
# Avalon Log Homes

Construction Manual

# Avalon Log Homes, a Division of Avalon Enterprises

*This manual is only a general guide and may not be specific to your building. Construction practices must be modified to meet the individual circumstances of your job. This manual is not all-inclusive for building a Avalon Log Home and you or your builder must possess the general construction knowledge and wherewithal to build your* Avalon *Log Home. All construction should be in full adherence with all local governing codes*

*Avalon Log Homes shall not be liable for accidental or consequential damages resulting from construction of your log home using our materials.*

*Introduction*:

The purpose of this construction manual is to answer the questions pertinent to the erection of your log home and is intended to make you aware of the special conditions that need particular attention. Generally accepted construction procedures should be followed during erection of the package. This manual is not attempted to answer all the questions associated with home construction in general, but a guide to answer questions relating to construction of a *Avalon* Log Home. Different builders will have various learned techniques for certain methods of installations. Should you encounter a condition while building your *Avalon* Log Home, stop and call your dealer or *Avalon* Log Homes for an answer.

We do recommend that you use a competent log home contractor if you have not had considerable construction experience.

If an architect or engineer draws your plans, those drawings will take precedence over *Avalon* Log Homes drawings. If the drawings are *Avalon* Log Homes, they will utilize the *Avalon* Log Homes system, and any construction details on those plans will take precedence over the general information in this construction manual.

*Critical Construction Points*

Audit the materials; understand the proper use and placement of all materials.
The first course of logs must be level.
The space between the logs at the top of the notch is 1/16” to 3/32”.
Do a test set of the first courses of logs before spiking.
Seal the first course of logs between the sub floor and the logs properly.

Caulk and use foam gasket at the freeze blocking to T&G decking joint at the eaves.

Verify bearing heights before cutting columns

Interior walls need to be attached to exterior log walls with slotted lag screws
Interior wall finish material should not be attached to roof members for settling
Interior trim at doors and windows should be attached only to the bucks and not the wall logs
Break the T&G decking at the gable ends.
Block the triangular cavity on top of the ridge beam formed by the T&G decking.
Adjust all setting devices to level loft floors and or ridge beams after the roof system is in place and before cutting rough openings for doors and windows.
Install flashing above all windows and doors.

*Receiving the material*:

When the material arrives to the job site in flat bed truck trailers, special care must be taken. The unloading crew is responsible for the product and the appearance of the product while the unloading is in progress. Any damage at that time will either show in the end after the building is finished or will cause additional time for the contractor because of the effort needed to correct or adjust for material that was damaged earlier.

> **Note: Tractor trailer trucks require at least a 65-foot turning radius and the access road must be wide enough to accommodate the truck and trailer as well. Driveway must have an adequate sub base to support the weight of the truck.**

The load spacers, called (stickers), used in the container or on the trailer may not utilize enough stickers to store the material on the job site. Two 2x4s or a 4x4 may be used for stickers it is important to position the sticker so the weight of the unit will transfer directly to the ground. This means that there must be a vertical sticker line between each unit and course of material that is being stacked. Remember the first stickers placed on the ground should be level or on the same plane so no irregularities of the ground will be transferred into the unit. Prolonged unbalanced weight on materials can cause telegraphing in that material.

The log and beam packages will be banded together into bundles ranging in weight from 1000 lbs. to 5000 lbs. A forklift is required for unloading the trucks and the forklift should be all terrain to handle irregular ground at the building site.

*Material Audit:*

The builder must audit the material and make a mental plan of the use of all the components supplied. The plans note the proper location and use of some of the specific pieces in the package. Improper utilization of any special length items will result in a shortage in the package. For most of the log package, the random

length system offers flexibility, but prior planning for the use of the logs is required by the builder.

*Positioning the packages:*

To enable your builder to work more efficiently, it is important to locate the packages near the walls of the building where the greater share of each package will be needed. Each package has a bunk tally card stapled to one end. The tally card describes what is in the package and the information corresponds with a take-off.

General Note: The tally card will list exact log lengths and quantities. The actual length of any one log may be slightly longer. Extra logs will be added to the package for shortages.

We recommend that you cover your packages with a heavy plastic lumber wrap, leaving the package ends open. Wrapping is available at the plant prior to shipping at an additional cost. If the material is to be stored for a prolonged period of time, it is recommended to use a warehouse or roofed area.

*Tongue and Groove Decking:*

The 2 x 6 tongue and groove decking (T&G decking) should also receive the same forethought to position the T&G packages around the job site that the logs and recommended to allow men and machinery to work easily.

*Insulation:*

Insulation may be part of a package and needs careful attention. The rolls of fiberglass insulation must not get wet.

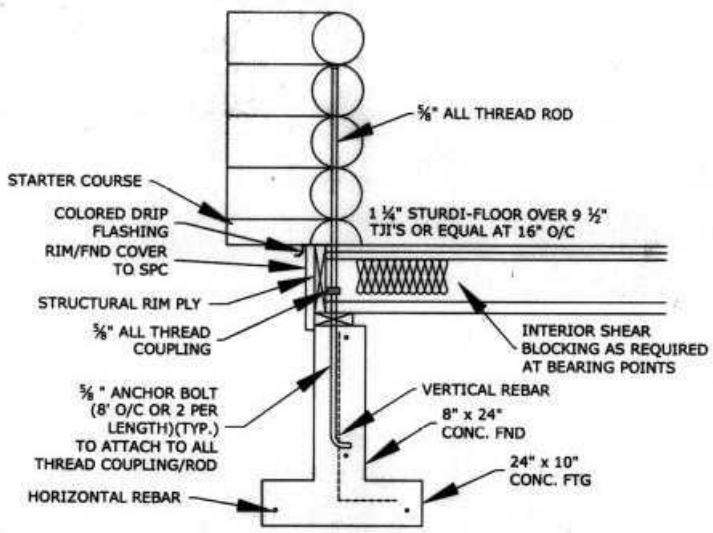
*The construction site:*

Every building site is different and poses its own logistic problems. Access to the site may be easy for a small car or truck, but remember that heavy trucks and special equipment will need to use the same access road. It is important to provide ample room to store the packages and allow for men and machinery to move freely about the building.

Proper water drainage must be considered so the ground will be able to dry as quickly as possible. Care should be taken to protect trees and shrubs that will be a part of the landscaping after construction is finished. An area for a topsoil stockpile should be considered during the excavation so it can be spread over the lawn and garden areas later.

Plan for temporary power and a job site phone. The phone will be appreciated by the builder and will usually save you time and money all during the construction of the project. Temporary sanitary facilities should be available for

the workers. Trash piles should be kept to a minimum for appearance and safety.




EXT FND WALL DETAIL
SCALE: NTS

*Footings:*

The footings must be placed on the undisturbed soil. If the footings are to be poured on fill or newly moved soil, a compaction test must be performed to assure a stable building site. If there is a question about the ability of the ground to hold the building, a soils engineer should be consulted to make recommendations. Do not make guesses or assumptions at this point.

Buildings require at least a soil bearing load ability of 2,000 Lbs./Sq. Ft.

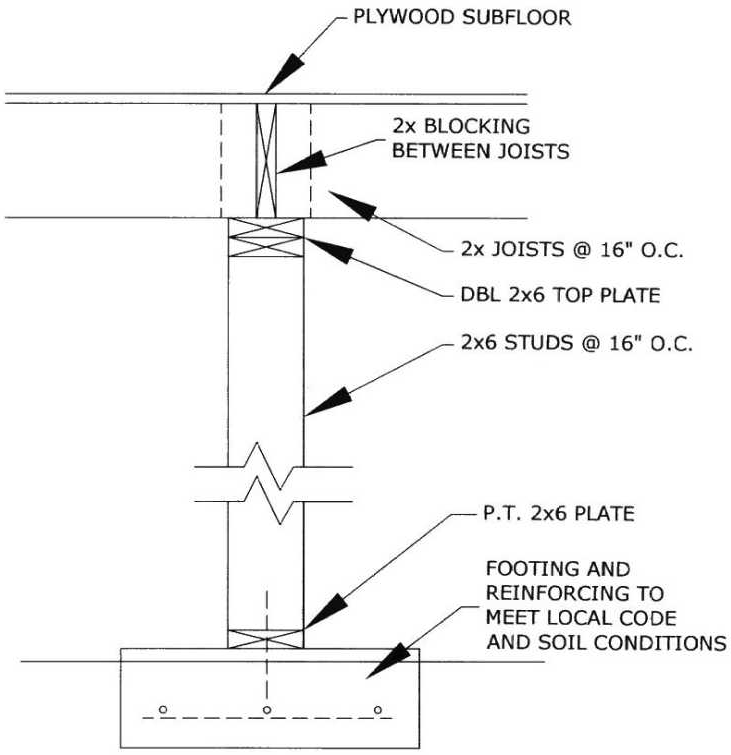
*Foundation Walls:*

*Avalon* Log Homes recommends 8-inch thick walls to support the weight of the logs, beams, and wind and snow loads. An 8-inch thick wall also satisfies most seismic conditions with the proper reinforcement according to engineered requirements.

While the foundation wall is curing (set up), the anchor bolts should be set. The anchor bolts secure the building to the foundation.

Standard practice is to seal the exterior of the foundation and provide drainage to compensate for the inability of the soil to drain excess water away from the foundation. The seal material is usually an asphalt emulsion.

> **Note: Failure to address the ground water question will result in a damp home and possibly water or mildew in the basement or crawl space.**




*Sub floor Systems:*
*Sill Seal:*

The beginning step is the strip of foam sill seal placed on top of the concrete before the 2x6 or 8" sill plate is installed. The foam sill seal is 4 to 6" wide. The sill seal will fill any irregularities in the top of the concrete. Also it will seal the space between the sill plate and the foundation wall.

*Sill Plate:*

*Avalon* Log Homes recommends that all wood that makes contact with concrete be treated. These levels of protection are used in more extreme conditions like sleepers for decks that are laying directly on concrete exposed to the weather, or in cases where the material will be under water at times.

Remember to use pressure treated stock under interior walls, which bear on concrete.

Use pressure treated 2x6 or 2x8 material for interior pony walls. The pony walls are on a concrete footings through the middle of the foundation area. They help support the floor joists.

There are several ways to build the sub floor. Follow the construction plans.

In place of the dimensional joists, web-ply joists are typically used. When the truss joists are used the perimeter joist are replaced with a laminated or composite rim-ply.

*Joists:*

The joists are spaced per the construction plans and rim joists and end joists must carry the weight of the log walls. Blocking must occur above the pony walls where the floor joists usually splice. The blocking is the same size material as the joists. The joists rest on the pressure treated sill. Plywood crush blocks may need to be installed over bearing walls.

