often covered by common sense. If your unit has no insulation and the item you want to store is sensitive to temperature extremes don’t put it in there..! Simple as that!

The following is just one unfortunate example I share with our clients. An Oregon County Sheriff purchased a custom 40ft container from a Portland supplier for an emergency command center. The supplier installed wood studs and fiberglass insulation then fully sheet rocked the unit. The supplier installed windows, doors and a full-length table to support numerous computers, radios, broad band emergency communication equipment etc. etc. All seemed to be going well until black mold began to creep up all around the base of the sheet rock. I was called to provide a solution to the problem. We broke away some sheet rock at floor level to find the fiberglass insulation was saturated with moisture and black mold. The supplier didn’t dry the walls completely prior to installing the fiberglass and sheet rock thus encapsulating the moisture and sealing it inside the walls. As I mentioned above, Shipping containers have strong tendency to sweat and that exacerbated the problem. Clearly the issue was Improper preparation and installation creating a serious health risk that rendered the unit unusable for their intended purpose. The Sheriff tore out all the improvements and is using the unit for non-sensitive equipment storage.

All in all, a very expensive lesson that should have been avoided.

*****DOs & DON'Ts*****

The very first thing on the DOs list is an absolute. "**Moisture and temperature control are regulated by insulation and ventilation.** With that said the next most important thing on the DOs list is "**manage the temperature and control moisture**" in the unit you are using. Let's say your unit has no insulation and no custom vents installed. You can promote ventilation simply by opening the big double doors for a few hours, at least every few days, to vent the unit. Should you find condensation on the walls you may need to vent it more often and or install a fan to circulate air. Ventilation management is needed year around even on rainy winter days. If you have a vented/insulated SECURE SPACE unit your DO list may also suggest you close or open the vents to produce a desired result. On your DO list you may want to note to check for pinhole leaks every few months especially in wet season. A pinhole leak is most often fixed in a few minutes with a putty knife and tar or a dab of paint often will last for years.

The very first thing on the DON'Ts list is, "***Don't ever fill a (as-is) container with household (or sensitive items) and lock it up for a long time***" Notice I used the term "as-is" in the sentence above meaning the unit is just the way they come with no vents, insulation etc. Etc. If the unit is properly vented and insulated you should be able to store just about anything any time. Another serious "DON'T" is don't accept delivery without inspecting the unit. Common sales lingo is this unit is "Wind and Watertight" abbreviated as WWT. That is an issue that we at SECURE SPACE have enjoyed a lot of compliments on. I can't begin to estimate the number of units that we purchased as WWT and when we put them through our shop, we found numerous leaks in the roof and sides.

Another important DON'T is, don't allow leaves to pile up the roof for an extended length of time. One of our buyers placed his unit under a large maple tree for shade and let leaves pile up on the roof several inches thick. He claimed the leaves created an effective insulation keeping his unit cool inside. I must agree that is true however the unit was developing numerous leaks as time went on. Most people don't know that tree leaves, especially maple, contain strong acid that is released when they get wet. A strong acid used for Gun Bluing was extracted from boiling maple leaves and bark. That same acid caused considerable damage to the roof of his container.

On your DO list, we advise people, DO clean the roof before rains come each fall. Also DO give the roof a fresh coat of aluminum fiber seal every few years. This reflects the Sun to keep it cool inside and prolongs your roof. Cool Seal is what we use most often, and we buy it a Sherman Williams Paint store. Low's and Home Depot have brands like Snow Coat etc. Silver Seal used to be a great product for the price but they "improved it." Need I say more?!

At SECURE SPACE STORAGE we go the extra mile to tune used units to our minimum standard. "***Through the shop***" means we Jack the roof to restore it as close as possible to its original condition that will shed water. The goal is we never want to have a big puddle of water in the roof day after week after month. That seems like a no-brainer, but I can't begin to count the times I've lifted a container and a large wave of water spills off one side or the other.

The truth is when the used units are stacked in depots and on ships all around the world oftentimes the top gets pushed in and we jack it back up before it goes to our customers. Next, we thoroughly inspect the unit and repair any holes, cracks, or weak spots that could soon become a hole or leak.

The last thing we do to make certain the unit meets our minimum SECURE SPACE STANDARD is tune and lubricate the doors to make sure they function properly. I have seen many units where the doors were so rusted and/or full of saltwater corrosion that it took two men to open and close them. We have a diligent crew yet despite our best efforts occasionally a pinhole is found that we missed. Should that be the case DO call us and we will send a technician to repair it.

Numerous factors can have a significant impact on how the unit will fit the buyer needs and goals. What modifications are available, affordable, and effective for the buyer's intended use? Please accept that I am very sincere when I ask what can we do for you? At SECURE SPACE SOLUTIONS we like a creative challenge that often takes us past our comfort zone.

Our shop people DO the job.

SECURE SPACE TRANSPORT LLC. *ON SITE PLACEMENT*****

Buyers are often very intimidated by the size and weight of Conex boxes. They assume there will be huge placement problems. If there are obvious issues and concerns, we like to conduct a sight review and address all relevant issues. There are always important limits to deal with, but seldom do we find any that can't be dealt with. My problem is that *I haven't been taught that I can't do things* and after 65 years driving more than 2 million miles, we put containers in places many competitors won't even try. I still get in trouble occasionally, but I'm pleased to say that it's very seldom. We have placed several thousand units in some very difficult places from central California to Seattle Washington, Idaho, and central Nevada.

