THE WINE ENTHUSIAST

the ultimate wine cellar and unique gift guide

RECOMMENDATIONS FOR THE PREPARATION & CONSTRUCTION OF YOUR WINE CELLAR

The major causes of deterioration and damage of fine wine are heat, light, vibration, and oxidation. Since any particular wine is purchased and consumed for maximum enjoyment, steps can be taken to insure that damage does not occur. Furthermore, as wine is a living thing, development and enhancement continue in the bottle for 2-5 years for many white wines, 3-5 years for vintage champagne, 5-20 years or more for full bodied reds and beyond for some ports and fortified wines.

Therefore, in creating and maintaining the proper storage conditions for your wine you will be assured of enjoying the best of what each bottle has to offer, whatever your particular preference.

IDEAL CONDITIONS

Traditionally, wine has been stored in cellars and caves deep under the hillsides of Europe. We can re-create these conditions in our own homes by using available construction materials and conventional cooling techniques at a relatively low cost. Professional opinion calls for an average 55 degrees F temperature for all wine storage, be it reds, whites, champagnes or fortified and desert wines. This is closest to cave conditions and allows for the proper rate of maturation: cooler temperatures will not damage wine but will delay development. Warmer temperatures (even the 65-70 degrees found in many basements and storage areas) will adversely affect wine over time.

In addition, humidity should be high, allowing the corks to remain pliant and tight. A relative humidity of 60%-70% is ideal; 50% is acceptable, 80%-100% will keep corks nice and tight, but invite mold leading to discoloration of the bottles and labels.

Bottles should be stored on their sides to moisten corks from the inside and the cellar should be kept darkened when not in use. In sum, a quiet, dark resting place with steady cool temperature and high humidity will both protect your wine and enhance not only the contents of the bottle, but your appreciation and enjoyment as well.

What follows are our recommendations on the preparation, construction, and finishing of your wine storage area or cellar to achieve these conditions.

LOCATION

Wine cellars are typically located in a below-grade (below ground level) basement area where naturally cool and humid conditions persist. Usually a corner is chosen with two exterior walls and then the space partitioned off to the appropriate size with two interior walls and a door. Exterior walls should have no openings; windows should be blocked and sealed. A commercially available sealant such as "Thoro-Seal" or "Dry-Lock" can be painted on to seal all cracks.

Wine cellars located on ground level, in areas where basements do not exist, should be insulated to the greatest extent possible, especially exterior walls that receive direct sunlight, including above the ceiling and below the floor.

Wine rooms and closets located in the interior of a house should be fully insulated and sealed with an air tight vapor barrier including above the ceiling and below the floor.

Before a location is chosen and construction begun, consideration should be given to the location and type of cooling system to be employed. Ventilation for the cooling unit must be anticipated, with the most popular units fitting completely through a wall to exhaust into an adjacent interior room of equal or greater size than what the maximum cooling capacity of the cooling unit. The ambient temperature of this area should not exceed 85 degrees F. Special cooling units are also available that can be vented to the outside.

CONSTRUCTION

Walls can be standard 2 x 4 construction of either metal or wood studs, in compliance with standard construction practices and local building codes. 2 x 6 framing can be used where increased insulation is required. Exterior walls and those below grade of block or concrete construction should be framed in the standard manner. All corners must be squared using the 3-4-5 method to square walls. (See Illustrations #1) Needless to say, exterior walls should be non-porous and dry.

Floors should also be solid and dry. A concrete floor should be sealed, and can be left exposed or covered with vinyl or ceramic tile as budget and taste dictate. An underlay of plywood can be used if needed. Floors located above grade should be fully insulated from below. See the accompanying illustration for wall, ceiling, and floor preparation.

Tile floor must be snug to finished drywall and 3/16'-5/16" maximum space for wood floors.

No "baseboard" or "toe-kick" molding to be installed to walls. (Baseboard and toe-kick will be installed to the racking).

Doors should be of solid-core exterior grade and can be ordered pre-hung on their frame, typically 30" or 36" in width. Decorative covering or paneling can be applied to both the interior and exterior if desired. If used for decorative and display purposes, glass should be thermopane and tinted. All doors should be completely weather-stripped to prevent loss of cooling and infiltration of warm air, which can cause unwanted condensation.

Existing exterior windows and HVAC vents in the wine cellar must be insulated and covered. Custom doors & sidelights for wine cellars are available through your consultant.

A **vapor barrier** should be installed on the non-cooled side of the wall for greater control over humidity (See sectional illustrations for placement). The importance of a vapor barrier cannot be over emphasized-it is an integral part of the proper construction of the cellar. The most common material used is 4 or 6-mil polyethylene plastic, sold in rolls or sheets. This can be stapled over the studs before insulation is applied.

