MODERN ARCH STRUCTURES MAS™

LOW COST SECURE RESIDENTIAL COMPOUND LAYOUT

USING MAS-570™ High Density Configuration (HDF)

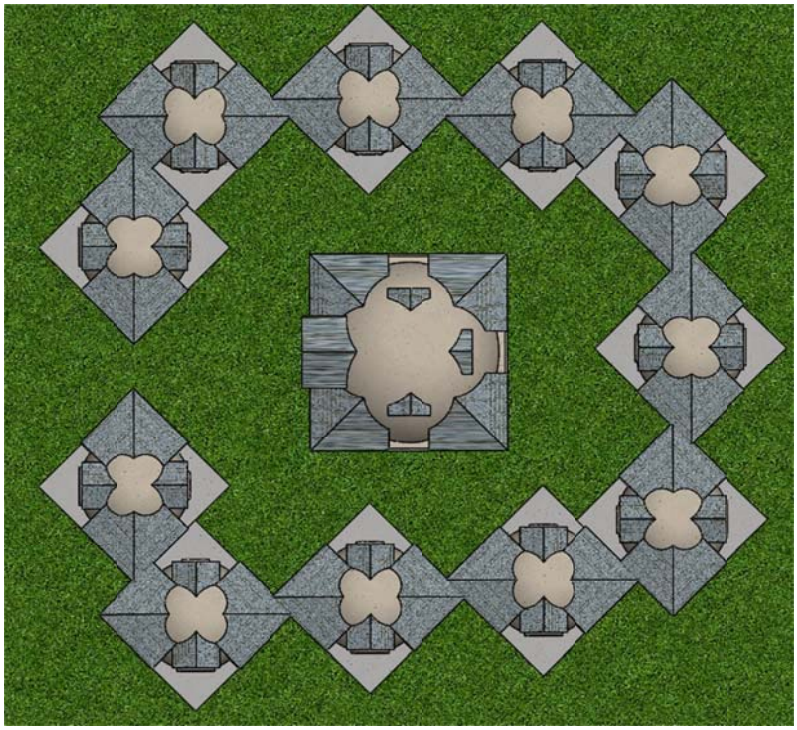
Revised September 9, 2011

Modern Arch Structures (MAS™) - Imagine a structure that stands up to any natural disaster or fire, costs a fraction of conventional construction, can be built in a week, is 100% green, is extremely energy efficient, and has an exterior structure, including roofing and siding, with an expected life span of hundreds of years with virtually NO maintenance. **It is here ... it is real ... it is MAS™.**

The MAS-570™ **all concrete structure** can be configured with 1 to 4 bedrooms. *A kitchen and living area is available in the 1 and 2 bedroom configurations.* The MAS-570™ is ideal for high density family housing where a central kitchen and bathroom facility is provided. In a high density configuration the MAS-570™ can hold 4 families of 5 or more persons each. Concrete partitions can be provided such that each family has an entrance to their OWN secure area.

One possibility is to use the The MAS-570™high density configuration WITHOUT interior partitions, thus allowing the families to collectively provide security at the entrance of each MAS-570™ system. A non-partitioned MAS-570™ system can hold 5 individual families.

The MAS-570™ high density configuration (HDF) is typically configured with a single exterior entrance. However, a rear entrance option is available at NO additional cost which allows a single MAS-570™ to be used as a common entry/exit point for a compound providing a common area as well as protection for security personnel guarding a compound.



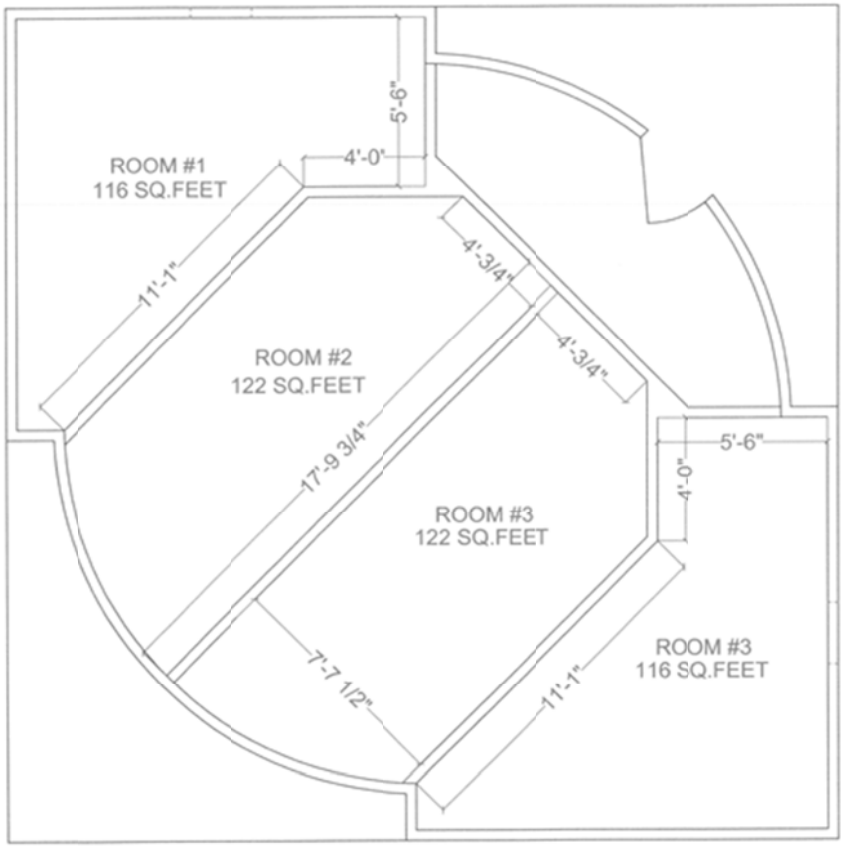
The MAS-1300™ may be used in the center of a compound consisting of 11 or more MAS-570™ systems to provide a common kitchen, bathroom and food storage area for the community. The MAS-1300™ is 18 feet high and can be equipped with a built in exterior roof access stairway system at NO addition cost.