*Tongue and Groove Plywood:*

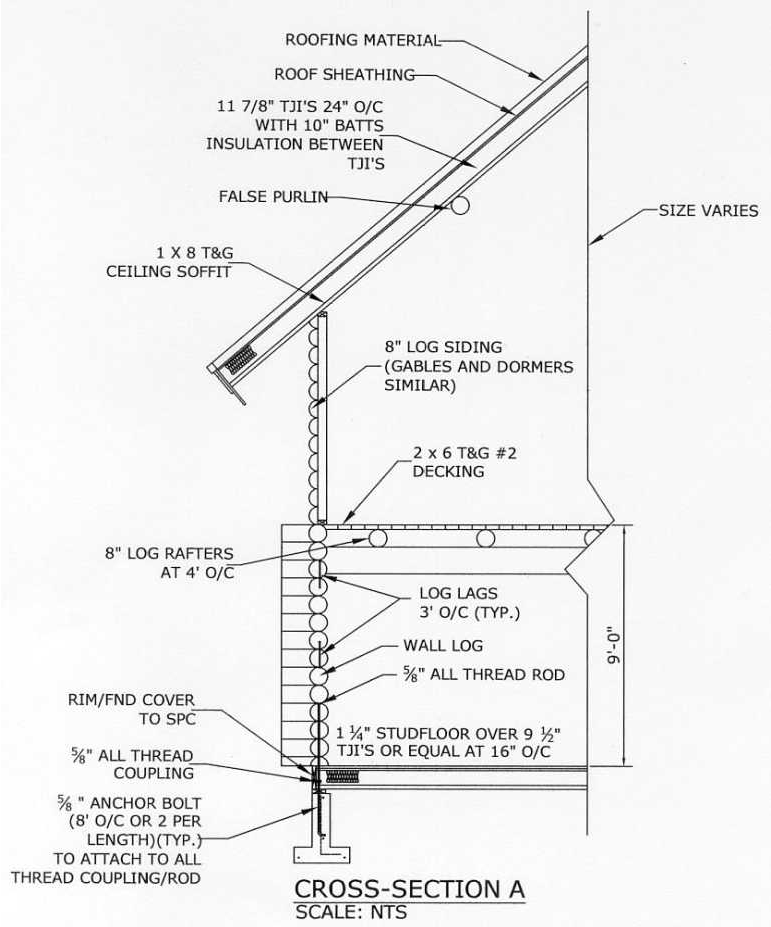
*Avalon* Log Homes recommends tongue and groove plywood for sub floor sheathing. The plywood should be glued at the joints and also should be glued to the tops of the joists. Construction adhesive is supplied with the sub floor package. Chipboard should be added after roof is dried-in in any areas to receive vinyl flooring.

> **Note: Make sure that there is solid plywood under the cope edge and the log will rest flat. If the groove is not cut off, the log my crush the edge of the plywood and the log will list to the outside of the house.**

*Foundation Vents:*
In some areas foundation vents are needed and can be in the concrete foundation wall or be placed in the rim joists. Foundation vents should not be located anywhere that a column with a load is coming down above it. Please review the plan to make sure that vent is put in non-bearing locations. Foundation vents may not be necessary if the structure has a full basement and it is a living area. It is very important to have adequate ventilation of any crawl space under the sub floor. Remember to use a vapor barrier of plastic over the soil in the crawlspace. This will help control the ground moisture under the plastic.

*Skirt Board:*

Rough sawn trim may be applied now or installed later. The trim skirts the entire perimeter of the sub floor system. The skirt board can be of varied materials. Typically, *Avalon* Log Homes recommends 1x12 rough sawn Douglas fir, Pine, or cedar boards.

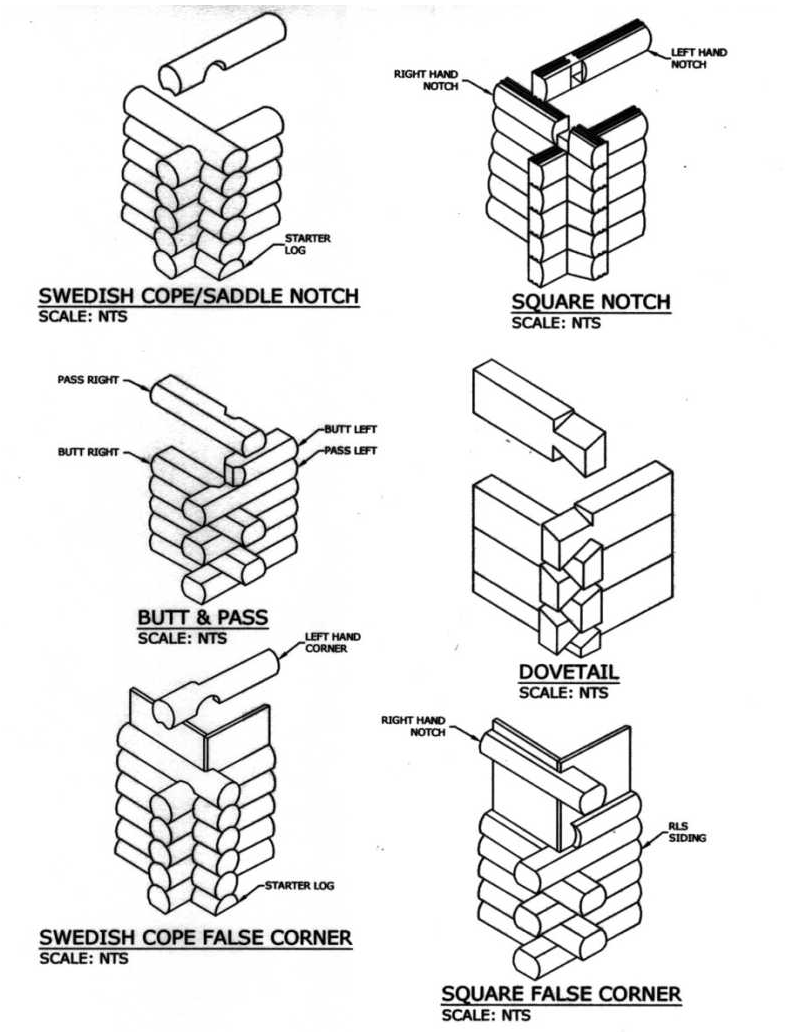



*Avalon Log Homes Random Length Log System:*

Wall logs are supplied at random lengths. For special logs with designated placements in your design- please refer to notes on you floor plans and elevations for locations of these special logs (if applicable), or plant package, or to your *Avalon* Log Homes representative.

Typically, it is the responsibility of the builder to inventory and make efficient use of the logs. Our random log system is designed to allow flexibility in stacking the log walls, with the on-site crew using their judgment on log placement to best suit the site requirements or homeowner preference. Because our logs are uniform in design, you can easily interchange pieces to achieve the most pleasing appearance.

Custom logs are often required for specific locations due to spline/no spline situations, mid-span log wall intersections, whenever the centerline dimension from log corner to log corner is 10’-0” or less, and other special circumstances which may require custom notching. These logs are always tagged.

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*First Course of Logs:*

Laying out the first log course and the erection of the logs will begin after the floor joist system and sub floor have been completed. The sub floor should be completed in such a manner as to assure a square and level building surface. There cannot be enough emphasis on how important it is to have the first log courses absolutely level. Failure to accomplish this will cause the saddle notches to open or gap as you stack the logs. Please take your time at this point to ensure a proper fit and tight construction.

*Chalk Lines Locate Inside of Logs:*

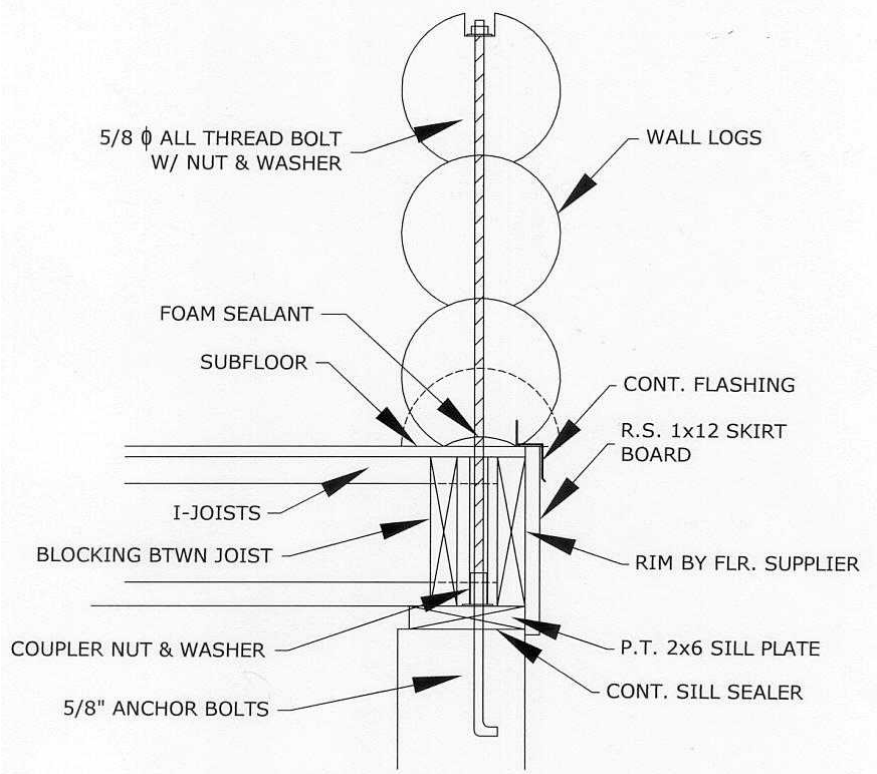
The first step is to determine the location of chalk lines, which will mark the inside of the log walls. All log sizes should project 1 ½" or 2" outside the foundation wall or edge of the sub floor system. Therefore, at each corner you measure in from the edge a distance equal to 1 ½" or 2" less than the diameter of the logs being used to establish the inside of the log wall.

After you have marked an “X” At each corner, it is important that you take length, width, and diagonal measurements from the corners to make sure that the first course of log wall is square.

When the final “X” marks are located you then snap a chalk line from corner to corner. The chalk line will be guide for the inside edge of the logs.

*Rim Flashing:*

Before placing the logs on the sub floor cut a saw kerk in the bottom of the half log and the bottom of the first full log to accept the rim flashing. Rim flashing is usually galvanized steel and is in the form of a “Z”. The rim flashing assures that any water that is traveling down the log wall will not be allowed to go into the house under the logs. The rim flashing also provides an insect guard.




*Anchor bolts:*

The half log and full logs will need to be marked where the anchor bolts extend through the rim joists. This extension is to be done in All-thread, in the same size as the anchor bolt, usually 5/8”. This redi-rod needs to extend up at least through 3 full courses of wall log. One of these needs to be used at every corner and 2 per every main length of house. The logs need to be drilled so that the threaded anchor rods will slip easily through the logs and into the coupler nuts on the anchor bolts. Countersink a hole into the top half of the half log and the full log to accept the washer and nut.

*Locate the Half Logs:*

It is important to review the construction plans for the particular structure being built to locate the half logs and the full logs. Usually the half logs are placed in the walls, which run across the width of the home, or on the gable end. The outside of the ½ starter log should rest approximately 1-1/2" outside the floor.

*Level the First Course and Test the First Log Courses:*

The half logs, because of manufacturing constraints, are not an exact half log. Either the half logs must be shimmed up into the notch of the first full log or in some cases, the half log may rest on the sub floor and the first full log will need shims.

To level the first course of logs use hardboard or hardwood shims. The shims should be placed at 3' intervals or less. It is important to have a shim on either side of the anchor bolts. To level the first course of logs, use a construction level and rod to establish the grade of the half log and the first full log. As mentioned before, it is very important to maintain an exact level condition for the courses of logs. After locating the highest point of the sub floor system, shim all of the other areas the correct height.

> **Note: Remember to seal between the sub floor or sill plate with caulking and use two rows of caulking or foam gasket under the half log and full log. It may be necessary to fill gaps due to the shim process with expanding foam sealer or caulk.**

*Expandable Caulking System:*
*You normally will be provided with tubes of log caulking. For Swedish cope logs install a ¼" x ¼" bead of caulk at the top center of the log before you lay the next log on it. Be careful to insure that you don't use an excess bed to avoid it seeping into exposed area of the log. Failure to do so may also cause you to sue more caulk than provided.*
*For Tongue & Grove logs install a bead of caulk in between the groves on double T & G logs. Also install a bead of caulk up against the outside face of the tongue –on the exposed side. This same procedure should be followed for a single tongue and groove system of installing a bead of caulk up against the outside face of the tongue.*

*Alternate Gasket System:*

You have been provided with ¾"x 1-1/2" foam gasket.

The strip of ¾" x 1-1/2" foam gasket can be stapled. Caulk.

Seal between the sub floor and half log. Place two beads of caulk and foam gasket under the half log. Lay a saddle notch gasket over the half-log, aligning one tab of the saddle notch gasket with the kerf in the top of the half log.

