# A TOOLKIT FOR VACANT DANCE HALLS:

## Keeping a dance hall in good condition when it is rarely used

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# A TOOLKIT FOR VACANT DANCE HALLS:

## KEEPING A DANCE HALL IN GOOD CONDITION WHEN IT IS RARELY USED

VERSION #2

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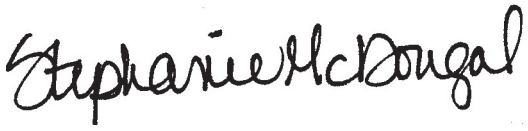
Welcome to the Texas Dance Hall Preservation Toolkit for "mothballing" dance halls. Historic dance halls are an important part of our Texas heritage, and we salute the hard work of the dedicated people who care for them.

Since Texas was founded, an estimated 1,000 dance halls were built in the Lone Star State, but today, only around 400 survive. They were built by social and service clubs, fraternal organizations, agricultural societies, and churches, as well as by individual Texans who made a business of presenting live music and dancing. No matter what their condition is today or how they are or are not being used, our state's dance halls are an irreplaceable treasure and can still be the cornerstone of a community.

Over the years, we have witnessed the heartbreaking loss of several Texas dance halls that could have been saved and put back into productive use. When halls are not used very often, small problems can quickly become major issues. This document was created to help owners and other stewards protect historic Texas dance halls that are vacant or infrequently used.

The term *mothballing* means to protect from damage, just as people used to place mothballs in a dresser or closet to keep moths from eating their woolen clothing. When applied to buildings, *mothballing* refers to activities that secure (prevent vandalism and unauthorized access), weatherize (keep wind and water from damaging the building), and stabilize (prevent structural problems that might cause walls to lean or a roof to collapse). Regular inspections can identify problems when they are still easy — and inexpensive — to fix. Texas Dance Hall Preservation has prepared this toolkit to help you do just that.

We want to thank all of the dance hall owners, members, and volunteers for everything that you do to care for and maintain these halls for future generations. We hope that this toolkit can be a valuable resource for you.



Steph McDougal

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FREYBURG HALL
EST. 1912

# 1. INTRODUCTION

Dance halls are unique icons of music, dancing, fellowship, family, and history throughout the state of Texas. All halls hold a special place in the heart of their local community but owning and operating a dance hall can be tough. Keeping a vacant or infrequently used dance hall in good condition can be even tougher. Halls that go unused for extended periods of time are in danger of vandalism, deterioration, and potentially total loss of the building. This Toolkit aims to prevent that by providing clear steps that can be taken to mothball the building and protect your dance hall.

## WHAT IS MOTHBALLING?

The term mothballing means to protect from damage, just as people used to place mothballs in a dresser or closet to keep moths from eating their woolen clothing. When applied to buildings, mothballing refers to activities that:

- stabilize - prevent structural problems that might cause walls to lean or a roof to collapse
- weatherize - keep wind and water from damaging the building, and
- secure - prevent vandalism and unauthorized access

These activities are undertaken to protect a building when it is not being used on a regular basis.

## WHY MOTHBALL?

When dance halls are vacant or infrequently used, small problems can go unnoticed. For instance, a small leak may drip for a few weeks or months in a dance hall left alone. By the time the leak is found, the wooden dance floor could weaken and rot from prolonged exposure to moisture. If small issues go unchecked, they can turn into big problems costing you a lot of time and money in repairs. In some extreme cases, dance halls can be lost if left alone for too long. Proper protection and regular inspection can identify problems when they are still easy — and inexpensive — to fix. Texas Dance Hall Preservation has prepared this toolkit to help you do just that.

## IS MOTHBALLING AN APPROPRIATE COURSE OF ACTION FOR MY DANCE HALL?

To determine if mothballing is right for your dance hall, consider how often you use it:

### Open Regularly

If activities are held in the building on a weekly or monthly basis, there is no need for you to mothball your hall. However, the information in this document can still help you find and address building problems at an early stage. Review the “Common Problems and Treatments” section of the Toolkit, which outlines issues that can happen in any dance hall or building. Then take a walk around the exterior and interior of your hall to inspect the building. Make sure you check all the little nooks and crannies that you do not see on a regular basis. This will help you ensure that your building is in good shape.

### Open a Few Times a Year

If you use the dance hall twice a year or every few months, we encourage you to keep reading and consider the Mothballing Steps outlined in Section #2. You may not need to complete each mothballing task such as covering windows or turning of the electricity, but some of the other tasks may help you keep your hall safe while you are not around to keep an eye on things.

### Temporarily Closing Up Shop

If you have been using your hall regularly, but plan to close up for an extended period of time then mothballing is exactly the right course of action for you to take. Follow the steps outlined in Section 2.

### Vacant

If events are not held in the hall and it has sat empty for more than a year, mothballing should be undertaken as soon as possible to prevent future damage or loss.

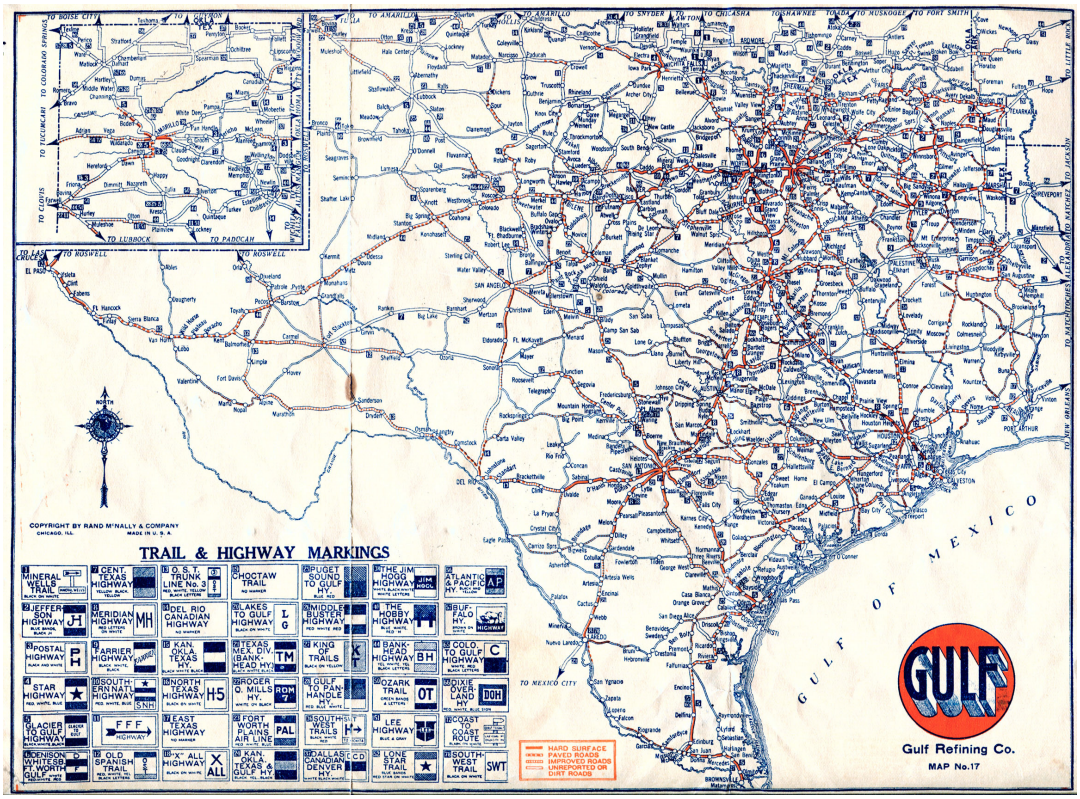
## HOW TO USE THE GUIDE

Mothballing your dance hall does not have to be a daunting task with proper planning and consideration. The Toolkit breaks down each phase of the Mothballing Process, from planning to implementation, into a step-by-step guide. Use it as your road map.

Review the entire Toolkit first to get acquainted with the Mothballing Steps, Building Inspection, and Common Problems that may arise. This will prepare you to take a better look at your building during the initial building assessment.

Complete the Building Assessment, as described in Section #2, using the Checklist provided in the Resources section of the Toolkit. Then, create a Mothballing Plan that fits your needs and specific situation.

*Gulf Oil Map of Texas, 1924.*



# 2. MOTHBALLING ASSESSMENT AND PLAN

Before you can properly mothball your dance hall, you must first determine the current condition of the building. This section will walk you through the Building Assessment process and how to translate your findings into a Mothballing Plan that will specify the needed repairs and tasks to protect the building while it is vacant or infrequently used.

**Step 1** **Building Assessment: Evaluate the current condition of the dance hall.**

**Step 2** **Building Assessment: "Download" your observations.**

**Step 3** **Mothballing Plan: Prioritize tasks to mothball and protect the dance hall.**

**Step 4** **Mothballing Plan: Understand your limitations.**

**Step 5** **Execute your plan and mothball your dance hall.**

**Step 6** **Plan for the future.**

## Step 1: Building Assessment - Evaluate the current condition of the dance hall.

A Building Assessment is a systematic inspection and review of a property, which will provide you with an overview of current issues. Your findings will help you determine the necessary repairs needed to protect the building now and in the future. You can do an assessment on your own or with a team.
Most importantly, collecting information about the building in its current form both in writing and photos will give you something to compare against in the future to see if anything has changed. Identifying changes early is an important task that could signal the start of a problem before it's too late.

The next few pages will walk you through a building assessment. The Building Assessment Checklist found in Section #5 breaks the assessment down into a series of questions about the building, highlighting the building components and elements that should be reviewed for deterioration and instability. The Checklist is meant to be printed and can be used on site to make notes about the building. You will start with the surrounding site and landscape around your dance hall, then review the exterior and interior of the building. Before you go, review the Section #4: Common Problems and Treatments to get a better idea of the types of issues and conditions you may find. The assessment should take approximately one to two hours.

## BUILDING ASSESSMENT PREPARATION

To complete the assessment, you will need to the following materials and tools to document the building:

- **Checklist** - Print the "Building Assessment Checklist" in Section #5 of the Toolkit. The checklists will walk you through each part of the building and what issues to look for while you are on site.

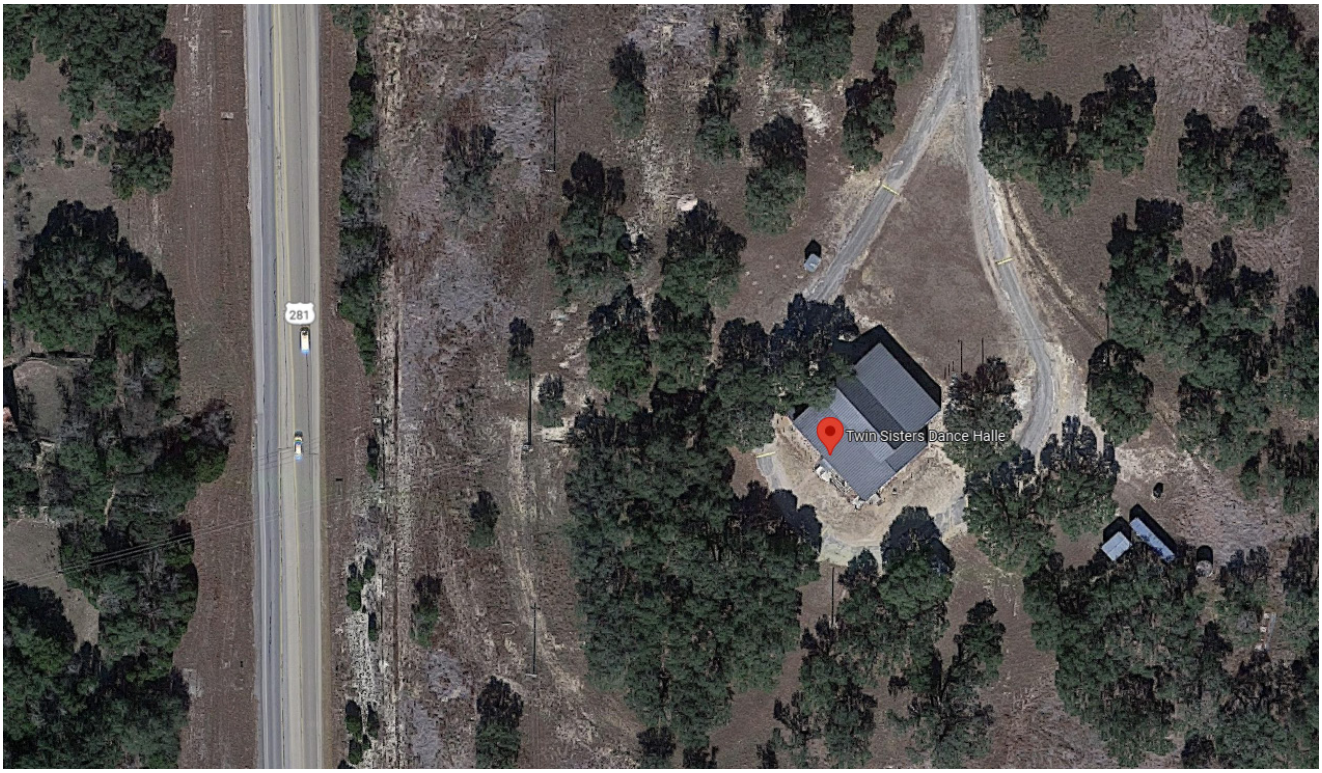
- **Mothballing Toolkit** - Bring a copy of the Toolkit along with you as well, so you can reference specific conditions or problems if needed.

- **Site Plan** - Print an aerial view or site plan of your building, like the image below, to help orient yourself during your visit. This can be done by going to Google Maps or your preferred mapping application and locating the dance hall in aerial view. Zoom in. Then, screen shot the page and print. If you are familiar with the overview shape and orientation of your dance hall, you can also sketch out a site plan on a piece of paper. Make sure to mark the cardinal directions (North, South, East, and West).

You may also need:

- Pens / Pencils/ Erasers / Pencil Sharpeners
- Clipboard
- Camera
- Flashlight or Head Lamp
- Bug Spray / Sunscreen
- Ladder
- Screwdriver

*Example Site Plan from Google Maps*



## SAFETY FIRST

Before you go, determine if you can safely enter the property and if the structure is stable. Buildings that have been vacant for an extended period of time can have a compromised roof or unstable structural system. Look for signs such as leaning walls, sagging roof, sloping beams. Be cautious and do not enter an unstable property without consulting a professional. Even if the dance hall is fair shape, is it wise to wear the proper attire to protect yourself from hazardous materials, bugs and other pests, and site hazards such as poison ivy/oak. Consider wearing:

- Long Sleeves and Long Pants
- Closed Toed Shoes
- Face Mask
- Hard Hat

## BUILDING ASSESSMENT

Use the instructions below in combination with the Building Assessment Checklist (see Section #5) to guide your inspection of the dance hall. Make notes on the Checklist and take photos as you go to document the condition. You will use this information to create your Mothballing Plan. For an explanation of terms or examples of conditions, review the "Common Problems and Treatments" and "Typical Dance Hall Construction Glossary" at the end of the Toolkit.

### SITE CONDITIONS

Start by walking around the exterior of the building, approximately 10 to 20 feet away. Look at the entire site around the building noting any landscaping, drainage, or pest issues that could damage the building. Also, look at the building from this distance, noting any issues with the roof or buildings elements that are out of reach.

