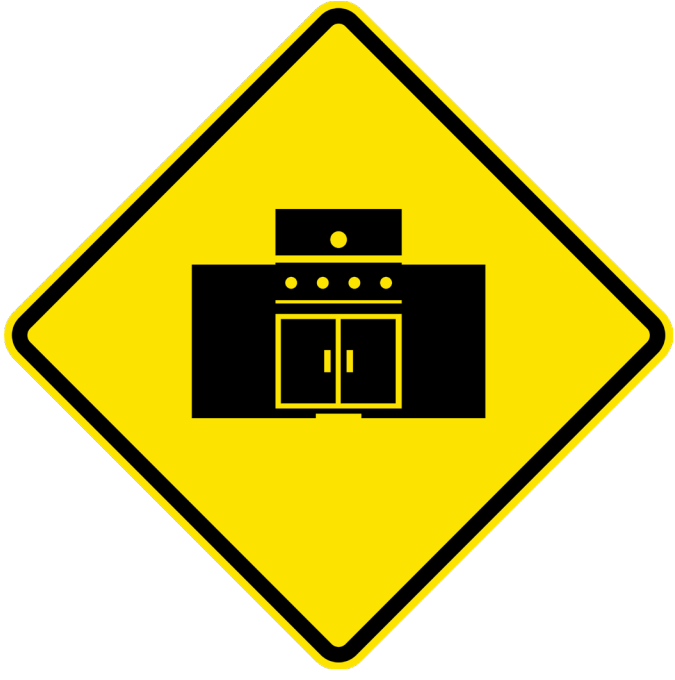
RTA
OUTDOOR LIVING

OUTDOOR KITCHEN SAFETY GUIDE



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THE ULTIMATE OUTDOOR KITCHEN SAFETY GUIDE

In our modern age, the safety of consumer goods is often taken for granted. With the growing litany of safety regulations and third party standards, it's easy to see why this is the case. However, there are industries in which safety is still a deep concern, and broad standards have not yet been set in place. Such is the case for the outdoor kitchen industry. Hence, why we have felt compelled to create this guide.

Over the years, we have encountered a shocking number of outdoor kitchens that are unsafe to use. There are three primary examples that showcase this. For one, many islands are made with wooden frames, and do not include insulated appliance jackets to protect the structure from excessive heat. Another common scenario would be homeowners sliding a freestanding grill cart into an outdoor kitchen, which is not its designed purpose. Further yet, many islands are made without any ventilation whatsoever. While you may not completely understand the inherent safety issues with these examples yet, you will be well-versed in the topic as this guide comes to a close.

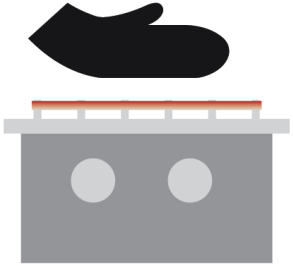
Why are these safety mistakes happening? And why are basic safety precautions overlooked? There are a few variables at play. Until recently, most homeowners would work with a landscaper, mason, or contractor to construct their outdoor kitchen. Both groups tend to have a significant knowledge gap that happens to intersect. Landscapers and masons understand the principles of outdoor construction, but do not grasp the principles of kitchen construction and safety specifically. Whereas, a contractor is familiar with kitchen construction, but generally unfamiliar with the unique needs of an island built outdoors. Additionally, both groups are usually not well-versed in the distinctive requirements of a built-in grill. The results are an outdoor kitchen without proper ventilation, safe materials, and safe design.

With 10+ years of experience in the outdoor kitchen industry, this backing allows us to speak authoritatively on the topic of safety. In fact, our outdoor kitchen solution was designed with safety in mind from the outset. While our single-layer *(or monolithic)*, panelized and “fireproof” outdoor kitchen solution was initially created in 2013, thorough safety research was completed before bringing the final product to market. In 2017, we developed several ventilation patent designs that demonstrate this emphasis on innovation and safety. Additionally, we have participated in extensive grill heat testing, measuring its impact on island structures and countertops. As a result of a decade of work and innovations, we have set a new standard for outdoor kitchen island safety.

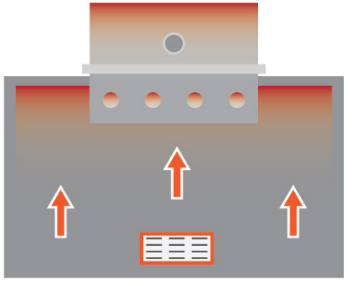
Disclosure: This guide is only an informational resource, we are not liable for any actions taken as a result of reading this guide. Always consult your grill manufacturer’s manuals, and follow the instructions as recommended. Always follow local codes and regulations, including any setbacks.

For the purposes of this guide, the risks we discuss are centered around dangers to personal health, safety, and property damage. If property is damaged, there's also often a risk to your personal health or safety, therefore there is overlap between the two.

The primary health and safety concerns due to improper island construction are burns, island collapse, trapped gas, fires, and possibility of structural failure. Burns can occur in two different scenarios with an outdoor kitchen.

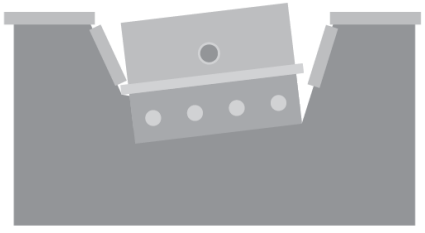


Grills and other cooking appliances *(burners, ovens, smokers, etc.)* are scorching hot during use, so there is always a risk of getting an accidental burn.



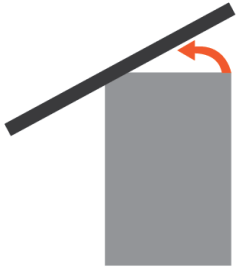
There's also a chance of heat buildup in your island causing the knobs of your grill to get hot enough to cause a burn. This is particularly a risk if your outdoor kitchen is not well ventilated and/or prevailing wind is directed from the back of the grill.

An additional risk factor due to improper ventilation would be trapped gas leading to an island explosion. If gas is not allowed to exit the island structure, it could cause buildup in your island. Should this be left unchecked long enough, there is an ever present risk of your island exploding due to combustion of these gasses. It may seem far-fetched, however, the dangers of an island exploding are very real. In fact, a prominent island manufacturer recently issued safety recalls for this exact reason. And should an explosion occur due to gas buildup, this of course can create the secondary risk of a fire hazard. *(Poor material quality can be a separate fire hazard risk, which will be discussedon next page.)*



ISLAND COLLAPSE

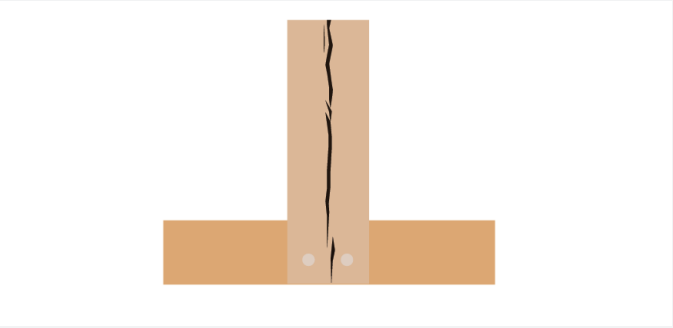
The risk of collapse has to do with the structural integrity of your island. Your outdoor kitchen must be structurally sound and strong enough to withstand the pressure of supporting appliances and countertops that can weigh several hundreds of pounds. If the construction is not structurally sound, there's a significant safety risk if the island were to collapse in the presence of yourself or your loved ones.