An elevated security lookout area is created utilizing the MAS-1300™ 360 degree top area to provide sentry watch over the interior and exterior of the compound while allowing personnel to remain in a defensible position.

The secure compound in this configuration can house 44 to 55 families with well over 250 individual residents. The central kitchen, bathroom areas (male/female) will easily support a community of this size.

This secure compound made up of 11 each MAS-570™ systems and 1 each MAS-1300™ system provides for a wire mesh or "bar" protected window in each of the 4 bedrooms housed in each MAS-570™ high density configuration. Water storage/collection as well as solar options are available. It is possible to eliminate all exterior and/or interior window openings for added security.

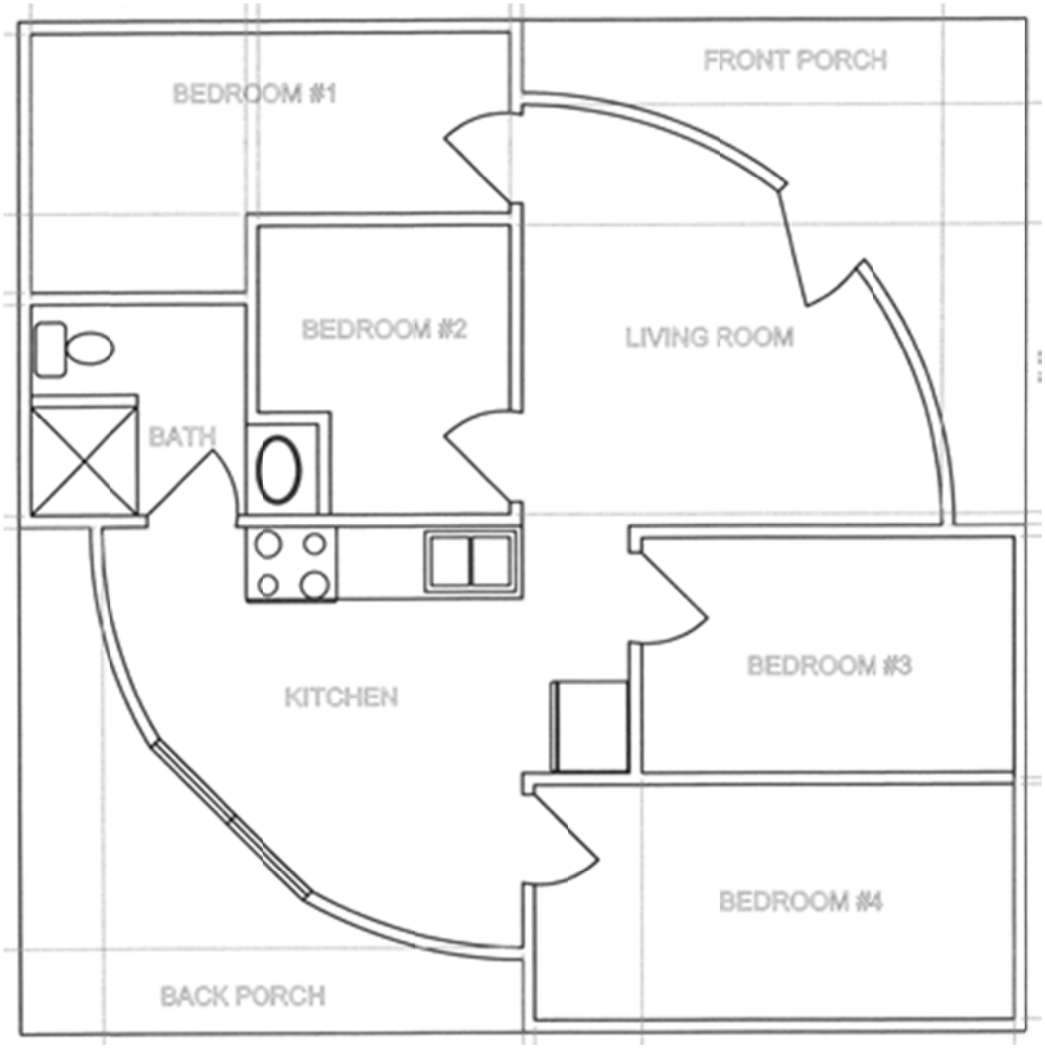
This secure compound is made up of 11 each MAS-570™ systems and 1 each MAS-1300™, however a **single MAS-570™ system is used to provide a common entry/exit** area allowing for a central common area. By using a MAS-570™ as a common entry/exit area, also housing the kitchen and bathrooms, it would allow the elimination of the central MAS-1300™ such that the entire interior compound area is unimpeded. *(Photo shows MAS-1300™ common area which can be eliminated)*