### EXTERIOR CONDITIONS

Get closer to the building and walk around all sides. Take your time and inspect all buildings elements. For each side, start by looking at the ground level and foundation working your way up. Use the Building Assessment Checklist to make notes of the questions outlined below. Take pictures of the issues you identify so you can reference them later on. Note that some questions are repeated because they apply to more than one part of the building. Review the following exterior elements:

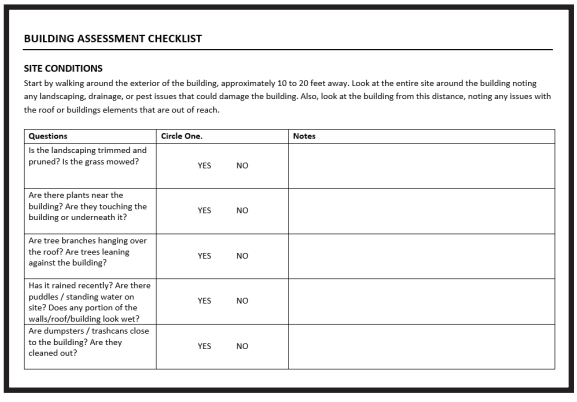
- foundation
- facade /exterior walls
- doors and windows
- roof
- mechanical equipment

### INTERIOR CONDITIONS

Now enter the building. On a blank piece of paper sketch out the general plan or layout of the building. It does not need to be pretty or accurately measured. The goal of the sketch is to help you document the main spaces of the building and where specific issues are located. Use the Building Assessment Checklist to review all components and make notes for each question outlined below. Repeat for each space. Mark the location of deteriorated building elements your plan sketch.

- floors
- walls / columns / vertical structure
- ceiling

*Example Building Assessment Checklist Page.*



**BUILDING ASSESSMENT CHECKLIST**

**SITE CONDITIONS**

Start by walking around the exterior of the building, approximately 10 to 20 feet away. Look at the entire site around the building noting any landscaping, drainage, or pest issues that could damage the building. Also, look at the building from this distance, noting any issues with the roof or buildings elements that are out of reach.

| Questions | Circle One. | Notes |
|---|---|---|
| Is the landscaping trimmed and pruned? Is the grass mowed? | YES NO | |
| Are there plants near the building? Are they touching the building or underneath it? | YES NO | |
| Are tree branches hanging over the roof? Are trees leaning against the building? | YES NO | |
| Has it rained recently? Are there puddles / standing water on site? Does any portion of the walls/roof/building look wet? | YES NO | |
| Are dumpsters / trashcans close to the building? Are they cleaned out? | YES NO | |

## Step 2: Building Assessment - "Download" your observations.

A mothballed building may stay vacant for an extended period of time with several people involved in the inspection process and potential future rehabilitation. Creating and maintaining clear records of your regular inspections and any work to be undertaken will keep everyone informed and make future preservation work more efficient. Once you are done evaluating the building, make copies of your Checklist notes. Download your photographs. Label each individual photo file with a description, or create an image list that notes the location of the photo, so when you refer to them later you can determine what window or side of the building you were looking at during the assessment.

Next, create a building file folder or binder, if you do not have one already. A building file is a great way to track changes and maintenance to a building. This file can be digital or physical, but preferably both should be maintained. Add a dated copy of the Building Assessment you just completed to your file. Also add copies of all relevant data, plans, photographs, and a list of consultants or contractors who have worked on the building recently or in the past. While the building is mothballed, keep track of any maintenance work or changes in conditions that you observe. Use the Maintenance Log template located in the Resources section. Duplicate the file and share it with your organization, business partner, or family member, whomever can ensure that a backup of the information is safe.

## Step 3: Mothballing Plan - Prioritize tasks to mothball and protect the dance hall.

Now that you understand the condition of the dance hall, you can create a list and prioritize any repairs that you need to complete before the hall is mothballed, or later, before it is brought back to regular use. Refer to your Building Assessment Checklist. What issues did you find? Review your notes and photos and compare them to the Common Problems in the Section 4.

Remember that mothballing should focus on these three primary goals to protect the building while it is not in use:

- stabilize - prevent structural problems that might cause walls to lean or a roof to collapse
- weatherize - keep wind and water from damaging the building, and
- secure - prevent vandalism and unauthorized access

Focus your time and money on these goals first. Cosmetic repairs or true restoration repairs can come later when you plan to reopen.

No matter the building, there are seven mothballing tasks that must be considered and completed before the building is left alone to protect it from long term deterioration, fire, or vandalism. Use the Mothball Plan Basics list on the following pages as the basis of your Mothballing Plan and add additional repairs if you found issues unique to your building.

## MOTHBALL PLAN BASICS

1. **Structural Stabilization** - Structural stability is the highest priority to keep a vacant dance hall from collapsing. Roofs, foundations, walls, interior framing, cupolas, and porches all have structural parts that may need added reinforcement, or structural stabilization, while the building is vacant. For significant structural issues, stabilization should be done by a qualified contractor under the direction of a structural engineer or a preservation specialist. These professionals can design and install temporary reinforcing that will hold the building up while it is mothballed.

2. **Weatherize, Prevent Leaks and Moisture Penetration** - After the dance hall has been stabilized, the next goal is to secure the exterior from moisture penetration and wind damage. Keeping rainwater out of the building is critical. Water can enter through the roof and walls. It can also enter under the building, weakening the foundation. Water in a building damages beams, rafters, floors, walls and woodwork. Water also attracts pests, creates mold and mildew, and encourages damaging plant growth.

   Identify areas of the building where leaks are active. Then, find the source of the leak. Leaks are typical at the ceiling or at the connections between windows / doors and walls. Moisture can also migrate from the ground, up the foundation, and into the building.

3. **Exterminate or Control Pests** – Numerous types of pests can cause damage to a building if left unmanaged. Pests can include termites, moths, beetles, ants, bees, wasps, pigeons, squirrels, raccoons, bats, mice, rats, snakes, etc. Termites and carpenter ants destroy wood. Mice and other types of rodents can gnaw holes in wood and electrical wires. Pigeons and other birds will nest in any open spaces. Pigeon and bat droppings will damage wood finishes and can also create a serious health hazard for humans.

   Review the pest control methods for each type of pest in Section 4 to make sure that removal or extermination follows state/federal law and is safe for all involved. Certain kinds of pests, such as bats, are protected by state and federal law and cannot be killed, instead they must be carefully removed from the building.

   If the building is currently infested, remove and/or exterminate the pests before sealing up the building. Seal off any holes that can allow access to the building such as holes in windows, chimney flues, vents, grilles, etc. Make sure to use the proper sealing method for each kind of opening:
   • Close off chimney flues with exterior grade plywood caps with vents or framed wire screens.
   • Screen crawl spaces or attic vents with bug mesh or heavy-duty wiring depending on the location and pest you're trying to keep out.
   • Treat damp areas around the building or wood features with insecticides or preservatives to slow the rate of deterioration. If possible, have the building treated regularly by a certified pest control.

4. **Clean out interior.** – The interior of the building should be emptied of all furnishings and equipment unless you plan to mothball these items as well. Leaving furniture or equipment behind can encourage vandalism and theft. Kitchen equipment or stage fixtures can also cause electrical fires or leaks if improperly stored. If furnishings / equipment will remain in place, unplug them and remove any kind of water, liquids, or ice. Pull the items away from the wall and cover with a drop cloth or tarp. Attempt to locate stored items away from views through windows, so they are not visible from the exterior.

   If the hall has already been vacant, remove any debris. Building materials too deteriorated to repair or which have come detached such as decorative elements, wood members, plaster, etc. should be collected, labeled, and saved in a

safe place so they can be used to inform future preservation work. Finally, sweep and dust the rooms to remove major dust, dirt, bugs, and cobwebs to ensure that the hall is "broom clean."

5. **Turn off or modify utilities and mechanical systems.** – Determine which systems will remain on while the building is mothballed. If possible, turn off all utilities and systems to reduce the risk of fire or leaks.

   o Electricity – If possible, it is best to completely turn off electricity to the building. However, if power is needed for other systems or security systems, the National Park Service recommends installing a new temporary electric line and panel (100 amp) so that all the wiring is new and exposed. This will be much safer for the building and allows easy access for reading the meter. Some halls may have a single disconnect switch at the interior of exterior of the building. Others may need the electrical company to turn off the power.

   o Heating & Air Conditioning – If the hall has a heating system, turn it off to reduce the risk of fire. Typically, air conditioning systems can be turned off while the building is vacant. Air circulation and ventilation are important for the building's health while it is vacant as Task #6 below discusses. However, this can typically be undertaken using simpler, passive methods, which is explained in #6 below.

   o Water – Turn off water to the building and drain toilets and other fixtures to reduce risk of leaks or frozen pipes throughout the building.

   o Gas – Gas systems with open flames should be turned off unless there is regular maintenance or frequent surveillance of the property. Otherwise, gas lines should be shut off by the utility company.
   o Sewer - Don't forget the sewage lines or septic system as sewer gas is explosive. Sewer lines should be capped off at the building line or the traps must be filled with glycol to prevent the backup of sewer gasses into the building.

6. **Provide adequate ventilation to interior.** – A mothballed building must be stable and secure, while still allowing for air movement between the interior and exterior of the building. Even when a building is occupied with heating or cooling systems on, the interior is directly affected by the temperature and humidity of the exterior air. Most historic buildings were designed to let the building "breath" and naturally ventilate itself through passive means as well. Without air exchange, humidity may rise, allowing for mold, rot, and insects to thrive. Moisture from condensation may also damage plaster, paint, woodwork, dance floors, and other building elements. For most buildings, especially in Texas, the need for ventilation during the summer is more important than methods to heat the building during the winter. A building can be vented in several ways and typically it takes a combination of these methods to properly circulate air:
   - Foundation / crawl space vents
   - Attic vents
   - Louvered vents in window openings
   - Electric fans

7. **Secure windows and doors to reduce vandalism and break ins. Lock all doors with lock boxes. -** Once a dance hall is not in danger of collapsing and is weather tight, the next step is protecting the building from vandals and break ins. Verify that all doors and windows are locked. Alert local police and fire services that the building is vacant. Place a list of emergency phone numbers including the key holder's name in a window or on an exterior, weatherproof sign at the entrance of the building or at the main gate to the property.

## Step 4: Mothballing Plan - Understand your limitations.

You now have a list of repairs and tasks to complete as part of your Mothballing Plan. Typically, mothballing be undertaken by a few handy volunteers. Mothballing tasks should be minimally invasive, so they can be reversed during a future restoration. Consider the following:

- **Time:** Construction work, included mothballing tasks, often takes more time than planned. Do you have time to do the work yourself, or should you hire someone else to do the work in a timely manner?

- **Physical Limitations:** Is it physically possible for you to carry out this work without the assistance of others? Can you lift heavy materials or climb on the roof? Can you rely on the assistance of others for the duration of the project?

- **Equipment / Tools:** Do you have access to the equipment and tools needed to complete the project? If not, would it be more cost effective to hire someone else with the right equipment compared to renting or buying new equipment?

- **Safety:** Can you safely enter the property or is the structure unstable? Will the tasks you plan to take on involve ladders and roof access, which could lead to falls if improperly undertaken? Will mothballing tasks involve disturbing asbestos or lead? Do you know the proper methods to protect yourself against these toxins? Make sure your mothballing plan includes safety measures to keep you and your assistants safe.

All repairs do not need to be undertaken to successfully mothball a dance hall. When in doubt, it is ok to monitor the condition of the building. If a task requires specialized skills or a large budget, it may need wait until a larger repair project can be undertaken.

## Step 5: Execute your plan and mothball your dance hall.

Congratulations! You have successfully created a Mothballing Plan for your dance hall. Now carry out your plan to stabilize, weatherize, and secure the building.

While undertaking your Mothballing Plan, remember to remove the source of the problem first. Find the source of the leak or the cause of the crack before covering or repairing what is visible. The leak and the crack are symptoms that show us there are bigger issues at work. Fix the root of the issue, so that those same problems do not happen again in the future.

Also, consider how your planned tasks affect other parts of the buildings and site. Good intentions can unwittingly damage a building with simplistic and mismatched alterations. For example, placing skirting around your raised foundation may look more attractive, but it can seal in moisture around wooden floor beams, causing them to rot. Mothballing measures must not cause permanent damage to the building, so when the building is reopened the measures can be reversed and the building restored.

## Step 6: Plan for the future.

The work to protect your dance hall is never done. It is important to regularly check on the building even if it has been properly mothballed, to ensure that it is in good health and new issues have not occurred. Continue on to the Section #3 “Check Up Tasks to Do Later” to prepare for your dance hall’s future.

# 3. CHECK-UP EVALUATION

The work of a dance hall steward is never done. Once the hall is mothball, regular check ups are needed to ensure the health and stability of the building. Follow the steps below on how to complete a Check Up Evaluation.

## Step 7: Regularly check up on your dance hall.

Create a schedule to visit your dance hall to monitor the condition every few months. Use the Check-Up Calendar provided in the Resources section of the Toolkit. At minimum, check-ups should be completed twice a year. However, the more often you visit the building, the safer it is from harm. Set reminders on your calendar so this important step is not forgotten. If multiple people can check on the building, set up a revolving calendar, so more than one set of eyes can check on it more often.

The Check-Up Evaluation does not need to involve the full building assessment conducted prior to mothballing. Instead, focus the Check-Up on items related to the current season. For instance, plants grow quickly in the spring and summer. Check for overgrown landscaping or plants growing on/near the building. During cooler months, pests are more likely to seek shelter in a warm space. Check the interior of the building and crawl space for unwanted guests during the fall and winter months. Schedule additional visits after major storms or weather events to ensure that the site is draining properly, and leaks are not present in the building.

## Step 8: Re-evaluate the condition of the building every year.

Re-assess the building once a year using the full Building Assessment Checklist from Step 1. The Checklist is included in the Resources Section of the Toolkit so you can print it as many times as needed. Consistent monitoring and documentation will ensure that the building does not rapidly deteriorate. If new issues are found, repair them as soon as possible.

## Step 9: Make plans to reopen the dance hall.

A preserved dance hall is one that is regularly used. The best plan you can make for your hall long term, is figuring out how to open it doors at least once a month, every month. Consider events like monthly dances or opening up the hall as rental space. Lease the building to a local business owner who may be wanting to test out a new bar or restaurant concept in the space. Halls also make great lease spaces for dance teachers or exercise instructors to hold weekly classes. Schedule free concerts by local musicians. Regularly using the building is the key to its longevity.

## Step 10: Celebrate your success!

Whether you are still in the mothballing phase of preserving your dance hall or have figured out a plan to open it again, celebrate your success. Your time and money have been well spent preserving a unique part of Texas history that would be lost otherwise. Texas Dance Hall Preservation thanks you for your efforts.

# 4. COMMON PROBLEMS & TREATMENTS

While each dance hall is unique, many dance halls were built between the 1880s and the 1920s, using similar construction techniques of the time. Dance halls were often constructed by local builders and volunteers, who used construction methods and techniques that were in common use. This chapter identifies common problems associated with dance hall construction and short term solutions that you can take on now. Some problems may require long-term solutions that may require professional assistance. These will be identified so you can plan for them.