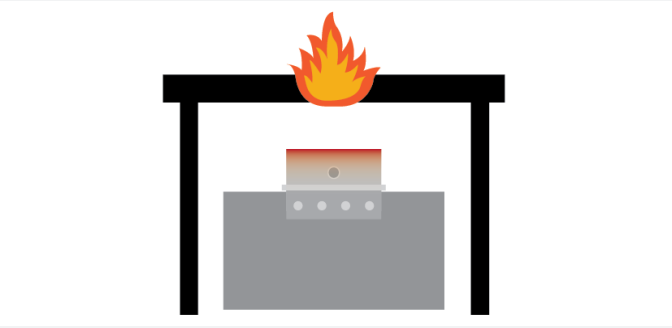
COUNTERTOP FLIPPING OVER

Finally, there is concern of the countertop flipping over. This is the least common risk, but still noteworthy enough to mention. Most outdoor kitchen systems do not directly adhere the countertop to the island structure. If there is too much of a cantilever, it's possible the countertop can flip over when too much pressure or weight is applied to the unstable end. With most countertops weighing at least several hundred pounds, this can be dangerous if you're in the wrong place at the wrong time.

The primary health and safety concerns due to improper island construction are burns, island collapse, trapped gas, fires, and possibility of structural failure. Burns can occur in two different scenarios with an outdoor kitchen. Grills and other cooking appliances *(burners, ovens, smokers, etc.)* are scorching hot during use, so there is always a risk of getting an accidental burn. There's also a chance of heat buildup in your island causing the knobs of your grill to get hot enough to cause a burn. This is particularly a risk if your outdoor kitchen is not well ventilated and/or prevailing wind is directed from the back of the grill.



Naturally, heat dries out wood. And when wood dries out, it becomes brittle like kindling. Therefore, it becomes far more susceptible to combustion, creating a fire hazard. However, this isn't the only source of a fire risk.

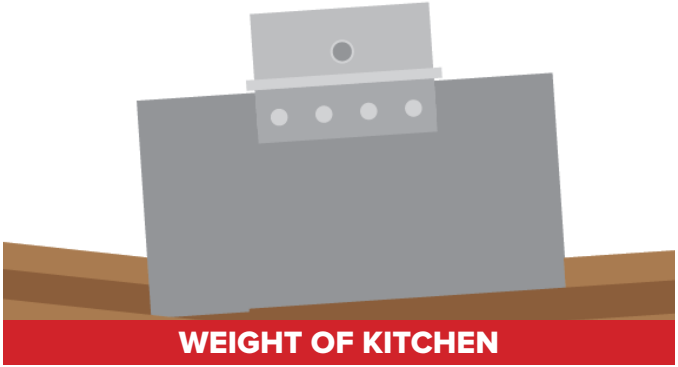


Excess heat, grease fires, or flying embers from the grill can also cause a flammable structure overhead to combust. And if the island is not well-ventilated and heat cannot escape, the island itself can combust. This then creates a risk of the fire passing to other nearby combustibles, creating a far more dangerous problem.

WHAT ARE THE RISKS OF IMPROPER ISLAND CONSTRUCTION?

At the same time, excess heat is not the only concern. If gas is getting trapped in your island and is unable to escape, there's a risk that your outdoor kitchen can explode. Once again, this creates an extremely hazardous situation for yourself and your loved ones.

Another underplayed property damage risk is due to the weight of your outdoor kitchen. It is essential to ensure that the surface you install your island on is strong enough to handle the load. There are many situations where a wood deck or roof deck has collapsed under the weight of an outdoor kitchen it could not support. If people are on the deck while this is happening, there's a serious safety risk in addition to property damage. If you install your outdoor kitchen on a patio, you aren't exempted from the risk of property damage. If the patio is unable to support the weight of your island, it's quite possible that your patio can crack under the pressure.



With all of these risks to consider, it's crucial that you plan your project for safety from the outset. This guide will help you understand the safety of outdoor kitchen materials, construction methods, appliances and insulated jackets, island ventilation, utilities, and design. By the time you've wrapped up this guide, you'll be armed with an immense amount of information you can use to consult with your contractor *(or outdoor kitchen manufacturer)* to ensure your project is safe for the entire family.

WATCH OUR OUTDOOR SAFETY WEBINAR

WHY OUTDOOR KITCHEN MATERIALS MATTER:
COMBUSTIBLE VS. NON-COMBUSTIBLE MATERIALS

When it comes to the safety of your island, the primary material consideration you'll have is combustible vs non-combustible materials. Combustible materials are prone to combustion when exposed to fire or heat, whereas non-combustible materials are the opposite. More specifically, the International Building Code *(IBC)* defines combustibles as "materials that, under anticipated conditions, will not ignite or burn when subjected to fire or heat".

Taking it a step further, they break down construction materials into five separate types. Type I is considered completely non-combustible, and Type V is considered fully combustible. II, III, and IV lie somewhere in between. When we consider that your outdoor kitchen will be frequently subjected to high temperatures and possible gas leaks, it's essential to work with a firmly non-combustible material.

These outdoor-rated materials remain inert, even when exposed to extreme temperatures for a long period of time. Masonry materials *(CMU islands built from cement block)* and concrete are uniquely equipped to withstand the harsh outdoor conditions. They are unaffected by rust, rot, corrosion, swelling, pests, and damage from freeze/thaw conditions. The one caveat to this category is cement board, like HardieBacker board. While a cementitious material, it is susceptible to moisture absorption and swelling, which can reduce efficacy. Further, it is unclear whether sustained exposure to heat impairs the integrity of this material over time.

MASONRY/ CONCRETE

WOOD

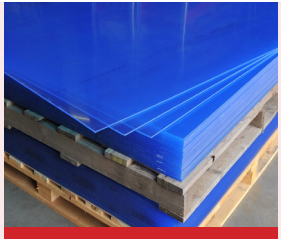
Conversely, it's well-advised to avoid combustible materials for your BBQ island project. These include wood, plastic, composite decking, and PVC. Wood in particular would be considered the worst offender, being most likely to become a fire hazard. Plastics such as composite decking and PVC are more likely to melt than to combust. At the same time, many composite decking products are made from wood byproducts and resins, which are combustible.

