Project YIPPEE

An Adventure in Safe Living

Project Description
Version 5.0
November 18, 2005

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ABOUT CHRIS & CASSANDRA

Cassandra

- Totally housebound, without access to a computer. Has text-based e-mail access.
- Has extreme Multiple Chemical Sensitivities (a.k.a. MCS). Allergic to certain chemicals, including perfume, solvents, bleach, paint, glue, formaldehyde, mainstream laundering products. Generally, not allergic to "natural" substances such as wood, pollen, etc.
- Can be tested to determine if an item is "safe" for her.
- Cannot meet with people in person. Can have visitors provided they go through extensive decontamination process and wear safe clothes that we provide. We try to avoid these visits as much as possible.

Chris

- Travels Sunday-Thursday for work as a software consultant. Assignments can come at any time with a 24 hour notice.
- Opens all mail and packages.
- Does all the shopping.
- Does all initial property visits.

Both

- Have been searching for a safe living environment since 2000. Unable to make various rentals safe, they have concluded the best option is to build a safe home.
- Constructed a platform for and erected a 14 Foot Yurt in December 2003.
- Have been "living" in this 14 Foot Yurt in the backyard of the current rental property since December 2003. Still use the kitchen, office, bathroom, and laundering facilities in the house.

PROJECT OVERVIEW

Important to our project are these items:

- Safety of materials in the Main Living Area.
- Time - we need to get this up as fast as possible in order to get
- Cassandra to a safe environment. Currently, we are living in an unsafe environment. As a result, Cassandra is sick every day.
- Do it ourselves - we would like to build as much of the Main Living Area as possible ourselves so as to avoid having third parties contaminate the materials.

We chose yurts over other housing options because:

- We can erect them ourselves, quickly.
- All the materials are safe for Cassandra.

Note that systems powered by electricity (water, heating, etc) though expensive often provide the safest living environment for those with MCS.

General Description

The proposed construction, incorporated with the right piece of land, includes the following components.

Land

Land is located in Williamsville, Vermont, near Newfane. It is 147 Acres located along Baker Brook Road, at 13 Oregon Falls Road. Officially, the plots are C44, C45, and C46 on the Town of Newfane Tax Map. The land is currently in transition from a raw/undeveloped state, having had a main driveway developed to the main living area.

Welcome Center

The "Welcome Center" will be located near the entrance to the property. This construct has more flexibility in construction materials used, as Cassandra will not visit the Welcome Center. The purpose of the Welcome Center will be to provide a separate area, for activities considered unsafe to Cassandra, far from the Main Living Area. The center includes an office, laundering facilities, a place to "decontaminate" (i.e. shower and change out of unsafe clothes), and storage. Thus, the Welcome Center will require electricity, heat, and water systems. Storage will be accomplished with a stand alone shed unit.

Main Living Area

The Main Living Area **MUST** be safe for Cassandra. It will be built between 1000 and 1500 away from any property borders to provide a sufficient buffer from the surrounding properties. The Main Living Area will include a Deck and two structures: a 30 Foot Yurt and a 20 Foot Yurt. These two will be connected by a very short walkway.

In our experience with MCS we learned it is far easier to be diligent in preventing contamination than to attempt making contaminated items safe. Thus, the Main Living Area should be constructed as much as possible by Chris & Cassandra in order to prevent third parties from rendering it unsafe. An exception would be the construction of the Deck. Any persons who must be involved in the construction will be required to decontaminate and wear provided clothing when working on the Main Living Area. Chris & Cassandra do have associates, friends and family familiar with both construction and MCS. These people may be able to assist as needed.

All materials used in the Main Living Area need to be tested on Cassandra. If a material proves unsafe, it must be made safe, substituted for, or safely encased in the construct if no reasonable and cost efficient alternative exists.

The Main Living Area requires electricity, heat, and water systems.

Improvements

Driveway & Clearing

The roadway should be a dirt/gravel passage of sufficient width for one vehicle. Proper drainage and winter plowing should be taken into account in the design. The roadway will enter the property and go directly to the Welcome Center. The Welcome Center will need a clearing sufficient to park four vehicles. The roadway will continue on to the Main Living Area, which will need a clearing sufficient to park two vehicles. The roadway should have a gate at the Welcome Center to prevent accidental travel by delivery personnel, etc.

The Main Living Area needs to be cleared of trees in order that the structure, small yard, and garden can be placed. No foundation is required for the structure and the ground does not need to be leveled as the Deck can be built to accommodate varied terrain.

The Welcome Center area needs to be cleared only for the building and parking.

Item: Main Driveway & MLA Clearing	**Date:** 08/09/2004
Description: Driveway installation begun by Independent Partners of Williamsville, VT	

Item: Driveway Revision	**Date:** 08/23/2004
Description: The roadway will enter the property and go directly to the Main Living Area. There will be parking sufficient for two vehicles at the Main Living Area. The Welcome Center will be situated along or near the driveway at a distance sufficient to prevent any contaminants from reaching the Main Living Area. A secondary driveway may be needed to access the Welcome Center.	

Item: Driveway Revision	**Date:** 10/2004
Description: The Welcome Center will have its own driveway forking off the main driveway.	

