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When designing a structure, in this a case a small dwelling unit, it is important that the residential codes of NYS are met. This is the most important step when designing a structure because if the codes are not followed the structure cannot be built. Small dwelling units are becoming more and more popular as the population increases, because of this a list which states rules of thumb for simple residential buildings has been created. If a design is to follow these rules of thumb it will cover the triple line approach in the most straight forward way. It is important when designing that the structure adheres to the triple line approach. This triple line approach will make your structure benefit the economy, society, and environment. By using different design techniques we are able to meet these criteria. Along with using the rules of thumb to cover this triple line approach, different technologies can be used to further solidify your structures potential to be a great all around building. These technologies cover; affordable construction, energy efficiency, land use, and universal design. By incorporating all these guidelines the structure will be at its most efficient state within the community it is designed in.

As by code every dwelling unit shall have at least one habitable room that will not have less than 120 square feet of gross floor area. By creating the master bedroom on the second floor it is possible to create a room that is larger than 120 square feet. Every dwelling unit will also be provided with a kitchen area which will also have a sink. The kitchen within this design also covers a dwelling spatial organization rule of thumb called the kitchen work triangle, this triangle addresses the efficiency of the kitchen space between the major work centers. When planning a kitchen plan about 12 square feet of cupboard space for glassware and china and an additional 6 square feet per family member for general storage = 24 square feet. By knowing the area of your kitchen you are able to start designing other rooms and their

sizes. Another room that will be sized to code is the bathroom. All fixtures will be spaced per figure R307.1 of the residential code. By having this basic residential layout for a bathroom a sense of square footage of the bathroom can be established.

By establishing site design considerations we are able to use rules of thumb which address the orientation of the building. A rule of thumb for the site is elongating the building along the east and west axis. This will enable the south face to be larger than the east and west faces which will allow more natural lighting to enter the building considering the sun will be hitting the south face for most of the day. The natural light and natural ventilation minimal codes are met by using a large amount of windows along the south face of building. By placing the windows along the south face another rule of thumb is met addressing dwelling spatial organization, along with climate and solar exposure, because the interior spaces requiring most light, heating, and cooling should be placed along the south face of the building. While placing the more habitable rooms by the south face we can also plan for privacy within the design by placing the more private rooms along the north face. Another rule of thumb for site design is to minimize a buildings footprint by creating 2 stories instead of one. This will leave more room for plants and wildlife, and better absorption of rain water and snow runoff. Smaller houses also use less materials and cost less to operate. The gradient will be sloped 6/10 from foundation walls. This rule of thumb allows the site to be in control of where rain water will go and be stored. Creating a correct slope away from foundation walls will also lessen the chances of flooding within a structure.

Development of appropriate technical means for envelope design, structural design, and building systems will save money and time in the design of a structure. One rule of thumb addressing this consideration is a wood stove, it will be placed on the first floor of this design to lower costs of heating the home. A 1 ton AC unit is required due to a building falling within the 500 to 100 sq foot range. The size of the structure should not be larger than 30% of the site, this give a square footage of 750 feet, which is within the range for the 1 ton AC unit. Another rule of thumb is a super insulated

house, which should have 12 square feet of windows every 100 square feet of floor, and at least two thirds of windows should be facing south. Once again placing most of the windows along the south face is important in this design, it is a strong factor in the overall process of designing this building.

When building a structure based on a 150 dollar per square foot it is important to save money where it is possible. Some rules of thumb for residential structures can be used to help cut costs in order to meet the 150 dollar square foot budget. When designing a home, Keep room sizes below 16 feet in the narrow dimensions to save some costs. Also any odd-angled wall will cost twice as much as wall built with 90-degree corners. This design is constructed almost entirely of 90 degree corners this will help stop any extra costs for different angles. Because the structure designed has porches and overhangs add 40% to the base cost for porches and decks with a roof over them. By following these rules of thumb we can keep the price of the home to a minimum.

There are four technological categories which are to be covered in this design; affordable construction, energy efficiency, land use, and universal design. To address the affordable construction category, storm windows will be used throughout the house. Tight-fitting interior storm windows can reduce drafts, thereby improving comfort. By creating an airspace between the interior and exterior windows, they also improve the insulating value of the window assembly and raise the interior window temperature. Energy efficiency is covered by many things, but in this design compact florescent lighting will be used. This lighting is simply miniature versions of full-size fluorescent lights. The use of these lights can be lessened by incorporating a large amount of windows for natural lighting. As areas become developed, a much larger percentage of rainwater hits impervious surfaces including roofs, sidewalks, parking lots, driveways, and streets, and must be controlled through storm water management techniques. By sloping the roofs on this design all in the same manner, the direction of rain water falling off the house can be controlled. By sloping the land we can use it to move the water coming off the north and south sides of the building. The rain water will come off of the roof in these direction due to

the use of gable and hip roofs. This control of rain water can also be used when trying to incorporate rain water harvesting, another form of energy efficiency and land use. As the interest in aging-in-place grows, so does the demand for senior appropriate new homes. This information can help builders and remodelers address the needs of their older clients, this is considered universal design. In order to cover universal design in this design a versatile shower that accommodates both able-bodied and those in wheelchairs called a transfer shower will be used, or a roll in shower which allows a wheelchair user to bathe without transferring to a shower seat.