This chapter is divided into issues found in specific materials – wood, masonry, metal - then issues by building element – foundations, walls, roofs, etc. The intent is to identify potential problems early and pursue remedies to fix them before they become more serious. It is also to provide solution ideas that will not harm the dance halls in the long term. Note that this guide is not comprehensive of all issues that can be found in dance hall. Instead, it addresses issues that need to be remediate before the dance hall is mothballed and vacated.

## WOOD

Wood is a remarkably resilient material with great strength in relation to its density. However, if the wood in your building becomes damp, or worse, remains damp for a long time, then it deteriorates swiftly for a number of reasons. The presence of moisture in too large a quantity is the key to wood preservation problems. Moisture can rot wood in other ways besides the wet/dry cycle of leaking rainwater. Fungi and molds, if there is sufficient water available, will “eat” wood and weaken structures. If water is pooling around foundation piers, it must be stopped. Damp foundations rot wood and make them unstable, particularly if the wood beams are resting on the ground and not on stone, concrete, or brick piers. Last, insects that infest wooden buildings and eat structural beams and trusses cause expensive problems.

### MASONRY

Some dance halls are constructed of load-bearing masonry, meaning the walls support themselves, the roof, the floors, and everything in between. Each masonry wall is several wythes (layers) of brick thick and does not rely on an underlying framework or stud system. In load bearing masonry, typically, a header course (a row of rotated bricks with the narrow edges aligned with the wall surface) was used every 7-9 courses to tie the wythes of brick together. Unlike the very uniform bricks produced today, historic bricks range in size, quality, and hardness. The quality of brick depended on the type of clay available in the region and its location within the kiln during firing. Bricks exposed to higher heat would be harder. Experienced masons sorted the brick into grades, using the softer ones inside the building and the harder ones on the exterior. After the 1870s, the extrusion process was perfected making bricks more uniform and durable, although still not as strong as today.

### METAL

Metal is a common roof material found at historic dance halls and can also be used for exterior siding. The sheet metal found on dance halls is typically tin or sheet iron, which is very durable. However, decades of storms, hail, and water exposure can eventually lead to the failure of exterior metal in the form of rust, corrosion, and holes. Some exterior metal may have originally been installed with a zinc or terne coating that was used to protect the metal from rust, but most often, the metal was simply painted. Red and green were common colors used to imitate the look of other finer metals. Overtime, these coatings wear out, exposing the metal surface to the elements.

**The following pictures and comments give short and long term fixes for weatherization problems for each material type.**

# WOOD: MOLD, FUNGI, AND ROT

Mold and fungi are a significant threat to wood and cause wood to decay if too much moisture is present. Mold is a visible form of fungi that attacks the surface of the wood (FIG. 1). In contrast, fungi attack the wood and grow into the core of the wood element, leaving behind crumbly, deteriorated wood that cannot bear weight or stress (FIG. 2). The air is always full of mold spores and typically will not cause issues unless exposed wood is wet. If the moisture content of the wood is between 35-50%, mold and fungi will grow and feed on the wood, resulting in wood rot (FIG. 3-5) Below 25% mold and fungal growth is small and their subsequent rot of wood will be minimal.

FIG. 1: Mold growing on old wood.


FIG. 2: Fungus growing on wood element.

## WHAT TO LOOK FOR

Molds are usually white, purple, or pink in color. They appear in a circular or curved pattern on the sur-face of the wood and have a powdery or fuzzy appearance. In some severe cases, mold can be dark gray to black. The presence of a dusty or musty smell at the interior can also indicate the presence of mold.

Fruiting fungi are typically the only fungus that can be seen. This will look like shelf mushrooms growing directly on the wood. Microscopic fungi can also cause issues and will result in various types of wood rot, which is described on the next page.

## IMMEDIATE TREATMENT:

To stop mold and fungal growth on wood, it is important to keep moisture content of dance hall wood below 25%. This can be done by ventilating the hall, as discussed in x. For molds, which attack the surface of wood, clean off the powdery substance by brushing, sanding, or shallow planning the wood surface. Then allow the wood to dry. There are chemical wood treatments available that fight mold and fungi, but all chemical treatments carry some sort of toxic hazard to people and animals and should only be used in extreme cases. Curing fungal attacks is more difficult, requiring either applications of toxic

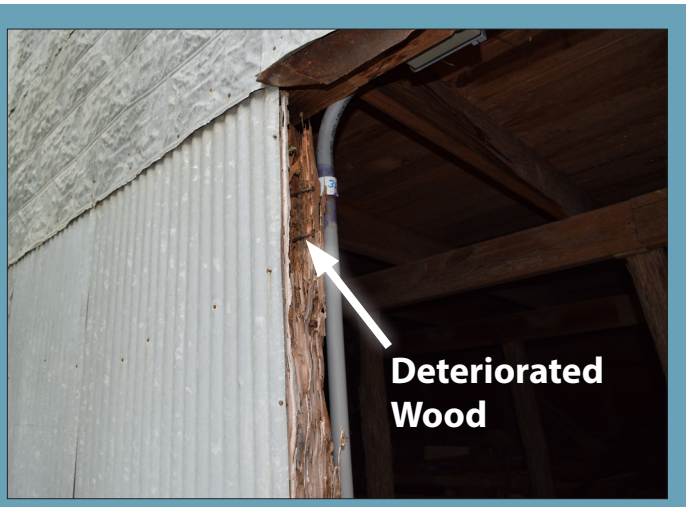


FIG. 3: Deteriorated structure from dry rot.

FIG. 4: Loss of wood due to fungus.

FIG. 5: Loss of wood due to fungus.

wood preservatives or by replacement of a wood feature.

### LONG TERM TREATMENT

Keeping the moisture content of the wood low prevents molds and fungi growing on and in wood. Better air circulation, water-resistant roofing, and water diversion around foundations, such as regrading the site, are key to keeping wood dry and below the magic moisture content of twenty-five percent.

One the building and wood are dried out. Replace severely deteriorated wood in kind. Paint all exposed wood to protect it from further deterioration.

# WOOD: INSECTS

Several types of insects are a threat to the wood in dance halls. Termites and carpenter ants thrive in moist wood, but can also be present in dry spaces. Termites typically live in colonies underground. It is estimated that for every acre, there is at least one active termite colony. Termites feed on dead plant material and cellulose, which makes wood an appetizing meal. Carpenter ants are even more damaging to wood structures than termites and are actually the number one wood pests in the United States. Carpenter ants love moisture and warmth. They do not eat wood, but excavate it for their nests. Carpenter ants also typically access a building from the roof line or from vegetation touching a building. They commonly live in the hollow parts of trees.

FIG. 6: Termite paths in wall.


FIG. 7: Termite tubes leading to underside of structure.

FIG. 8: Carpenter ant frass appears as saw dust.

## WHAT TO LOOK FOR

Termites are rarely found by observation of the actual insect. Typically, they are spotted by the mud "tubes" or tunnels that they build along a foundation to keep themselves moist during the journey from nests deep in the ground to the wood framing (FIG. x). Termites also carve tube like paths into the wood, which can be easily spotted.

Like other types of ants, carpenter ants can sometimes be found by active worker ant lines crawling on a building. Evidence of their presence also looks like piles of sawdust, which are the remnants of their excavation work (FIG. x).

## IMMEDIATE TREATMENT

Both pesticides and preservatives should be used to eradicate an infestation and prevent future attacks. Regular professional pest control treatments are the best method for both eradicating and preventing insects. However, if funds are limited, chemical treatments can be found at your local home improvement store. Read the directions carefully to ensure that the chemicals do not harm people or animals. It's important to note that if pesticides are

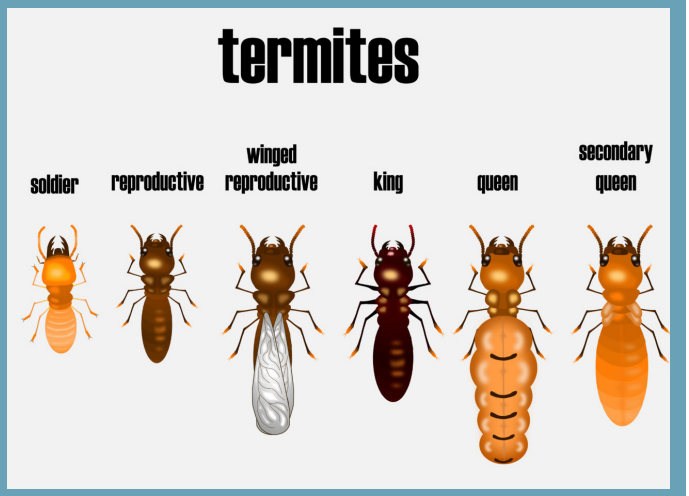


FIG. 9: Termite Forms.


FIG. 10: Typical Appearance of Carpenter Ants.

not applied properly and thoroughly, pest may come back.

Keep the dance hall dry. Termites and carpenter ants love moisture. Check that water drains away from the hall. Keep all firewood and wood products away from the foundation and/or ground below. Trim fence slats and any wood trim around the dance hall like door jambs up off the soil. Remove all wood, cardboard, or paper from the crawl space if present under the dance floor. If storage is necessary, keep it off the floor to avoid attracting insects. Keep plants and trees around the dance hall trimmed and away from the building to limit carpenter ant access.

### LONG TERM TREATMENT

Have the building professionally inspected annually for termites and carpenter ants. If needed, regular treatment sprays can be undertaken to eradicate infestations. Termite stakes are another preventative treatment that can be placed in the soil along the perimeter of the building to stop termites at the source.

Most importantly if termites or carpenter ants do infest the hall – don't panic! These insects work very slowly. Take your time and find a qualified pest management pro to help you kill them once and for all and then continue the management program.

# MASONRY: MISSING MORTAR

Mortar is the "glue" that holds a brick wall together and ensures overall structural stability for the wall system. The mortar also allows for expansion and contraction of the stone, bricks, or other masonry units during different weather conditions or building settlement over months and years. Mortar allows these slight movements to occur, without damage to the masonry. Historically, mortar was quite soft, consisting primarily of lime, sand, and other additives, such as shells, clay, animal hair or other locally available ingredients. Portland cement was not commonly used in mortar until the 1930s. Today, contemporary mortar mixtures have a high concentration of Portland cement, which produces mortar too stiff for historic brick structures. Improper mortar mixtures used in historic buildings do not allow for slight movements, causing wall cracks and bricks to fracture or spall.

Over time, historic mortar weathers and disintegrates leaving empty joints between the masonry units. This disintegration and replacement is an expected occurrence. Repointing, or the process of removing deteriorated mortar from the joints of a masonry wall and replacing it with new mortar, is a necessary step in maintaining your historic building. Properly done, repointing restores the visual and structural integrity of the masonry. Repointing is a specialized technique and should only be undertaken by a qualified mason.

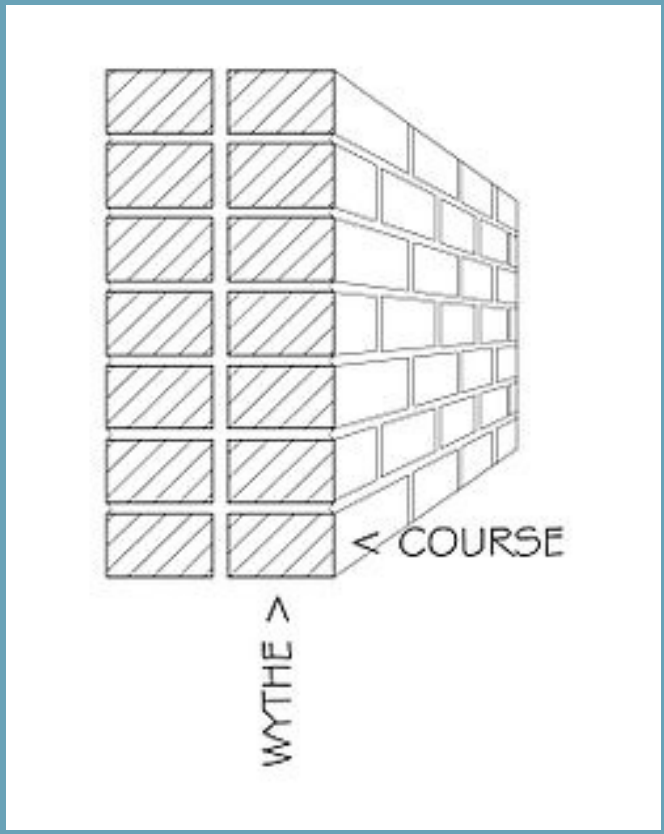


FIG. 11: Brick construction terminology.


FIG. 12: Example of severely empty mortar joint.

### WHAT TO LOOK FOR

Repointing is needed every 10 years or so, and it is common begin the repoint process when signs of deterioration are visible. These include:

- mortar joints where no mortar is visible or mortar is recessed more than ½ inch from the surface of the brick,
- mortar that dusts or flakes to the touch
- brick units that are loose or missing

### IMMEDIATE TREATMENT

It's important to inspect and investigate further to ensure other underlying issues are not causing the

**Mortar Strengths**

| | |
|---|---|
| Hard, High Strength | M - 2,500 psi |
| | S - 1,800 psi |
| | N - 750 psi |
| | O - 350 psi |
| Soft, Flexible | K - 75 psi |

**Mortar Types** (measured by volume)

| Designation | Cement | Hydrated Lime or Lime Putty | Sand |
|---|---|---|---|
| M | 1 | 1/4 | 3 - 3 3/4 |
| S | 1 | 1/2 | 4 - 4 1/2 |
| N | 1 | 1 | 5 - 6 |
| O | 1 | 2 | 8 - 9 |
| K | 1 | 3 | 10 - 12 |
| "L" | 1 | 1 | 2 1/4 - 3 |

**Suggested Mortar Types** for Different Exposures

| Masonry Material | Exposure: | Sheltered | Moderate | Severe |
|---|---|---|---|---|
| Very Durable Granite, Hard-Cored Brick | | O | N | S |
| Moderately Durable Limestone, Durable Stone, Molded Brick | | K | O | N |
| Minimally Durable Soft Hand-Made Brick | | "L" | K | O |

*Chart Information Courtesy of National Park Service*

FIG. 13: Mortar Types

mortar to deteriorate prematurely or more extensive problems. Symptoms should be carefully examined to determine their causes, such as roof leaks, building settlement, or rising damp. These issues should be addressed first, as without appropriate repairs to eliminate the source of the problem, mortar deterioration will continue, and any repointing will have to be repeated in the near future. If the mortar is still mostly intact, do nothing. If mortar loss is over ½ inch or greater, follow the repointing guidance below.

## LONG TERM TREATMENT

To stabilize the brick long term, repointing by a qualified restoration mason should be undertaken. If possible, a sample of the mortar should be sent to a materials laboratory who can determine the existing composition in order to create a new mixture with the appropriate ratio of lime, sand, and cement. The goal is to match the historic mortar as closely as possible, so that the new mortar and old mortar can coexist without causing damage to the other. The new mortar should match the historic mortar in color, texture, and tooling and should have the same compressive strength as the existing mortar, which is typically softer than the brick units.