Electricity

We would prefer to be "off-the-grid" with some type of alternative power system. We are willing to upgrade to this at a future date. Net initial cost and energy needs are the determining factors for this system. Currently, solar power is being investigated as Vermont offers an incentive program for new system purchase.

If on-the-grid power is chosen, Vermont Electric Co-Op will be the supplier. They will need to run power approximately 1100 feet to two meters.

Item: Electricity	**Date:** 12/2004
Description: Electricity will be provided by a solar power system and a propane or biodiesel powered generator. The solar panel array will sit at one end of the septic leech field. The “powerhouse”, containing the generator, batteries, inverters, etc., will sit aside the main driveway. There is a possibility that a hydroelectric turbine may be incorporated into the system. This is dependent on results of water source development.	

Water Systems

We are open to either drilling a well or developing a spring. The land likely has a spring that can be developed. Traditional septic “mound” system will be developed. Hot water heater will be that which is used to provide heat for the radiant floor heating system.

Item: Water Source	**Date:** 11/2004

Description: Three water sources were located via dowsing, uphill from the Main Living Area on an old logging road. These sources are purported to be 12-15 feet below surface and are apx 80 feet higher in elevation than the MLA.
Item: Update **Date:** 8/2005
Description: The three water sources failed to produce water. The excavator hit ledge at the bottom of all three. New locations are being sought.
Item: Update **Date:** 10/2005
Description: Two new locations failed to produce water. The excavator hit ledge at the bottom of all three. Possibly developing a run-off site into a reservoir
Item: Update **Date:** 11/2005
Description: A spring was found behind the MLA. This was developed into a 12 foot reservoir with line to the utility shed.

Item: Hot Water **Date:** 10/2004
Description: There will only be one hot water tank, housed in a well-insulated utility shed near the wood furnace. This water tank will provide hot water for both the MLA and the Welcome Center.

Item: Septic System **Date:** 4/2005
Description: The State of Vermont approved a new design. This new design will require less material. Septic system is being redesigned. May also need a second septic tank as the Welcome Center is lower than originally planned.
Item: Septic System **Date:** 8/2005
Description: Septic system inspected and completed by AS Clark & Sons.

Wood Furnace System

A wood furnace will be used to heat water which, in turn, will be used to heat all buildings via a radiant floor heating system. This radiant system will be "open" thus it will provide potable hot water. Sufficient timber exists on the property to supply a constant source of wood, and a large amount will be available as the roadway and various building sites are cleared. The furnace will be situated in a location between the Welcome Center and Main Living Area, skewed toward the latter so Cassandra can maintain the fire with minimal travel.

Item: Closed Radiant Floor System **Date:** 8/2005
Description: We have to use a closed system as the open system will likely freeze.

Item: Wood Furnace Install	**Date:** 11/2005
Description: The wood furnace was picked up by AS Clark from Landry Outdoor Furnaces. Clark dug trenches from the furnace location to the utility shed location, then from the utility shed location to the MLA and Welcome Center. The trenches contain both radiant floor supply/return and HCW supply lines. After backfilling, Clark placed the furnace on a stone pad and set it level.	

Telecommunications

Mobile phones and satellite broadband internet will meet all telecommunication needs.

DETAILED DESCRIPTIONS

Welcome Center – 14 Foot Yurt

See Diagram #7, Pacific Yurts 12 Foot Portable Platform Construction Plans and Pacific Yurts 14 Foot Platform Construction Plans.

Details

- Cassandra will not visit this structure. Chris would prefer safe materials. However, there is more leeway to use lower cost materials here as Chris is far less sensitive to various substances.
- Primary structure is the 14 Foot Yurt that Chris & Cassandra already own. Some modification of the existing yurt & platform will be needed to accommodate plumbing & electricity. (See Pacific Yurts 12 Foot Portable Platform Construction Plans as a reference. These plans were modified and used to build the existing 14 Foot Yurt platform.)
    - Under consideration is construction of a completely new 14 foot platform to accommodate installation of radiant floor heating system.
- 7' x 7' (apx.) bathroom:
    - opens to office
    - 3' x 3' shower stall
    - toilet
    - small sink
    - exhaust fan
    - light & electrical outlet
- 7’ x 7’ (apx) laundry area:
    - Will hold combination washer/dryer already in possession. This is a ventless unit that operates on household (110v) current and requires hot and cold water hookups and a drain pipe.
    - Space to install closet organizer system.
    - Light & electrical outlets
- Office area, with window & electrical outlets
- Needs electricity, hot & cold water, and septic systems.
- Radiant heat provided by in floor or above floor units (TBD).

Item: Welcome Center Yurt Raised	**Date:** 12/2005
Description: The 14’ yurt to be used for the Welcome Center was deconstruced at its New Hampshire location, transported and raised in its final location on the property in Vermont. It is being used as a residence, with a wood stove, DWV system, and portable power pack, until the MLA is ready for move in. Details on the modifications made to the yurt interior for the extended residence are in a document titled “Park Avenue Plan.”	

Welcome Center – Storage Shed

Details

- The storage area will be a storage shed in the size range of 8’ x 10’. This may be a pre-delivered unit, ready to assemble kit, or constructed from low-cost/reclaimed materials.
- One electrical outlet & light will be required, though this can be installed at a later date.