Be sure to seal the inside edge of the half log at the floor where the first full log notch will cover the half log. Install the first full log and only after the proper test fit; tighten the nuts on the anchor bolts.

*Log Screw Spacing and Counter Sink Holes:*

The log screw spacing and position is very important to satisfy seismic conditions and wind load requirements. Refer to the construction plans if they are engineered for data on the spacing of the spikes in the log walls. If no notes or specific instructions are noted, the log screws should be spaced 3 feet apart.

Log Screw the corners at the saddle notch.

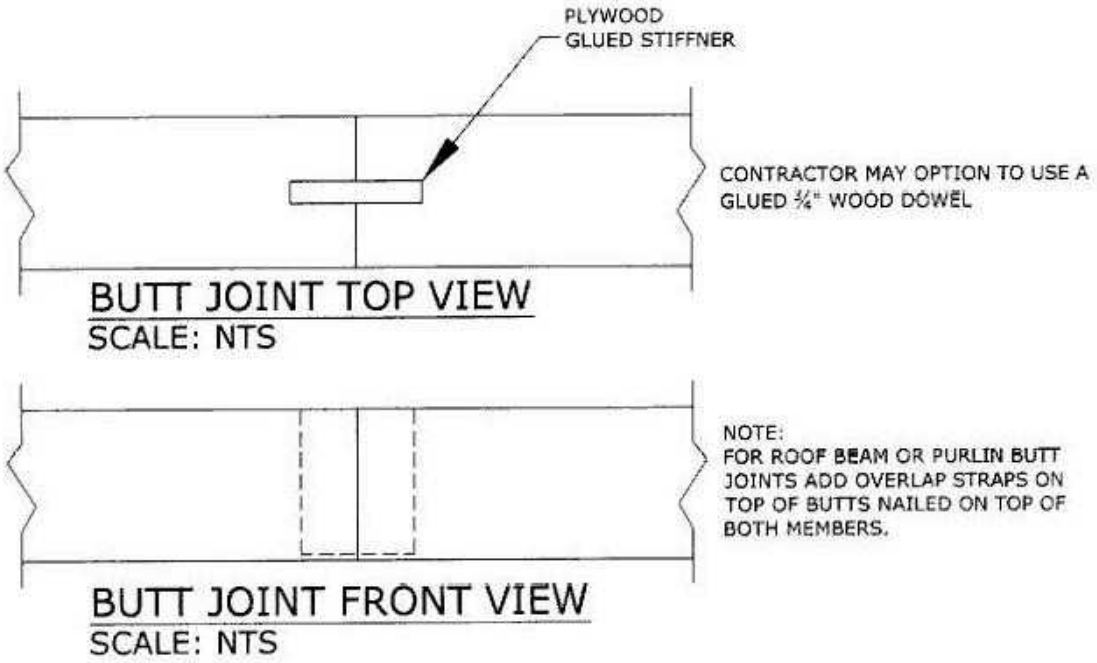
Counter sinking the screws into the log is very important so that the logs will be able to settle. The depth of counter sink depends upon the log size. Engineering requirements dictate that 4-6" of screw penetrate the log below the log being screwed down.

> **Note: It is extremely important to counter sink the screws to allow for settling.**

Also, it is important to drill a 3/8" pilot hole in the log that is being screwed down. The pilot allows the screw to move or slip when settling occurs.

*Installing Log Screws:*
Screws should be at 12" away from butt joints and window and door openings. When installing, alternate the screws on either side of the Gasket System. Do not angle the screws, but make sure that the screws are driven vertically into the

log below.



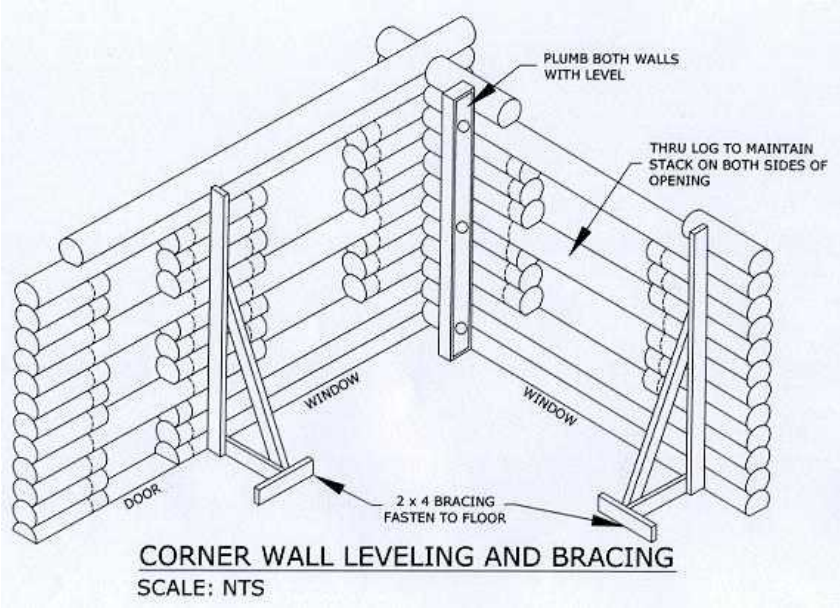

*Butt Joint Treatment:*

Each structure will have a certain amount of butt joints. A butt joint is a connection between two logs in the middle of the wall. It is important to treat this connection so that it will not allow any air infiltration. The end of each log should be cut square so both logs will meet with no gap.

We recommend that you use either a plywood wedge (7/16" or ½" stock) or wooden dowels. Either method should be done by apply caulk into the hole or slot to help seal up the air gap.

The slot is precut into the end of a log before it is set into place. Set the next log butted to it and run the chain saw down the slot creating another slot in the new log. This will create a double slot that lines up that the plywood shim can be inserted. PL400 glue or sealer caulk can be used to glue the plywood shim. If using a dowel, just drill a vertical hole between the two logs and add glue or caulk as you insert the dowel.

Cut the wedge or the dowel off level with top of the log.




*Log Through Openings:*

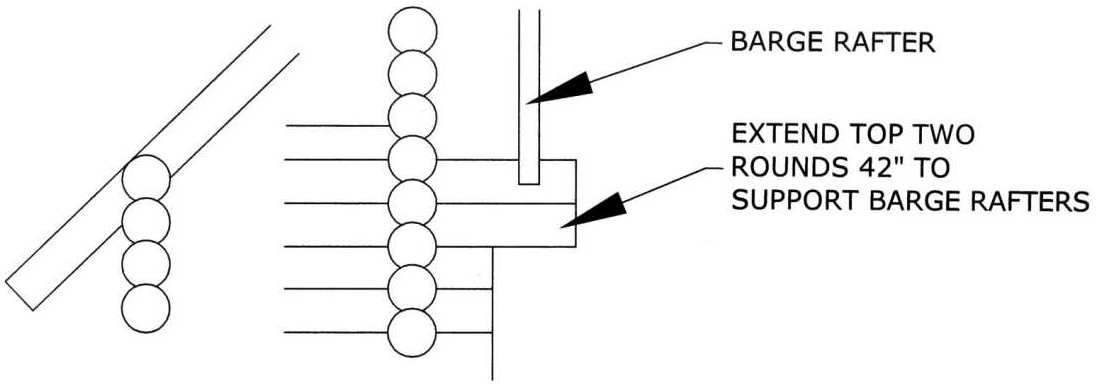
After several courses of logs have been erected it is advisable to run a log through the openings where the doors or large windows will be. This log will stabilize the log wall while under construction and also will help maintain the same log elevation on either side of the door opening.

While erecting logs it is critical to maintain a constant check on the elevation of each course so that it is level with its corresponding log course. As you are stacking logs you will always have two different elevations to maintain.

*Elevations Adjustments:*

It is important to maintain the elevation throughout each course of logs. If you discover a low or high spot, particular attention will be needed to compensate in that area where the elevation of the log course is either low or high. Many builders will adjust the elevation of the log by seating the spikes with more or less pressure to lower or raise the log height. It is still critical to not allow any air gap between the log courses. It may be necessary to sand or plane off a small amount of wood to maintain the proper elevation of the log.

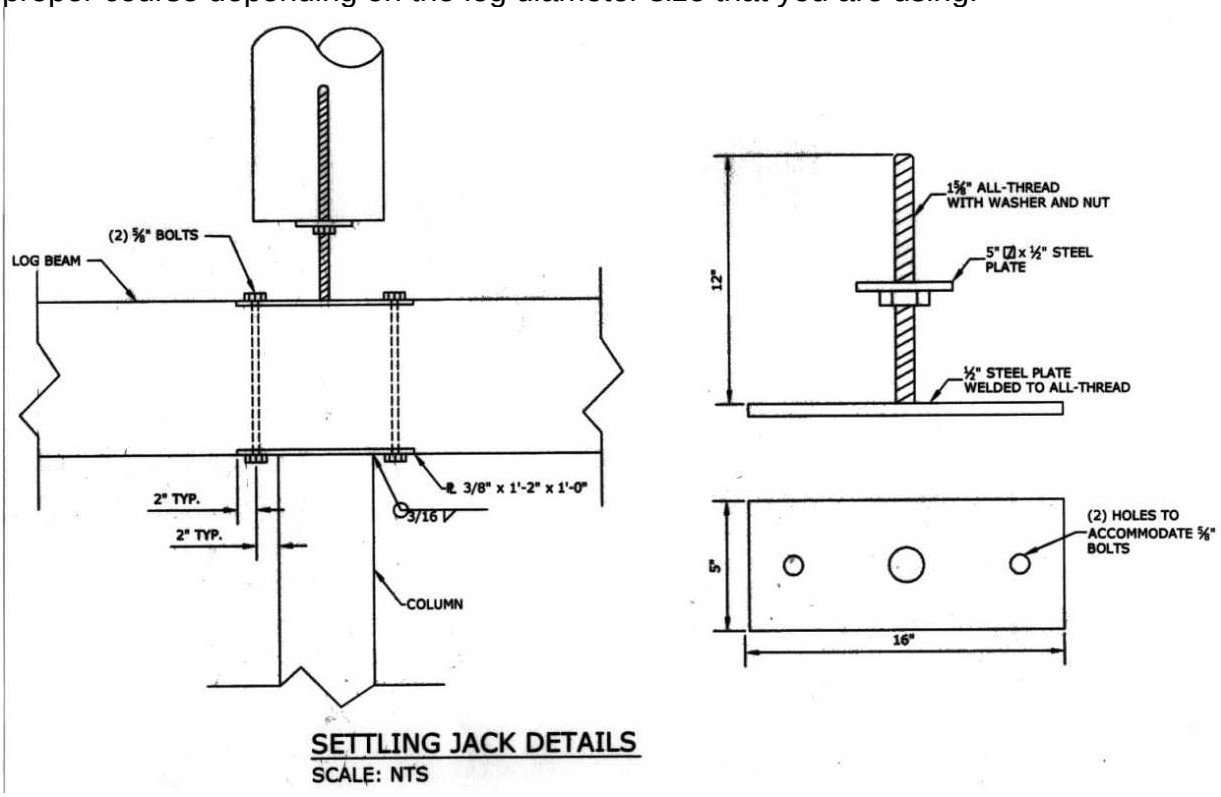
**Note: Do not try to resolve a large problem in one log course. Spread the correction over several courses of logs. The ultimate goal is to end up at the loft floor level or rafter level at a level condition.**
**Be sure to sue a level to make sure that the wall logs are staying drifting outward from each other. Put the level vertically on the inside of the wall and also check the outside of the wall before screwing down the log into the one below.**




BASE/CORNER EXTENSION DETAILS
SCALE: NTS

*Barge Rafter Support Logs:*

If your Avalon Log Home has barge rafters (rafters outside the gable end of the home), barge support logs are necessary. The extension of the top 2 courses is used to provide support for the barge rafters. Note the number of the log courses that are extended for any given log diameter. Place the barge support logs at the proper course depending on the log diameter size that you are using.




