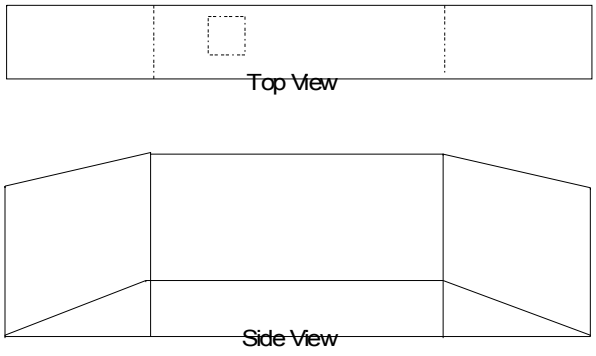
Bridges, Pits and Cracks in the Floor

Book one includes the Lava floor with a large clear Plexi glass opening for people to walk over. It contained a partial body captured in the lava and was illuminated from the edges. Over the years in my haunt I have noticed how customers react to this. Some step right in the middle of the Plexi glass display, others hop over and still others creep around the sides. Bridges, pits and things add depth to a haunt, give another direction for customers to look and worry about.

Trap Door

This was my first bridge type (Diagram left) The effect. trap door bridge was 16' long and 4' wide. Its ascent and descent ramps were 8' long. The bridge was 3' off the ground with a trap door in front of the descent ramp. The door was hinged, had a creature attached to its underneath and was chained to keep it from flopping open while being operated.



The bridge was covered in fire proof plastic and had a protected entrance and exit. Fog filled the enclosure. The creature had Red LEDs for eyes. As the customer approached the trap door it would pop up and they could see the creatures eyes.

This was my first and last trap door. It failed. I had a 12-year-old girl and her friend operating the effect. I had no idea how strong two little girls could be. One night the chain came loose, the trap door flopped up and over and became a hole in the floor. The girls did not know what to do, they could not pull the door back over from below, so they decided to wait for the customer to pass by. The customer fell through the hole, hurt her leg and I had $145 bill to pay for emergency room x-rays.

I have seen trap doors in other haunts and they solved the problem by placing several very large chains over the trap door(s) as well as a path that did not require the customers to walk over it. We repaired the effect and it did not fail again. Because I was using children someone got hurt. They were not mature enough to do there job correctly. And yes they were told not to let anyone cross over the bridge if the door did not close properly. This was in reference to the creature's limbs getting caught in the door as it closed and was the reason for two people. One to fix the door while the other stopped the customers till it could be fixed.

SWAMP CREATURE

The bridge is raised two feet over a swamp. The effect uses three hall widths (diagram left), ramp up, bridge and ramp down. The bridge is 2'x6'9". The ascent, descent ramps and platforms are customized and cannot be used in any other configuration.

The scene has 2' high Plexi mirrors attached to the walls and platform bases, a red revolving emergency light attached to the under side of the bridge and low level fog covering the floor of the bridge by several inches. The walls were black and the red light reflected in the mirrors made the room seem larger than it was.

The revolving light was the distraction and the creature under the bridge the scare. The swamp creature would suddenly rise up on one side or the other of the bridge and slam a large board against the walls or bridge railing. It is an example of maximum use of space as the entrance to the effect and exit are side by side.

