

Anthem to complete monument within year

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SPECIAL FOR
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By the summer of 2009, retired Rear Adm. Ron Tucker's vision of constructing a memorial in the Anthem Community Park to honor veterans was gaining public support, and a team of volunteers was assembling to make it a reality. Artist Renee Palmer-Jones created a design for the Anthem Veterans Memorial (AVM), and construction expert Steve Rusch drafted the initial working drawings. In July 2009, Tucker invited local civil engineer and land surveyor, Jim Martin, to join the AVM Planning Committee as its chief engineer to further develop the technical and engineering requirements of the project.

The Memorial design features five marble pillars in graduated sizes representing the branches of the military. Palmer-Jones' idea centers on using sunlight passing through elliptical openings in the pillars to illuminate a mosaic of the Great Seal of the United States at the base of the monument. Full illumination of the Seal will occur every year at

precisely 11:11 a.m. on November 11, Veterans Day. The pillars and Seal are set in the Circle of Honor consisting of 3,000 brick pavers inscribed with the names of veterans.

Together the all-volunteer Planning Committee members refined the details of the Memorial design. Using Computer Aided Drafting (CAD) software, a three-dimensional view of the project took shape. According to Martin, "The position of the sun became the primary design element relative to the placement of the pillars and the elliptical openings that pass the sun's rays through the structures." Martin's knowledge of

celestial and solar observations and his land surveying experience were invaluable in calculating the sun's vertical angle (altitude) and horizontal angle (azimuth) at the Memorial site.

"Using latitudes and longitudes for the Memorial location, altitude and azimuth data were calculated to solidify the geometry of the column structures and the rotation of the Memorial site relative to true north," says Martin. He explains that he used three different methods to ensure the accuracy of the angles, all yielding the same results.

In addition to defining the spacing and height of the pillars, the altitude of the sun was used to determine the horizontal placement of the Great Seal of the United States at the base of the pillars. "Trigonometric functions were used to calculate the angular projection shadows of the pillars onto the horizontal surface, and the elliptical openings in the columns were calculated to illuminate a perfect three-foot diameter circle to match the outline of the Great Seal," Martin explains.

In order to increase public awareness of the project and verify the Memorial's design concept would work as planned, the Committee members suggested construction of a scale model. Utilizing Rusch's woodworking and construction capabilities, a mathematically precise model of the Memorial was crafted including landscape, hardscape and benches. On November 11, 2009 at 11:11 a.m., the model was tested at the Memorial site, and the Great Seal of the United States was illuminated through the elliptical openings in the pillars as anticipated.

The AVM Planning Committee began to evaluate construction methods, materials and costs for the project. Martin's technical and engineering experience, complemented by Rusch's construction knowledge, allowed the Committee to make practical and cost-effective construction choices while remaining true to the

artist's concept.

According to Martin, "The prime engineering issue was related to the design of the column structures. Based on cost, foundation requirements and longevity expectations, the team selected a cast-in-place light-weight concrete solid core structure with a marble façade. The elliptical openings will be formed into the cast-in-place construction with a single elliptical tube extending through each of the five pillars."

A geotechnical analysis was performed by a licensed engineering firm to determine the stability of the soil at the Memorial site. While the ground overall was found to be favorable for the Memorial construction, soil remediation was deemed necessary to correct for expansive soil typical in Anthem. Additionally, Martin conducted a site survey to establish topographic requirements for grading and storm water control.

Led by Martin, the Anthem Veterans Memorial Planning Committee members met with personnel from several Maricopa County planning, zoning and engineering departments in June 2010 for a pre-application meeting. With final engineering plans currently underway, it is anticipated the permit application will be complete for County review and approval before spring 2011.

A request for bids from qualified construction contractors is planned for spring 2011 with construction to begin in the summer. According to Martin, "Planning Committee Members will oversee the construction activity to ensure compliance with plans and specifications." The Anthem Veterans Memorial Opening Ceremony will take place on November 11, 2011.

While the Memorial will be built in Anthem, its purpose is to honor all veterans regardless of where they live or when they served. *For information on how to support the Anthem Veterans Memorial, go to www.OnlineAtAnthem.com and click on Veterans Memorial.*

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