If laboratory testing cannot be completed, review the mortar types chart on the left. The standard Type O mixture is typically appropriate for a historic structure:

- 1 Part White Portland Cement
- 2 Parts Lime
- 9 Parts Sand

Type M and Type S mortars are readily available at big box home improvement stores, but SHOULD NOT BE USED ON HISTORIC STRUCTURES, as they are too strong for the soft brick. Type N and O can be special ordered but is typically mixed on site. The full mortar specification can be found on the GSA website: https://www.gsa.gov/real-estate/historic-preservation/historic-preservation-policy-tools/preservation-tools-resources/technical-documents?Form_Load=88337

# MASONRY: CRACKS

Cracks in brick and other masonry types can result from a variety of conditions, such as structural settlement of a building, mortar that is too hard, or it may be an inherent characteristic of the masonry itself, such as unfired brick or adobe. Cracks are warning signs that should be monitored and reviewed regularly, as they can indicate a much larger building issue.

## WHAT TO LOOK FOR

Small cracks, smaller than ¼", within the mortar joints or a single block of masonry may not be serious, but longer wider cracks extending over a larger area may be a symptom of significant structural problems. Cracks cutting directly through a masonry unit, is almost a sure sign of structural instability.

A crack monitor can be installed to aid in the monitoring process as seen in FIG. 16. These two part rulers can illustrate how much and in what direction the masonry is moving. Note these tools should be installed without causing additional damage to the brick. Glue to brick, do not screw or create additional hotels.

## IMMEDIATE TREATMENT

Note the location of all cracks and current size. Then monitor the width and length of the crack to determine if the situation is getting better or worse. Review every few months.

## LONG TERM TREATMENT

Consult a structural engineer to determine the cause of the cracking and determine the proper repair.

FIG. 14: Cracks through brick units indicate structural movement and instability.

FIG. 15: Hairline cracks through mortar joints indicate slight movement and should be monitored.

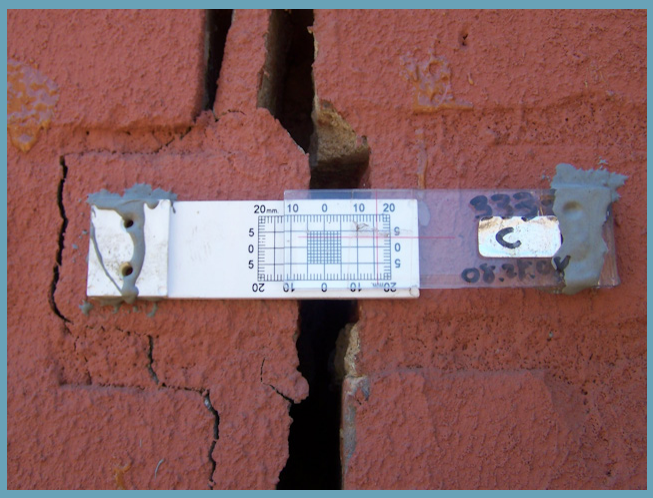


FIG. 16: Example of a crack monitor.

# METAL: RUST, HOLES, & OTHER FAILURES

FIG. 17: Rust present under drip line of tree.

FIG. 18: Rusting but stable sheet metal.

FIG. 19: Example of severe hole in metal.

In the late 1800s and early 1900s, metal roofing and exterior siding became popular across the country due to its durability and inexpensive price point. The malleable nature of the material allowed it to be shaped in many different style and applied to building in numerous applications. Typically on dance halls, corrugated or standing seam sheet metal was used. While durable, even metal roofs can deteriorate over time.

### WHAT TO LOOK FOR

Review the surface condition of the metal for holes, rust and corrosion.

### IMMEDIATE TREATMENT

Cover or patch hotels in metal immediately to prevent water leaks. Monitor rust and surface corrosion. Remove debris from the surface of the roof. Trim trees and vegetation so they do not touch the roof. If possible, trim so that drip line does not fall on roof surface.

### LONG TERM TREATMENT

Slight corrosion and/or blistered and peeling paint can be repaired by sanding the surface than repainting the area.

Localized areas of severe corrosion need to patched. In severe cases, the roof may need to be replaced.

# FOUNDATION: SHIFTED FOUNDATION

Shifting foundations are the primary cause of an unstable building. This could be due to varying soil conditions, weight distribution, severe weather exposure (such as tornadoes or hurricanes), active water under the building, or other stresses on the building (FIG. 21, FIG. 22).

## WHAT TO LOOK FOR

A visual inspection of the dance floor will reveal clues to an unstable foundation. Dips and buckling in the dance floor are indications of trouble. Inspect underneath the hall as well. The posts will be at awkward angles, rather than vertical and in plumb.

## IMMEDIATE TREATMENT

Foundations problems are serious problems that need expert advice. Some foundations shifts happened so long ago, that the building has reached an equilibrium and is not in danger of imminent collapse. An experienced foundation company may be able to assist. In the meantime, hang a plumb bob from the top of a leaning post, measure the distance the post is out of vertical. Return in a few weeks or months and measure the distance at the same point. If the distance is greater you will know you have active movement and you need to take action to repair the foundation immediately.

## LONG TERM TREATMENT

If there is no movement in the foundation, and it seems to be stable – it still is a long-term problem that needs to be addressed. Consult a structural engineer or a qualified foundation company who may be able to assist.

Consider replacing the existing foundation posts to with longer posts that can extend into the ground at least three feet. This will provide lateral support for the footing which will help resist strong winds. Also consider providing a traditional spread footing under the post. These types of repairs should be undertaken with the supervision of a structural engineer.

FIG. 21: Shifting foundation may place support columns at awkward angles. Monitor with plumb bob from top of post.

FIG. 22: Wood foundation post on ground exposed to active water. Keep dry to prevent rot. Note rotting post.


FIG. 23: Inadequate footing: concrete blocks can collapse.

# FOUNDATION: DAMAGED, MISSING, OR INADEQUATE POSTS

FIG. 24: Unsupported beam due to shifted column. Note brick post above has shifted, causing unsupported beam.

FIG. 25: Rotting post due to moisture.

FIG. 26: Examples of replacement posts

It is not uncommon in historic dance halls to find damaged, missing, or inadequate foundation posts. Posts can be made of bricks, concrete block, wood, or a combination of materials that sit directly on the ground. Over time, these posts can and will deteriorate. Masonry posts may crack because of weight or shifting of the soil. They may also loose mortar. Wood posts can rot or be eaten by pests. If the post material is deteriorated, the structural capacity of the post can be compromised resulting in sagging beams and floors. Sometimes the existing posts maybe in good condition, but the span of the beams between post is too great for the size of the beam, which also causes the floor above to sag. Other times a post may have settled and is no longer in contact with the beam (FIG. 24).

### WHAT TO LOOK FOR

Inspect the crawl space and review all visible posts. Determine what material they are resting on, if it has moved, and what condition the material is in. If the post is wood, try to insert a knife or screw driver into the post. If it is easy to insert, the post has been compromised. Damaged masonry posts will have cracks, chips, or missing mortar. Review the beams. Note if they are sagging or curved towards the ground at the middle. Note if all posts are touching the adjacent beam.

### IMMEDIATE TREATMENT

Replace broken masonry footing with new masonry or a solid concrete pad. Deck blocks or pre-fabricated posts can be found at Home Depot and other big box hardware stores. Similarly, replace deteriorated wood posts with a new piece of lumber. If a beam is sagging at the center point, add an additional post halfway between the existing posts. Shim existing posts that no longer touch a beam to make the post surface tight to the beam.

### LONG TERM TREATMENT

Engage a qualified foundation company to assess the entire foundation system.

# FOUNDATION: IMPROPERLY VENTED CRAWL SPACE

Most dance hall foundations are pier and beam, which means they are elevated above the ground and possibly have an accessible crawl space. The air circulation in the crawl space is vital to keeping it dry, as well as the interior of the dance hall (FIG. 27). Proper ventilation ensures the health of the hall long term.

## WHAT TO LOOK FOR

Look in the crawl space. Is the ground / soil dry? Pools of water are obvious signs of a wet crawl space, but overly wet soil can indicate a ventilation issue as well. Compare the soil in the crawl space to soil outside the crawl space. Is it more or less dry? Crawl space soil will typically be a little more wet than soil exposed to sunlight, but excessively wet soil can indicate a ventilation issue.

## IMMEDIATE TREATMENT

Review the skirting or enclosure around the crawl space. A lattice-like apron will allow for ventilation, while a completely solid apron will not. Mostly solid aprons are more likely to keep pests out of the crawl space, but some vents should be placed around the perimeter to allow for air circulation (FIG. 28).

## LONG TERM TREATMENT

Install non-rotting building aprons that extend at least twelve inches into the ground to keep animals out. Metal or cementitious board should be used for the apron, as wood placed directly on the ground can cause additional pest and termite issues, as well as absorb unwanted water from the soil. No matter the material, add vents for proper circulation.


FIG. 27: Mold on skirting indicates excessive moisture and ventilation issues maybe present under the dance hall.


FIG. 28: A larger vent is recommended to increase air circulation within the foundation and under the dance hall.

# FOUNDATION: POOR DRAINAGE / WATER EROSION

FIG. 29: Water erosion due to flooding under dance hall.

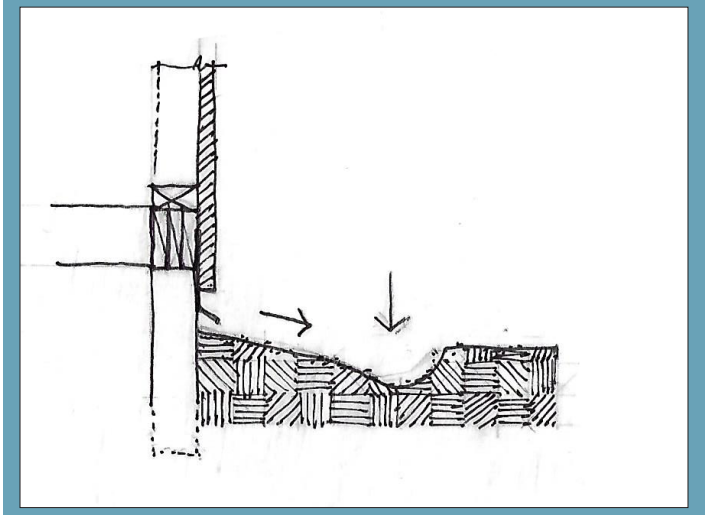


FIG. 30: Create a trench to keep water away from the building foundation.

After rain, surface water can erode the soil around and under a dance hall. Overtime, this erosion can destabilize the soil around a foundation or buried post (FIG. 29).

### WHAT TO LOOK FOR

Examine the dance hall foundation. Look for low spots around the perimeter and in the crawl space. Are there low spots where water can collect? Pay specific attention after a rain storm, when running water can be observed on the site. Water should be flowing away from the building.

### IMMEDIATE TREATMENT

If low spots are found around posts or walls, replace the missing dirt with dirt fill to secure them. Compress the fill to stabilize as much as possible. To divert water away from the building, dig a shallow trench around the perimeter of the building direct under the drip line of the eaves. Extend that trench away from the building. Creating high point with a dirt mound or dams can also divert water away from the building. (FIG. 30)

### LONG TERM TREATMENT

Hire a civil engineer or drainage contractor to design a plan for re-grading the entire site so that water flows across the site and does not run under the building. A French drain or other drainage systems maybe needed to divert water.

# WALLS: STRUCTURAL INSTABILITY

Columns and load-bearing walls play a critical role in the structural stability of a building. They are the elements that carry the load of the roof to the foundation and keep a building upright. Structural instability can be indicated by walls or columns that are out of alignment.

One issue that can cause structural instability is a lack of bracing. The load from the roof may be too great for the size of the columns or the construction of the walls. If the walls or columns aren't braced or bracketed to carry the loads, they may be pushing a column or wall out of alignment. If the entire dance hall is leaning in one direction or another this is called racking. This is a serious condition and can lead to the collapse of the building.

A leaning wall or column may also be due to a poor or failing foundation or settlement of the foundation posts.

### WHAT TO LOOK FOR

Review all walls and columns. Columns or walls that are leaning to one side and not vertically straight are typically a symptom of an underlying structural issue.

### IMMEDIATE TREATMENT

Prop up the leaning wall with braces made of dimensional lumber, such as 2x4's or 2x6's. Simply wedge the lumber between the ground and the wall to keep it from leaning further. Placing a board across the face of the wall can provide added support (FIG. 31, FIG. 32).

### LONG TERM TREATMENT

Determine the cause of the leaning wall or columns. Check the foundation and confirm that it is adequate. Consult a structural engineer or qualified foundation company who can assess the structural forces on the walls, columns, and/or foundation and make recommendations for stabilization and repairs.

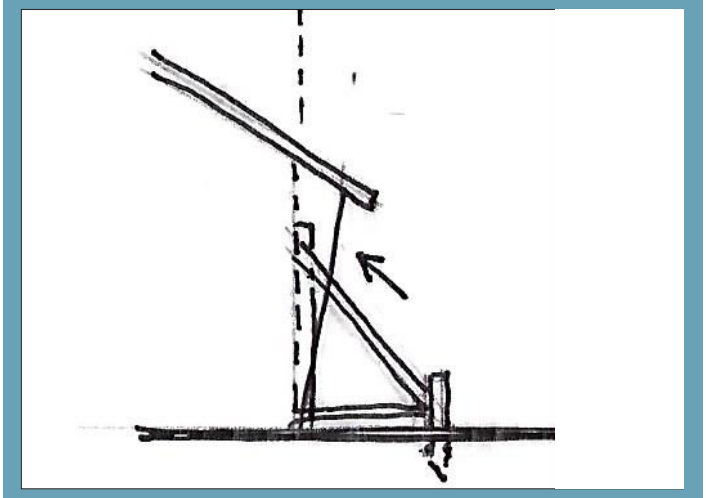


FIG. 31: Leaning buildings should be temporarily propped up until a more thorough solution can be found.

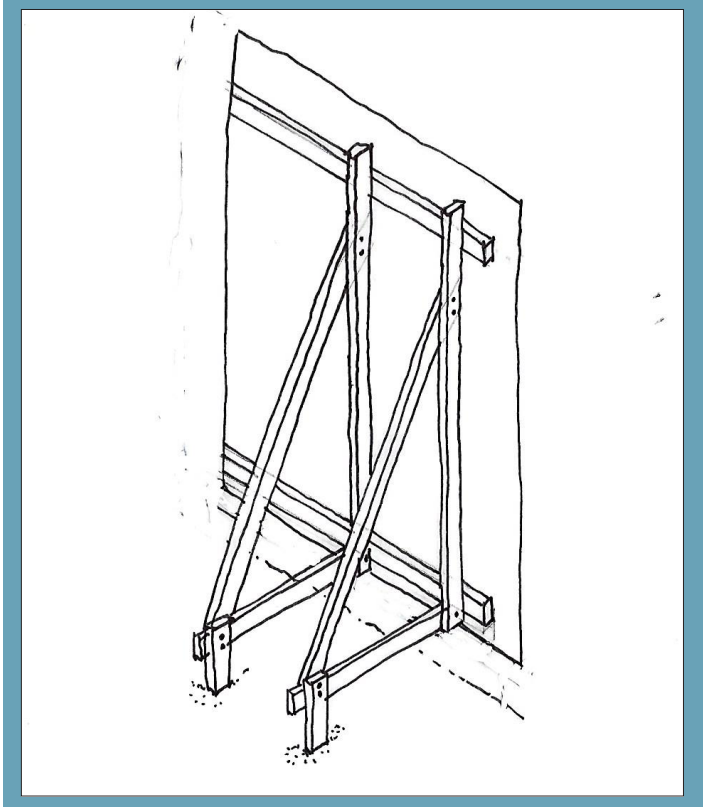


FIG. 32: Detail of bracing to stabilize a wall.