To summarize, there are three groupings when it comes to the safety of outdoor kitchen materials. Wood, PVC or plastic, and non-stainless steel would be considered the "worst". These materials should be avoided at all costs.

WORST

WOOD

PVC



PLASTIC

GALVANIZED STEEL

In the “better” grouping are cement board, aluminum, and HDPE. These materials are less combustible, but they do have their weaknesses as mentioned previously that prevent us from recommending them wholeheartedly.

BETTER

CEMENT BOARD

ALUMINUM

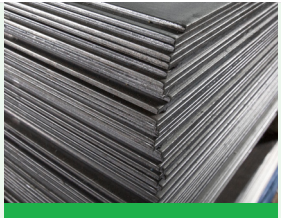
HDPE

For an outdoor kitchen application, masonry, concrete, granite, and stainless steel are superior material choices. In particular, masonry *(brick, stone, etc.)* and concrete are considered the gold standard. These are completely non-combustible materials that are truly safe for an outdoor kitchen application.

BEST

CONCRETE

GRANITE



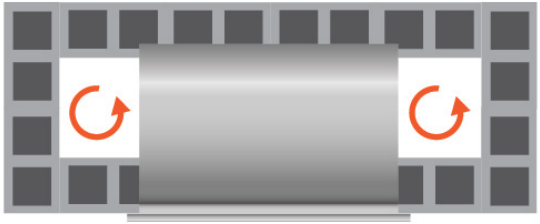
STAINLESS STEEL

HOW THE STRUCTURAL INTEGRITY OF YOUR ISLAND IMPACTS SAFETY

Aside from combustibility, you also must consider the structural integrity of your island. If the frame or substructure is not solidly built, your island can collapse and become a future safety risk. An example of this would be using inappropriate studs for holding cement board and cladding to the frame. Many homeowners will use thin gauge metal studs rated to hold sheetrock when attached to an existing wall. These studs are not designed to be an independent support structure, and therefore are not rated to support the weight of cement boards and stone cladding.

To avoid this problem, masonry and concrete are clear winners here. These structures have far superior performance outdoors and are engineered to resist damage and weathering, which will remain durable for decades to come.

MASONRY/ CONCRETE



CMU CONSTRUCTION

However, there is a bit of a caveat with CMU construction, which is concrete masonry with a cladded finish. The inherent weakness of a CMU island is the lack of interior cavity space. This is because the dimensional size of the concrete blocks ends up monopolizing the space in your island. With less cavity space for air circulation, these systems offer subpar ventilation. To work around this, it's recommended to utilize a structural concrete panel instead. *(This system will be discussed later.)*

METAL

The most common material used for an outdoor kitchen frame would be some form of metal, whether it be aluminum or galvanized steel. While metal does offer a good amount of structural stability, it is unfortunately susceptible to water, humidity and moisture in the outdoor environment. Eventually rust and corrosion will occur and in some cases, the damage will be enough to make your island structurally unsafe to use. It is also worth bearing in mind that a metal frame could possibly be less structurally sound than a 2x4 wood frame. This is the case if you use a high gauge metal that is far too thin to support the structure you are building.

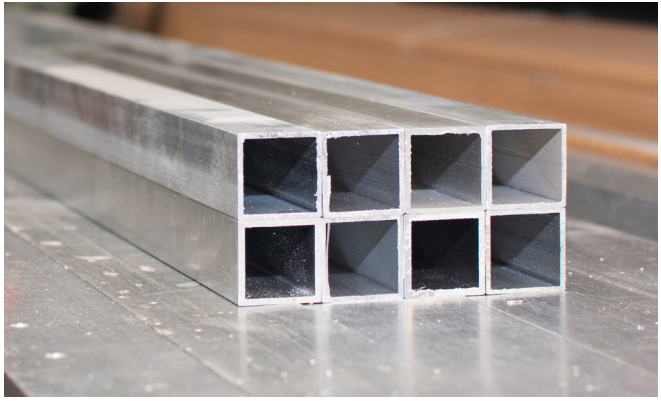
That said, structurally, wood does not come without its own issues. While it will not rust or corrode, it can become structurally compromised far more quickly in different ways. Wood is prone to rot, swelling, warping, and termite damage. And as soon as moisture enters the interior of the structure, the process of decay begins. Compounded with this is the issue of combustibility, as mentioned earlier. Every time you use your grill, you are also heating the wood inside your island. Therefore, there is always a risk of combustion. The constant temperature fluctuations may also weaken the wood over time. *(When wood dries out, it becomes brittle and more flammable.)*

WOOD

After safe, non-combustible, and structurally-sound materials have been selected, you must also consider the construction method of your island. Just as with materials, not all construction methods are optimized for your safety. The reason for this? Currently, much of the outdoor kitchen industry could be likened to the “Wild West”. There are no code requirements for constructing an island, which leaves the decision solely to the discretion of the builder. Further, there are no associations leading the charge in establishing safety standards for island construction. Therefore, the information in this section provides the best knowledge currently available in regard to safe island construction, but keep in mind that official standards are yet to be established.

Outdoor kitchen construction can be boiled down to four primary components: the base or surface, the frame/substrate, the finish material/cladding, and the countertops. Of course, every outdoor kitchen project requires a surface to build on. A properly constructed base will provide a stable and sound footing to support your island structure over time. When it comes to base installation, there are two scenarios at play. You either have an existing surface that you want to retrofit, or you are constructing a new surface in anticipation of your island structure.

In either case, the weight of your outdoor kitchen will affect how you proceed. If your island is extremely heavy (i.e. CMU substrate), you may require a dedicated poured concrete base and footing to support your island. *(This will also prevent settling over time.)* In the case of an existing patio, this may require you to rip up sections of your patio and have a reinforced poured concrete footer created to account for this. In the case of a retrofit, you will also need to ensure that your patio has some pitch. It should be enough to allow for natural drainage, but not too much so that your island cannot sit somewhat level on the surface.



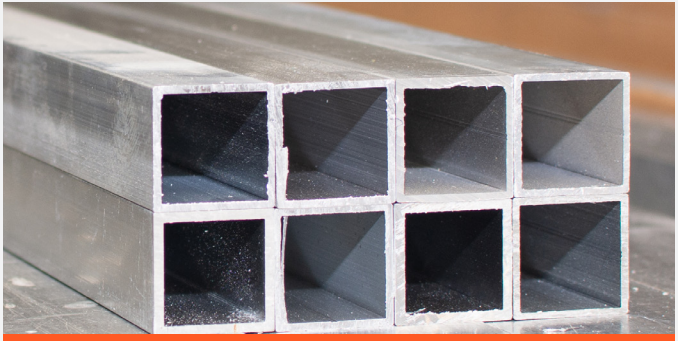
ESSENTIALS OF WHY CONSTRUCTION METHOD MATTERS

In some cases, you will be seeking to install your island on an existing deck rather than a patio. In this scenario, the considerations are similar. Aside from ensuring your island can fit comfortably on your existing deck, the primary factor to consider is weight. Your deck must be rated to handle the weight of your future outdoor kitchen. If your outdoor kitchen exceeds the weight limit of your deck, you will have to add structural reinforcement to your deck to account for this.