In areas of humidity, such as the Southern and Gulf States, the vapor barrier will prevent infiltration of warm and moist air, which can cause excessive and unwanted condensation from the cooling unit. In areas of dry conditions a vapor barrier will provide more control over humidity levels, retaining higher humidity inside the wine cellar.

Insulation is required on all walls and the ceiling to help prevent heat infiltration and cooling loss. Rigid foam insulation should be used according to the R factor desired and individual handling preference.

It is recommended that all walls be insulated to a minimum of r-11 and preferably r-19. In areas of high summer or excessively low winter temperatures ceilings should be insulated to a minimum of R-19, with R-30 recommended where framing allows.

Insulation specifications are as follow:
Rigid Foam ("Tuff-R")

R-Factor	**Thickness**	**Framing**
R-7.2	1"	2 x 4
R-14.4	2"	2 x 4
R-21	3"	2 x 4

CONSTRUCTION (cont.)

Interior walls and the ceiling can be covered with any standard material according to your individual budget and taste. Standard sheet rock can be used, ½"-3/4" thick, with all joints taped, sealed and sanded. In areas of high humidity, a moisture resistant sheet rock called "green-board" is recommended. Wood paneling, redwood, or pine can also be used if desired. Ideally, ½" plywood sheeting will be secured to all walls after electrical rough in and insulation to anchor racking. (This step is not needed if using mailers between studs.)

Drywall must be installed a maximum 1/8" above sub-flooring.

If wallboard is used, finish with a quality interior oil-base or latex enamel, allowing the paint to completely dry and cure. Unfinished wood can be painted or stained, and finished with polyurethane or other sealer. Drywall to be finished and painted in its entirety with no unfinished areas. This includes areas normally left unpainted where baseboards would have been placed. Redwood generally does not require further finishing.

All pipes, wires, duct work, etc., should be enclosed in the walls or re-routed as needed.

All finished soffits for single deep racking without lighting must be a minimum of 16". And double deep racking without lighting must be minimum of 28" (See Illustration #3)

All finished Soffits for single deep racking with lighting must be a minimum of 16"+ diameter of "Can Light" covers +2". Double deep racking with lighting must be a minimum of 28" + diameter of "Can light" covers +2". (See Illustration #4)

All finished soffits for radius racking. (See Illustration #4)

Electrical work should be completed before the insulation and drywall, and should conform to all local codes.

Interior lighting is both a practical and aesthetic choice; allow enough lighting to view your wine and enjoy your cellar. Lights will *not* be on long enough to either heat the cellar or affect the wine. "High-hats", light fixtures inset in the ceiling, are practical in not interfering with racking and bottle access.

Any recessed "Can Lighting" must be thermally fused so the insulation and vapor barrier can be wrapped around "Can Lighting"

All lighting must be a minimum of 16" at "Can Light " cover from wall for single deep racking. And a minimum of 28" at "Can Light " covers for double deep racking. (See Illustration #2)

CONSTRUCTION (cont.)

How to Measure Wine Cellar Walls and finish floor to ceiling height for customer racking must be exact. All custom racking are built to your measurements and cannot be returned. So double-check your measurements.

1. Wall width should be measured at the bottom, center and top and provide the smallest measurement. Identified each wall. (A wall, B wall, C wall, D wall, etc. See Illustration #6)
2. Ceiling height should be measured in all corners and center of all walls and provide the minimum and maximum measurements. If you measurements vary more than 1" you should consider using a platform base to level up your racks properly and gave you crown molding fit tight to the ceiling for a better look. (See Illustration #6)
3. Any walls that bump out, or in to form a pocket should be measured from corner bead to corner bead (outside the pocket) and wall to all (inside pocket) using the smallest measurement. (See Illustration #7)
4. Racking should stop 2 to 3 inches from door casing so racking won't interfere with door casing. (3 ½" door casing).
5. Racking should stop 2 to 3 inches from existing light switch next to door that could not be removed.
6. Racking should stop 2 to 3 inches from existing thermostat.

Factory installation is available. Factory installation takes between 3 and 5 days depending on the size of the wine cellar.

There are to be NO electrical outlets or switches where racks are to be installed.
Exceptions:
a). Existing wall with electrical outlets and switches will be eliminated on a case-by-case basis. As a last resort, switch will be placed on outside wall next to entry door. The customer should contact their electrical contractor to move/install any outlets and switches.
b). If installing lighting for High-Reveal racking, Archway, etc. the final drawing indicating ultimate placement of electrical outlets must be complete prior to installation of electrical outlets.
c). If installing *Forced Air* systems such as Breezaire, the final drawing indicating ultimate placement of refrigeration unit and electrical outlets must be complete prior to installation of electrical outlets.