# WALLS: MISSING OR MODIFIED BEARING WALLS


FIG. 33: Bearing wall removed to expand stage. Note sagging beam, add support post.

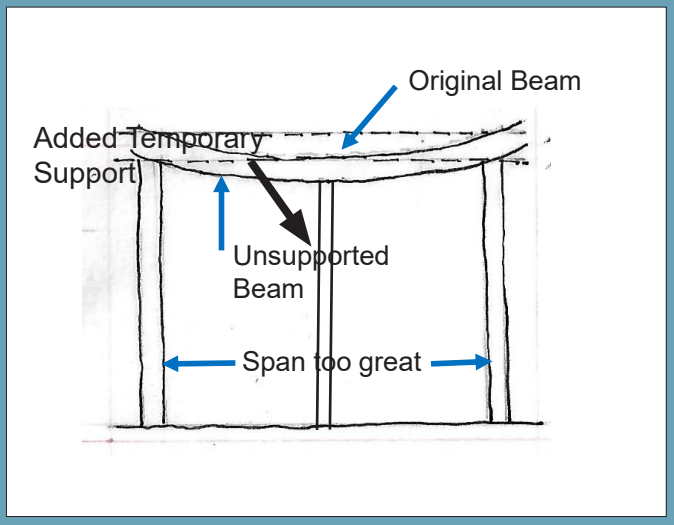



FIG. 34: The diagram illustrates a sagging beam and indicates where to add a post to give temporary support.

Interior walls that separate different rooms such as a wall between restrooms and kitchens may be load bearing walls. That is, they bear the weight of the roof structure above. If these walls are removed, or large openings are made without proper support this may cause added stress to the structure resulting in a dangerous situation. It is important to determine which walls on the interior are load bearing.

## WHAT TO LOOK FOR

Sometimes a bearing wall has been removed to create a larger space, or a large opening is added to provide access to an adjacent bar. This usually results in a sagging beam or a drooping wall above the opening. (FIG. 33)

## IMMEDIATE TREATMENT

Add temporary support posts (2x4 or 2x6) beneath the beam where the wall used to be. It is wise to make sure the new posts align with adequate support below the floor. In the case of an opening, insert posts if there is something to bear on like a supported counter or add a beam across the top that bears on a solid wall on either side of the opening. (FIG. 34)

## LONG TERM TREATMENT

A structural engineer should assess the structure and make recommendations. Generally, they will be able to tell if the temporary solution is adequate.

# WALLS: ROTTEN OR DAMAGED BEARING WALL

Typically, walls in a dance hall are wood framed and/or columns are made of wood. If that wood is exposed to moisture, it can deteriorate over time.

Water can enter a building in several different ways. If the siding is not water resistant, water can soak through wood siding, especially if the wood is not painted. Water can also enter through gaps in metal siding or roofing. (FIG. 36). A bearing wall located beside a restroom or kitchen may also be a plumbing wall. Leaks in the plumbing may have caused serious damage to the bearing capacity of the wall. (FIG. 35) Leaks from the roof can also drip down walls or columns causing damage in the long term.

### WHAT TO LOOK FOR

Review the surface of all walls. Look for wet spots or stains that indicate areas that were wet at one some point. Also look for gaps in the wall material and exterior siding. If you can see light coming through the whole, there maybe an issue. Note if the exterior siding is paint.

### IMMEDIATE TREATMENT

Determine the source of the water and repair any and all leaks. If damaged or water stained walls are found, remove the sheathing from the wall until the framing is exposed. Examine the studs for rot and remove any severely damaged studs. Add new studs in the same location. No repairs are needed if the structure is stable (FIG. 37) Allow wood to dry. Replace the wall sheathing with the original material if salvage or replacement material only after the structure is stable. Monitor the wall.

### LONG TERM TREATMENT

Repair all damaged and deteriorated walls. Consult an architect or historic preservation specialist for assistance.

FIG. 35: Deteriorating bearing walls. Note damage to the floor as well.


FIG. 36: Deteriorated wood siding allowing water into building.


FIG. 37: Water stain indicates leak. Repair leak and allow wood to dry. No wood stabilization is needed as the element is intact.

# WALLS: ADDITIONS


FIG. 38: Collapsed addition. Remove if possible, to stop drag on main building.

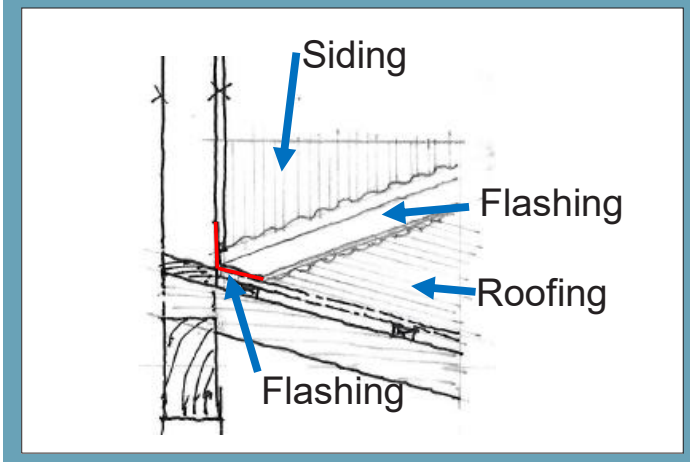



FIG. 39: Section showing flashing detail.


FIG. 40: Addition with failing foundation.

Additions were often added to the original dance hall structure to house functions such as kitchens, restrooms, ticket booths, etc. Additions were attached on the outside of the building. This attachment point is often where problems can be found, such as a leaky roof, a sagging wall, or where the addition is literally dragging the main building down.

**Problem #1:** Flashing is a metal shield that is put between one structure and a lower structure at the joint to ensure that water does not enter a structure through the joint. Often times, flashing was not installed during the construction of the addition. Review the connection between the exterior and interior. Look for a thin metal strip at the connection. Cover the joint with a tarp or other water resistant material to prevent water from entering the joint.

**LONG-TERM TREATMENT**: Remove the siding from the highest structure and insert the flashing under the outside siding. Add a piece of metal flashing to protect the joint from water entering the building. Be sure and slip the flashing under the bottom edge of the siding. (FIG. 39)

**PROBLEM #2:** If the addition was hastily built or was originally intended as a temporary structure (such as a shade structure that was eventually enclosed) there may be no foundation, or the floor joist might be sitting directly on the ground. (FIG. 40)If the addition is pulling on main building -causing it to lean either inward or outward - separate the addition from the main structure. If the addition is not significant or in extremely dilapidated condition, remove the addition. Cover any openings with marine grade or painted plywood.

**LONG-TERM TREATMENT**

Repair the foundation and structure of the addition if possible. Replace holes or openings in original building with materials.

# ROOF: INADEQUATE STRUCTURE

There are several common failures that can occur at the roof structure. These are outlined below:

Historic buildings often have construction that is not as standardized as modern construction. Rather than rafters or joists being set exactly 12 inches on center, historic dance halls may have the rafters spaced between 18-24 inches apart or greater. It is not uncommon in historic buildings that the distance between rafters varies from rafter to rafter. (FIG. 41)

The greater the distance that needs to be spanned, the greater the size the lumber needs to be. If the dimension of the lumber is too small or the distance too great, the beams, rafters or joists will sag.

Sometimes an existing column has been removed or modified to widen an opening, or to create an obstructed view of the dance floor. This means the beam running above the column is no longer adequately supported, and a serious sag may occur. (FIG. 42)

Over the years, fans, gas heaters, speakers, signs, or HVAC equipment have often been added to or hung off the original structure. Sometimes plywood sheathing and layers of old shingles contribute to the weight. The added weight can cause sagging.

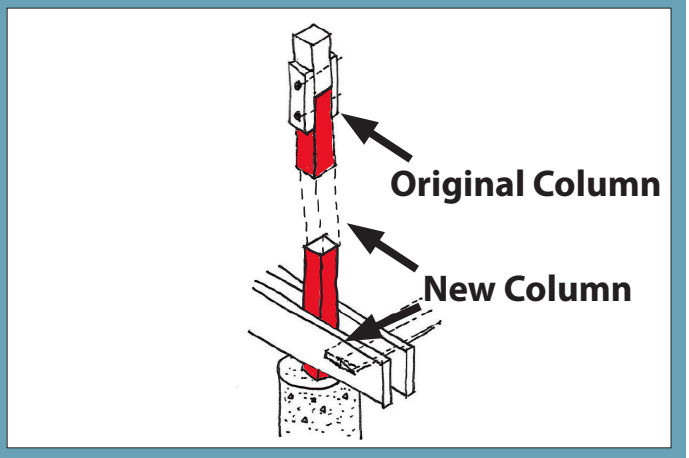
FIG. 41: Rafters or joists are spaced further apart than modern construction. Look for sagging beams or ridge lines.

FIG. 42: In this case, a column was removed and the structure now bears on steel cable. This modification may compromise the structure and should be evaluated by a professional.

### WHAT TO LOOK FOR

Review the ridge line of the roof from the exterior. If its straight, the structure is stable. If it is sagging, bowing, or there are visible dips in the surface of the roof, this indicates that the roof structure is unstable. Also, if the roof structure is visible at the interior, review it as well. Note if beams or trusses are bowing and sagging as well. Columns should have direct contact with beams above. Any gaps indicate that the beam is no longer bearing on the column. Review the condition of the material noting any deteriorated or rotten wood or rusted metal.


FIG. 43: Additional weight of gas heater could causes beam to sag.



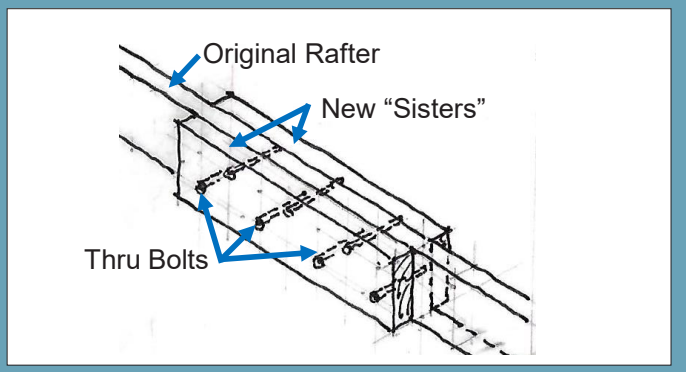




FIG. 44: When replacing a missing column, make sure the new column has a strong foundation and that it is securely attached to the existing piece of column.

FIG. 45: Inadequate sized lumber used to span a distance. Causes sagging of beams. Add a piece of lumber to assists, called a “sister beam.”

## IMMEDIATE TREATMENT

If the rafter, beam, or truss member is not large enough to support the span, add a piece of wood equal in size to both sides of the original rafter. Bolt it in place. This is called a sister or “sistering.” The sister pieces should be long enough to help the original rafter bear on plates or beams. (FIG. 45)

If a raft or joist is sagging, prop the rafters or joists up from below, and support between the rafter and the inside floor. If possible, rest temporary supports over floor beams. Try and use at least a 2X6 board as a prop.

If a column has been removed or cut off, add a post beneath the beam where a column used to be. It is wise to make sure the new post is aligned with adequate support below the floor. (FIG. 44)

Remove objects that are adding weight to the original structure. If the objects are historic, such as signs or stage curtains, do not throw them away, but save them for possible reuse after a long-term solution is found. (FIG. 43)

## LONG TERM TREATMENT

A structural engineer should assess the structure and make recommendations. Generally, a structural engineer will recommend design modifications to support specific conditions of added weight.

# ROOF: DETERIORATION OF STRUCTURE

Water damage from leaks in the roof sheathing or insects that eat or nest in wood can cause deterioration of the wood roof structure (rafters, joists, etc.) underneath. Deterioration will eventually lead to a weakened structure that is no longer stable and cannot support the weight of the roof. (FIG. 48)

## WHAT TO LOOK FOR

Finding a roof leak is not always easy, as rainwater does not always run downhill. Sometimes it runs between old and new layers of roofing and emerges in a different spot. However, the major culprits for roof leaks on sloped roofs are often where the roofing materials have been penetrated such as vent pipes, exhaust fans, attic vents, and other utilities that can create holes in the roof plane. Around these points, the roof flashing can fail. In older buildings, flashing may not have been included in the design.

Another common leak occurs at joints between building additions and their lean-to roofs are another source of water leaks. Flat roofs on building additions are another notorious source of leaks, as they tend to "pond" water, and then leak. Often flat roofs have a "membrane" roof material that fails quicker than other material types.

## IMMEDIATE TREATMENT

If there is an obvious, gaping hole in the roof, a quick patch of tar paper will keep the water out until all new roofing, or a roofing patch can be acquired. A blue tarp can also be used for a shore period of time.

Flashing around the roof penetrations should be renewed if the source of the roof leak is not obvious. Extend it vertically and then clamp it around the pipe or stack. On a shed roof adjacent to the main building's roof, flashing again needs to be renewed to seal the joint between the two structures so that water does not run down the walls between the main

FIG. 46: Metal roofs last a long time if they are painted regularly.

FIG. 47: Flat roofs need a "tilt" to get the rain water off.


FIG. 48: Deterioration of wood member due to water damage or bugs.

FIG. 49: Holes in the roof need immediate repair.

FIG. 50: A tar paper patch is a quick fix.

building and the addition.

Metal roofs, often made of corrugated tin, may need to be repainted to prevent rust. Also, in re-nailing metal panels, remember to put a rubber gasket between the panel and the nail to seal the nail hole.

Some general roof rules of thumb include:
Steeper is better. Water moves faster off the steeper roof. Simpler is better. The more a roof plane twists and turns, the more linear feet of flashing, crickets, and folds are made to fail and leak. Recall that the south slope of a shingle roof weathers (and leaks) faster than the north roof plane as the sun fries it more regularly, causing shingles to fail. Shingles on a steep slope are better than membrane roofs. When they leak, leaks are easier to track and repair. Metal roofs can last "forever" if they are maintained. All water problems are greater near low points than at high points. Water should not be allowed to accumulate or pool at a failed drainage area. If there are gutters, extend downspouts to move water away from the building.

If structural elements are sagging or visibly deteriorated, shoring maybe necessary once the leak is resolved. A "sister" repair maybe needed. Refer to page 41.

**LONG TERM TREATMENT**

Flat roofs should be rebuilt with enough pitch to drain water away from the building. Shingle roofs may need to be replaced and metal roofs may need repainting to prevent rust. (FIG. 46)

Work with a qualified roof contractor with experience in restoration to repair the roof. A structural engineer should assess the structure and make recommendations as well.

# DOORS AND WINDOWS

Windows and doors are penetrations of the building envelope, and they can allow water into the building. An older dance hall will have custom-sized windows, doors or even shutters over openings with no windows. Typically, openings a unique size that fit that building, but will not fit a modern "off-the-shelf" window. Door openings are equally unique. All original doors, windows, and hardware are a character defining feature of the building and must be retained as authentic parts of the dance hall. However, these unique features can often let water into the building either through visible gaps in the members or lack of weatherstripping along the door or window edge, which keeps the opening watertight.