The layout to the left is an optional high density configuration of the MAS-570™ which would be suitable for partial partitioned and/or non-partitioned living space.

This layout is also suitable for use as a common area by utilizing the outside two rooms as partitioned bathrooms (one male & one female) and the interior area for cooking as well as entry/exit to a compound.

Any configuration can have any of the openings for windows and doors removed and doing so does NOT affect the cost of either the MAS-570™ or MAS-1300™ systems. Both the MAS-570™ and MAS-1300™ can be built in a week using a 2 person crew working 8 hours per day. It would also be possible to complete an entire compound of 11 to 16 each MAS-570™ systems with a central MAS-1300™ system in one week using a single shotcrete system, multiple forms and a crew of 6 persons per 8 hour shift working 3 shifts per day.

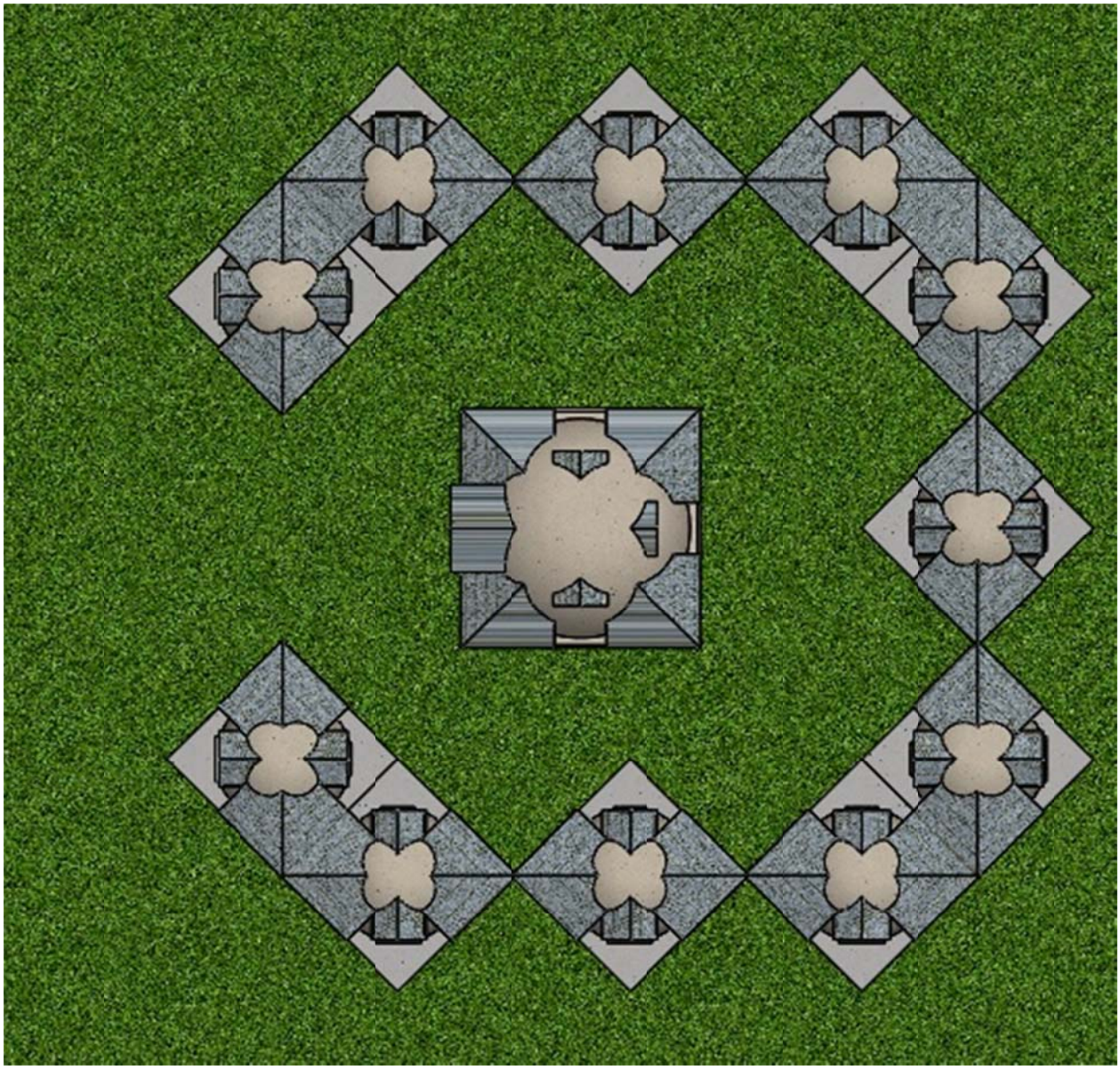


The MAS-570™ system above is configured with 4 small bedrooms AND a bathroom/ kitchen area. This configuration is often used in a 4 unit compound as shown below. These bedrooms are small and as such this configuration is best used when a central kitchen and/or bathroom is NOT available to the community. This configuration can also be used by community leaders who require their own kitchen and/or bathroom facilities. Another use for this configuration is a central medical facility for a compound providing isolated rooms for patents and/or sleeping quarters for visiting medical personnel.

The MAS-570™ system configured in a 4 unit compound. The area between the units can be eliminated by sharing walls and/or the openings can be bridged with a solid concrete wall during construction. Multiple 4 unit compounds can also be used to create larger compounds.

MAS™ SYSTEM: The MAS™ system uses components that are used as part of a final design. Therefore there are hundreds of options that can be added to configure the MAS™ system. Without any options, the MAS™ system consists of a square concrete foundation, a thin shelled concrete structure, concrete encapsulated electrical conduit, a concrete encapsulated plumbing raceway and formed openings for windows and doors. All options, including the windows and doors, are accessories supplied and warranted by 3rd party vendors. From hurricane-storm windows to solar panels and rain water collection and storage systems, the optional accessories are endless. **MAS™ does not manufacture, or sell MAS™ structures.** MAS™ certifies suppliers and vendors, and licenses the right to build each structure.