- This structure may be incorporated into plans for an off-the-grid power system, as the hardware (inverter, battery array, generator) will need to be housed and PV panels will likely be mounted to the roof.

Item: Storage Shed Construction	**Date:** 11/2004
Description: A 10' x 14' pre-fabricated shed was stained & sealed at the Poocham house, and raised on site in November near the site of the Welcome Center. The building was raised on skids and will not be part of the off-grid power system plan. It will house construction materials until the project is complete, at which time it will be further weatherproofed and will serve as general storage.	

Deck

See Diagrams #8 which show the Main Living Area yurts on the deck, Pacific Yurts 20 Foot Platform Construction Plans, and Pacific Yurts 30 Foot Platform Construction Plans.

Details

Assume that the Deck is an average of 3 to 4 feet above ground. For the proposed building site, the deck posts will be sunk to below the frost line or pinned to the rock ledge.

The Deck should not use pressure treated lumber if possible.

20 Foot Yurt

See Pacific Yurts 20 Foot Platform Construction Plans and Diagrams #6 & #6.1

Details

This yurt will contain a bedroom and mudroom.

Includes:

- electric outlets
- hallway leading to 30' yurt
- Hall closet
- Bedroom
- Walk-in closet from bedroom
- Mudroom
- Walls and doorways between the bedroom & closet, bedroom & hallway, hallway & mudroom.
    - Walls will be finished with ¾" x 6" tongue & groove pine panelling planks.

30 Foot Yurt

See Diagram #5 and Pacific Yurts 30 Foot Platform Construction Plans

Details

- 30 Foot Yurt Platform - needs to be modified to hold weight of fully occupied claw foot tub.
- Electrical outlets, possibly a 240v outlet for oven/stove and other appliances
- Bathroom:
    - claw foot tub with shower add-ons
    - wall mounted or pedestal sink
    - toilet
    - closet
    - door to kitchen - French doors
    - door to laundry - French doors
    - Walls & ceiling - see notes on Loft below.
- Kitchen:
    - 2 bin stainless steel sink
    - Under-counter cabinets, wood, with a counter top & breakfast bar. PacificYurts suggests using standard/stock cabinets and customizing only the countertop.
    - exhaust fan
- Laundry/Exercise area:
    - Washer/Dryer hookups
    - Utility sink
- Loft: This will be a raised platform allowing for 6' high storage space/rooms underneath and sitting/TV area on top. The front will be round and the sides will extend to become the bathroom side walls.
    - The 12' wide back wall is shared with the bathroom
    - the upper sitting area is 9' wide from back wall to the center of the arc [see Diagram 5, drawing C]
    - Upper floor of Loft is 6 1/2' above main floor, allowing 6' of space underneath for storage.
    - Bathroom/back wall is 9 1/2' tall from yurt floor. It then turns 90 degrees towards the bathroom, extending 3' to meet the yurt roof. This is used as a shelf from the sitting area.
    - Bathroom walls/ceiling cannot attach to yurt ceiling/walls.
    - Bathroom side walls match the yurt ceiling angle.
    - Window above each door on each bathroom side wall.
    - Loft must be able to support living room furniture and people.
    - Loft will be accessed by a pull-out ladder [See diagram 5, drawing A].
    - Space under Loft is partitioned [see diagram 5, drawing A] to house enclosed pantry, bathroom closet, storage closet and desk area.
    - Loft needs a railing.
    - sitting area will have tongue & groove wood floor
    - will need floor mounted electrical outlets
- Note that height at center of yurt (not including dome skylight) is 14'. The walls of the yurt are 7' high. There will be a small ceiling fan in the center of the yurt ceiling, just below the dome skylight.
- There is a 6" allowance at the edge of the yurt for the installation of the snow and wind kit rafters.
- Need a sliding partition between yoga room and laundry/exercise room; we do not want a wall here.
- Any interior walls will be finished with ¾” x 6” tongue & groove pine panelling planks.

Connecting Two Yurts

The yurts will be connected as follows (or reasonably similar), described by Pete Dolan of Pacific Yurts:

> *Build the two round platforms so that they are 12" apart. This will allow you enough room for your drill when installing the side covers of each yurt. Once the two yurts have been fully installed you can cut a piece of plywood wide enough to connect the two doorframes together. Paint or stain the plywood strips and screw them into position. Using the bag your top cover was packaged in, cut a "gasket" to connect the two top covers together. Using a vinyl cement*

(available from Pacific Yurts), glue the "gasket" onto both top covers, then screw the "gasket" to the plywood strips where it overlaps.

Utility Shed

See Just Sheds' 1110.pdf 8' x 6' shed plan and Utility Shed floor diagram.

Details

The Utility Shed will be an insulated 8' x 6' shed resting on concrete footings. The shed will reside roughly between the MLA yurts and the wood furnace. It will serve the following purposes:

- Connection point for inbound water from spring pipe, cold water supply, hot water supply, radiant floor heat supply & return;
- Location of water pressure tank;
- Location of hot water tank;
- Location of water filtration system;
- Location of radiant floor heat system heat exchangers and control systems.

