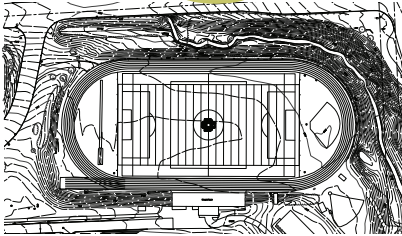


The SDA CONNECTION



Back to School



In the last decade, SDA has been privileged to work with numerous educational communities including:

- | | | |
|--|--------------------------------|---------------------------------|
| Allegan Schools | Harbor Beach | Schools |
| Almont School District | Harper Woods Schools | Plymouth-Canton |
| Anchor Bay School District | Hazel Park School District | Community Schools |
| Archdiocese of Detroit | Howell Public Schools | Richmond Schools |
| Avondale Public Schools | Huron School District | Rochester College |
| Berkley Schools | Jackson Public Schools | Rochester Community Schools |
| Birmingham Schools | L'Anse Creuse | Roseville Public Schools |
| Bloomfield Hills Public Schools | Lake Orion | Schoolcraft College |
| Brandon School District | Lake Superior State University | St. Clair Community College |
| Brown City Schools | Laker School District | Troy Schools |
| Brownstown Schools | Lapeer Community Schools | University of Michigan |
| Capac Schools | Marysville Public Schools | Utica Schools |
| Chippewa Valley School District | Melvindale - Northern | Van Dyke Public Schools |
| Clarkston Schools | Allen Park School District | Walled Lake Schools |
| Clawson Schools | Memphis School District | Walsh College |
| Cooley Law School | Michigan Christian College | Warren Consolidated Schools |
| Davenport University | Mt. Clemens Schools | Waterford Schools |
| Dearborn Public Schools | Oakland Community College | West Bloomfield School District |
| Detroit Country Day | Oak Park School District | Woodhaven |
| Detroit Public Schools | Oxford Schools | Brownstown School District |
| Dryden Schools | Pinconning Schools | |
| Father Gabriel Richard High School - Ann Arbor | Pinckney Community | |
| Ferris State University | | |
| Gibraltar School District | | |
| Grosse Ile Schools | | |

SDA has worked with Alexander Bogaerts and Associates, Duce Simmons, French Associates, HarleyEllis, Rossetti Associates, TMP Associates, SHW Group, and Wolf-Wineman Architects. SDA's Land Development and Survey Departments work in concert with architects and school communities to achieve safe and cost-efficient school zones. For example, the Survey Department provided a package of comprehensive surveying services necessary to purchase, design, and engineer a new charter school facility in Detroit for the Thompson Foundation. Initially, SDA provided an ALTA survey which defined the subject parcel's property lines, easements, zoning, setbacks, and adjacent public rights-of-way. SDA then supplemented this ALTA survey with a detailed topographic map, which depicts the lay of the land, along with all the existing site utilities that are available. This information was utilized by the architect and civil engineer to develop a site plan. Once the design process had begun, the client was able to use legal descriptions, provided by SDA, and their engineering design plans to place an offer to purchase land adjacent to their property.



The land survey portion of any project is just the beginning. Engineering a sound design for the school zone is the next step.

ENGINEERING THE SCHOOL ZONE

School zones are very specialized sites that require attention to detail in areas that are not seen in retail or office developments. Automobile traffic during pick-up and drop-off times can be a nightmare; bus transportation has special needs for stacking space and turning movements; pedestrian traffic is

predominant and must be accommodated safely; and a host of other items make the design of school sites a serious challenge making an experienced civil engineer very valuable. Let's take a look at these various difficulties and challenges that are faced in engineering a safe school zone:

Traffic Flow

Many times, old school buildings were not designed to handle the present student population and the number of parents who drop

off their children. Engineers who are experienced in working on school projects can be invaluable in assessing traffic flow issues and recommending solutions. While we understand that the ultimate solution is complete separation of car and bus traffic, sometimes sites do not have adequate space or cannot realistically be designed in this manner. An experienced engineer can offer alternatives to alleviate or reduce traffic flow problems.

Maintenance

Inevitably, all sites will require some minimal level of maintenance, mainly snowplowing, lawn mowing, and eventually pavement rehabilitation or replacement. Experienced school engineers know how to minimize these maintenance requirements. For instance, unless islands are necessary to control traffic flow, they should otherwise be avoided. Curbing should be minimized, although we do recommend concrete curbing as it tends to protect pavement edges from deterioration. When curbs are used, generally a mountable curb is desired. Landscaping should be low maintenance plantings.