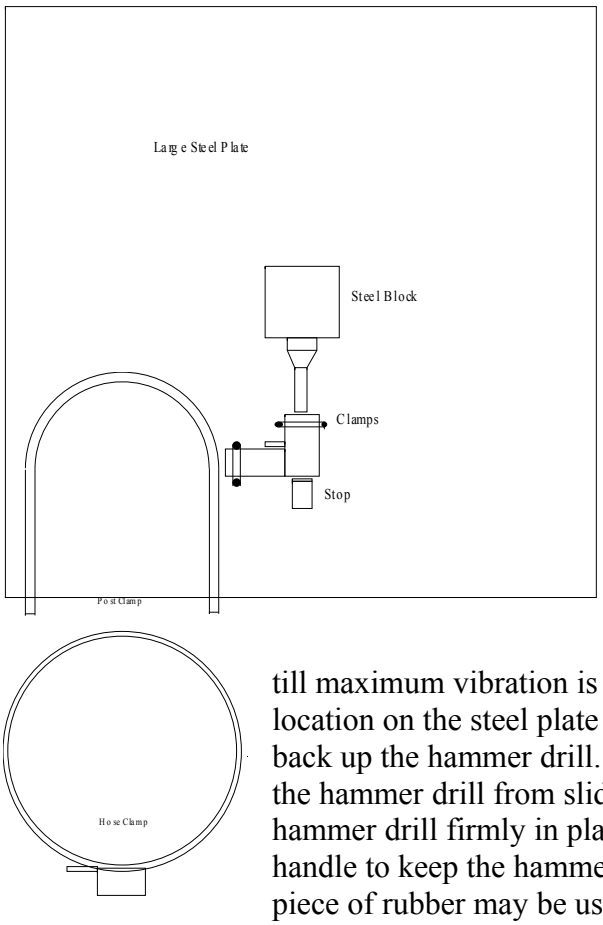
SHOCKING DEVELOPMENT

Sparks of electricity leap from a shaft or steel sword as the creature rakes it across a wire mesh. This effect is dangerous for the actor. The battery charger must have a good earth ground; it must be raised from the floor; it must not get wet; it must have excellent air flow, it must have its own dedicated 20 amp breaker and it must be properly maintained. The size of the sparks is directly related to the Amp rating of the charger.

This is a central corridor type effect. One of the many lost triangles created by the 60-degree method (Book One) is ideal for the spark effect. Build a 4x8 panel with a small window opening (2x2'). Make it irregular in shape, missing bricks/stones, broken slats or busted plaster. Fit a heavy gauge steel mesh into the frame and secure it. Weld to this mesh a 12" long number 10 wire electrical lead with a stage plug at the top. The back of the panel will have a fold down shelf over the top of the opening for the battery charger, which will be secured with bungee straps. Remove the clamps from the charger, shorten the leads and add stage plugs to their ends. Plug the electrical lead into one of the charging cable plugs and the sparking instrument into the other. The lead on the sparking instrument (#10 wire) will not be long enough to allow the sparking instrument to touch the ground should it be dropped. The actor and customers will be on a thick rubber mat. The actor will wear thick rubber gloves on both hands. Inspect sparking instrument lead wire for exposed wire and repair/replace as needed.

This is the distraction. The customer sees the effect in action. This will keep the customer a safe distance from the mesh. The customer will stay close to the opposite wall with the scare coming from there or above. The actor working the sparking effect will stop the sparks at the same time he triggers the scare.

Vibrating Bridge, floor or wall



Air hammers (as well as other air powered tools) are great for vibrating. Weld a ½" to 1" thick steel block to the center of a large ¼" steel plate (Diagram, left). Drill ¼" holes around the perimeter 3" OC (On Center). Use these to firmly attach the plate to the item to be vibrated.

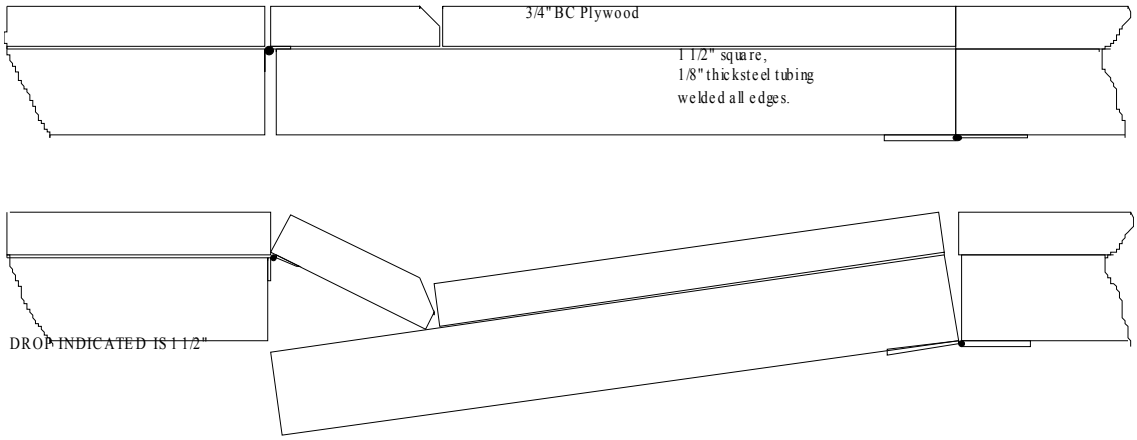
Lay the hammer drill with chisel bit touching the steel block. Mark the steel plate for pipe clamps to secure the hammer drill barrel and handle. Drill two holes through the plate for the each of the pipe clamps that will capture the hammer drill being used. Adjust the relationship between the the steel bar and Hammer drill till maximum vibration is obtained. Mark the hammer drills location on the steel plate and weld a second piece of steel to back up the hammer drill. This second piece of steel will keep the hammer drill from sliding and the pipe clamp will hold the hammer drill firmly in place. Use a hose clamp around the handle to keep the hammer drill trigger depressed. A piece of rubber may be used between the hammer drill body and the pipe clamps to reduce vibration to the securing aircraft nuts. These nuts will protrude into the object being vibrated. Countersink four holes in the object to allow the vibrating metal plate to be flush with the object.