The next stage of outdoor kitchen construction would be the frame or base substructure that will support your finish, countertop, and house your appliances. You can think of this substructure as the “skeleton” that provides the structural integrity of your island, therefore it’s crucial to ensure that your construction has “good bones” for safety and longevity. The frame is intended to provide adequate structural integrity to support the countertop and substrate for the finish material. It’s key to ensure that your frame can support the weight of your cladding, countertops, and appliances. Within this category, there are four common approaches to creating a frame that you may encounter for your outdoor kitchen.

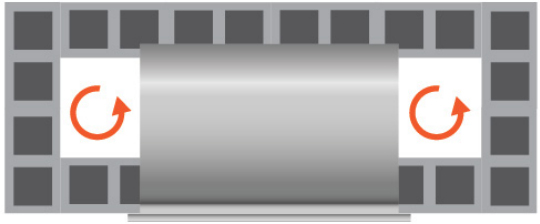
WOOD & CEMENT BOARD

The worst frame system to use for your island in relation to safety would be 2x4 wood studs with cement board, and the worst for longevity and performance would be galvanized steel studs with cement board. As previously discussed, wood and galvanized steel studs are inferior materials for an outdoor kitchen *(and not recommended)*. Due to their propensity for deterioration in the outdoor environment, structural integrity can be compromised.



ALUMINUM

A step up from wood or galvanized steel would be the use of square aluminum tubing. Aluminum frames won't rust and can offer more corrosion resistance than steel. However, it still is prone to corrosion over time, particularly if it's not an aluminum alloy. It's also important to ensure that the gauge used is engineered/rated to support the weight of your cladding, countertops and heavier counter mount appliances.



An even better option for your structure will be CMU *(concrete masonry unit)* construction or GFRC *(glass fiber reinforced)* cabinets. Starting with CMU, which is also known as concrete block construction, offers far more longevity benefits than a wood or metal frame. With this method, concrete blocks form the frame of your island. Being made from concrete, this is a hardy, non-combustible framing option. The structural integrity of CMU construction is robust, and will not succumb to the environmental pitfalls that metal or wood do. *(No rusting, corrosion, rotting, etc.)* However, concrete block construction does suffer in the area of ventilation. The blocks themselves take up a massive amount of interior cavity space, leaving little room for air to circulate throughout the island *(and can remain trapped between the layers of block).*

Therefore, an improvement on the CMU method would be GFRC cabinets. Like concrete block islands, they won't run into the issue of corrosion, rust, rotting, warping, swelling, or insect damage. These boxes are structural, and brands such as Eldorado Stone advertise that structural footings are not needed for this solution. They also avoid the caveats of typical CMU construction, being excessive weight and lack of interior cavity space. And being made from concrete, GFRC is a non-combustible material that provides a safe construction method for your outdoor kitchen.

However, there's another iteration that further improves on this system. High performance concrete panels are a full realization of the potential a concrete outdoor kitchen can provide. These panels are fully structural, and are easily adapted to any homeowner's backyard. They're lightweight, and often don't require the need for structural footings or reinforcements to your deck. Further, these panels are completely frameless. There is no opportunity for rusting, corrosion, or other deterioration being in the outdoor environment may cause. There are no weak points, period. And due to the omission of a true frame, the interior of these panelized islands are cavernous. This allows for ample airflow and ventilation potential, being a huge boon for outdoor kitchen safety.

HOW THE STRUCTURAL INTEGRITY OF YOUR ISLAND IMPACTS SAFETY

After the substrate, it is time to add the aesthetic finish or cladding to your outdoor kitchen island. We've categorized these finish options into three groups, being "worst", "ok", and "best". In the worst category, you'll find any form of combustible finish materials. Wood *(i.e. cedar or IPE),* faux stone finishes made from polyurethane, or composite decking are all examples of this. Of course, being combustible materials, this is a serious safety concern you'll want to avoid for your home. *(You will also have the added cost of an insulated jacket, which can cost in excess of several hundred or even over a thousand dollars.)*

For an option that's in the middle of the road, some homeowners might consider a stucco or Hardie fiber cement siding finish. While we broadly consider these as "okay" materials, it strongly depends on the climate you live in. If you live in an arid, dry climate like Nevada, stucco could last a long while. However, if you experience high humidity and winter weather, stucco is not a good choice. The humidity and temperature fluctuations will cause stucco to crack quite rapidly. This can also lead to pieces flaking off, leaving the interior of your island completely unprotected. It's this "flaking off" that can lead to safety concerns for your island. In the case of a metal frame, moisture can now freely enter the interior to cause corrosion and rust. Over time, this will damage the structural integrity of your island.

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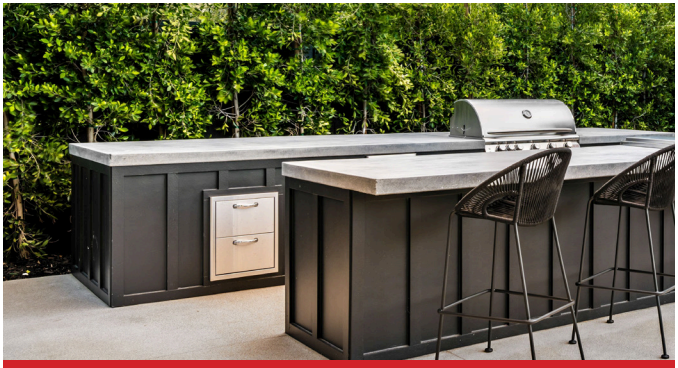


WORST

In the case of Hardie fiber cement siding, this material easily absorbs moisture, leading to molding, rotting, and damage to the panel itself. Even in an arid climate, this can pose a risk if unexpected weather conditions come through. Additionally, this siding requires regular maintenance, and is prone to chipping or cracking, just like stucco. In either scenario, your frame is once again left exposed to the elements, leading to structural damage over time.

The best outdoor kitchen finishes will be outdoor rated stone veneer *(cultured or natural)*, brick, concrete finish, tile *(porcelain or ceramic)*, or powder coated metal *(304 stainless or marine grade aluminum alloy is ideal)*. These are all non-combustible materials that will not pose a safety risk to your island. Further, they are hardy to the outdoor environment and able to withstand harsh weather conditions.