MAS™ 20 year WARRANTY: The MAS™ system comes with a 20 year warranty. From the foundation to the entire thin walled structure it is COMPLETELY covered for an entire 20 years. The MAS™ system warranty includes natural disasters, fires or "acts of God" and does NOT exclude them like everyone else does. (Please see complete warranty details included with your MAS™ certification)



The MAS™ system can also be configured to share walls allowing for a smaller footprint as shown above.

OPEN AND SPACIOUS LOOK: The MAS™ system is open and spacious. With square corners and a high ceiling height the MAS-570™ and MAS-1300™ not only have large interiors but they look LARGE. The spherical shape, at the top where the arches meet, provides for natural convection circulation. The larger the temperature difference between the upper air and the lower air, the more the air circulates. This process continues until temperature equilibrium is achieved, thus avoiding the temperature stratification present in almost all conventional structures. The MAS™ air circulation system is natural, it is automatic and it is FREE. High ceilings in conventional construction most often come with a cost of higher energy bills due to the additional space to be heated or cooled. The high ceilings in the MAS™ system actually add

to the energy efficiency by allowing for the full 360 degree natural convection process to circulate air.

The MAS-1300™ can also be configured as a two story residential housing configuration as shown below.

Exterior View MAS-1300™ Residential Housing Configuration Option

TYPICAL INTERIOR SHELL FINISH OPTIONS: The MAS™ systems may be insulated with a proprietary sound absorbing spray foam called MAStilite™ should this be desired due to environmental conditions. First any electrical provisions are installed. This is a very quick process due to the foundation encapsulated conduit system contained in the MAS™ envelope. Then the sound absorbing MAStilite™ foam is sprayed to the thickness designed to achieve the desired insulation properties. Generally 3 inches is recommended to achieve an R60 equivalent value. Finally an acoustical plaster is typically applied at a thickness of 1/8 inch to allow for any traditional finish. This finish can be a faux tile, stone or brick finish or a traditional textured or smooth finish often used with drywall. As in the exterior shell and roofing finishes, the only added cost is labor.

Interior View MAS-1300™ Residential Configuration Option (looking up)

Interior View MAS-1300™ Residential Configuration Option (looking down)

For further information please contact Professor Mathew Edwards with Southern Utah University at (435) 592-5782 in the US or by e-mail: matt@modernarchstructures.com

Please also visit the Modern Arch Structures website at www.modernarchstructures.com for more information, photos and instructional videos.