An outlet should be provided for a *Forced Air* cooling unit and should be located near the ceiling, with regular 110v (amperage service will vary in accordance with cooling unit selected). Additional outlets can be provided around the room at standard height above the floor.

d). If installing *Split Refrigeration System,* The final drawing must indicate the ultimate placement of evaporator and thermostat.

e). If installing *Split Air Handler System,* the final drawing must indicate the ultimate placement of supply air duct, return air duct and thermostat.

It is recommended that the light switch be located at the entrance door, on the exterior of the room, near your door handle. An automatic switch, operating with the door, is and added convenience.

Plumbing is generally not needed in a cellar. Through-the-wall cooling units have a self-contained evaporator pan. Split system cooling units require a drain line from the fan unit mounted in the wine room, but usually drain to a location outside the cellar (such as a waste line, floor drain, laundry tub or to the outside).

In areas of high humidity a continuous condensate drain is helpful to initially remove excessive condensation from the cooling unit, or when local conditions are excessive.

CONCLUSION

By following these simple procedures, all based on standard construction materials and techniques, your wine room will be ready for the next steps: cooling/humidity control and racking in the wood of your choice. Then you will have achieved your goal-a true wine cellar.

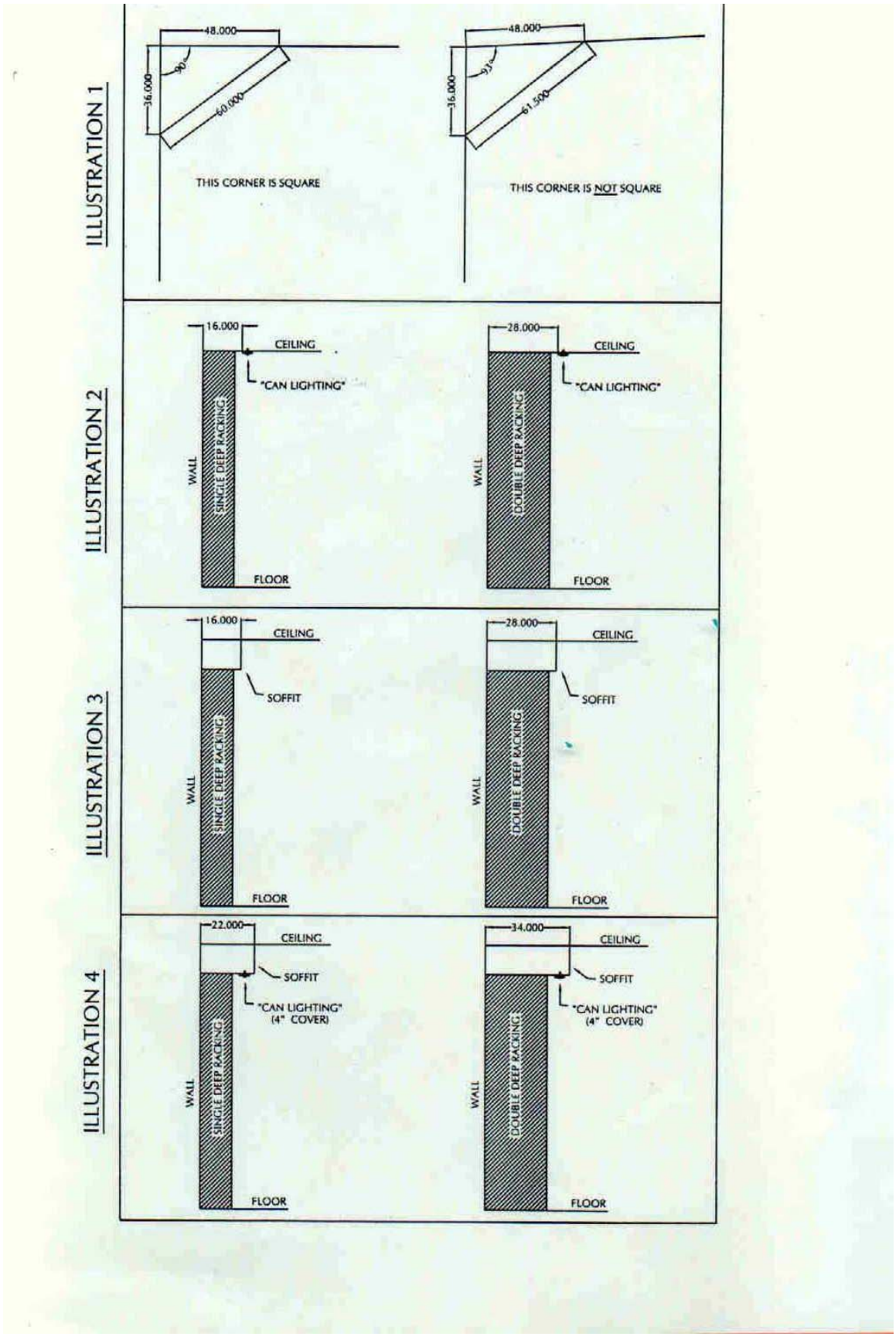
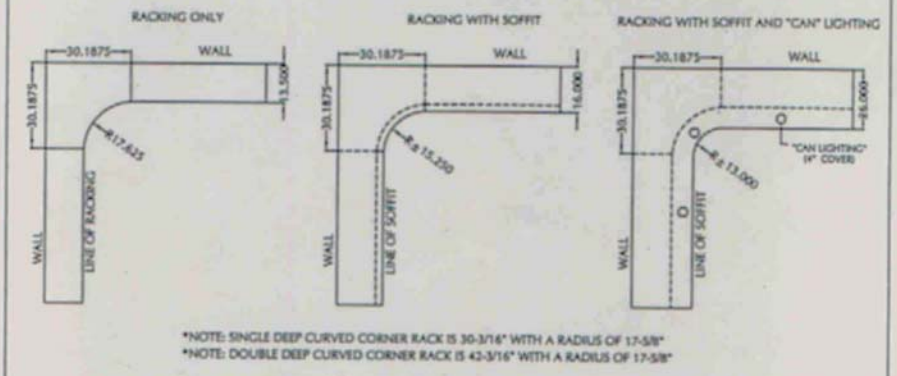