BEST

THE TWO BIRDS, ONE STONE APPROACH TO OUTDOOR KITCHEN FRAMES & FINISHES

As for the best frame material, no-question, it's a substrate that will not rot, rust or corrode over time and has to be virtually fireproof to be safe for the long term. The answer? It's a frameless, finished concrete panel. These are monolithic, concrete panels with the finish completely integrated into the structure. You get all the benefits and durability that comes with concrete, and no downside. Because the finish is fully integrated into the panel, there is no concern of finish delamination. Further, the concrete panels themselves are extremely durable and are more than capable of supporting the weight of countertops and appliances.

INSULATED JACKETS: ARE THEY THE ANTIDOTE FOR USING COMBUSTIBLE MATERIALS?

If you are dead-set on using combustible materials for your island, the grill manufacturer and a knowledgeable outdoor kitchen builder will require that you use insulated jackets for your gas appliances (grill, burners). These are inserts that provide a barrier between the firebox of your grill, and the interior cavity of your island. Thus, protecting the island cavity from excess heat coming off your built-in grill. Ultimately, they are intended to allow you to use combustible materials for an outdoor kitchen structure. Many grill manufacturers permit this, and even go so far as to allow grills with insulated jackets to have closer proximity to combustible surfaces. However, not all insulated jackets are insulated and designed the same way, leading to potential safety risks.

Our independent testing revealed that running a grill on high heat for up to 1 hour can transfer enough heat to begin to melt materials like HDPE, even with an insulated jacket in place. This test was completed with 2 different built-in grill brands, and 3 unique insulated jackets. The best results were with a double walled, insulated jacket that forced heat away from the island structure from below the grill. The single layer jackets with no insulation pose multiple problems and safety concerns as jackets designed for heat to sink offer little value in the way of buffering heat, and actually create the opposite effect. It was found that this design actually funneled excessive heat into the cavity of the island. Our conclusion was, vented insulated jackets also do not offer a sufficient barrier to contain a grease fire. Double wall insulation did fare better, and testing revealed that it did reduce heat transfer into the island cavity.

WHY YOUR CHOICE OF APPLIANCES MATTER

Generally speaking, outdoor grills and burners are defined as gas cooking appliances. And just as with outdoor kitchen island materials, there are standards in place for gas grill and burner safety. The American National Standards Institute *(ANSI)* sets forth standards and is considered the best resource in this area. In terms of use in an outdoor kitchen, many homeowners are unclear of the essential difference between standalone grills or built-in grills. In the interest of saving money, a fair amount of homeowners explore if they can use a standalone grill for their island. First, it's key to understand why you always want to use grills and appliances that were designed to be built in.

Everyone is familiar with standalone cart grills. They can be found at any big box, hardware or appliance store. They are freestanding grills that live on a cart, making them mobile and easy to maneuver. These are inexpensive options, often available for purchase around or under $1,000. While often tempting due to the cost savings, it is never recommended to install a standalone grill into your outdoor kitchen, as it poses a significant safety risk. For one, the cart and the grill are not designed to be separated. This will require you to modify your grill *(a risky endeavor)* and will likely void your warranty. Additionally, the vent is typically in the firebox of a standalone grill. So when it is installed into an outdoor kitchen, it is impossible for the grill to ventilate and dispel heat properly. In fact, you are forcing heat into the cavity of the island, creating an even greater fire hazard from combustion or grease.

STANDALONE

BUILT IN GRILL

So, why is a built-in grill essential? Unlike standalone grills, these appliances are designed to be installed into an island structure. Ventilation will be located in the back of the grill hood, allowing hot air to properly exhaust into the atmosphere. This also means that built-in grills will not burn out or overheat when enclosed in an island. Insulation is also superior compared to a standalone grill, adding an additional layer of protection. The cost of a built-in grill will start at around $1,500. The increased cost is due to the use of higher quality, longer lasting materials, cooking performance and additional safety standards. Look for a built-in grill that conforms with ANSI standards and is either ETL listed, or UL approved, which all indicate an acceptable safety rating.

QUICK NOTES ON PIZZA OVEN SAFETY

In addition to a built-in grill, many homeowners also opt to incorporate a pizza oven as part of their outdoor kitchen project. Therefore, there are safety considerations unique to a pizza oven that must be addressed separately. In the case of a wood-fired oven, there are safety risks associated with hot coals. When maneuvering pies in and out of the oven, it's possible that a hot coal could escape the oven and cause a burn.

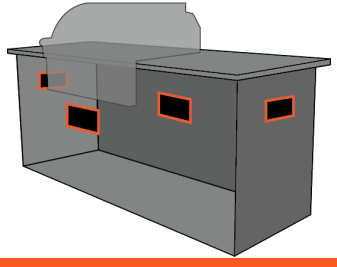
Just as with built-in grills, ventilation is important here as well. A pizza oven should have access to airflow from multiple directions, and be properly distanced from combustible materials. Further, pizza ovens can reach interior temperatures in excess of 1,000°F, which can be a serious burn risk if the oven is not properly insulated.

For countertop pizza ovens, the structure itself must be able to support the weight of your pizza oven, which can weigh in excess of 300 lbs. Also, there must be a gap between the bottom of the oven and the countertop, to ensure adequate airflow and not transfer excessive heat to the countertop.

Next, we will look at another critical component of outdoor kitchen safety that is often overlooked, poorly designed, or in some cases completely omitted. It's proper island ventilation.

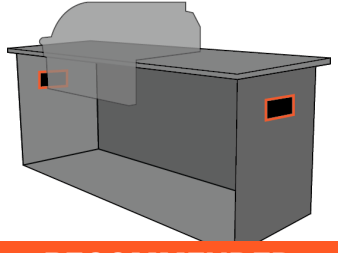
KEY CONSIDERATIONS FOR ISLAND VENTILATION

Proper ventilation is the cornerstone of safe island construction. Without it, it's impossible to use your island with a gas, charcoal or pellet grill without putting yourself and your loved ones at risk. Built-in island ventilation is an essential inclusion that a builder cannot forego. Island vents serve two critical purposes: to flush out gas if there is a leak, and eliminate heat buildup from your island. However, it isn't as simple as adding a couple vent covers to your design. In this section, we'll discuss exactly that.



BEST

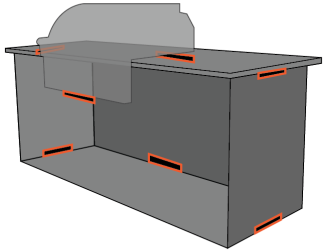
The objective of island venting is to create airflow that leads to cross ventilation. This allows air to circulate freely through your island, creating a natural cooling effect.



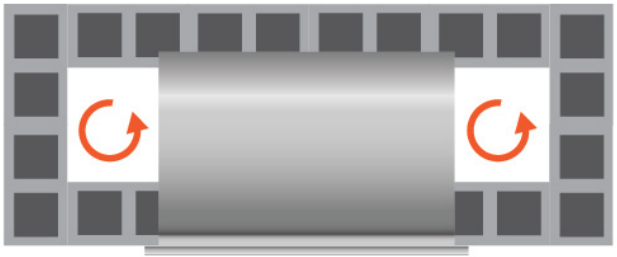
RECOMMENDED

If accounted for, most prefab island manufacturers will install vents on either side of the island, typically the left and right sides.