The Utility Shed will be heated by one loop of radiant floor heating pipe – the return flow from the 20' yurt zone.

Power House

See Just Sheds' 1113.pdf 8' x 12' shed plan.

Details

The Power House will be an insulated 8' x 12' shed resting on concrete footings. The shed will reside to the southwest of the intersection of the main and Welcome Center driveways, placing the power source no more than 300' from both the MLA and Welcome Center buildings. It will serve the following purposes:

- Location of biodiesel-fueled generator;
- Storage of biodiesel fuel;
- Location of deep-cycle battery array;
- Location of controllers, inverters and shunt loads.

The Power House will be heated via an electric space heater and waste heat from the running generator. There will be a controller tied to a thermostat, and when the temperature in the building drops below a designated temperature the generator will fire to run the heater. Once the desired temperature is reached the heater will shut off, and waste heat from the generator engine will continue to warm the building. Further, certain heavy load items, such as the dryer and sauna, will be directly tied to the generator. Using these heavy load items in the winter will cause the generator to run and, thus, create waste heat from the generator engine.

The generator will have an exhaust pipe exiting the building

UNDECIDED

- Logging costs & sale of extra timber

DIAGRAMS

Diagram #5 – 30 Foot Yurt

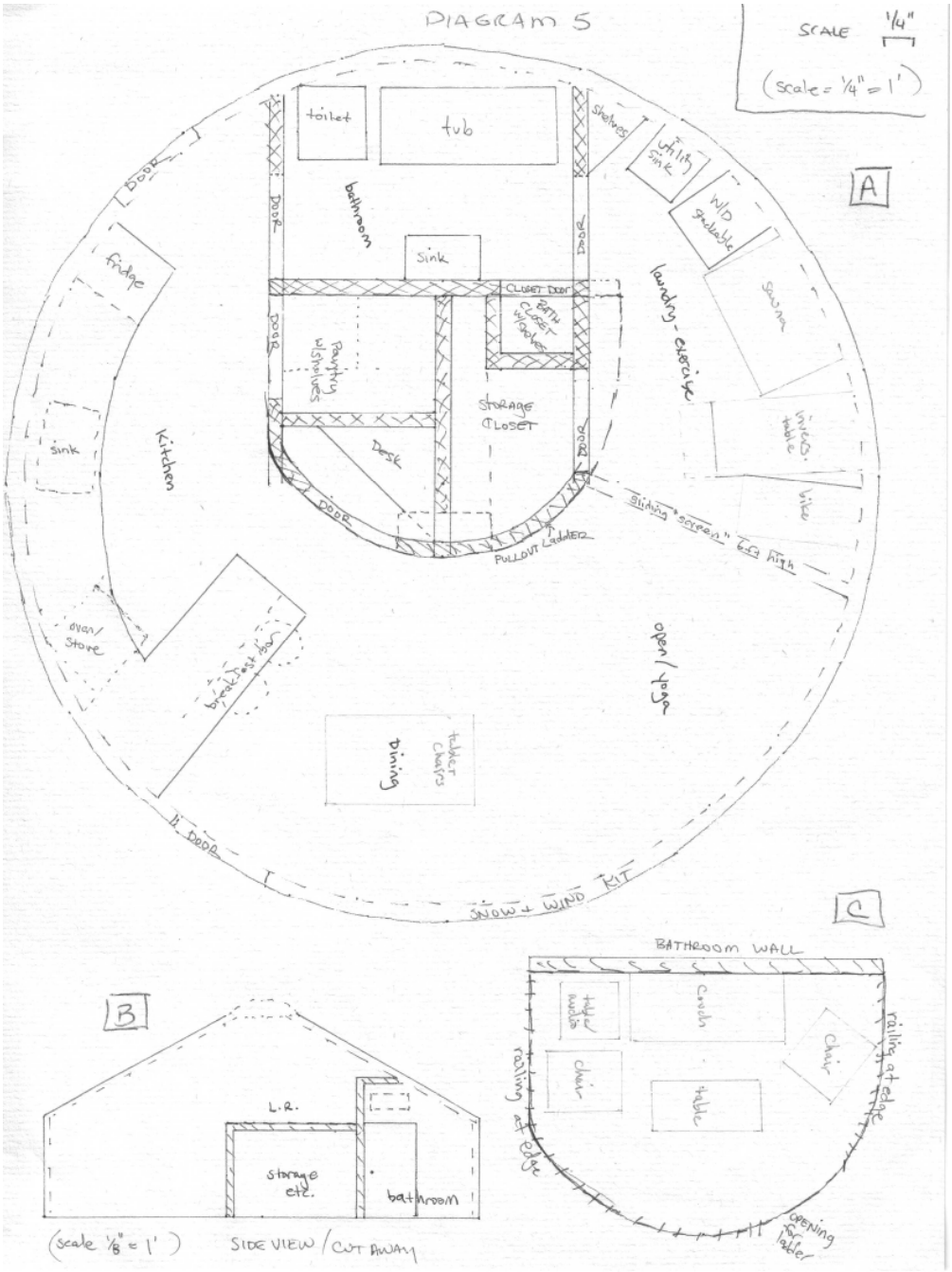


Diagram #6 – 20 Foot Yurt

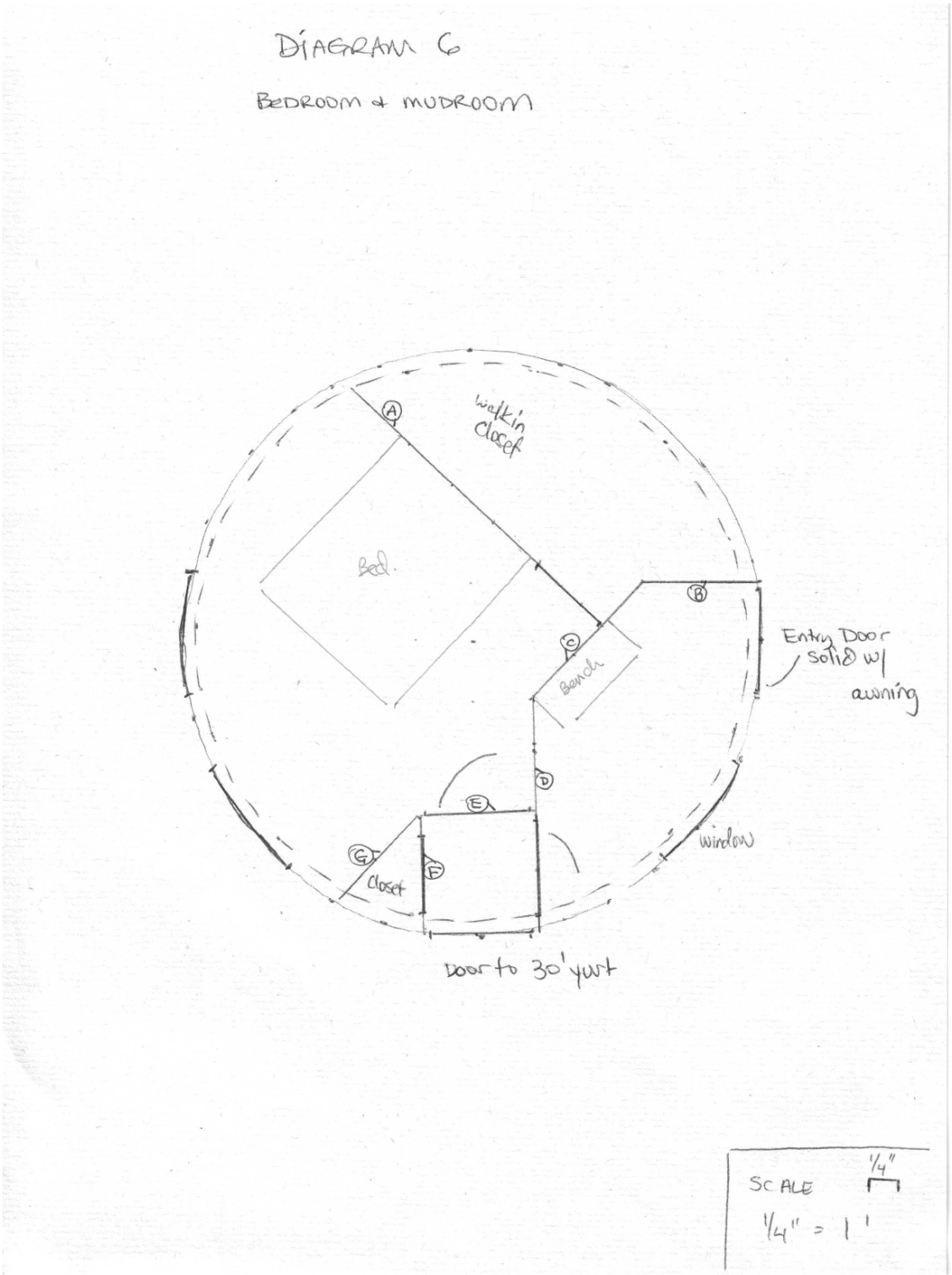