Install an in line oiler between the air hammer and the electronic valve controlling the airflow to lubricate the hammer drill. Place it in an easy to inspect location and check oil levels frequently until you determine the oil use level. Once the oil use level has been determined you can add this unit to your opening checklist and inspect as needed.

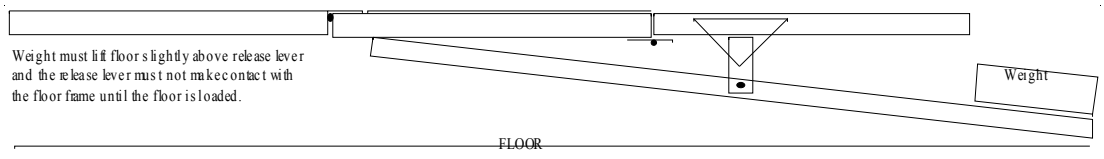
Air tools may be attached to a variety of objects. A favorite is a steel pipe above the customer path. Enclose the impact area with a fine screen to catch any metal filings that may be chiseled off. The air tool may be placed on a pipe in a long hallway. Different sound effects are obtained with placement on the ends or middle of the pipe. Pipe diameter is important. 2" ID is a minimum pipe size. Pipes may be used to create walls, or parts of walls and multiple air tools may vibrate an entire pathway, surrounding the customer. The floor, ceiling and walls come alive with vibrations and sound. Very effective should a customer be touching a wall pipe when it begins to vibrate. Smaller pipes may be vibrated inside of larger ones.