SETTLING JACK DETAILS
SCALE: NTS

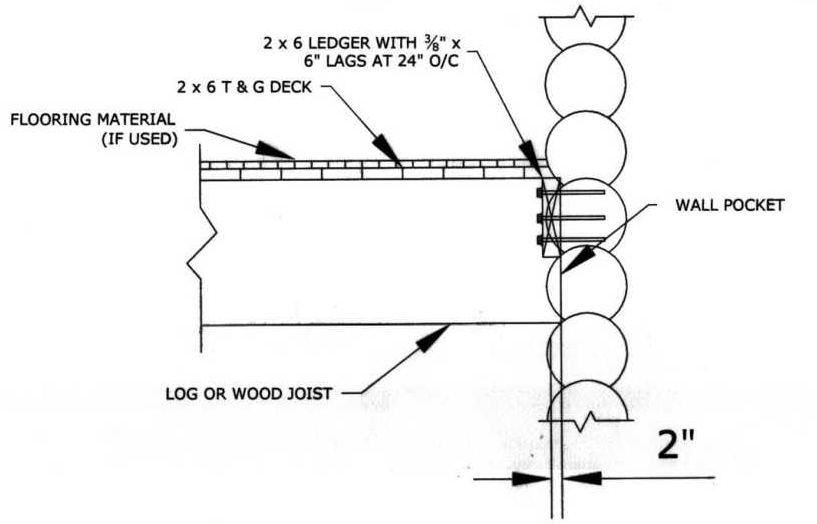
*Settling Devices:*

The construction blueprints should note the placement of the beams and joists. All posts which carry beams and or floor joists must have a 6” post settling base

or structure. When a bearing wall carries floor joists, and adjustable bolt settling device is used in the bearing wall.

Dealing with settling begins with the logs themselves as screws are counter-sunk into the logs. By counter sinking the screws, the logs will slip down as the screws stays stationary in the log below. The first few log courses will hardly move down at all while the very top log will come down more due to the total of the individual log's settling.

Anything attached to the log wall will either settle along with the logs, if designed to do so, or will not allow the log wall to settle. Areas to account for settling are the log walls, second floors, posts that are supporting second roofs, and posts that support the roof. Items to keep from hindering the settling of any of these areas are interior walls, cabinets; trim boards, window and door bucks, temporary braces and fireplaces. These all need to be attached to logs using slotted anchors.




TYPICAL JOIST TO WALL CONNECTION
SCALE: NTS

*Loft Floor Joists:*

The end of the floor may be pocketed into the log. If the pocket method is used, the floor joist must bear on at least 2" of the log below. The floor joist must be cut to nearly the center of the log.

*Beam to Log Wall Connection:*

The standard procedure is to install the joists and tie beams ½" below the top of the log wall stack. Refer to the framing plan to determine if any notching for beams will be required prior to reaching the top of the log stack or the top of the joists height.

**Note: Remember that rough sawn timbers have slight variations in their sizes and must be treated individually.**

By selecting the beam for each location, you can cut each pocket to the exact size of the beam for that position. Measure the exact depth of the beam and mark the wall at the point where the bottom of the beam will seat. Check to be sure the top of the beam is at the desired height.

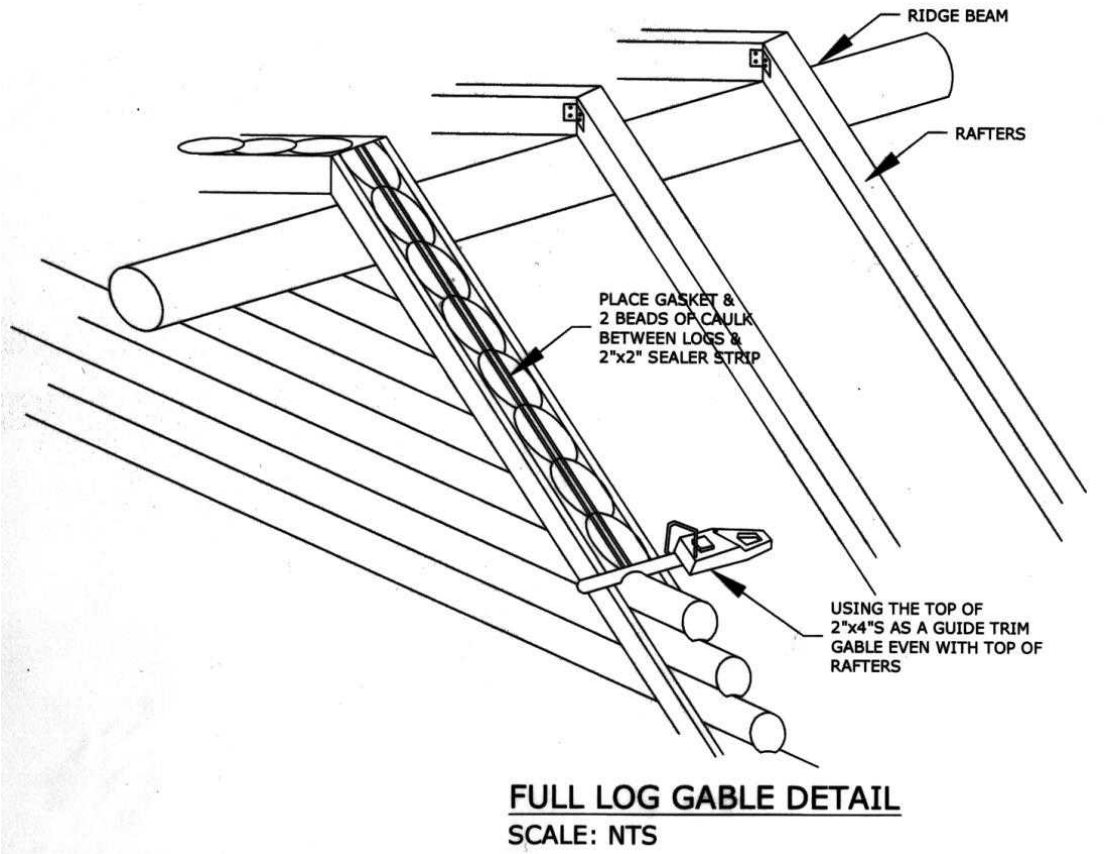
If you have a full second floor or loft in your building, you may want to install the tongue and groove decking over the joists at this time to give you a safe and level working surface for the stacking of the log gables and dormers. If you have a cathedral ceiling with tie beams you will be required to use scaffolding to stack the gable ends. Be sure the scaffolding provides a sturdy and level working surface to avoid injury to yourself or anyone assisting you.

*Tongue and Groove Decking:*

Begin the first course of T&G at either side of the building. Rip the first board so the groove is cut off and make the cut at an angle that matches the curvature of the log wall.

Points to follow:

1. Span at least 8 feet with each board of T&G. Stagger butt joints out randomly.
2. Seat the board by using a scrap of T&G as a buffer between the hammer and the T&G which is being nailed down.
3. Toenail the T&G just above the tongue at a 45-degree angle. Face nailing is acceptable if the surface is to be covered.
4. Nail two times at each joist using 8d or 8d galvanized nails, 16d if face nailed.
5. Cover the new loft floor after it is completed to keep it protected from future saw dust and dirt.




*Stacking the Log Gable End:*

The first step in preparation for stacking the log gables is to determine the location of the ridge beam. Make a light mark on the exterior of the wall below the future log gable. Using you level, nail a 2x4 vertically with the center of the 2x4 directly over the center mark on the log wall and use the 2x4 as a plumb staff.

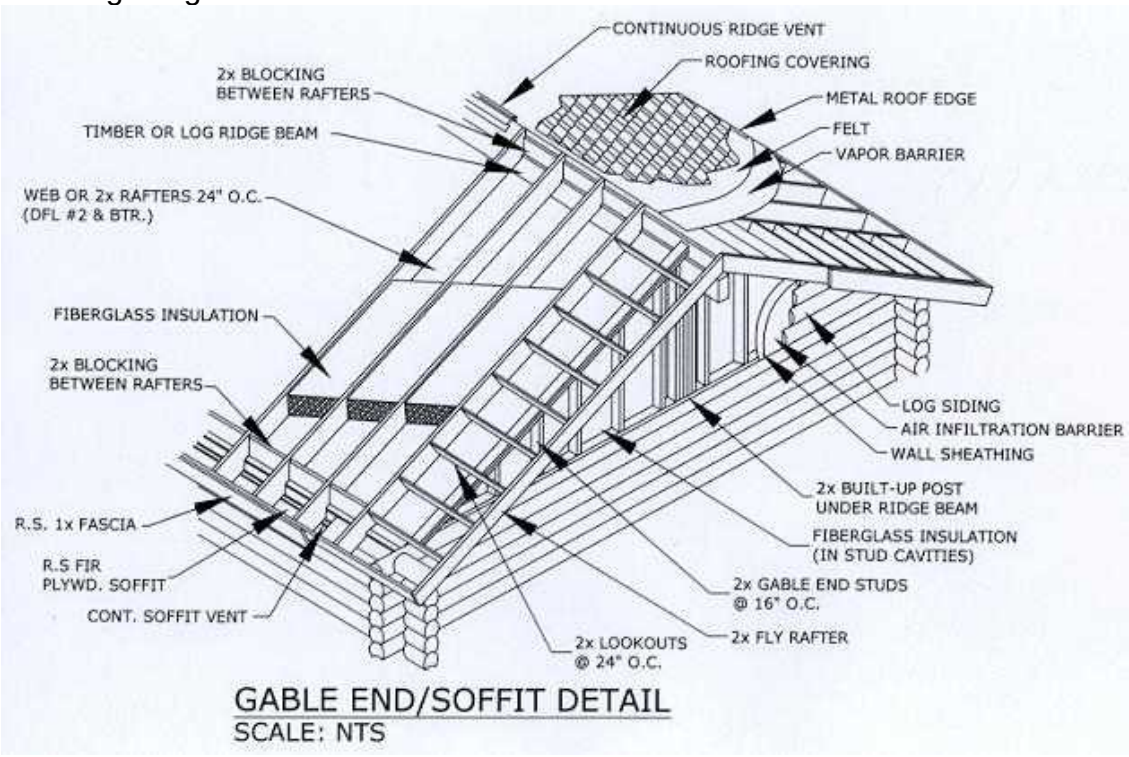
See the gable end detail. Attach a nail to the center of the 2x4 at the point where the vertical centerline of the ridge beam and the top of the rafter line converge. Then attach a string from the nail to a point outside the log wall, which corresponds to the top of the rafters being used. After the string is in place, stack the gable logs in the same manner as the walls, always making sure that the bottom of each log projects past the string.

Firmly brace the logs as you progress toward the peak.

**Note: Keep in mind that the gable ends need longer logs to minimize butt joints. Audit the logs before stacking the log walls and hold out logs for the gable ends.**

**Note: The gable end log wall is not stable until it is part of the completed building and poses an unsafe condition until the ridge, rafters and roof system are built. Make sure the gable end is adequately braced to withstand wind.**

Using the nail at the top 2x4 as a guide, mark the centerline of the ridge on the side of the top gable log. Also take a pencil and mark along the string on the exterior and interior sides of the gable. These marks will be used later when trimming the gables.




*Frame Gable Ends:*

Optional framed gable ends are used in some cases. The 2x4 or 2x6 framed wall typically will be sided with log siding, board and batten or other product.