The best-case scenario is to generate cross ventilation from left to right, and front to back. The more airflow generated, the better your island will cool itself.



RTA VENTS

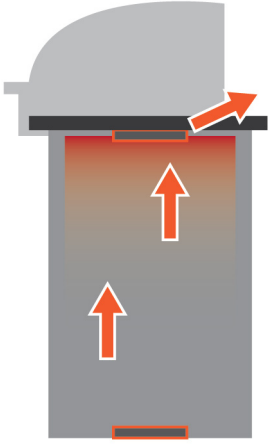


CMU BLOCK CONSTRUCTION

Even with adequate ventilation, you may not be risk-free. There are multiple ways the vents can become obstructed, leading to problems if left unaddressed. Installation of deep appliances, component cabinetry style islands, and concrete block *(CMU)* islands is of primary concern. Deep appliances refers to accessories like a refrigerator or drawers, which can obstruct airflow from the inside. The same applies to CMU construction, where much of the interior cavity space is obstructed by the blocks themselves. To avoid these issues, the safest option is to build an island with a wide-open interior, and limit or make accommodations for internal obstructions.

It's also key to consider the fuel type of your grill. Ventilation of liquid propane and natural gas have to be accounted for differently. Liquid propane is a dense gas, and will accumulate at the bottom of your island. Therefore, it's essential to have ventilation installed at the very bottom of your island. The inverse is true of natural gas. This gas is lighter and will rise to the top of the island and accumulate there. To expel the buildup, you'll have to install vents at the very top of the island. In either case, you'll want ventilation as close to the top, or as close to the bottom as possible. If you're installing ventilation 6" away from either location, that means 6" of gas will be able to accumulate in this area before any is able to be flushed out.

LIQUID PROPANE POSITIONING



NATURAL GAS POSITIONING

Regardless of the fuel type of your grill, it's always recommended to have ventilation at the top of your island. Heat buildup is also a real risk to be aware of, and will occur with pellet, charcoal, and gas grills. Significant heat buildup can cause combustion *(or melting of composite decking/HDPE/PVC)*, so you will need ventilation at the top of your island to account for this. If you will already need ventilation for natural gas, there's no need for additional vents to flush out heat buildup.

However, simply adding ventilation to the proper locations is still not enough. Most appliance manufacturers recommend 20 square inches of ventilation on either side of your island. Some grills in particular will require as much as 30 square inches on both opposite sides. If you install a 20 square inch vent cover on your island, you're most likely getting far less ventilation than you are led to believe. Most grill manufacturers' vent covers offer little space for actual airflow to occur. In many cases, a single vent will only allow for about 4 square inches of ventilation, which isn't even close to the minimum requirement. To achieve 20 square inches, you'd need a total of 5 vents on each side of your island, which is neither aesthetically pleasing nor feasible for most designs.

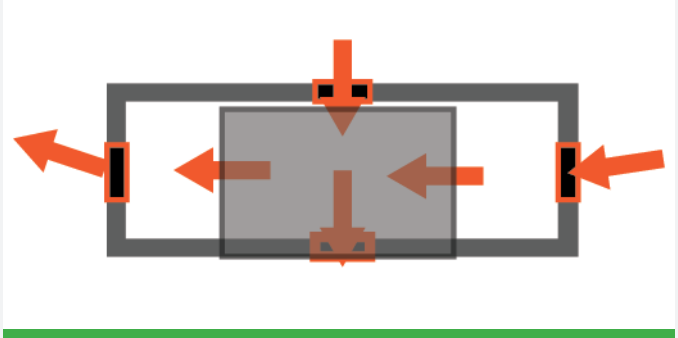
There are several solutions to work around this issue. First, avoid vent covers that offer less than required airflow. If you are working with a contractor, build into the agreement that your contractor will install ventilation to match manufacturer requirements. If you are purchasing a ready to finish island, account for frame openings to install proper ventilation. Regardless of build method, ensure that 20 square inches of ventilation is present on 3 sides (left, right, and back), on the top and bottom, and leave ¼" of an air gap underneath the grill.

Pro Tip: As an alternative, we suggest purchasing aluminum or stainless HVAC vents yourself and supplying them to your contractor. Stainless steel or aluminum is best. For example, the AG20 Series 4” x 30” solid alum fixed bar supply/return air vent grille is an excellent option to consider. *(This can be purchased online.)* These grilles provide an alternative to standard island vents, offering far more airflow and can be more sparingly used. A single vent installed on the top and bottom of the left, right, and back sides will be sufficient, compared to 5 vents on each side with a standard outdoor kitchen vent.

Also be sure to periodically maintain your ventilation, as debris and other items can clog your vents if left unchecked. It’s best to do this every couple months, particularly in the early spring and fall when leaves are on the ground in abundance.

RTA'S INDUSTRY-UNIQUE VENTILATION ADVANTAGE

To combat all of the complications that come with planning outdoor kitchen ventilation, our solution incorporates vents in 7 unique locations, and has a cavernous interior for plenty of airflow. This ensures all the bases are covered, and provides you with ample ventilation, no matter how your island is oriented. RTA's vents are small, open-air cutouts that are unobstructed by a standard vent panel. These vents are located on the very top and very bottom of the left, right, and back sides of the island. This allows heat, natural gas, and propane to efficiently be flushed out of the island without buildup. As an added bonus, there is also ¼" of ventilation coming off the bottom of the built-in grill insert. This means that a standard RTA grill island can have as much as 130.5 square inches of ventilation strategically built into the panelized structure, well exceeding manufacturer requirements. *(This calculation is based on the use of a 42" Coyote grill.)*