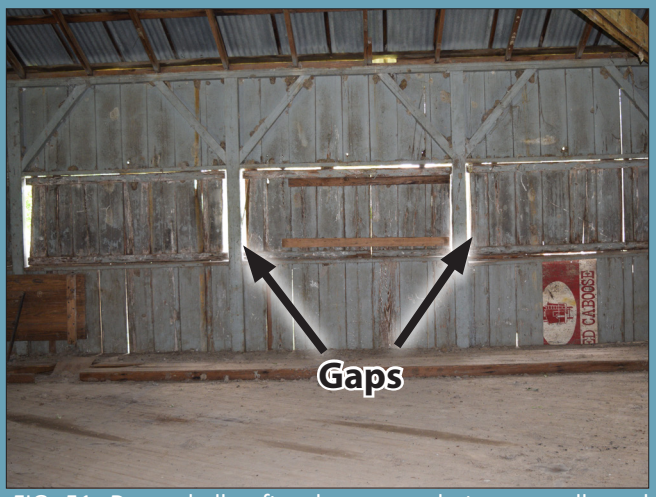


FIG. 51: Dance halls often have gaps between walls and shutters.

### WHAT TO LOOK FOR

Review each window and door. Look for visible gaps or light coming through between the window sash and frame or door panel and frame. Also look for water staining along the edge of the door or window.

### IMMEDIATE TREATMENT

Cover the windows on the outside with heavy duty plastic sheeting and hold in place with 1 inch by 4 inch nailers. This will keep water from running down the face of the window and leaking into the walls. Make sure the plastic and nailers extend at least 4 inches beyond the window in all directions. This method can be used for doors as well.


FIG. 52: Cover all windows.

### LONG TERM TREATMENT

Restore all windows and doors, adding bronze weatherstripping if none is found. Replace any broken glass panes in openings. Repair drop down shutters so that they make a tighter seal with the wall opening. Place a strip of plywood or tin at the top of the door so that it projects and diverts water.

# DANCE FLOORS

FIG. 53: Hole in the floor caused by leaking roof.

FIG. 54: Floor to left of the center post is buckling upward, which may be result of leaking roof or shift in the foundation.

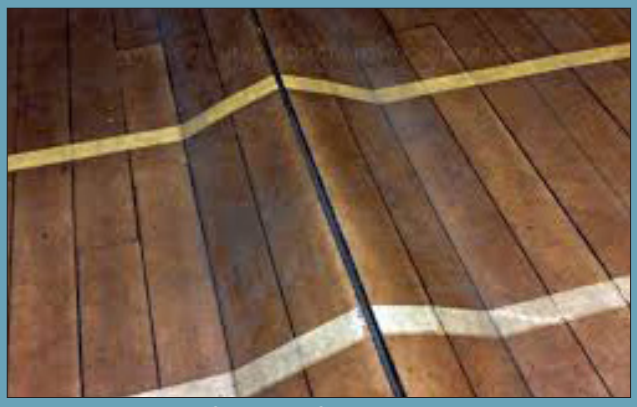


FIG. 55: Example of buckled floor.

While dance floor problems such as holes, missing boards, rotten wood, sagging or buckling (FIG. 55) are not in and of themselves a stabilization problem, they are good indicators of other underlying problems. Rotten or damaged floors can indicate a leak in the roof above or water infiltration from below. They can also indicate termite problems that maybe hiding below the floor. Buckled floors are an indication of a foundation problem, creating stresses in the floor structure. (FIG. 53, FIG. 54)

## WHAT TO LOOK FOR

Look for holes, missing boards, rotten wood, sagging or buckling boards. Review the wood deterioration section for more information on wood issues.

## IMMEDIATE TREATMENT

Identify the source of the problem such as a leaky roof or a poor foundation and then solve the cause of the problem. Cover the damaged area with plywood to prevent someone from stepping through the hole or damaged floor.

## LONG TERM TREATMENT

Salvage as much original material as possible and repair. Replace the damaged floor with wood flooring that is the same species and size.

# SITE PROBLEMS

Stabilization problems associated with the site of a dance hall are almost always about water drainage, and more specifically, water that runs under the site weakening the foundation system. All sites have some sort of slope. In a rainstorm event the water will seek the lowest point of the site. If the path to the lowest spot runs under a building, damage can occur by eroding foundations. If the lowest spot on the site is under the building, pooling water can also undermine the foundation, by displacing soil and rotting posts. (FIG. 56)

On sloping sites, it is possible that the dance hall is literally tucked into the site. This can create a condition of the floor level being below the natural grade. This condition causes wood siding, wood joists and wood perimeter beams to be in direct contact with the ground, which accelerates deterioration of the wood. (FIG. 58)

### WHAT TO LOOK FOR

Review the site after a storm and look for where water appears to run and pond. Look for low spots in the soil near the building.

### IMMEDIATE TREATMENT

Dig a shallow trench or create a small dam to divert water around the dance hall and away from the building.

Create a water barrier that separates the wood from being in direct contact with the ground. Weatherproof membrane, such as plastic or vinyl sheathing is a quick fix. (FIG. 59)

### LONG TERM TREATMENT

Dig a trench to allow separation of the ground and the wood and add a concrete wall to hold the ground away from the building and add sheet metal flashing at the base of the building. Hire a civil engineer to design a plan for re-grading the entire site so that water flows across the site and does not run under the building.


FIG. 56: Downhill slope to corner of dance hall will cause problem of pooling water against building.

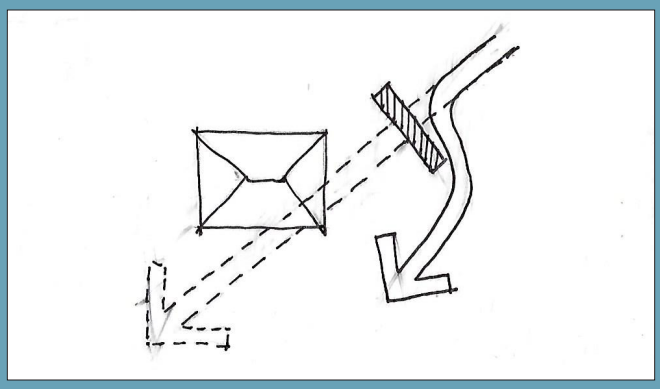


FIG. 58: Create a small dam to divert water from the building foundation.

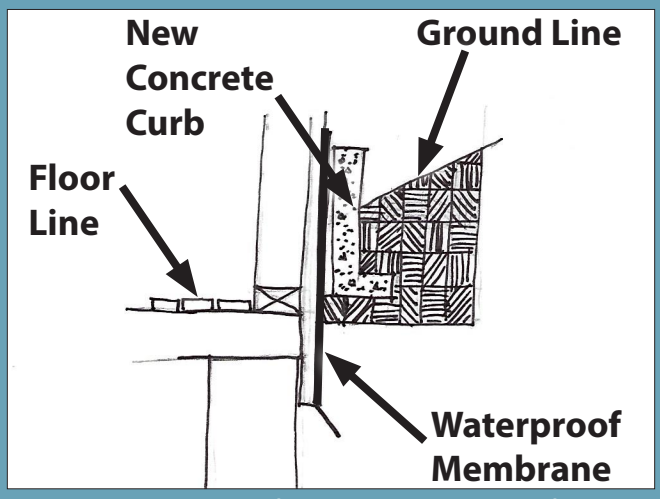



FIG. 59: For soil above floor line add waterproof membrane and a concrete curb.

# VEGETATION

FIG. 60: Structure surrounded by vegetation


FIG. 61: Trees leaning on roof.

Plants and trees that have grown on or against the building, can damage the dance hall. Climbing plants, like ivy, put roots into the walls that damage building joints. Old trees can be uprooted and fall onto the dance hall. (FIG. 61)

### WHAT TO LOOK FOR

Look for tree roots growing or under walls or are disturbing foundations (FIG. 60). Look for ivy, vines, or other plants growing on the building. Look for tree limbs or tall shrubs that maybe touching the roof.

### IMMEDIATE TREATMENT

Remove all vegetation that is growing on or too near the building. Clear off all climbing plants that cover the walls. For ivies, and other climbing plants, snip their stems (at the base of the plant) so that they die. After the leaves turn brown, they are easily removed.

### LONG TERM TREATMENT

Remove trees and plants that are too close to the building where they can rub on roofs and damage walls and foundations. A registered arborist can trim tree canopies and spot heavy limbs that will become a hazard to the dance hall roof.

# SECURITY AND VANDALISM

Protecting the building from vandalism like graffiti and break-ins will extend the life of the building. Vulnerable points of entry pose a threat to your building. Vacant dance halls are attractive nuisances. They can be targets of vandalism and school pranks. Dance halls become vulnerable to destruction because of their isolation. Graffiti on a building highlights its vacant status and identifies it as a safe place for further vandalism.

### WHAT TO LOOK FOR

Review all doors and windows for locks. Look for graffiti on the exterior of the building.

### IMMEDIATE TREATMENT

Notify police and fire authorities that the building is vacant or not regularly used. Leave a key in a nearby secure location and tell authorities where it is located. A knox box containing a key is a useful solution. Securely lock doors, windows and/or shutters. Notify near-by neighbors and give them a telephone number to call if they spot unusual or suspicious activity. Cover graffiti immediately with paint. Graffiti always encourages people to add more graffiti.

### Long-Term Treatment

If the building is going to be vacant for over a year, installing and covering doors and windows with form-fitting panels will secure it. Marine-grade and painted plywood panels and carriage bolts are often used in this case. Consider investing in an intrusion alarm system. Exterior lighting is another security option if electricity to the building is maintained. For graffiti, consider repainting the entire building.

FIG. 62: Broken windows on abandoned building.

FIG. 63: Mothball - exterior. Note semi-permanent covers over window openings and caps on chimneys.

FIG. 64:: Graffiti on abandoned building.

# FIRE AND FIRE PREVENTION

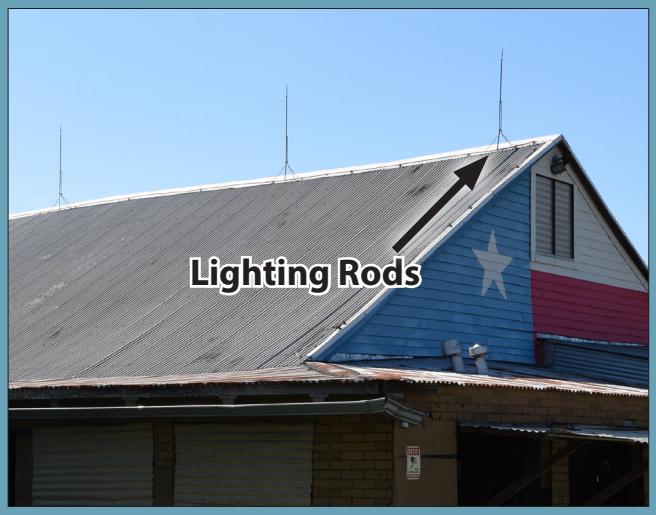


FIG. 65: Lighting rods on roof.


FIG. 66: Smoke detector

Fire can also be caused by vandalism or faulty utilities. Since the dance halls are often isolated out in the country, firefighting equipment is not readily available, and buildings can be quickly destroyed before help arrives. Securing the building from catastrophic destruction from fire, lightning, or arson is vital. Because of its rural location, help from local fire departments is often a long way away with no nearby standpipes for water supply. A burning wooden building can be in a “full bloom” in just minutes.

### IMMEDIATE TREATMENT

Turn the power off to the building at the break box and/or call the utility company and turn power off completely to the property.

Dance halls can be the tallest structure in a rural setting. If so, consider installing lightning rods that can properly ground lightening strikes and prevent them from hitting the building directly. (FIG. 65)

Install smoke detectors that use battery packs and remotely linked to cell phones or horn systems. (FIG. 66)

Remove flammable materials like paints, paint removers, and cleaning products.

### LONG-TERM TREATMENT

Install fire extinguishers if the building is to be reoccupied. Consider investing in a sprinkler system. Consult a certified electrician and have them review the condition of the electrical wiring to ensure that it is not a fire hazard.

Sudden loss of a dance hall due to failure of an internal system, like plumbing, gas, or electricity, is always possible. Preventing electrical and gas fires as well as water leaks due to failure of the dance hall systems is a function of regular maintenance and watchfulness.

### IMMEDIATE TREATMENT

If building is not going to be heated, then drain water tanks, toilets, and pipes and then add glycol to the water as an "anti-freeze." This will prevent broken pipes that may burst with expansion in freezing weather. Gas systems with open flames should be turned off. Have the utility company shut off gas lines. Electrical supply should also be turned off to the building at the main breaker or to the site completely.

### LONG-TERM TREATMENT

Install a single-source, cut off point for all electric power if the dance hall is to be vacant for an extended period of time. Consider updating wiring systems and electrical boxes if the wiring is unsafe.


FIG. 67: Electrical box with disconnect.

FIG. 68: Turn off all gas heaters and turn off gas supply.


FIG. 69: Historic backdrop properly stored in ceiling above kitchen.

FIG. 70: Well kept dance floor.

Flammable liquids, poisons, paints, and canned goods that could freeze or burst are a threat to dance halls. Excess dirt and debris can damage wooden dance floors. Storing heavy objects or equipment can strain floor framing. Historic benches and backdrops can be ruined if not properly stored. (FIG. 69) Historic artifacts can disappear.

### IMMEDIATE TREATMENT

A live load on the dance floor is a very different strain on the floor versus the static load of a heavy machine, so move any heavy equipment off the dance floor and store elsewhere.

Broom clean the dance floor as ground in sand and dirt can damage the unique oak and pine dance floors. (FIG. 70)

Find dry and secure places to store historic dance hall artifacts. Some supplies may freeze and then burst their containers, so clean out any supplies in the kitchen and maintenance areas that are old, expired, or dangerous and could harm people or property.

# 5. CHECKLISTS FOR DUPLICATION

# BUILDING ASSESSMENT CHECKLIST

## SITE CONDITIONS

Start by walking around the exterior of the building, approximately 10 to 20 feet away. Look at the entire site around the building noting any landscaping, drainage, or pest issues that could damage the building. Also, look at the building from this distance, noting any issues with the roof or buildings elements that are out of reach.

| Questions | Circle One. | Notes |
|---|---|---|
| Is the landscaping trimmed and pruned? Is the grass mowed? | YES NO | |
| Are there plants near the building? Are they touching the building or underneath it? | YES NO | |
| Are tree branches hanging over the roof? Are trees leaning against the building? | YES NO | |
| Has it rained recently? Are there puddles / standing water on site? Does any portion of the walls/roof/building look wet? | YES NO | |
| Are dumpsters / trashcans close to the building? Are they cleaned out? | YES NO | |

| | | |
|---|---|---|
| From this distance, can you see any issues with the roof? Are there holes or missing shingles / roof materials? | YES NO | |
| Does the roof ridgeline sag? | YES NO | |
| Does the site have a fence? Does the fence extend all the way around the property or just a portion? What kind of fence? | YES NO | |
| Is there a gate? What kind of gate? Can you lock the gate? | YES NO | |
| Is there a security problem such as vandalism, graffiti, or theft? Have you had trouble with people being on the property when no one else is there? | YES NO | |

## EXTERIOR CONDITIONS

Get closer to the building and walk around all sides. Take your time and inspect all buildings elements. For each side, start by looking at the ground level and foundation working your way up. Use the Building Assessment Checklist to make notes of the questions outlined below. Take pictures of the issues you identify so you can reference them later on. Note that some questions are repeated because they apply to more than one part of the building.