As for pavement replacement, your engineer should be able to offer different options depending on the level of finality required. Pavements can be replaced completely, or milled and capped with new pavement, or the cracks can be filled and the surface sealed. All of these options are reasonable and each comes with a different cost and life cycle.

Utilities

Older buildings typically have existing utility infrastructure that is in disrepair and usually does not meet current standards. When expansions or renovations are done, it is a good idea, if not absolutely necessary, to consider utility system replacement.

Sanitary sewers on old schools are typically a small diameter and often are constructed of old crock sewers. These sewers clog easily and will often have deteriorated to the point of failure.

For water service, a host of questions arise when new work is done on old schools. It is very typical that old buildings will have building services that are not sized to meet current demands or to meet fire



protection requirements. We also find that a majority of old school sites have no means of fire protection. Local municipalities and fire departments will often request or require improved service, including larger diameter piping, new hydrants to provide adequate fire coverage, and possible "looping" of the water system, providing service to the building from more than one location.

Storm drainage tends to be the most difficult engineering issue to address on existing school sites that are being modified. Most

older schools do not meet current standards for storm drainage and storm water management systems. Local municipalities or county agencies will request modifications to meet their standards. Sometimes this is difficult due to lack of area on the site, or lack of money to construct the expensive systems. In these instances, it is imperative to meet with these agencies early to discuss options and reach an agreement.

For storm water management systems (e.g., detention basins, forebays, etc.), it is also important to consider child safety when designing these systems. Depending on the school type, it may be advisable to add fencing around the basin to keep smaller children out of the area.

Community/Agency Reviews

Until recently, school districts have generally had free reign to design their school and school sites the way they saw fit, with little or no local jurisdiction to stand in their way. The State is now attempting to ensure some type of local "approval" or "buy-in" of what the schools are proposing. This is being forced by the State by asking for local approval letters or permits to indicate local acceptance. Depending on the community, this can often be handled with a friendly meeting between both sides, or a community will sometimes try to force districts to go through a complex site plan approval process.

However, the State has left a provision in their current policy where



Harbor Beach Schools

Districts can appeal and the State can override local requirements. This is particularly useful when communities have stringent requirements for landscaping that could cost a District tens of thousands of dollars, while this money would be much better spent on educating students. It should be noted that the State will not likely override local jurisdiction in instances where work is being done on public utilities or in public rights-of-way.

Construction Schedule

Many times, minor paving projects must be completed in a two or three month time frame over the summer, with cleanup complete before school starts. For larger projects that can last up to two years on existing sites, care must be taken to ensure schools can operate with minimal interference and with maximum safety for students and staff.

All of the above school-specific challenges can be overcome. An experienced team of professionals, including architects, engineers,

"Spalding DeDecker has performed well on all of our projects. They are very knowledgeable and thorough. I've particularly been impressed with how they have worked with the limitations of existing sites to creatively solve the issues involved in bringing the sites up to new standards and requirements."

*-Deb Walter
Director of Facility
Operations
Rochester Community
Schools*

and construction managers, can assist school districts in meeting these challenges.



Rochester Community Schools Obsessed with Education

In 1997, 2000, and 2004, voters in the Rochester Community School District approved bond issues for extensive work to its high schools, middle schools, and elementary schools. The bond issues also called for the construction of a new high school (Stoney Creek High School), a new elementary school (Delta Kelly in Oakland Township), and a new Support Services Center for the District.

The District's architect: French Associates

The architect's engineer: Spalding DeDecker Associates, Inc.

The first project SDA worked on with French Associates was the new Stoney Creek High School project. Stoney Creek is a 350,000 square foot high school constructed on 80+ acres of a former gravel mine. The project presented many challenges with the terrain, including two open drainage courses, extensive wetlands, and severe grade changes that all required special environmental

"We have had a very successful partnership with SDA on over \$250 million dollars worth of construction for Rochester Community Schools since the 1997 High School Bond Issue. They have continued to design intelligent solutions to, at times, difficult site constraints. They have also acted very much in partnership with the School District and assisted with its communications with the local Municipalities."

*- Paul A. Corneliussen, AIA
Vice President*

French Associates, Rochester Hills

considerations. In addition to the standard site civil design, SDA's work also included hydraulic analyses of the drainage courses to establish flood plain elevations, design of two box culvert/headwall drain crossings, wetland applications, and extensive use of slope stabilization measures to minimize impact to environmentally sensitive areas.

