

1. Description:

Stone slab handling occurs in virtually any stone shop, warehouse, stone storage yard and quarry. Stone slabs are very large, very heavy and can be unwieldy and extremely dangerous if not handled properly.

2. Description of Properties:

- **Size:** Natural stone is quarried in blocks that are trucked to a facility to be slabbed, or cut into slices that are typically 5' x 10' x 1-3/16" thick. Their oblong dimensions and large surface area make them difficult to control while moving especially in windy conditions.
- **Weight:** Slabs are quite thin compared to their height and width. They look deceptively light. However, a typical slab will weigh somewhere between 800 and 900 pounds, and often exceed 1,000 pounds. When grouped together in a bundle of five or six slabs, the weight goes up to 5,000 pounds or more. A stone slab that is not handled properly has the potential to create a life-threatening crushing injury.
 - Always ensure the forklift or crane is properly rated to lift the load. This means the rated lifting capacity of the forklift or crane exceeds the weight of the load to be lifted. The lifting capacity for forklifts and cranes can be found on the nameplate and crane bridge respectively.
 - You must receive forklift and/or crane training and be approved by your employer prior to operating a crane or forklift.
 - Cranes and forklifts must be properly maintained and inspected in accordance with your employer's crane and forklift programs.
 - Inspect lifting devices such as fabric slings and slab clamps prior to each use to ensure they are properly rated to lift the weight of the load and are in good condition.
 - Forklifts, cranes and lifting devices that do not pass inspection must **NEVER** be used until repaired and/or replaced as applicable.
 - A load must be moved as close as possible to the floor/ground and **NEVER** be moved over the top of people.
- **Balance:** One of the keys to preventing an incident while moving a slab is to ensure the lifting device such as a slab clamp or sling is attached to the center of the slab before moving it with a forklift or crane. Moving an unbalanced slab greatly increases the possibility of it tipping or breaking.

The Fall Shadow:

- The number one cause of accident and death in the stone industry is the result of stone falling on an individual.
- The definition of the fall shadow is the area around the stone orbits where debris could land.
- The key to moving stone is to always keep your employees at the edge of the stone. The spotter should always maintain a full arm's length distance from the slab when possible.
- Before moving a slab, always consider the path a stone must travel.
- Employees and customers should always have a "getaway plan" in the event that a slab does fall.
- Straps, clamps, bracing and other physical restraint systems should always be used to prevent slabs from accidentally falling.
- Never try to move a slab while standing in front of the slab.
- A wedge or pry-bar should be used to separate slabs from the side allowing placement of a lifting clamp.
- When on a job site, the area under the slab and around the lifting equipment should be clear of all personnel not assisting with the lift.
- Employees should always recognize the fall shadow when working with "pole racks". Employees should never position themselves between the slabs stored in pole racks.
- Remnants, like full slabs, should only be stored on properly rated racks or frames.

Never leave customers alone with stone slabs and exercise great caution when customers are present during slab movement.

The temptation to stand in front of or behind the slabs (within the “fall shadow”) presents itself frequently. Be mindful of body placement in these everyday work situations: unloading, unbundling, storing, handling, moving, and loading stone slabs. To minimize the potential hazards associated with handling and transporting stone slabs:

1. Avoid manually lifting stone slabs where possible.
2. Use mechanical aids (slab dollies, suction cups, vacuum lifts, scissor clamps, etc.). Lift only loads that can be safely handled.
3. Use the proper material handling equipment (e.g., an overhead crane with appropriate approved attachments, a forklift truck equipped with appropriate and approved boom attachments and lifting devices, or other equipment designed to assist slab handling).
4. Place the clamp on the secure area of the stone when moving and/or lifting a slab. Placing the clamp over a weak vein can cause the stone to break and fall. Clamps should be used only on solid stones without flaws, open seams, or cracks.
5. Only use suction cups and vacuum lifts on smooth stone (unless rated to lift another type of finish by the manufacturer).
6. Do not use scissor clamps on equipment operating on uneven surfaces.
7. Assure that dollies used to move stone slabs are designed to support the weight of the slab.
8. Walk on either end of the dolly to support the slab.
9. Raise the load only as far as necessary to clear the road surface or obstacles when using powered industrial trucks.
10. Only handle loads within the rated capacity of the truck when using powered industrial trucks.
11. Remove the supports and bracing from the stone slab bundles inside ship-ping/storage containers using a sequence that does not allow for the other slabs to shift or collapse.
12. NEVER lean or tip a slab toward yourself or anyone else when the slab is tall enough that it could hit you or another person should the rigging give way. Keep away by two times the vertical height. Use tag lines, when possible, to guide slabs during hoisting
13. NEVER stand under, near, or in the fall shadow of a slab when moving it.
14. NEVER walk in the fall shadow of a slab. Always walk at the end of the slab.

Physical Properties of Slabs:

- Stones such as marble, granite, limestone, travertine and others come out of the ground in blocks and then are trucked to facilities to be slabbled or cut into slices that are usually 5' x 10' and 1-3 /16th thick.
- A typical slab will weigh somewhere between 800 and 900 pounds and they can often exceed 1,000 pounds.
- Because slabs are big, flat and relatively thin, they look deceptively light.
- One key to avoiding an accident is to be extremely careful in selecting the center of gravity on a slab when attaching a clamp and moving it with a forklift or crane.

Safety Precautions When Moving Slabs:

Moving Slabs need to be a coordinated team of individuals with at least one equipment operator and one spotter.

- When moving individual slabs, always follow the specific equipment manufacturers' guidelines.
- "The slab shadow" or "Fall zone" is the theoretical cone which radiates from the slab being moved.
- Whenever possible, a slab should be lifted no more than eight to 10 inches off the ground during transport.

Potential Hazards during Transport:

- When a stone slab starts to slip or fall, do not try to stop it. Get out of the way as fast as you can.
- Getting hit by splintered pieces of a shattered slab or slabs can cause severe or fatal injuries.
- Almost a quarter of stone handling fatalities occur in outdoor storage yards.

Protective Clothing, Handling Equipment, and Inspections:

- Proper gloves, hard-toed shoes and safety glasses must be worn at all times when moving slabs.
- If your companies utilizes overhead cranes, hardhats must be a requirement.
- Without proper maintenance, the effectiveness of Personal Protective Equipment (PPE) cannot be assured.

Conclusion:

Leave complacency at the doorstep when you come to work, regardless of how many years you have been in the business. Virtually every slab handling accident victim had a significant amount of experience in moving slabs. But it took only one misstep for an accident to occur.