Bridge Collapse

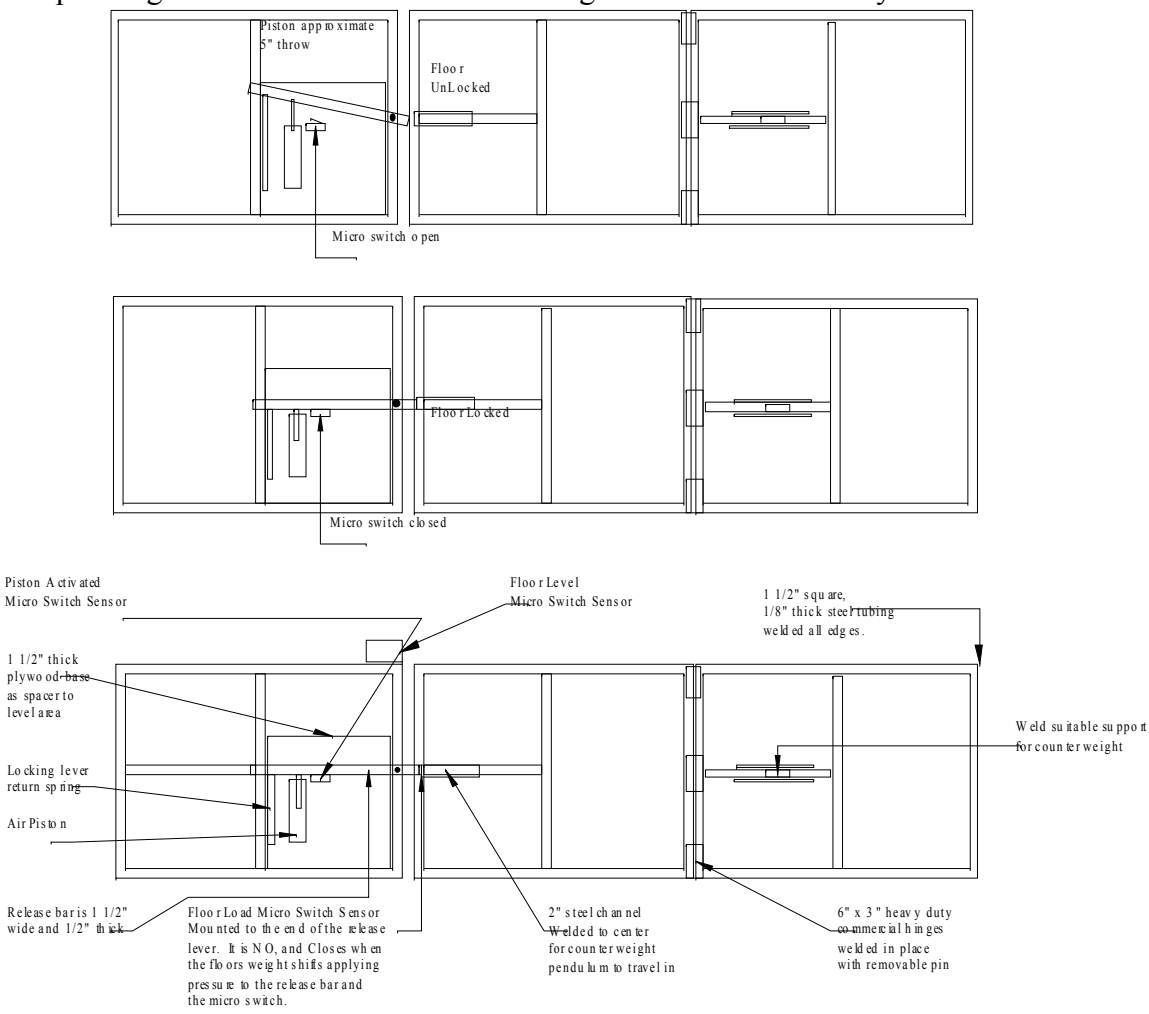
The sudden drop of the floor upon which you are standing can be frightening. The idea is to do it safely and have it automatically reset. The figure below is a side view of the floor. The floor sections on the left and right are rigid. The center section pivots (is hinged) at its very end and counter balanced from below. The counter balance will bring the floor back slightly above flush.



The customer moves on to the pivoting floor creating a load. The weight shifts the floor to load the release lever and depresses the 'Floor Load Micro Switch.' An indicator light next to the momentary contact switch notifies the operator that the customer is in position. The operator depresses the momentary contact button, this releases the floor and it drops a predetermined distance. The customer will be startled, hold onto the walls or handrails and stop for a moment. Note that part of the center floor section is attached with hinges to the stationary floor. This replaces the trip hazard with a ramp up and off of the dropped floor section. Once the floor drops the piston stays energized because the floor has not returned to level. As the customer moves forward off the portion of floor that has dropped the counter weight brings the floor up. Once the floor is level the 'Floor Level Micro Switch Sensor' removes power from the pistons air valve and it retracts, allowing the release lever to once again lock the floor in the level position.



NOTE: The pivoting section of the floor could be longer and balance itself by pivoting in the middle. The draw back to this is Murphy. An error by the operator or more than one person on the bridge at a time could create a disaster. Therefore: I recommend pivoting at the very end of the section that is to drop. This will keep differences in elevation to one section only and a gradual decline at the pivot point.