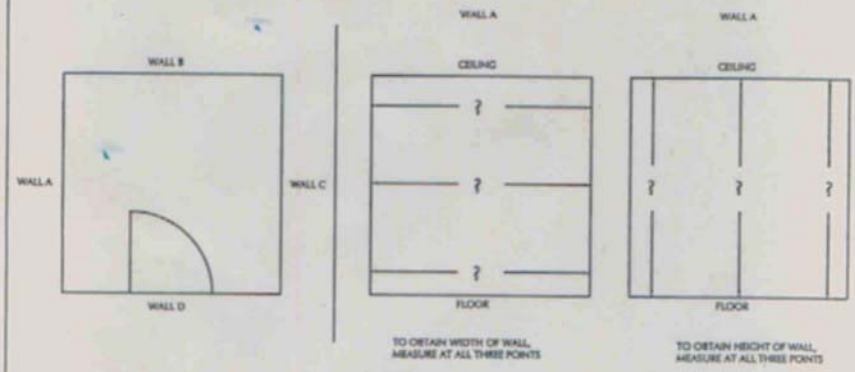
ILLUSTRATION 1
48.000
90°
36.000
60.000
THIS CORNER IS SQUARE
48.000
36.000
61.500
THIS CORNER IS NOT SQUARE
ILLUSTRATION 2
16.000
CEILING
"CAN LIGHTING"
WALL
SINGLE DEEP RACKING
FLOOR
28.000
CEILING
"CAN LIGHTING"
WALL
DOUBLE DEEP RACKING
FLOOR
ILLUSTRATION 3
16.000
CEILING
SOFFIT
WALL
SINGLE DEEP RACKING
FLOOR
28.000
CEILING
SOFFIT
WALL
DOUBLE DEEP RACKING
FLOOR
ILLUSTRATION 4
22.000
CEILING
SOFFIT
"CAN LIGHTING"
(4" COVER)
WALL
SINGLE DEEP RACKING
FLOOR
34.000
CEILING
SOFFIT
"CAN LIGHTING"
(4" COVER)
WALL
DOUBLE DEEP RACKING
FLOOR

ILLUSTRATION 5



*NOTE: SINGLE DEEP CURVED CORNER RACK IS 30-3/16" WITH A RADIUS OF 17-5/8"
*NOTE: DOUBLE DEEP CURVED CORNER RACK IS 42-3/16" WITH A RADIUS OF 17-5/8"