I am doing less and less delivery these days partly because we have an exceptional full-time delivery driver. Our customers tell me over and over about the great delivery driver we have. Our delivery system is truly exceptional in many ways. Unlike many of our competitors we load and unload, move and remove even the largest containers nearly every day. Numerous times people have called requesting help after buying a competitor's unit that couldn't be placed where the buyer wanted it. We must never assume a delivery driver has a magic wand tucked behind the seat but there is more to it than meets the eye. Most container suppliers use large semi type trucks where we use custom equipped Dodge 4X4 power units with a custom delivery trailer. When we shift into off-road delivery mode the trailer wheels are set to our drivers calculated position that allows him to make very tight turns necessary for placement. Still there are unknown factors and limitations that can only be determined by trial and skill of a professional SECURE SPACE TRANSPORT delivery driver.

VENTALATION UNDER THE UNIT

*****RAILROAD TIES OR BLOCKS*****

Most often, I recommend setting 40 ft containers on at least three road ties and two ties under 20 ft units. Now that's not carved in stone for sure as we've had buyers place them on cement blocks, treated lumber, rounds of firewood, and even old car and truck tires. The point is, like ventilation under your home, ventilation under your container is nearly always the right thing to do. Containers are under coated at the factory with a very effective sealer that lasts for many years. Ventilation helps keep moisture from wicking from the ground through the undercoat and into the heavy wood floors where delamination can become an important issue. Buyers should accept that nearly every unit placed will settle over time, often causing the doors to need a little adjustment. The railroad ties keep the unit up so that a jack can be placed to help facilitate the realignment process that we often refer to as fine-tuning.

Site preparation is also an important consideration to placement. Factors like water, soft ground, sloping or uneven ground, are only a few that need be looked at. Trees, brush, and rocks that can scratch new paint and dent the unit or delivery equipment need be considered. Structures including posts and fences mailboxes water and sewer lines and electric and phone lines often become

important issues also. As you make site prep plans. It's a good idea to consult a knowledgeable person, especially if you are excavating or placing a container underground. Reinforcement is a must in that the roof won't hold much weight. How much dirt are you going to put on top of the unit? What is your ground like? I know a person who bought containers with the intent of using them as retaining walls to hold back an unstable hillside. The containers were secured firmly yet the hill side kept moving eventually collapsing the sides. His final product became a very expensive nonretaining wall. By reinforcing the sides his goal may have been reached. If you have unstable ground, there is much to consider. If you plan to put dirt on top of the unit for sure we need to talk!!

Under the site prep category, it is wise to consider drainage and slope. If during the dry months there are signs of moisture seeping into the ground, chances are that during a though winter there will be substantially more. You may consider placing perforated drainpipe under the unit to carry groundwater out and away. Often buyers will order a load or two of rock and if drainage is an issue that's always a good idea. However, I have also seen a great deal of gravel wasted under containers where it was not needed, most often the best use of gravel is around the outside of the container where you walk not under it.

I SURE MADE A BUYER A THE COAST MAD ONE DAY. As I backed a 40ft high cube into its prepared spot. I made the comment that he did a beautiful job of site prep". He had excavated to perfect level then hauled crushed rock and compacted it with a vibrating roller testing and retesting it with his laser level. As he was placing railroad ties that were also measured with the laser transit I made mention that it's often a good idea to have a slight tilt (to one side or the other) of about 2 inches in it 8 feet, as that helps run the water off the flat roof, especially at the coast. Boy, did I get told! Something like "I been working my *#^ off for a week getting this job just perfect and you come along and tell me to make it not level." Why the *#^blank edy blank didn't you tell me that start with?" Unless you are going to use a container for something like a machine shop that needs precision leveling a slight tilt to one side or the other is a good thing.

I recall one delivery where placing the unit only took a few minutes but getting the truck and trailer back to the street (just 200 yards) took over three hours. There was truly exceptional and very expensive landscaping with many trees and plants imported from around the world I was fully informed of the painful torture that the lady of the house would impose on anyone who would cause even the slightest damaged to any of her plants, The exit driveway was a very tight and we could move the trailer only a few feet or inches and literally jack it up and push it over to clear a very exotic Bush or flower. Then we would move a few feet more and stop and jack up and push it back over again to clear the next. Not the delivery charge but the exit charge was \$300. After reaching the street with both our scalps still intact, the buyer agreed, the fee was fair.

In conclusion, this updated printing of cargo containers 101 is your invitation to call and or stop by our shop and see firsthand how we modify these units. We are next 1-5 in North Grants Pass Oregon. Look for the big sign that reads "RENT — BUY - MODIFY and a blue banner with an arrow that says CONTAINERS" directing you in behind the bowling alley. You are always welcome to call at 541-479-5750 or log on to SECURE SPACE SOLUTIONS INC.com to see recent photos of our products. On behalf of everyone on our SECURE SPACE team please except that we are most grateful for your business and look forward to seeing you and your friends again and again...!

All the best from all of us,

Col. Dan Vest

Founder/CEO