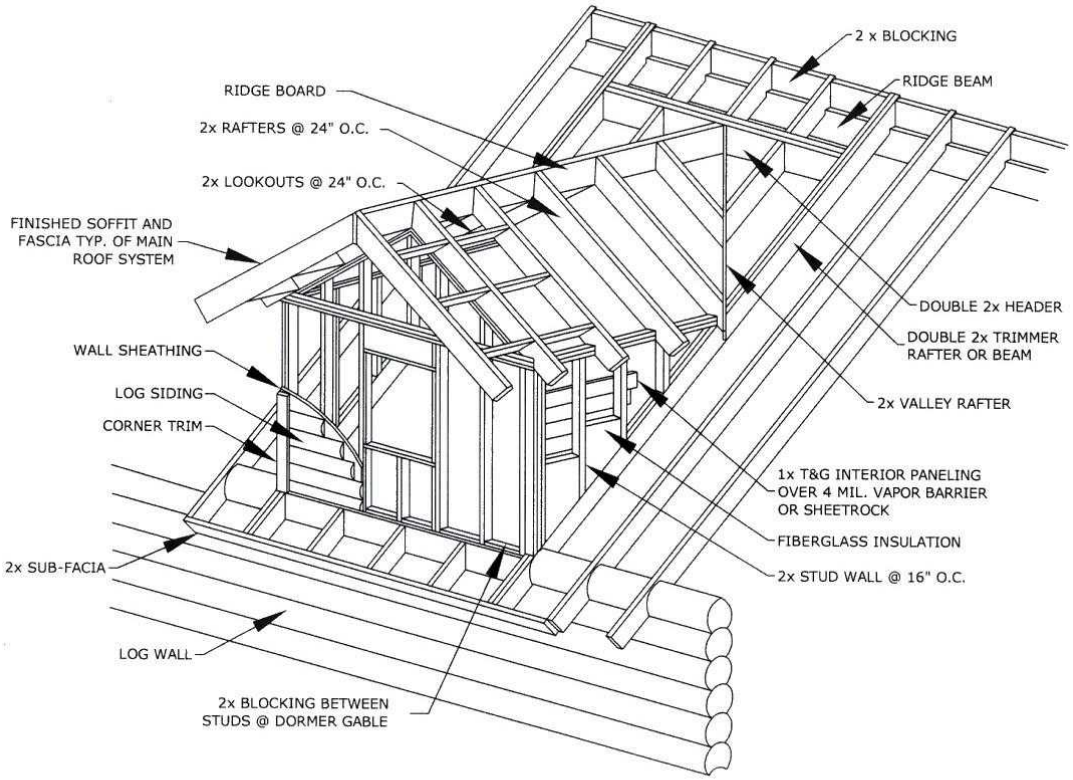
Refer to the details in your construction plans for specifics on framed gable ends.

*Framed Roof Structure:*

There are several methods for roof construction. The construction plans will show the method used in your particular building.

*Framed Dormer Construction:*

Again refer to the construction plans to determine the methods suggested to build the dormers. The following details are typically framing details for a gable dormer and a shed dormer.

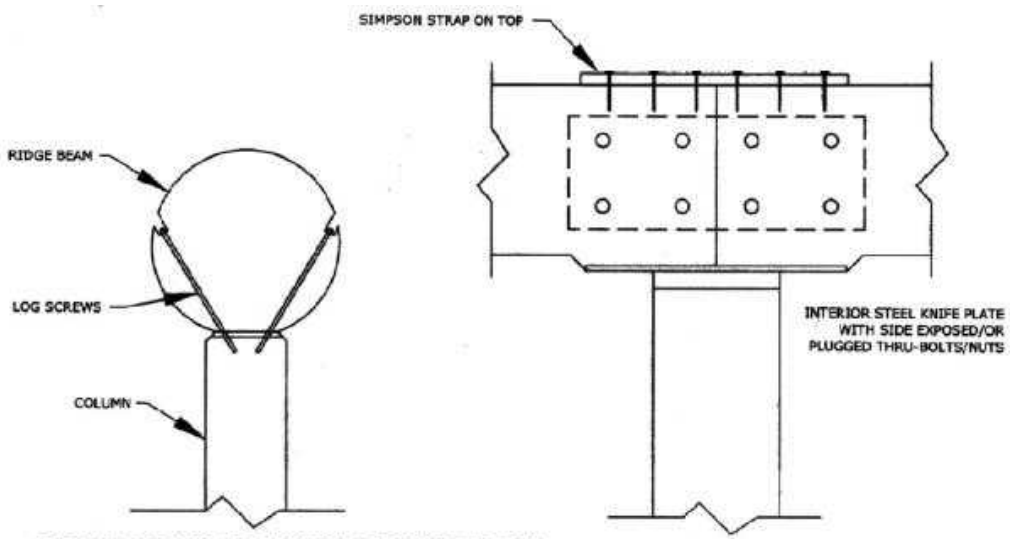



*Heavy Beam Roof Structure:*

*Avalon* Log Homes designs may use rough sawn, planed smooth, machined full round or natural hand peeled purlin timbers for roof framing members. Refer to your construction framing plans and the section drawings for descriptions of timbers used. Ridge beams or purlins should be strapped or bolted together at splice points.

*False Purlin Roof Members:*

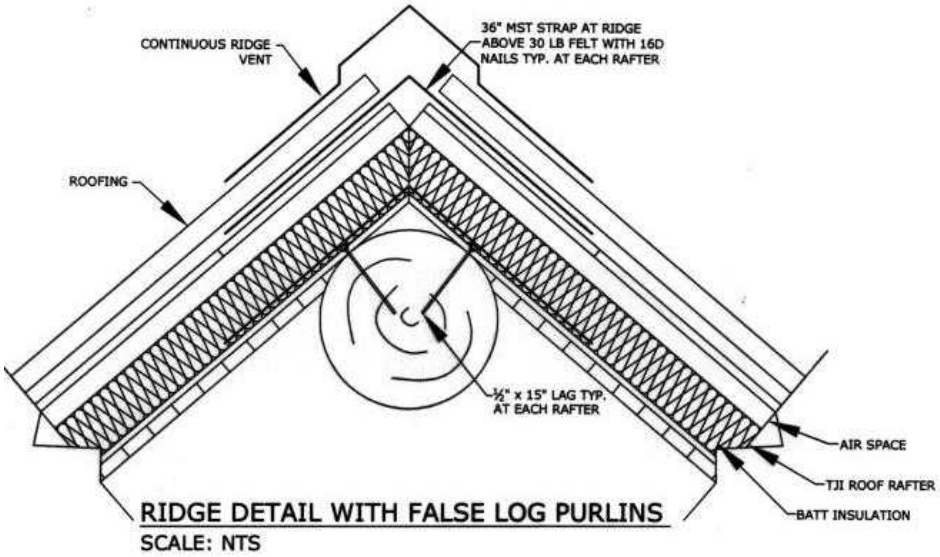
*Avalon* Log Homes designs may use Log False Purlin Roof Members. Refer to your construction plans for what is used. These false purlins are non-bearing members that attach after the T & G decking has been applied to the underside of the roof rafters. Attach these false purlins with lag screws through the decking and into the roof framing members. Strap or bolt together beam splices points.

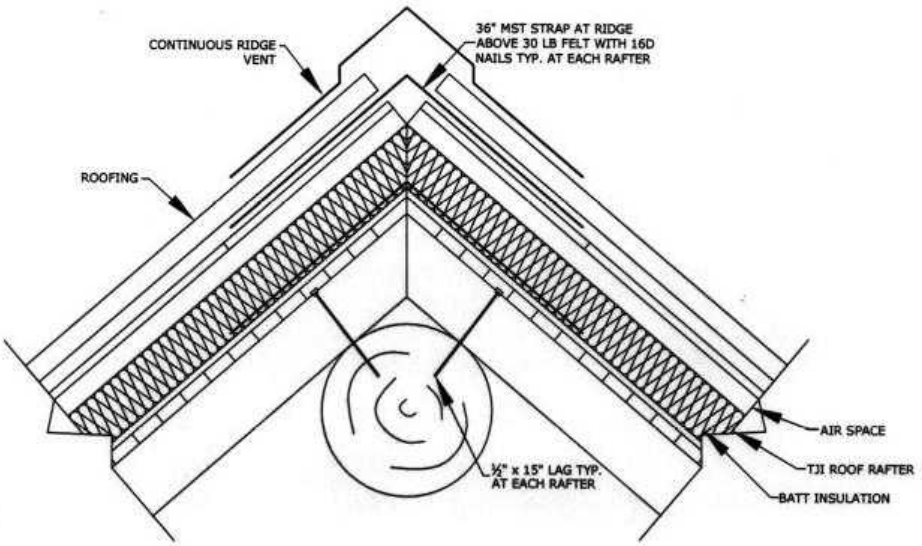



*Setting the Ridge Beam:*

Using the centerline mark made earlier on the top log of the gable, cut the ridge beam pocket and set the ridge beam. The ridge beam is set in the same manner as the joists and tie beams. Position any posts that are needed to support the ridge beam and brace them. Erect additional scaffolding at the post. The ridge and rafters are heavy timbers and it is advisable to use a boom truck or crane to lift the timbers.

**Note: Use of heavy nylon straps or nylon rope to avoid damaging the wood.**






RIDGE DETAIL
SCALE: NTS

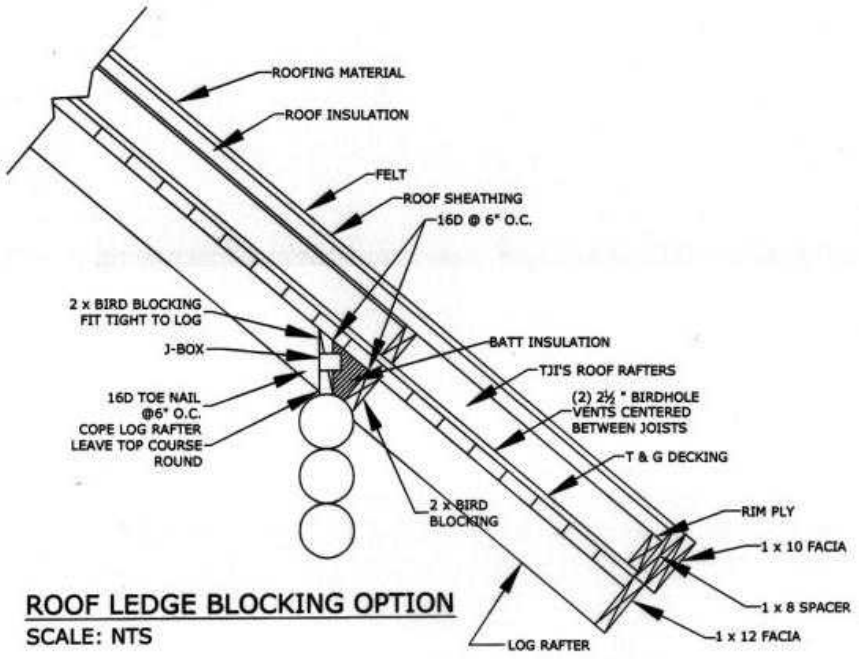
*Setting the Rafters:*

By cutting them at the site, a custom fit can be achieved. Once the ridge is in place and firmly braced, the log walls have been stacked to the specified number of rounds, and all the joists and tie beams have been set, you are then ready to set the rafters.

To make the necessary cuts on these rafters we suggest making a pattern from a standard 2X___ board, which is equal in length to the rafters, which you will be installing.