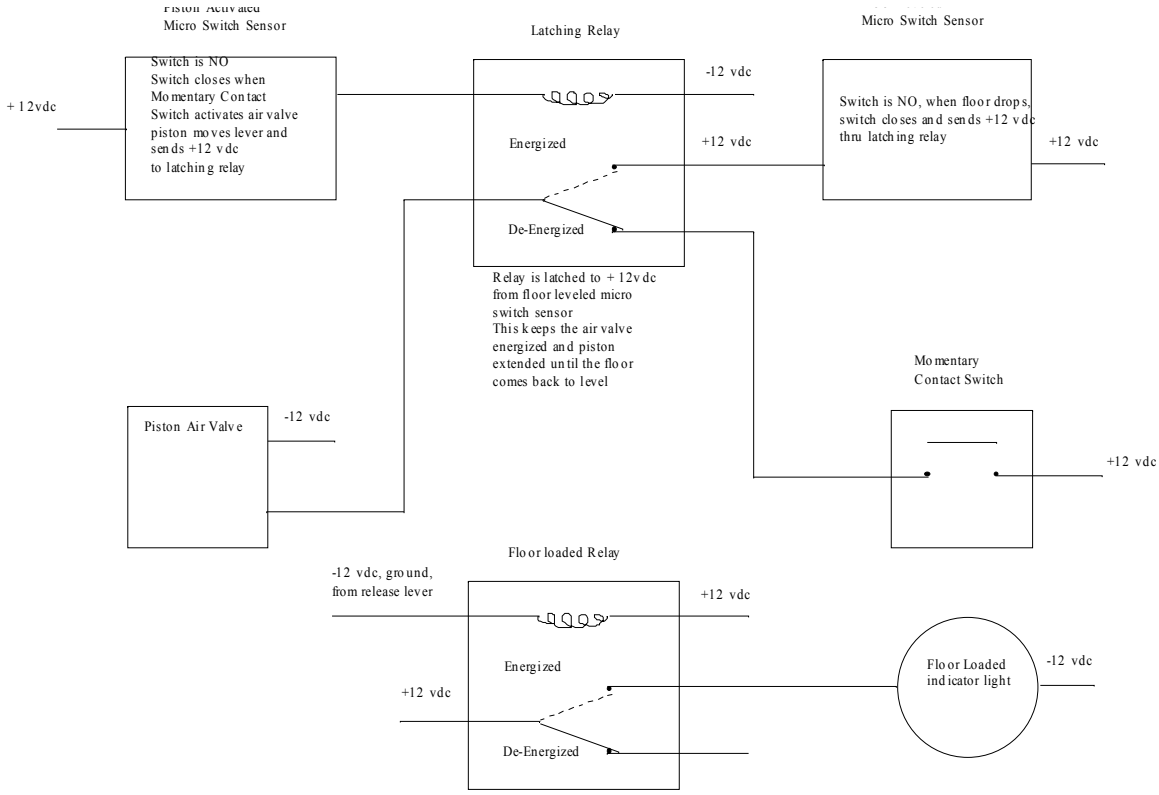


All views are from under the bridge. Top view, lever is released for floor to drop; middle view, lever in locked position and bottom view complete with labels. The gap between the fixed unit and the pivoting unit is for drawing simplification, the two units should be as close as construction materials will allow.

Three identical 1 ½" square tubing frames are welded. Two sections are welded together with heavy-duty hinges. The hinges may be installed in the traditional door manor, on the inside. This creates a gap of at least ½" between the two sections. Overlapping it with the plywood floor from the stationary section covers this gap. The center section has a 12" long channel welded as indicated for the counterweight of the pendulum to slide back and forth. The fixed hinged section has the counterweight support welded and braced. Attach ¾" BC plywood to top of frame for floor. This may be done with 1/8" bolts countersunk through the floor and steel tube. Use two 2x2' ¾" pieces of BC plywood to create the air piston platform under the floor.

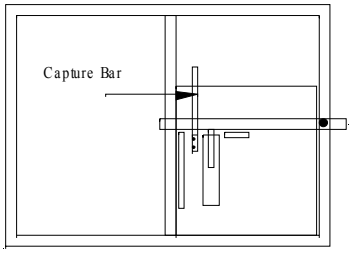
The air piston, as placed, needs about a 5" throw. Move it closer to the release lever pivot point and less throw is required. But, more energy will be needed to release the floor. Move the piston further from the release lever pivot point and less energy will be required to release the floor. But, the piston throw distance will increase.