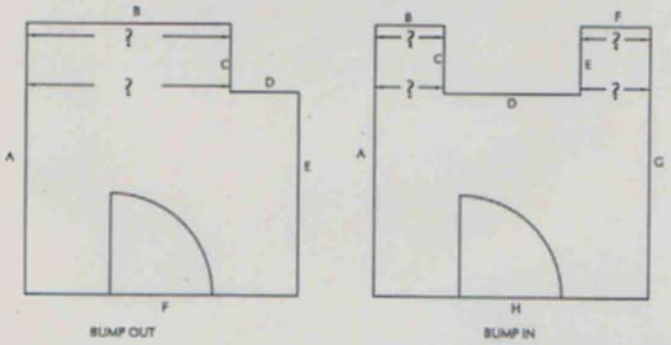
ILLUSTRATION 6



TO OBTAIN WIDTH OF WALL, MEASURE AT ALL THREE POINTS

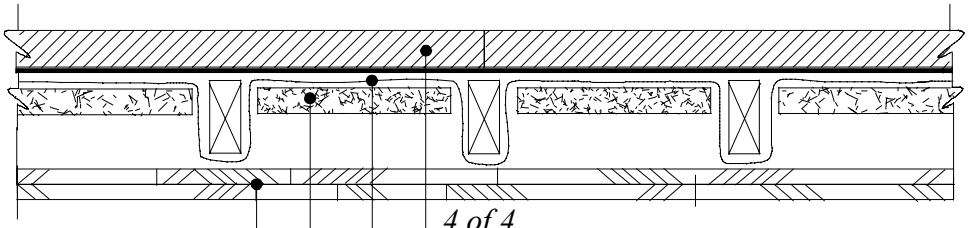
TO OBTAIN HEIGHT OF WALL, MEASURE AT ALL THREE POINTS

ILLUSTRATION 7



WINE CELLAR ROOM PREPARATION

CEILING SECTION



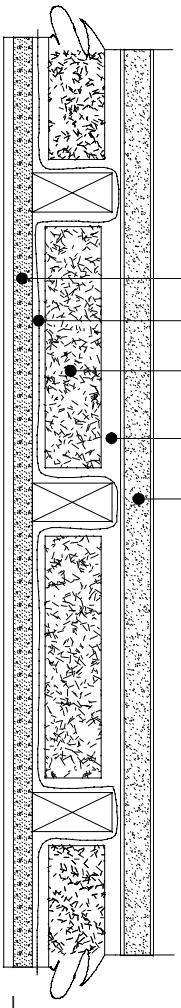
EXISTING FLOOR ABOVE

POLYETHYLENE VAPOR OR BARRIER, 6-8 MIL.

CLOSED- CELL STYRENE BOARD FOR INTERIOR WALLS (WITH 2 X 4 STUDS) R-FACTOR = 7+ /1" (3"R-MAX-R-21*)

GREENBOARD-INTERIOR QUALITY

WALL SECTION



EXISTING WALL

POLYETHYLENE VAPOR OR BARRIER, 6-8 MIL.

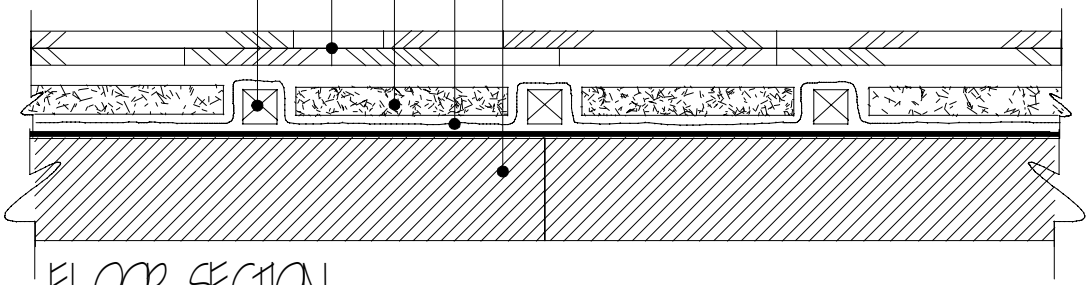
CLOSED CELL STYRENE BOARD R-FACTOR=7 + /1"(3" R-MAX)

1/2" AIR SPACE

GREENBOARD-INTERIOR QUALITY

*NOTE: DOOR-INSULATED STEEL WITH-8 TO 15 OR SOLID CORE DOOR. DOORS MUST BE WEATHER STRIPPED WITH DOOR SWEEP.

FLOOR SECTION



2 X 2 WOOD FLOOR FURRING

3/4" PLYWOOD- SEALANT & STAIN

CLOSED-CELL STYRENE BOARD (2" R-MAX)

POLYETHYLENE VAPOR BARRIER 6-9 MIL. TO BE LAPPED & SEALED ON ALL SURFACES TO FORM & COMPLETE BARRIER

EXISTING FLOOR

The Wine Enthusiast Co.