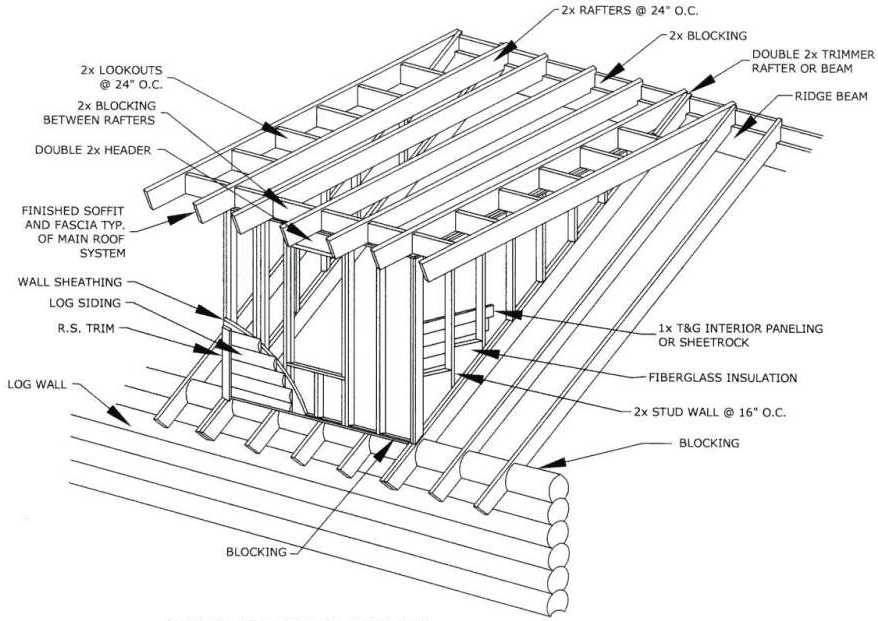
Check each fit before transferring the pattern to the rafter. Install rafters in pair (one on each side of the ridge). It may be necessary to change the cut slightly for opposite sides of the ridge.

You will have some rafters, which will set directly over the joists or tie beams. These rafters will require a bird mouth cut. With the proper cut at the upper end, place the rafters on the wall along side the joist or tie beam. Mark the notch or bird mouth as needed to make a snug fit.




*Freeze Block Logs:*

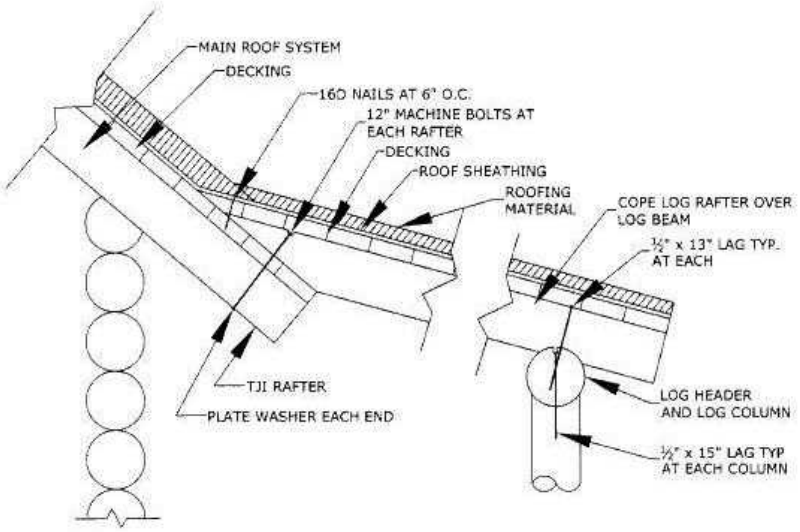
The log wall is bearing for rafters will need blocking between the rafters. Refer to the section drawing to determine the type of blocking used in the building. Logs are usually used but 2x__ dimensional material may also be used.




*Log Dormer Construction:*

The front of the log dormer is a continuation of the wall below. The log dormer sidewall logs rest on the top of the roof T&G decking. The built up roof is next to the dormer side logs and flashing is required.

False rafters are spiked or bolted into the front wall logs and are pocketed into the logs so they will not be seen from the interior of the dormer.




DECK OVERHANG DETAIL
SCALE: NTS

*Attaching Porch to House:*

After the sub-roof and freeze blocking have been installed, the next step is to build the porch roof. Refer to your material take-off list to select the porch posts, beams, and rafters.

Using the porch posts as supports set the porch beam at the proper location and brace it securely as required.

To determine the angle cut required at the intersection of the porch rafter and the main house roof use a standard 2x__ dimensional board as a pattern. After cutting the proper angle on the rafters, spike the rafters in place.

Using the porch posts as supports set the porch beam at the proper location and brace it securely as required.

To determine the angle cut required at the intersection of the porch rafter and the main house roof use a standard 2x__ dimensional board as a pattern. After cutting the proper angle on the rafters, spike the rafters in place.

Metal flashing is recommended at the intersection of the porch roof and the main house roof.

*Roofing Material:*

Refer to the construction plans to determine the type of roof for your building. *Avalon* Log Homes recommends that all roof systems have air flow above the insulation to allow any condensation to evaporate and be carried out through a roof ventilation system.

*Cleaning the Logs, Beams and T&G:*

At this point in the construction the roof and porch roof on, it is very important to seal the logs, beams, and T&G to protect them from the weather and sunlight. A thorough cleaning must be done first.

1. Cut all the rough openings per the construction plans
2. Sand all areas that have dirt or marks that have been made during construction.
3. Use a recommended cleaning product to re-new the total surface area of the logs, beams, and T&G. Your dealer/builder or staff member can advise you on the available products.
4. Allow the wood cleaner to work as directed by the manufacturer and follow all directions provided by the manufacturer.

   **Note: If the logs have discolored more than an average amount, a second application of cleaner may be needed.**

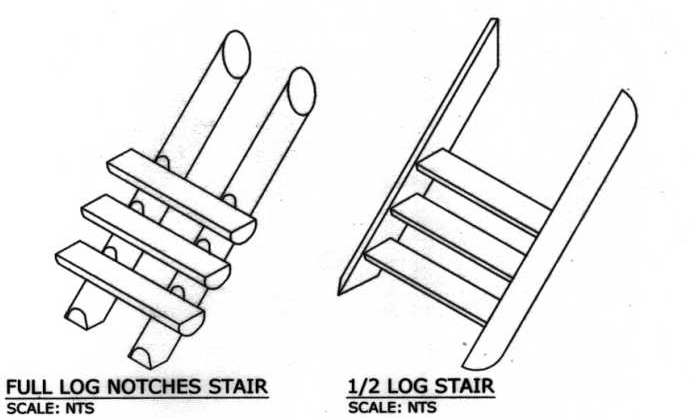
*Sealing and Staining the Logs:*

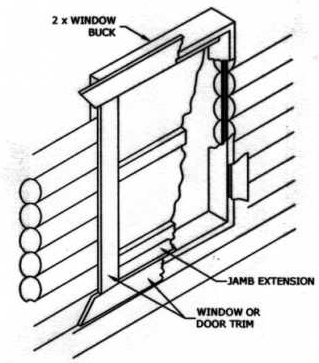
*Avalon* Log Homes recommends that you stain and seal you logs prior to installing the windows or exterior doors.

It is very important to seal the logs, beams and T&G at this time. Failure to protect your logs from the weather and sun can cause problems as it would with any exposed wood. For the exterior and interior we recommend a product that will be able to “breathe” and not trap moisture in the log.

Our research shows that exterior stains with ultra-violet light protectors are essential in maintaining the natural log appearance. You may also consider a first coat of a combination mildecide, fungicide, and insecticide to help protect the logs in more humid climates.

**Note: Again it is absolutely necessary for you to treat your logs and beams which are exposed to the weather as soon as possible after the shell erection has been completed to prevent discoloration that naturally occurs with unprotected wood.**




*Installation of Windows and Exterior Doors:*

Some window manufacturers supply buck materials with their window and doors.

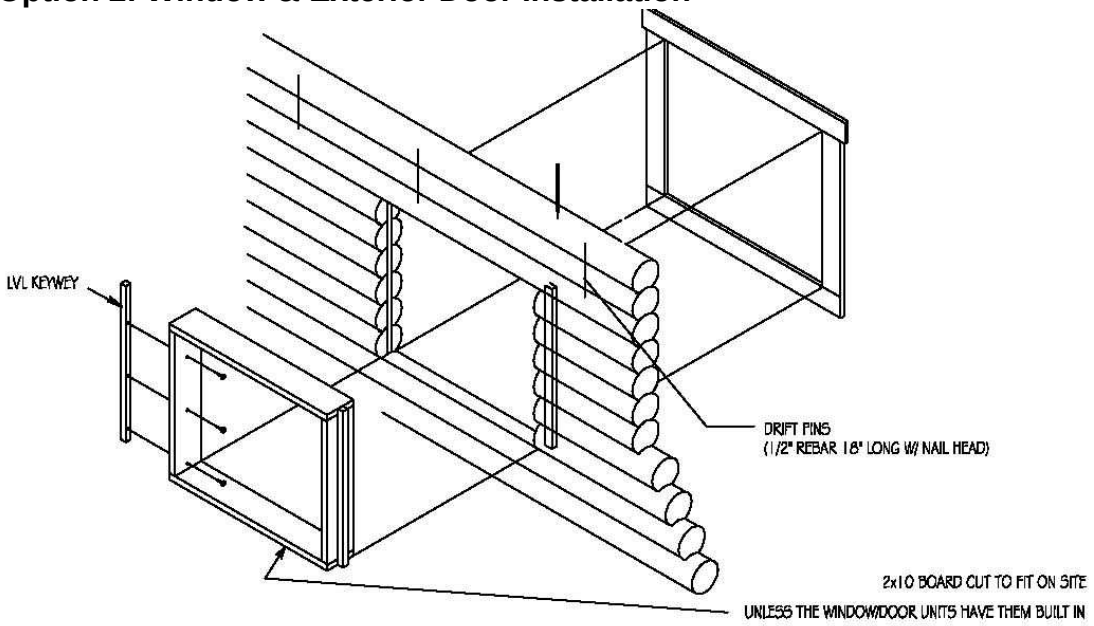
> **Note: You must add the buck material thickness to the rough opening of the window and doors to determine the actual opening in the log wall. Typically S4S dimensional lumber is used and it is 1-1/2" thick. For 12" logs add additional buck material on to a 2x12 S4S to make the buck a full 12" to cover the log ends.**

To determine the exact rough opening it will be necessary to add the minimum 2" of settling space to the height and then the thickness of the corresponding buck material. Only add the 2" settling space to the height of the rough opening.

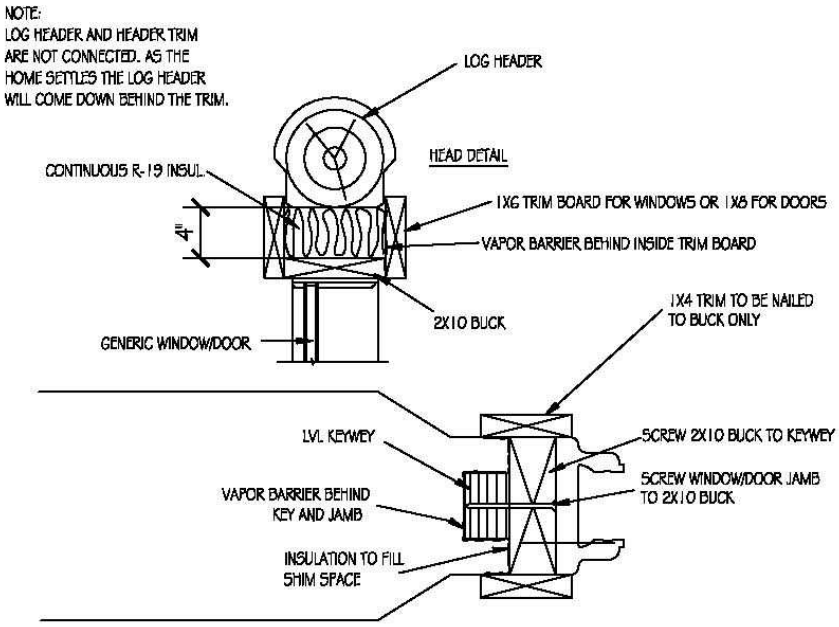
When installing the buck materials to form the rough opening for the window, be sure to cut vertical slots in the buck material. This will allow room for the nails used to fasten the buck to the log ends to slide down the face of the buck as the logs settle.