Electrical schematic for Bridge Collapse



Depending on completed construction, the 'ground' for the Floor Load indicator lamp could come direct from the release lever making contact with the pivoting floor section. In order for this to work, all sections of the bridge must be isolated from electrical ground. The pivoting section is then grounded to a 12vdc power source and a wire is attached to the end of the release lever. When contact is made the light illuminates.

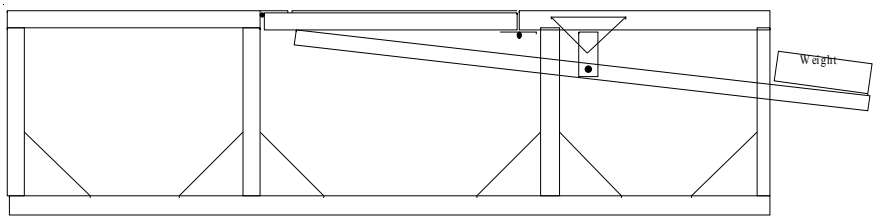
The Floor Level sensor must be adjusted for the floor to rise a little above flush. This will allow the release lever to easily slide back into position. The counter weight will weigh slightly more than the pivoting bridge section. Too much weight will cause the section to slam up and could cause an injury. The stop for the floor drop section is a strong wooden frame attached to the floor. It is tempting to weld a catch to the floor section with the piston or to allow the counterweight to act as the stop, DO NOT use either of these methods. This design will work for a 300lb load. 450lb load will require 2" square tubing and four hinges.



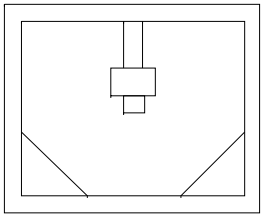
The release lever is ½" thick steel 1 ½" wide and approximately 28" long. The pivot bolt is ½" x 3". The plywood flooring is counter sunk for the bolt head. Double nut the end of the bolt. The release lever must move easily. A capture bar placed between the return spring and air piston will keep the release lever from sagging and will hold it against the bottom of the center steel tube support. The closer the release lever is held to the bottom of the frame the less it will move when the floor is loaded. Another design modification

may be that two release levers are needed. The two may be linked together and one piston drives them both.

The air piston may be firmly attached to the frame with no connection to the release lever. It will push it and the spring will return it. The air piston may pivot at the back end and be attached to the release lever, which will support the front end. I prefer method one, one less part to move. Use an air piston capable of at least 100psi and a three-way air valve with the exhaust vented through a muffler. An alternative use of the exhaust air is to run a ¼" hose to a location that will be close to a customer or have it power a pinwheel as a distraction.



SIDE VIEW


END VIEW

The frame supporting the bridge is welded steel. The base holds the two fixed portions of the bridge and keeps them from sliding away from or towards each other. The frame must be anchored/secured in place, it cannot move in relationship to any of the other components. The constant banging of the drop section will move an unsecured frame. Add ramps and handrails and place in a scene that requires the customer to walk slowly. Many non-threatening visuals, low light, strobe or objects hanging from above. Create some event (many hanging things near the end of the drop section) to slow the customer down and something for the customer to look at as he approaches the drop section.