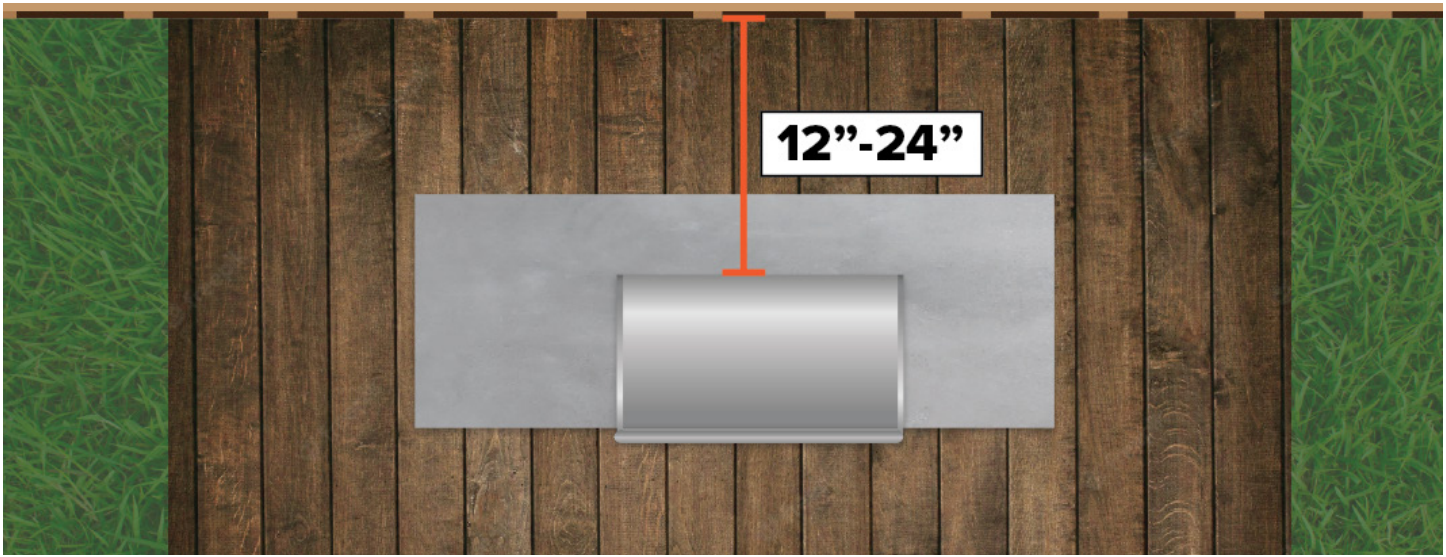
OPEN INTERIOR

HOW ISLAND LOCATION PLAYS INTO SAFETY

Even if adequate ventilation is incorporated into your island, you must also consider other structures around it to ensure optimal safety. The actual location and proximity of your island has a significant impact on the safety of your outdoor kitchen, backyard area, and home. In particular, there are three specific location/proximity considerations to discuss in regard to safety.

First is a scenario where your grill island is built directly against a home or other walled structure. The ventilation in the back of your island *(if present)* will become choked off. The more pressing concern is the amount of heat being absorbed by the adjacent wall from the grill. Depending on what this exterior wall is made from, it can be at risk of melting or combusting. This poses the greatest fire risk.

AGAINST A WALL



The solution to this is multi-fold. First, we recommend having an air gap between the island and the wall to allow hot air to escape.Your grill manufacturer will have grill setback requirements that detail exactly how far away your island should be from combustible and non-combustible surfaces. In most cases, 12” - 24” is appropriate. To be safe, it’s best to go a bit beyond what your appliance manufacturer recommends. It’s also strongly recommended to install a vent hood and a non-combustible backsplash. The exhaust hood will pull hot air and grease away, and the backsplash will prove to be far more resilient in the presence of heat. However, the backsplash still can create heat transfer if not designed properly. The wall covering should include ⅞” spacers and a gap from the wall to allow for airflow. This creates a buffer that prevents excessive heat transfer.

UNDER A STRUCTURE

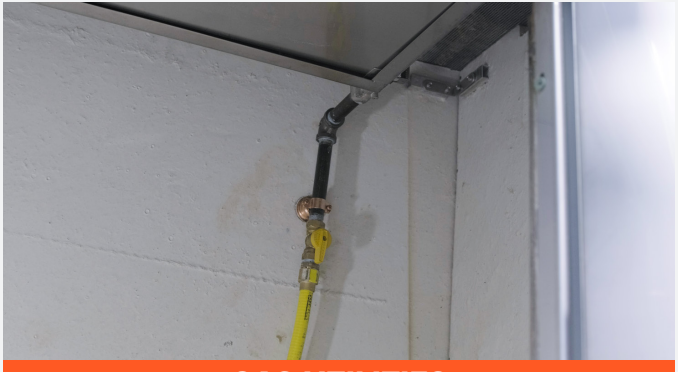
The second situation is an island under an overhead structure. Islands installed under a pergola, gazebo, lanai, or pavilion all fall into this category. The approach to this depends on the construction and materials the overhead structure is made of. If it's made from a combustible material like wood, there are some additional considerations at play. Hot air and grease coming off the grill could pose a potential problem in the future. To avoid this, install overhead ventilation to pull grease and hot air away from the island and roof. However, you might have a non-combustible structure or one that offers more airflow *(like a pergola)*. In this scenario, ventilation is not always required.

Finally, there's the little things. What if your island is near other features, like a deck railing, planting, or serving table? You'll want to follow the same grill setback guidelines to keep adequate distance from combustibles. And if you have planters or other small features right next to your island, be sure that they do not block the island ventilation itself.

NEAR A COMBUSTIBLE

UTILITY CONSIDERATIONS FOR ISLAND SAFETY

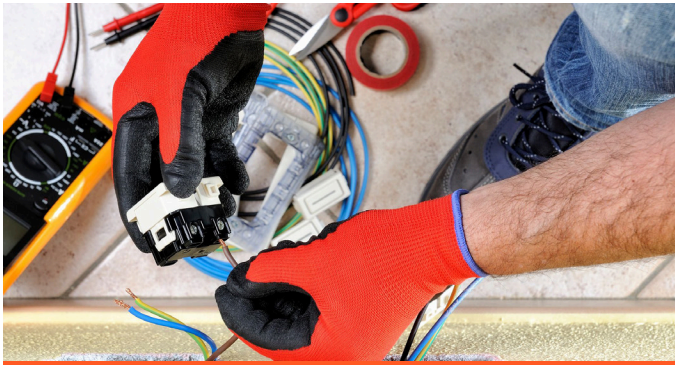
Utilities may appear to be an area of little concern. However, there are some safety guidelines to be aware of, particularly with natural gas, propane, and electricity. As long as your natural gas lines are installed by a licensed gas fitter, you should not have anything to be worried about. At the same time, it's important to be proactive. Ensure that the manufacturer's guidelines for gas line sizes are followed, as this will make certain they will run with the correct amount of pressure. It's also recommended to pressure test all gas lines before use. Further, keep gas lines away from hot surfaces. If you shut down your island in the winter, conduct a soap test in the spring. This involves putting soapy water on gas line connection points to determine if there is a leak. If the water bubbles, there's a leak in that spot.



GAS UTILITIES

PROPANE

Propane tanks have a unique set of safety requirements as well. The reusable nature of a propane tank can lead to safety risks over time. Therefore, it's key to follow manufacturer guidelines for small propane tank use. It's always recommended to inspect each tank before connecting it to your grill. For added protection, we suggest using an automatic 100% shut off device from GasStop® as well. As with natural gas lines, be sure to periodically check connections and pressure test.



ELECTRICAL UTILITIES

If you install appliances that require electricity *(such as a refrigerator or warming drawer)* there are a few more things you'll have to keep in mind. Just as with plumbing, be sure to hire a professional electrician to install the lines for you. Make sure they are using outdoor rated GFCI outlets to prevent shock or risk of a fire. It's also essential to properly design outlets into your island. You want to allow for plenty of distance from heat sources and running water, again, to prevent shock or risk of a fire.