> **Note: It is best to use a washer on the nail to allow the nail to slip down with the logs as the logs settle. Refer to details.**
>
> **Always use flashing above the window and door units.**
>
> **Always verify rough openings for doors and windows before you cut any holes**

## Option 2: Window & Exterior Door Installation



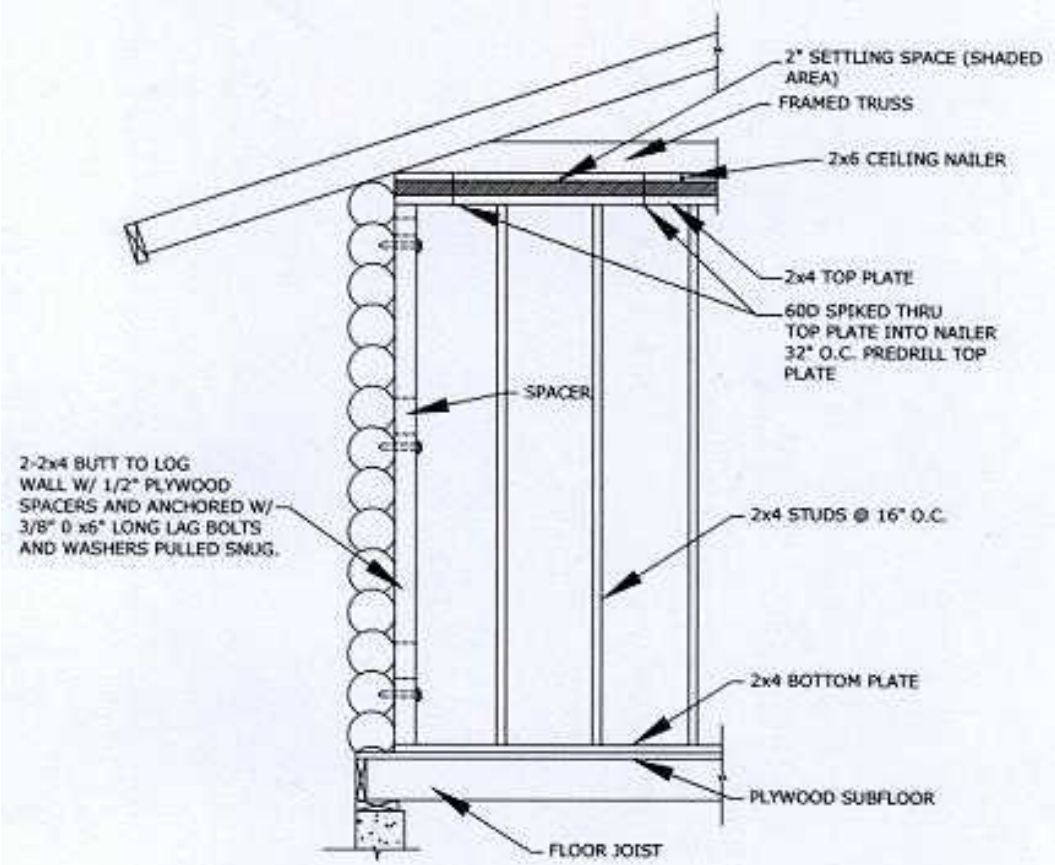

TYPICAL WINDOW INSTALLATION
SCALE: NTS




JAMB DETAIL

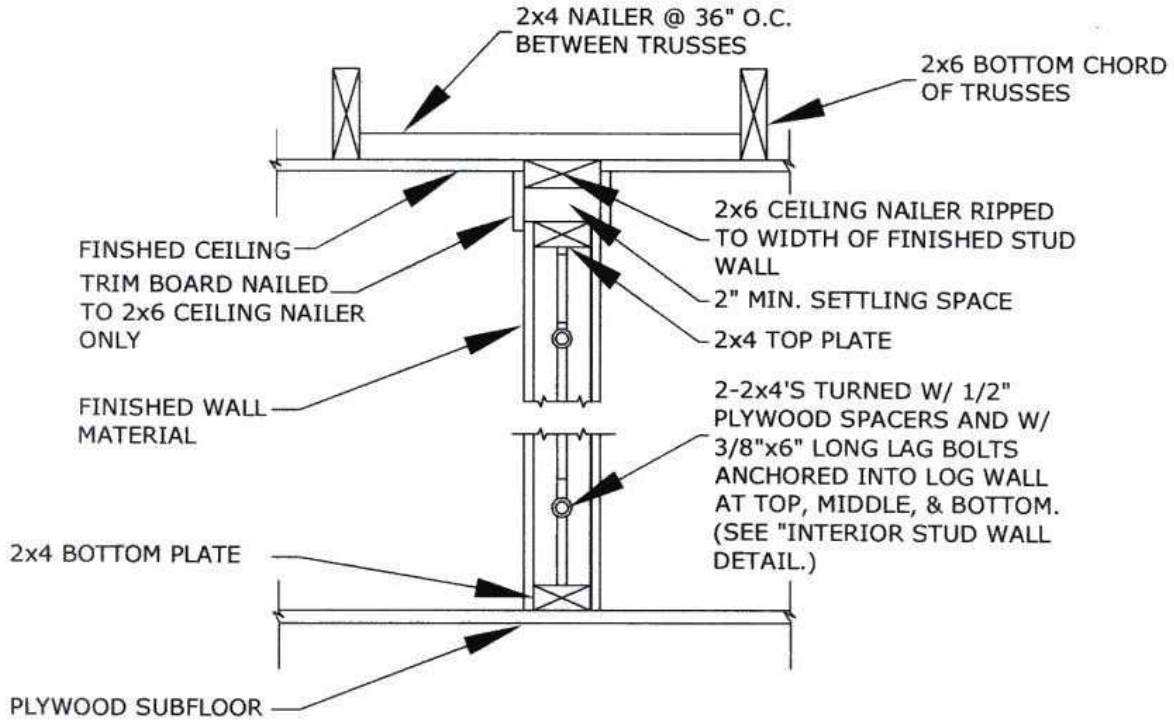
DO NOT ATTACH KEYWAY, SIDE BUCKS, OR TRIM TO THE LOGS. WINDOW/DOORS ARE HELD IN THE WALL BY THE KEYWAY NOT NAILS OR SCREWS.

