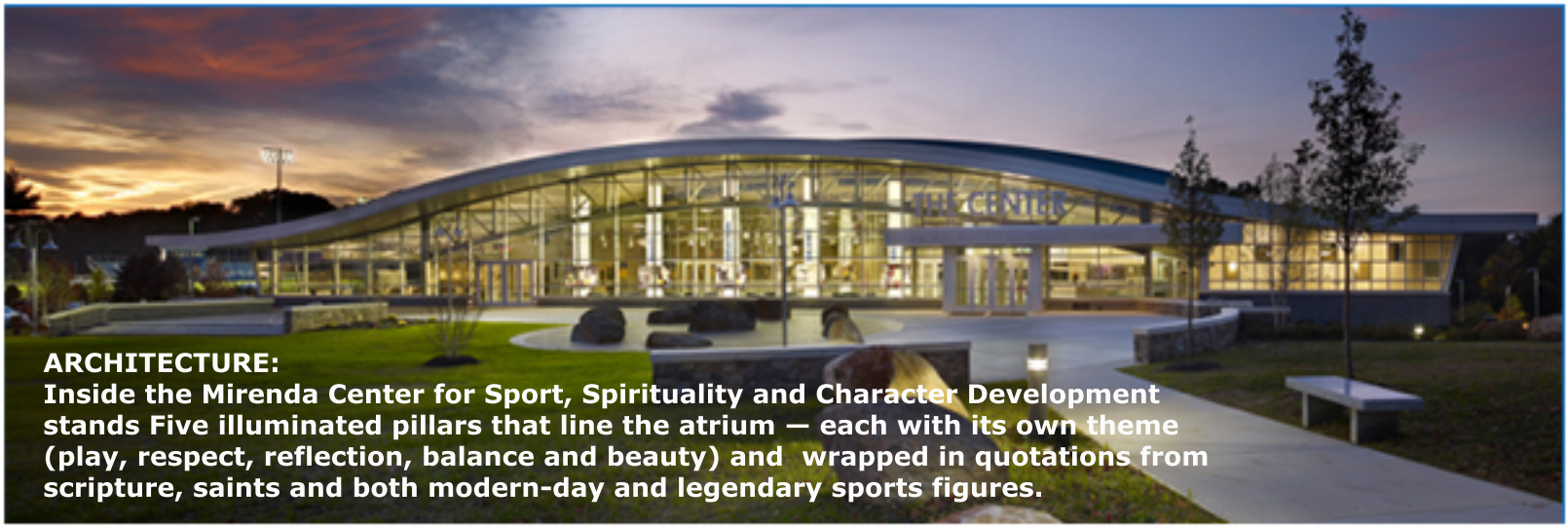

ARCHITECTURE:
Inside the Mirenda Center for Sport, Spirituality and Character Development stands Five illuminated pillars that line the atrium — each with its own theme (play, respect, reflection, balance and beauty) and wrapped in quotations from scripture, saints and both modern-day and legendary sports figures.

ZACHARY HEILMAN | MECHANICAL OPTION | WWW.ENGR.PSU.EDU/AE/THESIS/PORTFOLIOS/2011/ZJH106/INDEX.HTML

BUILDING:
THE MIRENDA CENTER FOR SPORTS, SPIRITUALITY, AND CHARACTER DEVELOPMENT

LOCATION:
ONE NEUMANN DRIVE ASTON, PA 19014-4707

CONSTRUCTION:
2,400 C.Y. OF CONCRETE
80 TONS OF REBAR
9,891 S.F. OF GLASS
14,500 S.F. OF WOOD FLOORING
7,000 S.F. SYNTHETIC TRACK

STRUCTURAL:
The Mirenda Centers structural system is divided into a central arena and a peripheral subsystem. The central arena stands 43'-10¼" from court level. The arena's span is supported by 9 (9'-2" deep) trusses that span 138'8" and are spaced 20'o.c. The structure is a steel skeleton with shear connections and a braced frame. The peripheral system is broken into a 20' bay o.c. that span 38' (W18X35). The whole building is wrapped in a masonry curtain wall. The foundation around the perimeter supports both the steel structure and the 16" CMU with steel reinforcing throughout.

ELECTRICAL:
The electrical system consists of a single outdoor pad mounted 1500 KVA transformer that steps down medium voltage from the utility to 480/277V. The Caldwell ground loop is the grounding method used under the transformer. Inside the building is two distribution panels. The MDP feeds two lighting panels directly at 277V, and 3 transformers stepped down for receptacle panels at 208/120V. The MDP feeds the PPMA which feeds the six roof top units of the mechanical system at 480/277V.

MECHANICAL:
The mechanical system consists of six roof top air handling units whose max cooling loads sum to 4651.91 mbh and max heating loads sum to 3031.4 mbh. Each ahu has a heat recovery wheel, economizer, filters, dx coil, gas fired heater, and necessary sensory equipment for optimal direct digital control (DDC). fan powered boxes provide individual zone control and electric baseboard heat keep condensation off the storefront glazing. Solid state DDC controls with scheduling for efficiency performance and savings.