## FOUNDATION

| Questions | Circle One. | Notes |
|---|---|---|
| What kind of foundation does the building have? | Pier-and-Beam<br>Post-and-Beam<br>Perimeter Wall<br>No Foundation | |
| Can you see under the building? | YES NO | |
| Is rotten wood visible? Does the wood look dry? Is it cracking or missing pieces? Is it soft or spongy to the touch? Does it break off easily? | YES NO | |
| Is insect damage visible? Are termite tubes visible? Are live bugs or other pests visible crawling on the surface? | YES NO | |
| Are the piers / beams / joists straight? If they appear to be sagging, bowing, leaning, how much have they moved? | YES NO | |

| | | |
|---|---|---|
| Are there drains around the foundation? Are they clean? | YES NO | |
| Is there standing water or puddles under the building? | YES NO | |
| Is mold or fungi visible? | YES NO | |

## FAÇADE / EXTERIOR WALLS

| QUESTIONS | CIRCLE ONE. | NOTES |
|---|---|---|
| What is the exterior wall material? | Wood<br>Stone Masonry<br>Brick Masonry<br>Metal | |
| Is any wall material missing? If so, where is this located on the building? If no, what parts are missing? | YES NO | |
| Are there signs of deterioration such as rotted wood, missing mortar in masonry, or rust on metal? These issues are typically found on the wall material close to the ground, near the roof, or near water sources, such as downspouts. | YES NO | |

| | | |
|---|---|---|
| Are there holes or openings where pests could get in, look low and high? | YES NO | |
| Are there signs of pests such as droppings, tracks, nests, visible bugs, etc.? | YES NO | |
| Is insect damage visible? | YES NO | |
| Are any walls visibly leaning? | YES NO | |

## DOORS / WINDOWS

| **Questions** | **Circle One.** | **Notes** |
|---|---|---|
| Are the doors and windows intact? | YES NO | |
| What is the door material? Are the doors solid or do they have glass? | Wood<br>Metal | |
| Do the doors have locks or other hardware? | YES NO | |
| What is the window material? Do the windows have glass or just window openings? | Wood<br>Metal | |

| | | |
|---|---|---|
| Are there flaps or shutters? | YES NO | |
| Have windows been covered up with exterior siding and/or interior walls? If so, are the window units still there? | YES NO | |
| Is the door/window material deteriorated? | YES NO | |
| Is glass missing or damaged? | YES NO | |
| Is the glazing putty intact? Is the putty intact or missing? Are pieces broken? Is it dry? Does it break off easily? (Between the late 1800s and mid-1900s, glass was held in place by a white putty around the edges of the glass to hold it in place within the wood frame.) | YES NO | |
| Is the sealant around the door / window frame intact? Are there holes? Is it brittle or loose to the touch? | YES NO | |

**ROOF**

| Questions | Circle One. | Notes |
|---|---|---|
| What is the roof material? | Metal<br>Shingle<br>Other | |
| Does the roof leak when it rains? | YES NO | |
| Are there visible holes? | YES NO | |
| Are shingles or other roofing material missing? | YES NO | |
| If the building has gutters, are they clean? | YES NO | |
| Are there downspouts attached to the gutters? Are holes visible? | YES NO | |
| Is the hall equipped with lightning rods? | YES NO | |

## MECHANICAL EQUIPMENT

| Questions | Circle One. | Notes |
|---|---|---|
| Does the hall have central heating and air conditioning? Window units? Swamp coolers? Gas heaters? Electric heaters? | Heating<br><br>Air Conditioning | |
| Where is the heating equipment located, if any? | North Side<br>South Side<br>East Side<br>West Side | |
| Where is the air conditioning equipment located, if any? | North Side<br>South Side<br>East Side<br>West Side | |
| Where is the electrical meter? | North Side<br>South Side<br>East Side<br>West Side | |
| Is there a single disconnect switch that would allow the fire department to turn off all of the electrical power at an electric pole on the property? | YES NO | |
| Does the dance hall have gas service inside the hall for heaters, kitchen appliances, etc? | YES NO | |

## INTERIOR CONDITIONS

Now enter the building. On a blank piece of paper sketch out the general plan or layout of the building. It does not need to be pretty or accurately measured. The goal of the sketch is to help you document the main spaces of the building and where specific issues are located. Use the Building Assessment Checklist to review all components and make notes for each question outlined below. Repeat for each space. Mark the location of deteriorated building elements your plan sketch.

**Room Name: _____**

## FLOORS

| Questions | Circle One. | Notes |
|---|---|---|
| Are floors rotten or damaged? | YES NO | |
| Are portions of the floor buckled? | YES NO | |
| Are there signs of leaks or moisture on the floor? | YES NO | |
| Is the floor “broom clean” or covered with dirt, dust, debris, etc.? | YES NO | |

## WALLS / COLUMNS / VERTICAL STRUCTURE

| Questions | Circle One. | Notes |
|---|---|---|
| Are walls leaning? Note which ones. | YES NO | |
| Is water entering through the walls? Look for dark spots, water stains, or rust, which may indicate water intrusion even if its not raining. | YES NO | |
| Are there any signs of rot or deterioration such as holes or visible daylight? | YES NO | |
| Some halls are constructed with posts or columns that support the roof. Are those present? | YES NO | |
| Load bearing walls is also a possible construction type. If you do not see columns, then bearing walls are probably present. These are typically the exterior walls. Are load bearing walls present? | YES NO | |
| Do the columns or interior bearing walls appear stable or are they leaning? Does it look like the roof structure is still being held up? For example, sometimes the post or roof structure will shift and no longer line up with other structural members. | YES NO | |

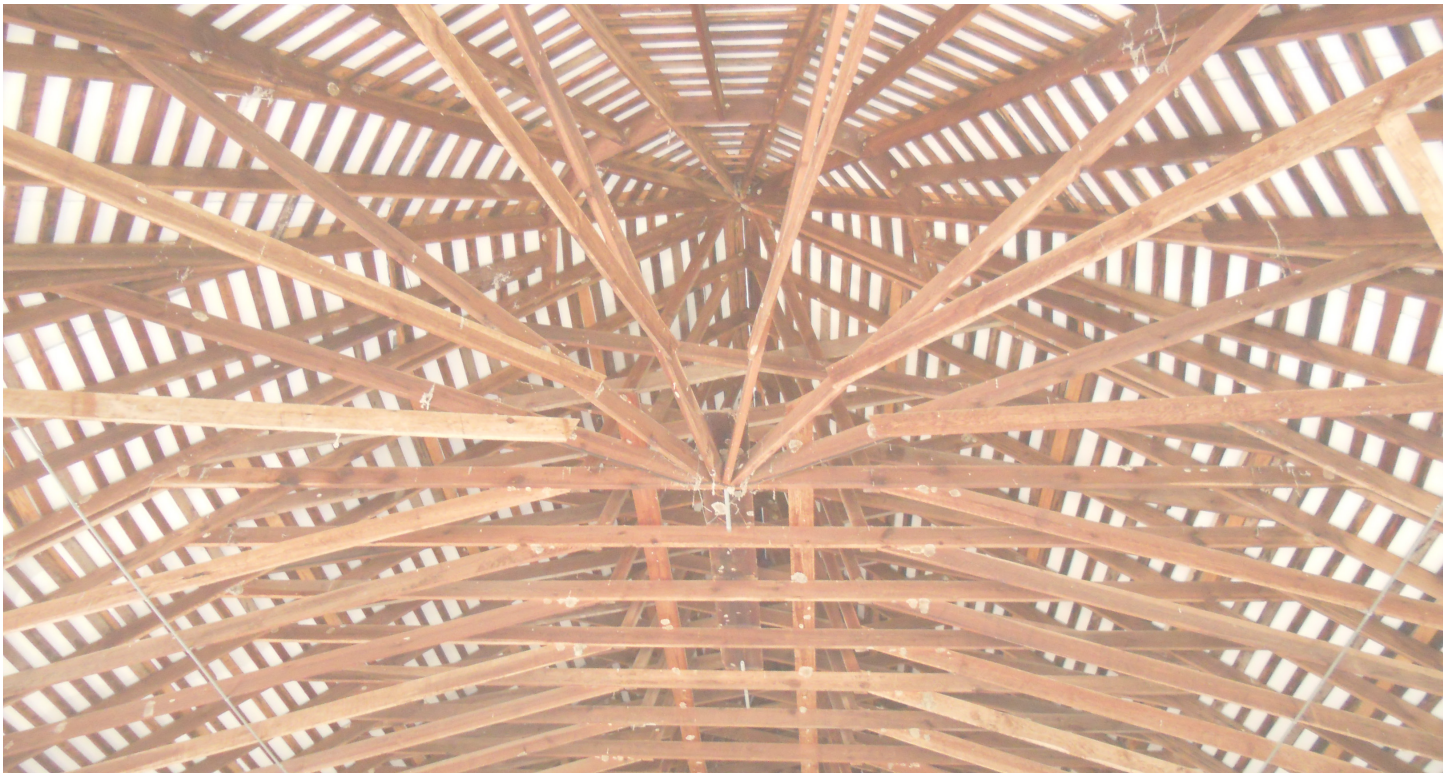
## CEILING

| Questions | Circle One. | Notes |
|---|---|---|
| Is the room open to the roof, so you can see the rafters and/or roof trusses, or does a dropped ceiling cover the roof structure so its not visible from below? | Exposed Roof Structure<br><br>Dropped Ceiling | |
| What is the ceiling materials? | Wood<br>Metal<br>Other | |
| Is the ceiling material or structure sagging? | YES NO | |
| If you can see the roof structure, are parts of it bent, sagging, twisted, or other not in their original shape? | YES NO | |
| Can you see water stains or other signs of leaks? | YES NO | |

# 6. TYPICAL DANCE HALL CONSTRUCTION GLOSSARY

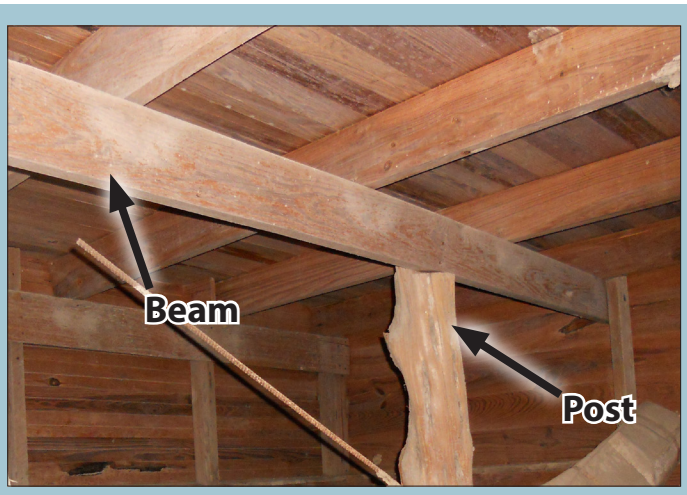
Dance halls are made of many parts. It will be useful to have a common vocabulary to use when doing an assessment of your dance hall. Understanding the form and construction of your building is important first step.

While many dance halls are rectangular, some are round or many sided with a more complex structural system. Dance halls have often been added on to over time, creating another set of special conditions. Dance halls were designed and built to provide large open spaces for unobstructed dancing. This required a structural system that could span a large dance floor, without columns getting in the way of dancers. The structural system is composed of a foundation, the floor, wall systems including columns, and the roof. These all work in unison to create a stable structure. It will be important to understand the basics of these structural systems and features to quickly see problems with the building.

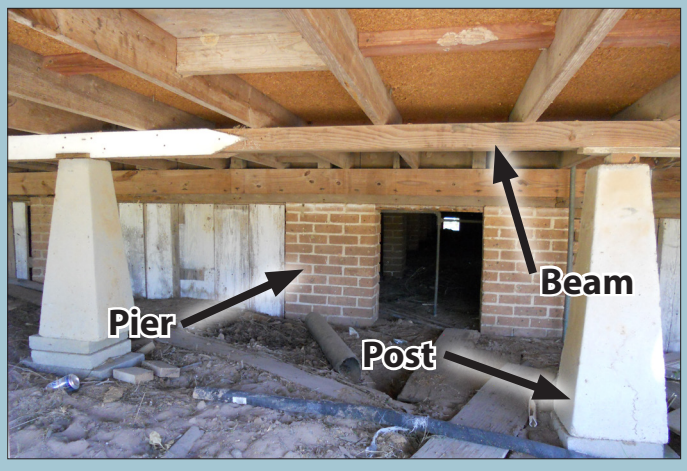


# FOUNDATIONS

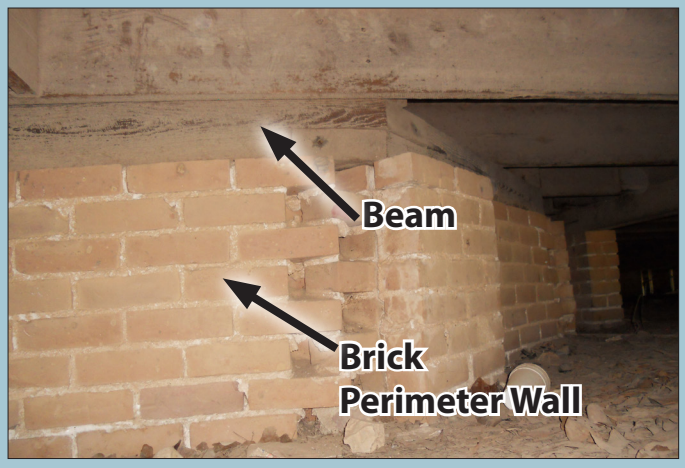
The foundation is the lowest load-bearing part of a building, typically on or below the ground. The foundation supports the weight of the building and evenly distributes into the earth. A dance hall foundation can be made up of wooden posts (historically) or, more recently, brick or concrete piers set into the earth. Long wooden floor joists are placed across the piers, parallel to one another; two more joists are connected to the short ends on either side, creating a stable frame. The floor is then laid on top of that box, perpendicular to the joists. Together, this system provides a stable foundation for the rest of the building.




**Post and Beam**
The simplest foundation system is a post-and-beam. Like the name implies, wood posts rest on the ground or are buried in the ground that hold up beams that span between the posts. Floor joists then rest on these beams. Sometimes the post rest on stones or concrete blocks. A typical foundation renovation might replace the wood posts with concrete posts or brick piers as they are less susceptible to rot and insect damage.




**Pier and Beams**
Similar to post and beam construction, a pier and beam foundation rest on concrete or masonry piers which extend into the ground. These piers often have spread footings or bell shaped footings beneath the surface.



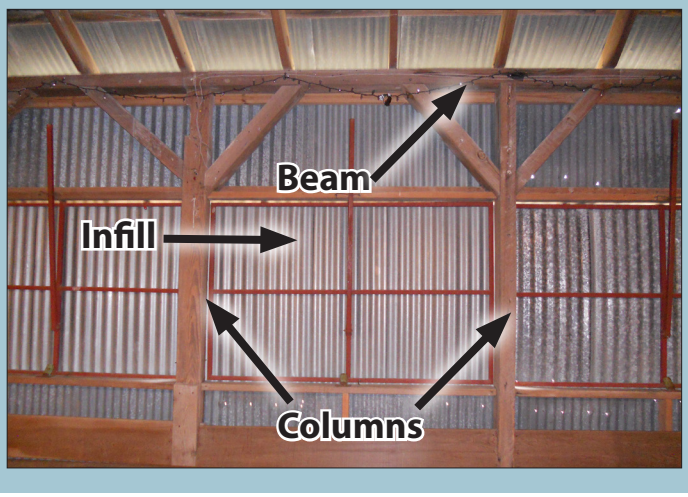

**Perimeter Walls**
A continuous wall is laid around the perimeter of the building. Beams rest on this perimeter wall and may span from side to side or on large structures to an intermediate interior wall. Brick or stone are typical materials for the foundation. Contemporary walls may be constructed of concrete.


