

**FACT SHEET
FOR “ENERGY EFFICIENT” BUILDING FEATURES**

Ten Oaks Middle School

Ten Oaks is one of five new energy efficient schools in the Horry County School district. The school is located off of Carolina Forest Boulevard on Revolutionary War Way in Myrtle Beach. It is a state of the art school that is organized around a central learning commons, dining commons and gymnasium that is flooded with natural light from a clerestory that runs the length of the building as well as north and south facing windows that make for an open and inviting place for students to learn.

- Opened on August 23, 2017
- Design-Builder: Firstfloor Energy Positive Built by Metcon Construction/T.A. Loving Construction
- Architect Team: SfL+a Architects (Architect of Record); Stantec (Interior Architect); Mozingo+Wallace (Exterior Architect)
- Budget: \$45.9 million
- Grades: 6-8
- Number of Classrooms: 36 classrooms, 12 science classrooms, 7 open collaboration spaces, 9 exploratory classrooms
- Size of Building: 170,784 Square feet
- Number of Students: 1,200

Solar Panels

Photovoltaic Cells

Electricity for our school is produced by solar panels mounted on the roof. It has enough solar panels to power the entire school with excess which is sold back to Santee Cooper Power Company which offsets the cost of purchasing electricity on cloudy days or after dark. Solar-powered photovoltaic (PV) panels convert the sun's rays into electricity by exciting electrons in silicon cells using the photons of light from the sun.

- Number of panels mounted on roof: 2,142
- Average amount of electrical power generated each day: 2833 kilowatt hours
- Amount of electrical power used each day: 2457 kilowatt hours
- Built to withstand hurricane force winds up to: 155 mph

Lighting:

LED Lighting

Almost all of the lighting in our school is LED. An LED lamp is a light-emitting diode (LED) product that is assembled into a lamp (or light bulb) for use in lighting fixtures. LED lamps have a lifespan and electrical efficiency which are several times greater than incandescent lamps, and are significantly more efficient than most fluorescent lamps. The lifespan of LED lighting is as much as 25 times more than incandescent or fluorescent lighting.

Lighting Controls

Lighting control systems are installed to maximize the energy savings from the lighting system. Occupancy sensors automatically turn the lights off when there is no motion for more than 10 minutes. This feature saves electricity and, since the school should be dark at night, alerts security personnel when intruders are on site and even pin points where the intruders are in the school because the lights turn on with motion.

Daylight Harvesting

Daylight harvesting systems use daylight to offset the amount of electric lighting needed to properly light a space, in order to reduce energy consumption. This is accomplished using lighting control systems that are able to dim or switch electric lighting in response to changing daylight availability.

- Number of LED light fixtures in the school 2,859
- Average percentage of energy used for lighting: 16% (based on energy model)

Heating Ventilation Air Conditioning (HVAC)

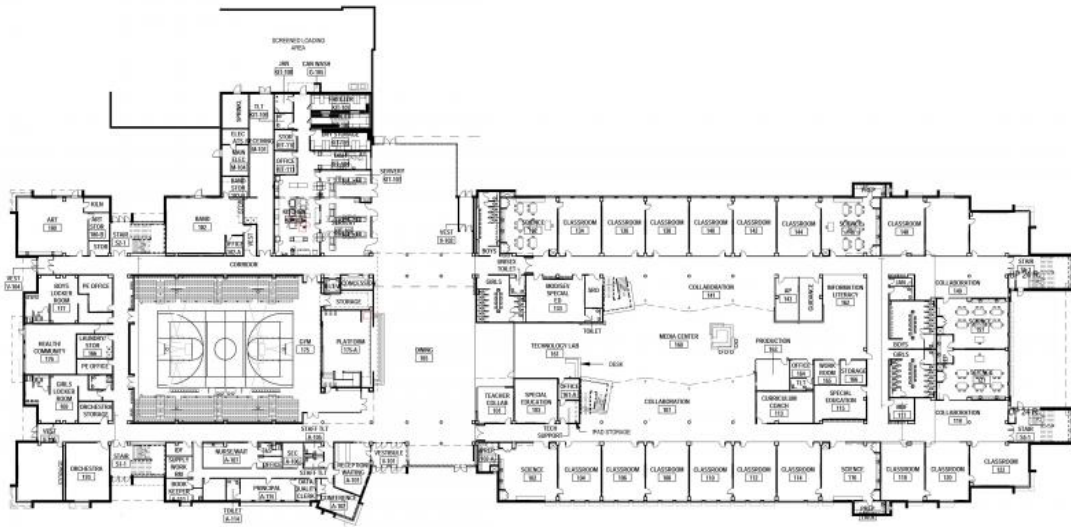
Geothermal

Our school uses less energy for supplying heating and air conditioning inside of the school through a special type of equipment that circulates water through several deep wells. A geothermal heat pump is a central heating and/or cooling system that transfers heat to or from the ground. It uses the earth as a heat source (in the winter) or a heat sink (in the summer). This design takes advantage of the moderate temperatures in the ground to boost efficiency and reduce the operational costs of heating and cooling systems. In addition, we circulate air through the concrete floor and roof structure in our classrooms which maintains comfortable temperatures in the mass of the building and provides for radiant heating and cooling.

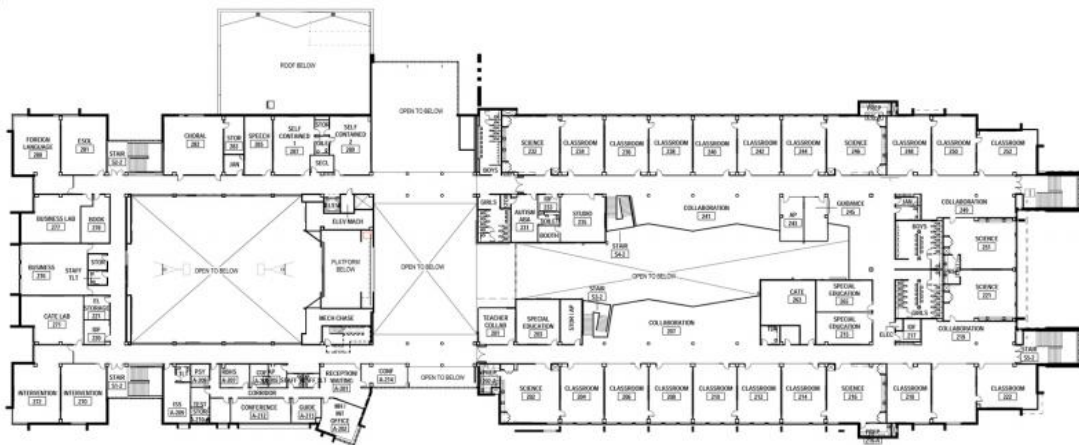
- Average temperature of water underground: 65.4 F (from geothermal model)
- Number of wells: 72
- Diameter and depth of wells: 4-inch diameter, 280 feet deep
- Location of wells: behind school next to basketball court
- Estimated gallons of water in the geothermal loop: 4,300 gallons
- Average percentage of energy used for HVAC: 41% (based on energy model)

Building Envelope

The walls, roof, windows and doors of our school are specially designed to maintain a comfortable temperature for as long as possible even when heating and cooling systems are not running. When our school was under construction the contractors used a spray applied continuous foam insulation. This provides an air barrier for all exterior walls that controls air leakage into and out of the building. Windows are designed with a special Insulating glass made of window panes separated by a gas filled space to reduce heat transfer across the exterior glass areas of the building envelope.



FIRST FLOOR PLAN



SECOND FLOOR PLAN