Diagram #6.1 – 20 Foot Yurt Walls

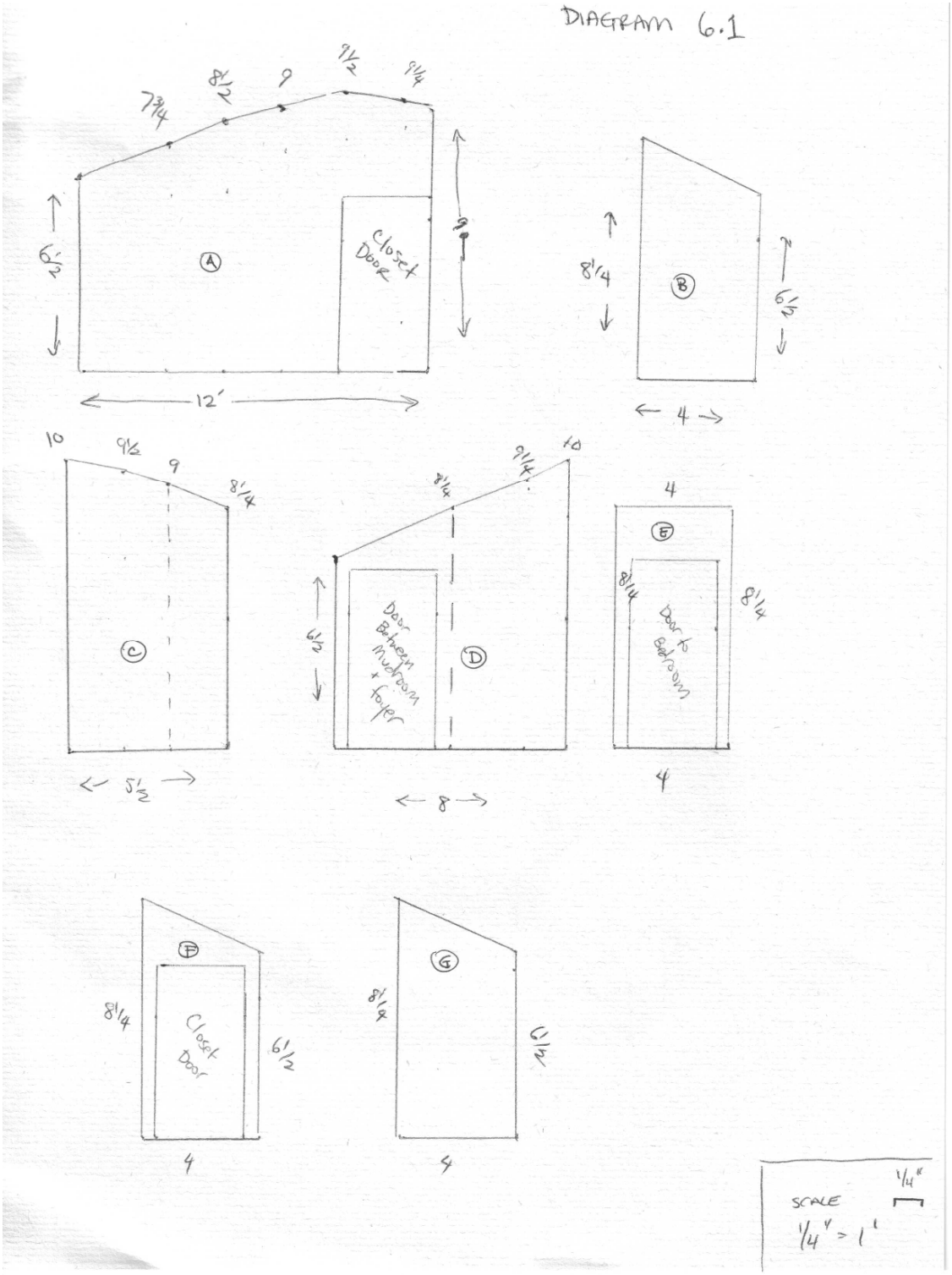


Diagram #6.2 – 20 Foot Yurt Walls

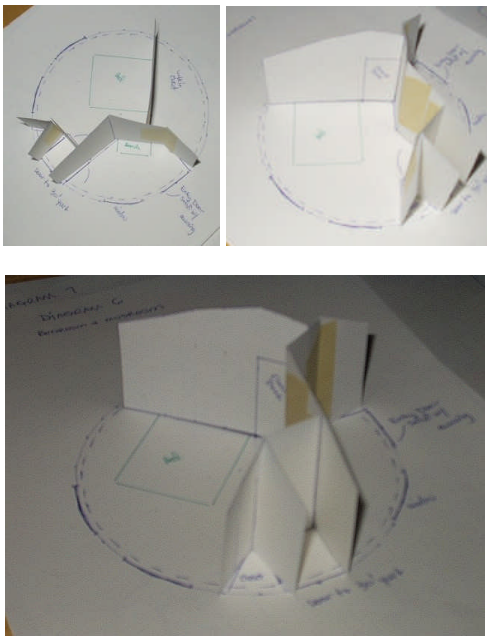


Diagram #7 – 14 Foot Yurt

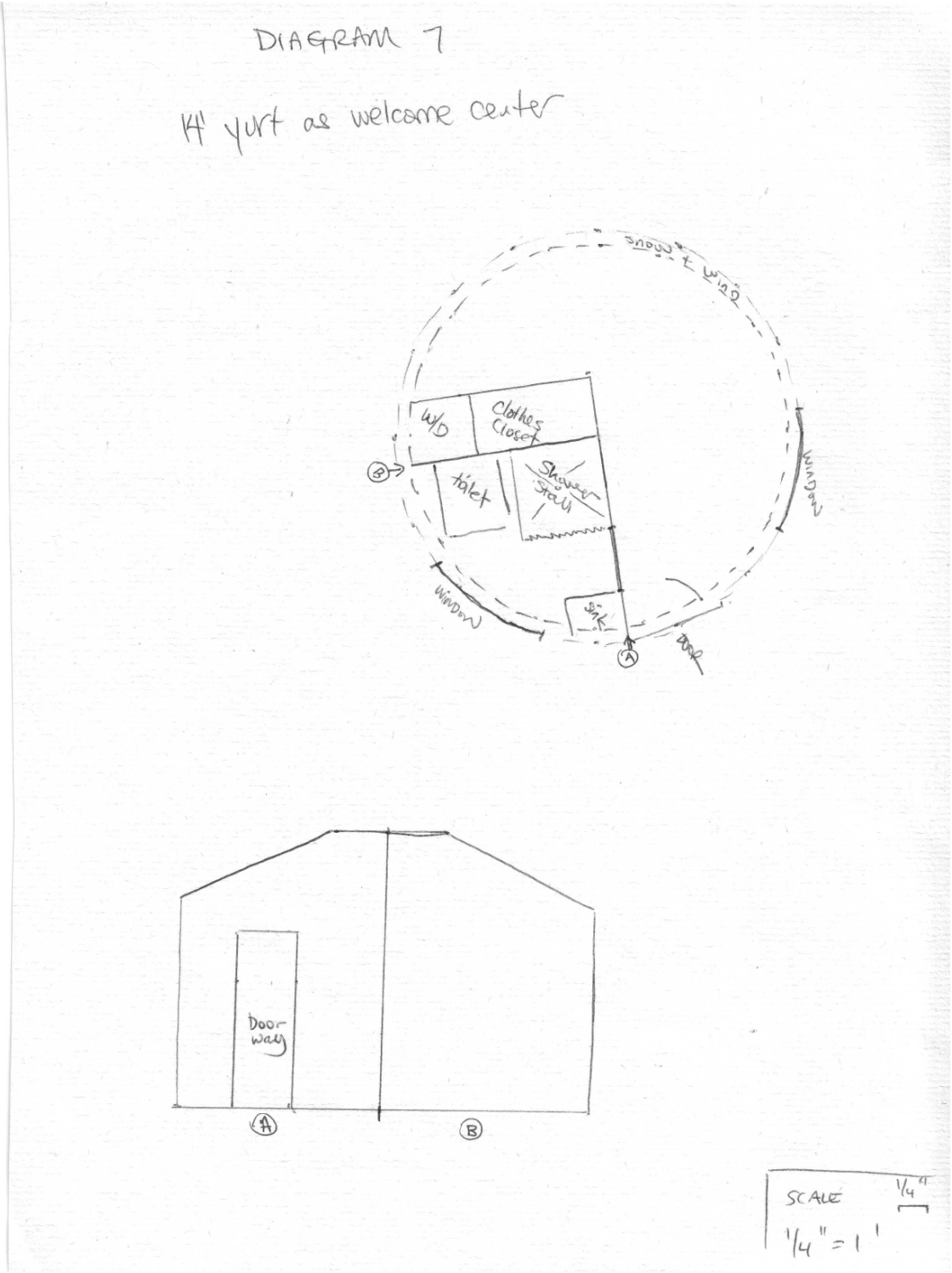
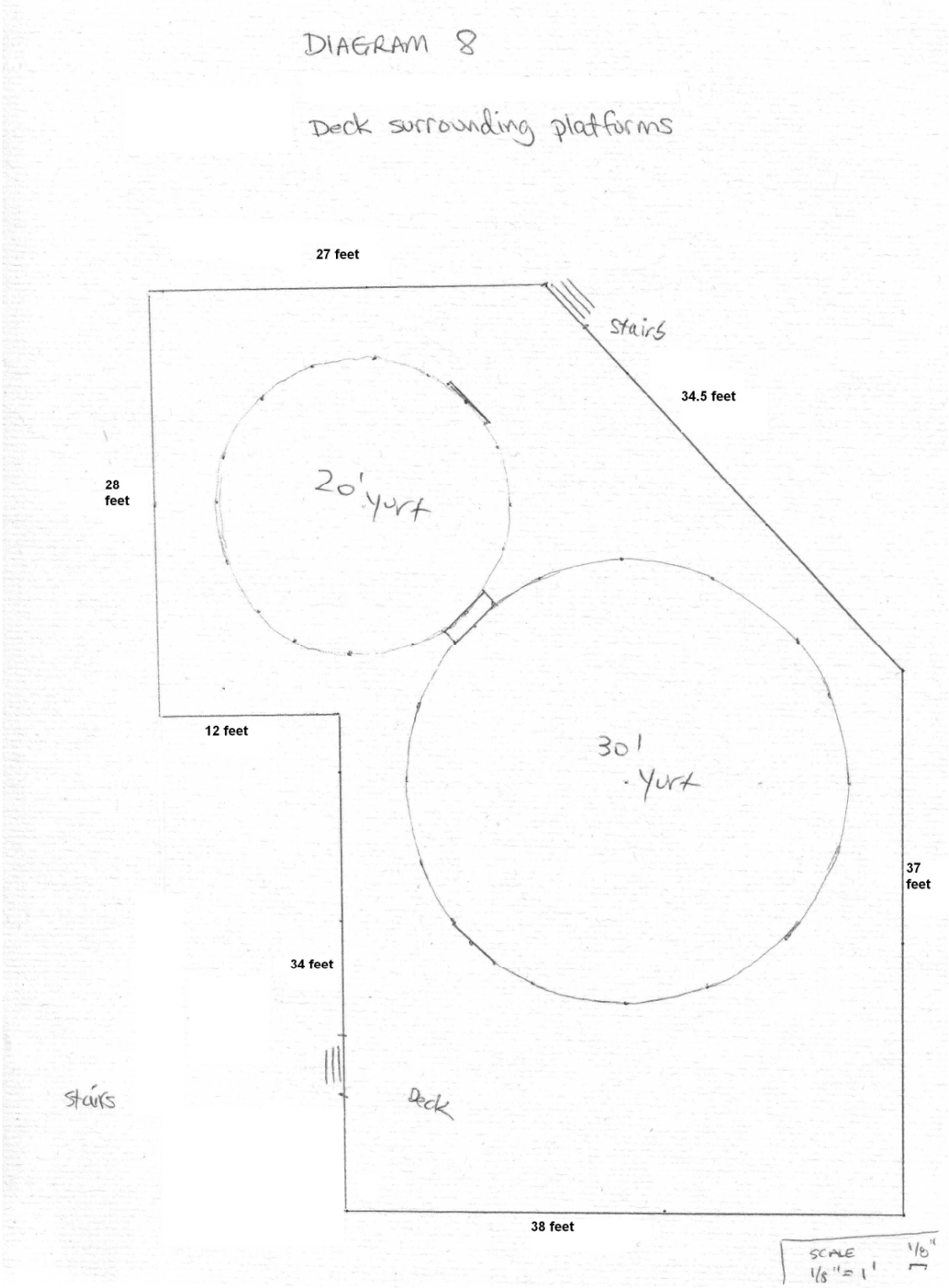
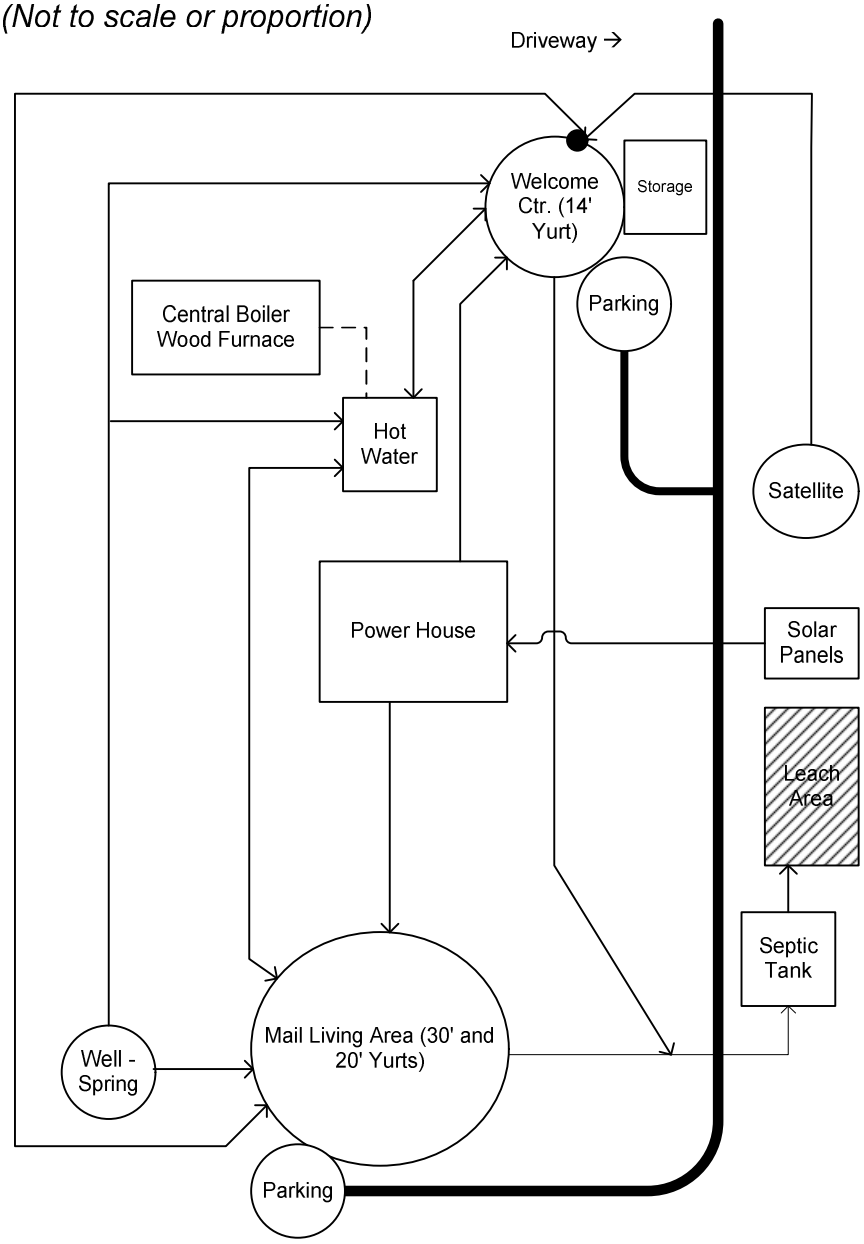


Diagram #8 – Deck



Site Diagram

(Not to scale or proportion)



Septic Design