Now, let's briefly discuss how your outdoor kitchen design factors into safety.

WHY ISLAND DESIGN IS A KEY COMPONENT OF SAFETY

Simply put, the majority of outdoor kitchen safety comes down to proper design. Properly designed ventilation, outlet locations, etc. However, there are other, seemingly obvious aspects of design that also play into the safety equation. If you aren't experienced with outdoor kitchen construction, we highly recommend consulting an experienced outdoor kitchen professional for guidance. Regardless, there are a few points for your consideration.

While often overlooked, it's smart to consider the prevailing winds in your area. For optimal grill function, fresh air should be pulled from the front of the grill, through to the back. This allows air to be expelled through the rear vents, creating a consistent source of airflow to vent off heat. Therefore, you want the grill to face the prevailing winds in your backyard. And for user comfort, it also serves the purpose of preventing hot air and smoke from being consistently blown into your face.

As discussed previously, account for grill setbacks and clearances in your design. This will ensure there is adequate airflow for your cooking appliances, and that they aren't too close to flammable materials. Additionally, the design best practice is to plan for different "zones" of your outdoor kitchen. For example, all cooking appliances should be clumped close together to create a "hot zone". Your family and guests will know that everything in that area is "hot", and therefore, reduce the risk of accidental burns.

Further, you'll need to incorporate foot traffic into the broader layout. Do guests have plenty of room to walk around your island? Are there tripping hazards or obstacles? These will have to be removed for optimal safety. It's essential that movement around your outdoor kitchen remains uninhibited.

Bearing all of this information in mind, how should you proceed?

THE NEED FOR AN EXPERIENCED OUTDOOR KITCHEN PROFESSIONAL IS INESCAPABLE

There's an inherent challenge in the outdoor kitchen industry. Demand is higher than ever, yet, there are exceedingly few experts that have an in-depth understanding of safe construction practices. The reason for this? The outdoor kitchen industry is young, and still in the early stages of development. Hence, why we stress the importance of working with the right people. We seek to set the standard in this area.

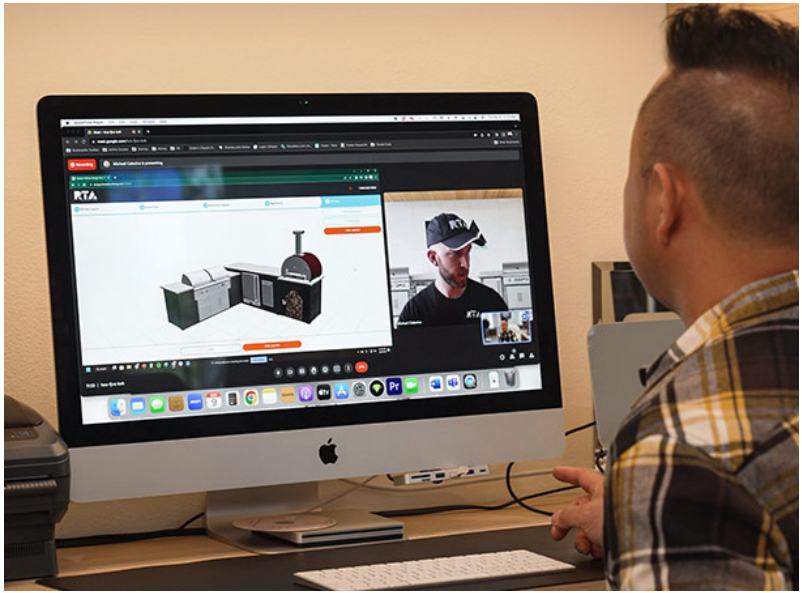
In fact, RTA was founded on the idea of making an outdoor kitchen accessible to all US homeowners. Our aim is to reduce barriers to outdoor kitchen ownership. One of the primary ways this has been achieved is through the creation of our free online 3D design and visualization tool. In the past, it would take days or even weeks to draft up an outdoor kitchen design. With this tool, you can accomplish an even better result in mere minutes. The RTA design tool allows you to strategically locate appliances, accessories, choose your finish option, and have the final result displayed to you as a 3D model.

To take it a step further, we don't end the process at the design tool stage. This initial design you created will be carried through multiple stages, all with the assistance of an outdoor kitchen Design Expert. You will be assigned an expert designer, who will work 1-on-1 with you. You'll be educated on a checklist of best practice considerations, to ensure that no stone is left unturned when creating your ideal layout.

Once you approve your design, a blueprint will be created for you. This is where utility locations and outlet locations are finalized. You'll also have access to precise measurements, allowing you to double-check the island will fit in your space as anticipated. Once approved, your completed design will move to production.

At this stage, you will be assigned a Project Experience Manager. They will work personally with you to iron out all the details for delivery and to create an installation plan. This is all done prior to your island being delivered, serving as an in-depth preparation guide. Once your island is delivered, your Project Experience Manager will be available for support the day of installation. This will ensure that the process is smooth, enjoyable, and you're using your outdoor kitchen as soon as possible.

Now, how does RTA stack up in relation to safety? There are several factors that contribute to RTA's ability to set the standard in outdoor kitchen safety. The core of this stems from our monolithic panel construction. By monolithic panels, we mean a single, solid layer. Most islands are built with multiple layers of material, which may be flammable or not structurally sound over time. We completely circumvent this issue. To top it off, our panels are made from non-combustible high performance concrete rated for 100 years. Once again, combustibility is a complete non-issue. This built-in durability allows us to provide every RTA customer with a lifetime structural guarantee.



Further, we work with Coyote Outdoor Living as our single source for premium outdoor kitchen appliances. Their entire appliance line either meets or exceeds ANSI and CSA standards. And because we work with Coyote specifically, our islands are designed to enhance the safety certifications already in place.

This concept is evidenced through our island ventilation system. This is considered the Gold Standard in outdoor kitchen venting. Rather than having two vents on either the left or right side of the island, RTA islands are built with ventilation in at least 7 unique locations. It's on the top and bottom of the left, right and back sides. There's ¼" of ventilation underneath the front of the built-in grill as well. And since our islands are not mortared together, there is even more airflow coming through the imperceptible cracks where the panels meet. Ultimately, this ends up giving you at least 42 square inches of ventilation

across the very top, and the very bottom of the island. So whether you use natural gas or propane, you are more than covered in the way of ventilation. *(Plus, heat will always be able to be flushed out.)*

The combination of these three features results in an outdoor kitchen that transcends the safety risks that plague most islands. Which leads us to our safety guarantee: RTA Outdoor Living guarantees that every island is manufactured with your safety in mind. All islands will be constructed to adhere to the strictest safety standards. It's comforting to know that your investment will be protected, and safe!

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