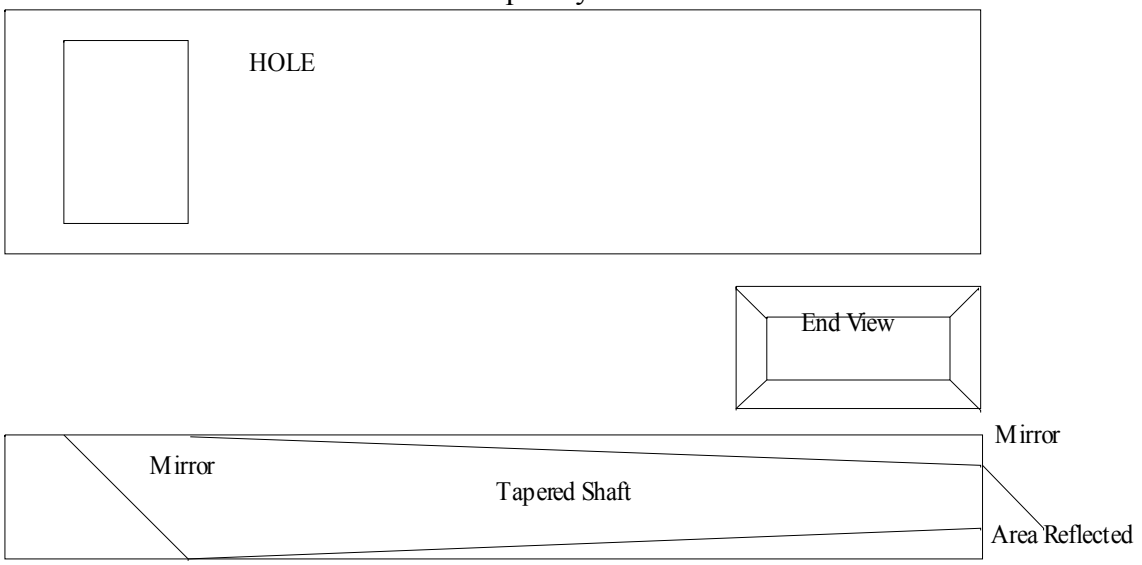
The effect can be done with hydraulics. The direct attach method of a hydraulic cylinder or a smaller one attached as the air piston. The direct method is the simplest, as it needs no counterweight, and the most expensive.

This is a dangerous effect. It is designed to be controlled by a reliable operator, who has a complete view of the effect at all times. No more than two people on the effect at a time. To increase traffic build two bridges parallel to one another. Increasing material size will increase load limit, but then you will have to increase the size of the area of the bridge that drops to handle more people at the same time. You will have to use a larger air ram to release the bridge. This effect should be managed the same as an amusement ride. I recommend padding the handrails. Paint the plywood floor with non-slip paint. Install an emergency effect cut off switch that automatically turns on emergency lighting for the area.

The entire bridge floor could also be covered with carpet. This would mask and protect edges. It does present other problems. Carpet installation makes for a cleaner install, but it increases maintenance and presents unique problems. Like, how to keep from tripping over the carpet edge that moves, or can you glue the carpet to the floor and hope that it stretches in the right places? And if it does what to do with the gathered fabric that shows up when the bridge is in the up and locked position?

Bridge Over Bottomless Pit

OK, almost bottomless. What fun is a bottomless pit if you cannot see the bottom? One could dig a very deep hole, but what do you do when you change the design and move the pit to another location? The answer is mirrors.



Top View, End View and Side View

A section of raised floor or bridge with an irregular large hole in one end. The hole is covered with thick Plexi Glass (1 ½" to 2") and that is flush with the ¾" flooring. Cover the Plexi Glass floor section with 1/8" plywood. Cut the irregular hole in this plywood to match the location of the Plexi Glass. Inserted into this space is an 1/8" piece of Plexi Glass that has been painted to appear to be broken into several pieces. It is cheaper to replace when it wears out. Save the irregular piece of plywood from cut as a pattern for cutting the 1/8" irregular Plexi protection piece and future replacements. Place the 1/8" Plexi and seal it into place with black silicone.

Below the hole is the first mirror, set at 45 degrees, reflecting the bottom (the bottom is created by the panel at the end) and sides of the tapered shaft. The optional second mirror is set at 45 degrees to reflect whatever is placed in the area to be reflected. A pan of water or an actor's head. The bottom could be replaced with translucent Plexi Glass, painted and backlighted. Or a rear view projection screen for a moving image projection. There needs to be enough internal illumination of the sides and bottom for the customers to appreciate the effect.

The hole can be larger, but then you will have to raise the floor to accommodate the larger mirror. The tapered light tight shaft may extend under the ramp, do a ninety degree turn with a mirror and be made longer. The broken Plexi Glass acts as protection for the main piece and as a distraction for the customer. Is the floor broken? What will happen if I step on it?

Paint the shaft with lighter colors near top too darker colors near bottom. Concrete is the simplest, wooden planks with bracing, bedrock, or a shaft into the brain of a creature or into the depths of hell itself.