At the new elementary school, SDA designed a stormwater management system that exceeded local agency standards for stormwater quantity and quality in an effort to minimize impacts to sensitive environmental features and downstream properties. All of the other projects also presented varying degrees of complexity and challenges, and all have been successfully completed.

In addition to SDA's involvement on the civil engineering design work for all of the Rochester projects, we have also provided surveying

services for the projects as well as construction layout on many of the schools.



Brandon School District

SDA was the Civil Engineer and Surveyor responsible for design of over \$6,000,000 in site improvements at various schools in the Brandon School District:

Work at the high school includes the following:

- Due to traffic flow problems on the site, a new 500-space student parking lot was constructed to segregate student and bus/parent drop-off traffic
- Complete reconstruction of the 200' long entrance drive to the school to improve ingress and egress to and from the site
- A new athletic field complex with entry plaza and concession buildings
- Cafeteria and gymnasium additions

Environmental Considerations

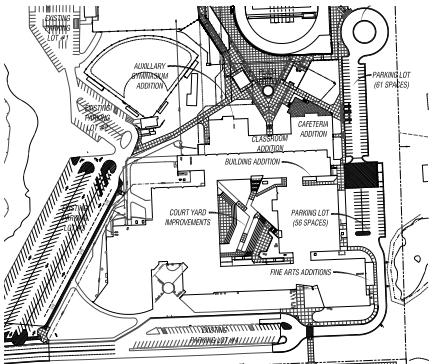
The Kearsley Creek cuts through the high school property, and is a high quality trout stream. Environmentalists had significant concerns of the affect the new parking lot would have on the quality of the stream – in particular the potential for raising the temperature of the creek and polluting it, thereby destroying the spawning habitat. SDA designed an innovative approach to address this issue, utilizing a depressed, underground storage and percolation system to take advantage of the well draining soils in the area. The design allowed the one-year storm event, which is typically the most detrimental in terms of stormwater quality impacts, to percolate into the ground thereby preventing that discharge from reaching the stream.

The new elementary school is being constructed on an 80-acre site on Oakwood Road east of Hadley Road. The project includes the following:

- An 80,000 square foot school
- Parking areas and drop-off loops for cars and buses
- Athletic fields
- Onsite sewage treatment system

Environmental Considerations

There are several wetland pockets on the property and the site plan was laid out in an attempt to minimize impacts to these areas. A large open water wetland area will remain untouched. The site utilizes an open channel drainage system to the greatest extent feasible. These open channels are intended to be collection and infiltration zones, with the goal of recharging the groundwater system at the source in lieu of piping storm drainage directly to sensitive drainage outlets. These drainage areas will be planted with water resistant plants, and will act as storm water cleansing areas prior to discharge.



Contact Information

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REENGINEERING THE SCHOOL ZONE: LEED

LEED (Leadership in Energy and Environmental Design) provides a complete framework for assessing building performance and meeting sustainability goals. Based on well-founded scientific standards, LEED emphasizes state-of-the-art strategies for sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

As school expenses rise, it becomes even more important to find new ways to minimize cost. LEED (Green) designs are an innovative and cost-effective alternative in controlling operation and maintenance expenses. Green designs join together the best design strategies and building technologies as well as:

- Provide a healthy and comfortable indoor environment.*
- Conserve energy, resources, and water.*
- Function as a teaching tool.*
- Serve as a community resource for neighborhood meetings and functions.*
- Ensure easy maintenance and operation.*
- Create a safe and secure educational atmosphere.*
- Provide an optimum learning environment.*

Pavement Management System (PMS)

School districts own parking lots and driveways that can add up to millions of square feet of pavement. Maintaining pavement in a "good" or better condition saves the school district money. Once pavement fails, the cost to replace the pavement is exponential compared to maintaining pavement based upon a Pavement Management System. With school budgets being cut each year, a PMS can help facility managers stay within their annual budget.

A PMS consists of four phases:

- Inventory and evaluation of existing pavement
- Recommendations for maintenance and rehabilitation
- Engineering Services
- Construction Services

A PMS can be simple or complex depending upon district needs. This system will help you make decisions about the type, timing, and funding of maintenance rehabilitation and reconstruction. With an expert PMS Project Manager and on-line color coded plans, aerial photos, and spreadsheets, facility managers can easily make cost-effective decisions regarding pavement maintenance.

Spalding DeDecker Associates, Inc. will provide an experienced PMS Project Manager to help your facility managers set up a long-term PMS.