**Foundations Using Different Materials**
Sometimes a dance hall may use more than one type of material in the foundation. This happens over time as different repairs are made on the building. It should be noted the carrying capacity of the different materials may vary.


**No Foundation**
Not all dance halls have foundations. Sometimes the wood floor beams or joists were laid directly on the ground. This makes the foundation more susceptible to deterioration from water or insects.

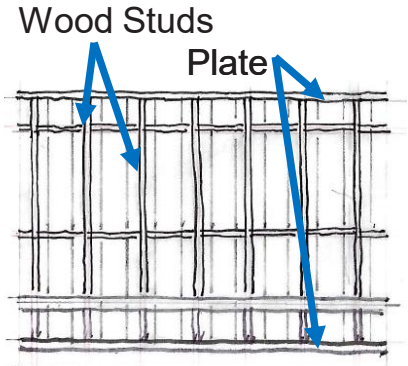
# WALL SYSTEMS

Walls that hold up the roof are called load bearing walls, because they bear the weight of the roof. Typically, the load bearing walls are also the exterior walls of the building. However, additions or lean-tos may obscure them. Interior walls that separate space but do not bear weight are called partition walls.



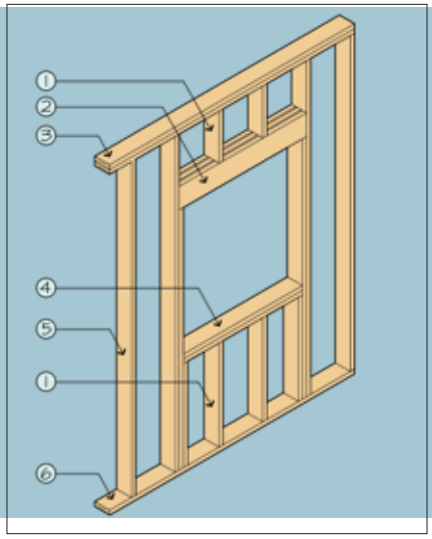

## Columns and Infill

A common type of load bearing wall is made of columns spaced around the perimeter linked by a plate or beam. The roof rests on beams that link the columns. The beam is often angle based to the column. The space between the columns can be filled with siding, or left open for hinged shutters. The columns, braces, and beams are bearing all weight of the structure and should not be removed.




## Framed Wall Systems

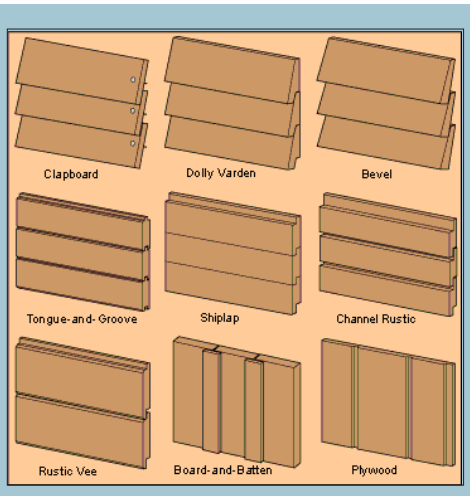
The exterior walls can have a framing system with studs placed equal distance apart spanning vertically between a top and bottom plate running horizontally at the floor and ceiling. Exterior wood siding, often 1" X 12" boards or corrugated metal, is nailed to these frame walls. Sometimes boards were added to the inside, but often the studs were left exposed. This whole system provides the support for the roof. Removing any of the studs without properly reframing can create problems.




**Stud**
An upright support in the wall of a building to which sheathing or dry wall is attached. See typical wall section in platform framing at right.

1. Cripple
2. Window Header
3. Top Plate / Upper Wall Plate
4. Window Sill
5. Stud
6. Sill Plate / Sole Plate / Bottom Plate

**Sheathing**
A term for a protective covering on the interior or exterior of a wall. Sheathing can be comprised of wood siding, shiplap boards, plywood, drywall, and various other types of sheet materials depending on the location. Exterior sheathing should be water-resistant. For instance, if plywood is used as a replacement material on the exterior of a dance, a marine-grade plywood should be used because it can stand rain, water, and other weather conditions.




**Siding**
Most dance hall's primary exterior material is siding, typically wood. The common types of wood siding profiles are illustrated in the image to the left.

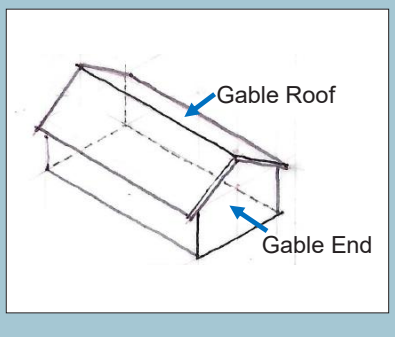
# ROOFS

The primary job of a roof is to keep water out. Roofs must also span large distances to provide adequate room for dancing. There are a variety of roofs types used in dance halls to span the dance floors. They were almost all built by hand as there were no manufactured joists and trusses available. This means there is great variety in the framing depending on the skill and knowledge of the original builders.

Wood can only span so far without needing the support of a column. The larger the span the more complicated the framing system. The distance that can be spanned depends on the type of wood and the size of the members. Adding weight to the roof structures, removing support walls or columns, or foundation movement can affect the stability of roofs.

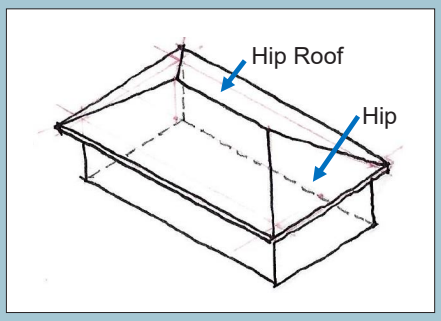

**Gable Roof**

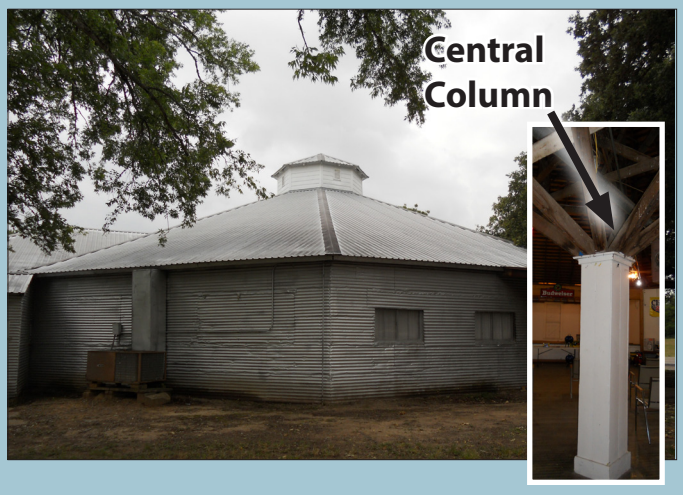
The gable roof is a typical roof. The two most common framing methods for a gable roof are rafters with a ridge beam or a truss system.




**Hipped Roofs**

Hipped roofs are similar to gable roofs, except that the ends are also pitched.



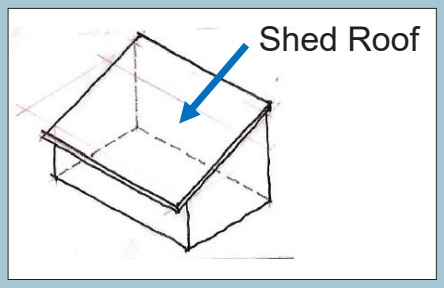



**Roofs on Hexagonal and Octagonal Structures**

The roof framing on these "round" structures is much more complicated. Commonly they have a central column made of wood or concrete. Large beams run from the central column to the corners of the building. There can be a rectangular framed structure above the column that distributes the weight. Sometimes there are one or two singular columns that rise above the main column.


**Shed Roofs**

Shed roofs are roofs that only slope in one direction. These are often found on additions.

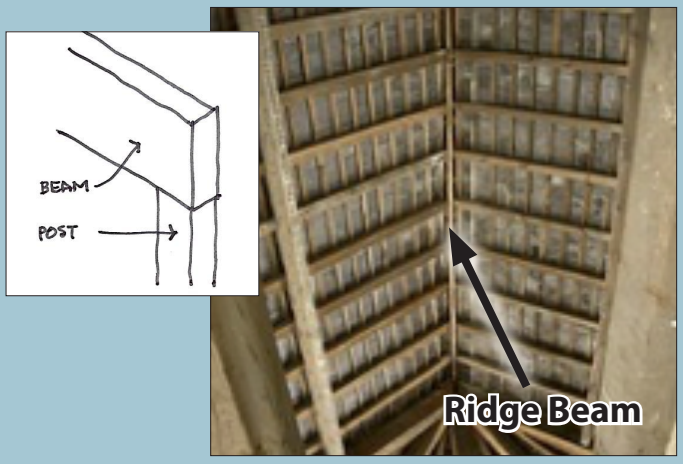




**Flat roofs**

Even though they are called flat roofs they often have a slight slope so that water does not pond on the roof. A ¼ inch slope for every foot is the minimum to avoid ponding.

# ROOFS




**Beam**
A long, sturdy piece of rectangular timber or steel spanning an opening or part of a building, usually to support the roof or floor above.

**Ridge Beam**
The top-most beam of a roof structure, running along the spine of the roof.


**Rafters**
A length of timber, sloped and extended from the roof ridge to the wall plate, and designed to support the roof deck. Exposed rafters are an important feature of dance halls.


**Roof Truss**
A framework, typically consisting of rafters, posts and struts designed to support a roof. Typically, trusses are triangular in shape, but they can also be curved along the tope edge. Trusses can support larger loads and span greater distances than a simple beam or rafter, which is why they are often used to cover large, open spaces.


**Cupolas**
At the highest point of a roof, you might find a cupola. A cupola is a small structure that extends upward beyond the roof framing. A cupola is used to ventilate the dance hall. It takes advantage of hot air rising to pull air up through the building and out the top, creating air circulation.


**Typical Roof Materials**

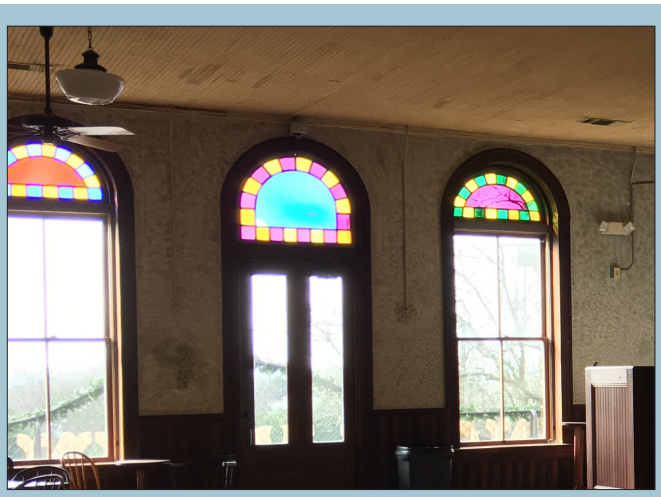
**Composition Shingles -** shingles made from a mixture of binder materials with fibers, also called asphalt shingles.

**Standing Seam -**

# EXTERIOR

### Porches and Stairs

An entry might be a stoop, or an elaborate porch. It may have a simple cantilevered awning or a gathering space.



### Windows

Original wood windows are important features. They come in many shapes and sizes. They are often double hung windows that are operable. Window panes can vary in size and placement, the windows illustrated are two-over-two. Original glass is often wavy. Aluminum windows are not historic.


### Doors

Entry doors come in a variety of style from barn doors to elaborate carved doors.

**Building Skirt**

Sometimes called a building apron, a building skirt is placed around a building's raised foundation to close off and hide the crawl space.

**Side Wall Openings for Ventilation**

A portion of the sides of dance halls may simply open to allow light and air into the space. These shutters or side panels can hinge at the top, the bottom or on the side. They are often made of the same materials as the siding, and are propped open from the inside.



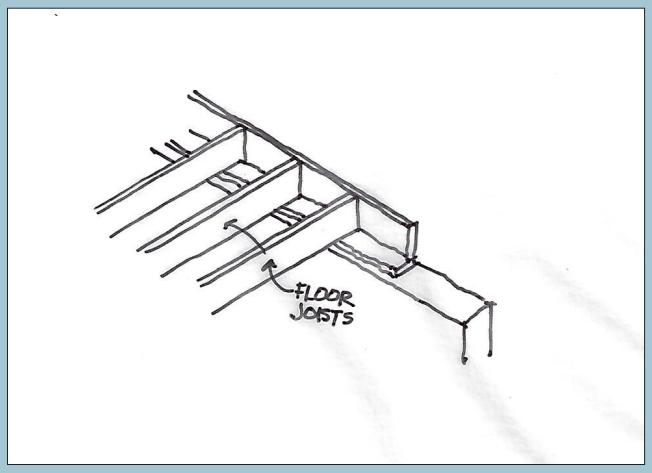
**Original Materials**

The original siding and roof materials are important elements of the historic dance halls and should be preserved if possible. Original siding is often wood board and batten as illustrated but siding could be plain boards laid vertical or horizontal. Some dance halls have replaced wood siding with other materials such as corrugated metal or asphalt singles. These replacement materials are generally not original. Original roofs may be standing seam metal, corrugated metal or wood singles.

# INTERIOR

### Wood Floors

Original wood dance floors are often made of oak or long leaf pine. Sometimes  cypress was used. The width of the boards can vary. Boards can be laid parallel to the front door, perpendicular or at a diagonal. Whether or not a sub-floor exists varies from hall to hall.




### Joist

A length of timber or steel supporting part of a structure of a building, typically arranged in parallel series to support a floor or ceiling. These are smaller members than beams.


### Perimeter Raised Floors

It is not unusual to find a raised platform around the perimeter of the dance floor. Benches or chairs often line this raised area. These raised areas serve to separate the dancers from those watching. In some dance halls the raised platform is large enough to accommodate tables and chairs.

### Stage or Bandstands

Often found in dance halls is a raised area, several feet in height for the band. These were either built into the hall or may have been added as an addition. Access to the raised stage is often up simple wooden steps that are located in front or to the side. Sometimes the steps are accessed from the rear or through a separate backstage area.


### Interior Signs

Historic signs of all kind may be present in the dance hall. Local historic advertising can be found painted on the inside walls, on canvas backdrops or around the stage walls. Other signs may include rules for behavior or special events.

### Bars, Kitchens and Restrooms

Many dance halls contain separate bar and/or kitchen areas. These may have been original to the hall or added later. In some cases, they are located in separate buildings next to the hall. Similarly, halls may contain restrooms that were original or were added later; restrooms also may be located in separate structures.

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