WINDOW & DOOR TRIM DETAIL
SCALE: NTS

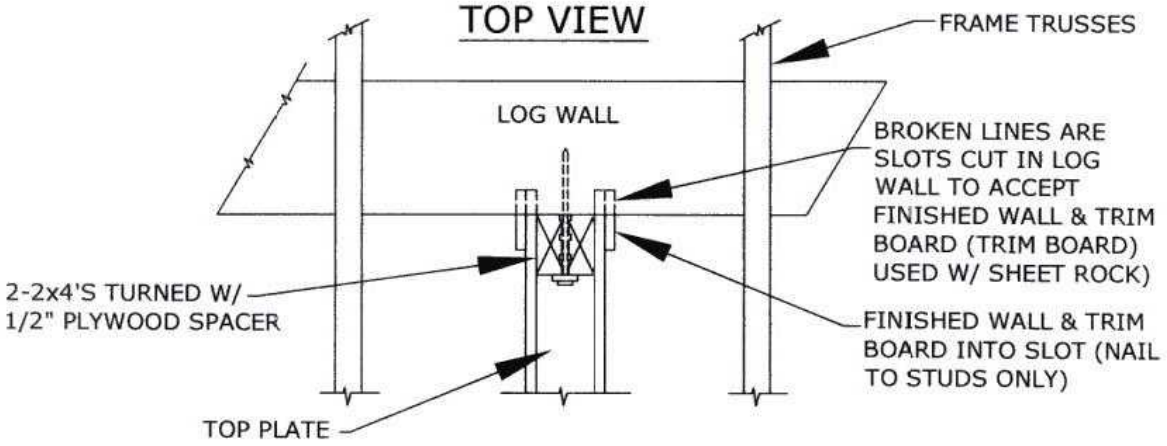



INT STUD WALL/EXT WALL DETAIL
SCALE: NTS

## VERTICAL SECTION OF STUD WALL

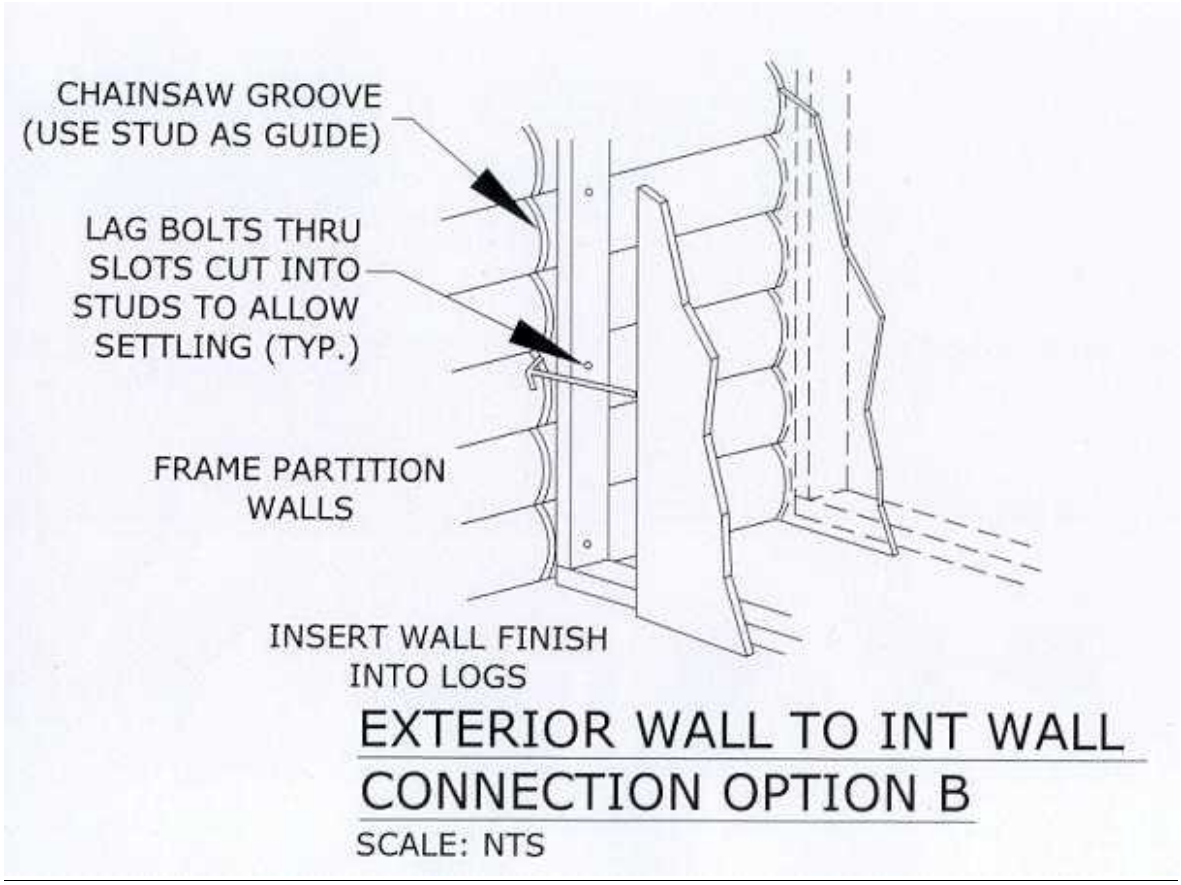



## TOP VIEW

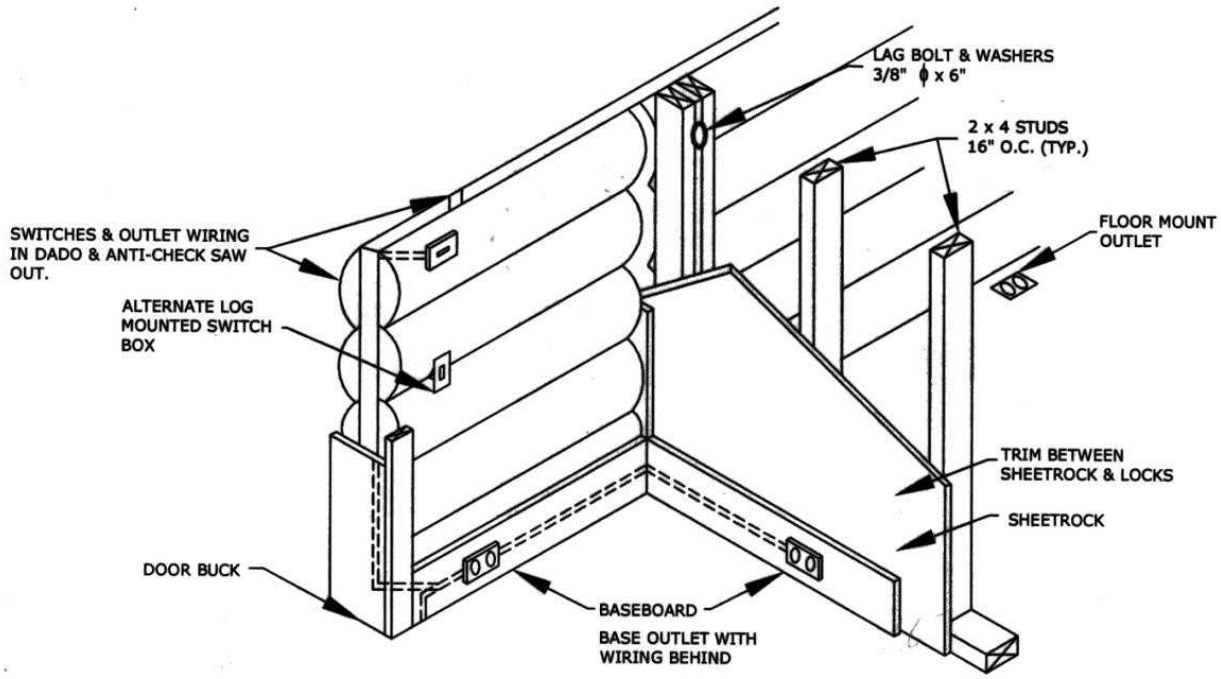



## STUD WALL/CEILING DETAIL

SCALE: NTS



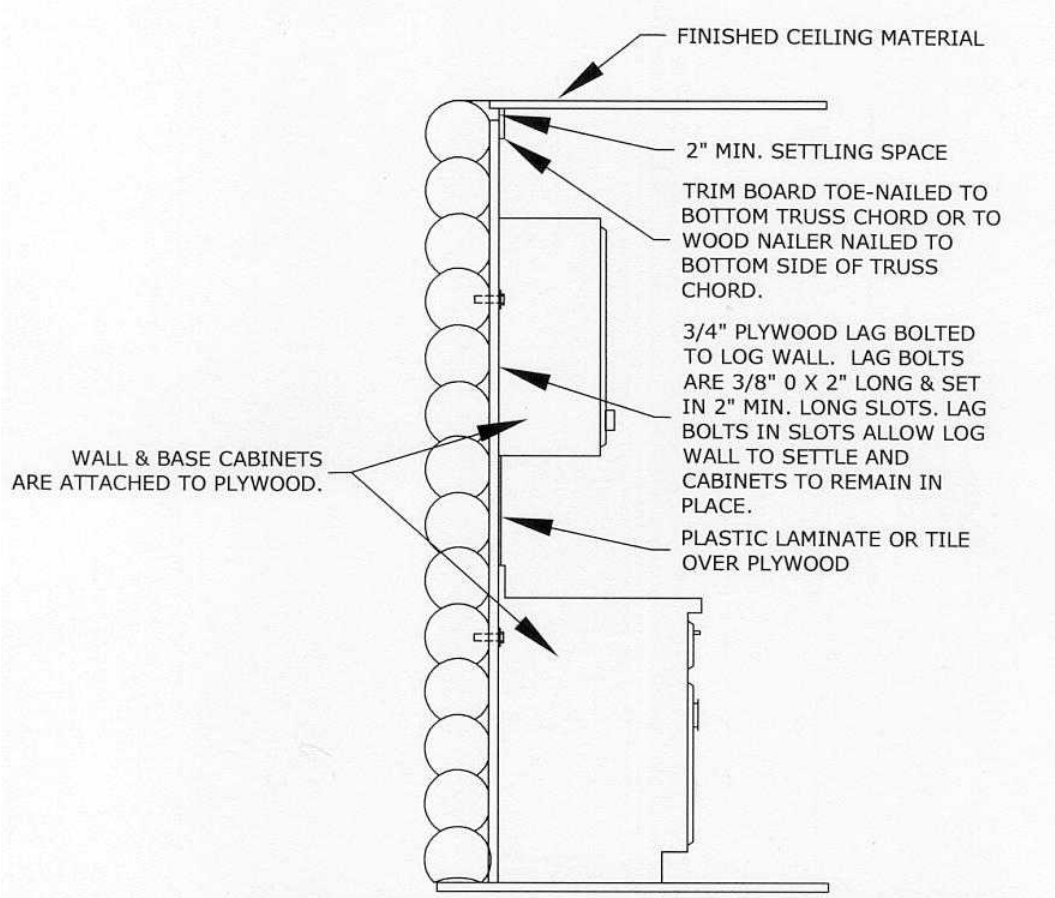

EXTERIOR WALL TO INT WALL
CONNECTION OPTION B
SCALE: NTS




INT WALL CONNECTION TO EXT WALL
CONNECTION OPTION A
SCALE: NTS

*Interior Walls:*

After the roof is completed, you can install the interior walls. The first step is to lay out the interior walls on the floor by snapping chaulk lines on both sides where the bottom plate will rest. Next snap chaulk lines up the log wall where the interior wall will butt against the log wall. Be sure these lines are plumb.
You have two methods of installation. One option is to now take two 2 x 4 studs and nail the two together with ½" thick by 1" wide spacer between the 2 x 4's. this space will allow for the 3/8" x 6" lag bolts which attach to the frame wall to the log wall.
The other option is to cut slots through the end stud that will lay against the log wall and attach the lag bolts through these slots. Both of these methods will allow for settling of the log wall. You can also snap caulk lines for the thickness of your wall finish material and cut out and into the wall log so that you can slide this material into the slot cut into the wall log. Don't attach any of this material either sheetrock or interior siding to the wall log. You may also want to allow for a trimboard as well. It's a good idea to let the logs settle against the trim board instead of the wall material.
Note: All interior frame walls are free floating and non-bearing unless noted otherwise and you should not nail them directly to the log walls or roof system.




*Cabinets:*

There are two methods for installing cabinets. Cabinets can be installed on a furred out plywood or 2x4 stud wall built inside the log wall. This plywood or stud wall is attached to the wall logs with slotted lag bolts.
The other option is to attach cabinets directly against the log wall. Upper cabinets can be attached to a wall log but only along that same course of logs. Lower cabinets should be toe-nailed into the sub-floor for support and not attached to the logs to allow movement.

*Electrical:*

Most log homebuilders request that their electrician review the blueprints. The electrician will know the local electrical codes and should be involved in the erection of the package.

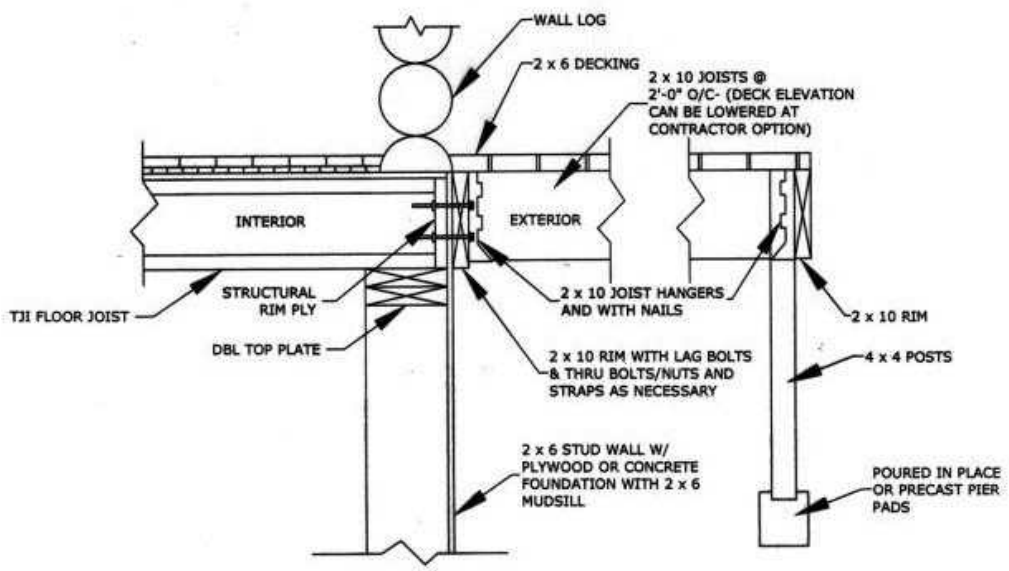
Drilling for wiring:
Once you have marked the location of all outlets in the sub floor, you can either pre-drill wiring holes in each log as it is installed, or stack up 2 or 3 logs and drill through all with a long drill bit. The wiring holes must extend down through the floor so that wires can be run under the floor and up to the outlet later.

Other locations for wiring are through the roof and down through the beams for ceiling lights and fans, through stud walls on the interior of the building. With a heavy timber second floor, wire are run in chases cut into the top of a beam or the 2x6 T&G decking. These wires must be covered with a metal flashing to prevent a finish-flooring nail from penetrating the wire.

One other wiring area to consider is the kitchen and bath counter height outlets and switches. These outlets and switch boxes may be accessed by drilling up through the log wall like wall outlets if need be. However, most kitchen and bath areas have furred out frame walls on the interior of the log wall, which will accommodate the wires.

> **Note: At all times it is best to make certain that you, your builder, and your electrician keep communication lines open to avoid any confusion.**

Light switches typically are placed next to door jambs with the wire running from the switch box horizontally to the jamb and then down the jamb in a wire chase cut into the ends of the logs and then routed into the crawl space or basement area.




EXTERIOR DECK DETAIL
SCALE: NTS

*Decks:*

The posts supporting the girders should rest on pressure treated stock or steel. Be sure to consult the construction plans to find the proper heights for the ledger and the support beam. Deck joists should be set at 16" o/c for any decking thinner than 2" material. Synthetic decks should have joists spans at 16" o/c and be attached per manufactures specs.

*Railing:*

The plans that *Avalon* Log Homes supplies are drawn with the railing centered at the edge of the decks, balconies, and lofts. The centerline of the railing is positioned exactly over the edge of the deck. Railings will typically be sent in sections that you will need to site cut into specific lengths that will work for each location.

**Note: *Avalon* Log Homes suggests that a borate solution or borate paste be used in the baluster holes.**

*Relative Humidity:*

*We feel that you should be aware of the proper usage of wood burning stoves and fireplaces. In order to get full potential out of a wood stove, the relative humidity should remain fairly constant inside your home. A common problem is created by dry heat in a home which is potential log shrinkage. Often, wood furniture in a home can dry out and miters can loosen at the joints. The same thing can occur with trim around doors and windows, gable ends, with the joints in the T & G decking on ceilings. Even logs can be susceptible to dry heat. Even though the logs and lumber are dry upon arrival, dry heat may tend to contribute to additional checking of the logs on the heated side.*

*The most efficient method is to have a gauge to tell you whether or not to adjust the relative humidity. If the relative humidity in your home is below normal, a residential humidifier may be used to raise the humidity. You can also circulate the air in your house using ceiling fans as well.*

Roof or Attic Ventilation:
The Uniform Building Code requires adequate air space above any roof or attic insulation with a positive ventilation to the outside. This allows condensation to dissipate to the outside.
For cathedral or open ceilings, it is recommended to have a continuous ridge and eave ventilation.
For standard truss roofs, it is recommend to use roof vents, gable vents, and soffit vents.
A vapor barrier membrane is required between the inside of the house air and the insulation.