CHASTAIN-SKILLMAN, INC.

ENGINEERS • ARCHITECTS • SCIENTISTS • SURVEYORS

CONSULTANT'S UPDATE

ISSUE 26 OCTOBER—DECEMBER 2007

WORK-ZONE SAFETY

By W.R. "Ron" Cauthan, PE

"Our nation's highways see more than 42,000 people lose their lives in roadway-related accidents every year, and more than 1,000 of these fatalities occur in work-zone areas alone[1]." Since Florida highways seem to be constantly under construction, anyone passing through these work-zones can readily understand the danger. In an attempt to decrease the number of work-zone related deaths, the Federal Highway Administration (FHWA) recently authorized $17 million dollars in grants to various organizations to provide safety training to those who work in work-zone areas to reduce injuries and deaths on our roadways.

The American Traffic Safety Services Association (ATSSA) was awarded $11.9 million of the $17 million grant. Under the grant, three different areas of work-zone safety training are going to be covered.

The first area will focus on work-zone worker safety training. ATSSA will be reviewing current safety training criteria and techniques for the workers on the site. The second area will focus on developing work-zone safety guidelines. The current guidelines will be reviewed with the idea of improving work-zone safety requirements. The final area of focus will be to develop any new guidelines into safety training programs for local governments, transportation agencies and local engineering groups.

(Work-Zone—Continued on page 5)

A MODEL FOR TRACKING SELF-DIRECTED TEAM PRODUCTIVITY

By Fernand J. "Tib" Tiblier, Jr., PE

By definition, a manager is expected to accomplish some measure of his/her work through others. The classic mission of a manager is to plan, organize, direct and control, yet the sole evaluation criteria lies in the results achieved and the perception of those results. A good manager will take the bull by the horns to ensure that the facts are well documented, not relying on perceptions, as fickle as they may be.

Over the course of my years in service to the engineering profession, predominantly as a local government department director, I have devised a system of measuring these results as they relate to the control and actual productivity of self-directed work teams. Examples of such teams may be a group of utility plant operators charged with the safe and efficient operation of a facility, or a crew charged with the use, care and operation of specialized equipment to patch roadway potholes. Through such a tracking system, the manager defines what parameters should be measured: miles of pipe laid, lineal feet of storm sewers cleaned, number of trees trimmed, gallons of water treated, costs of services, etc.

(Team Productivity—Continued on page 4)

EOH NEWS

*New Legislation in Florida, Minnesota and Wisconsin could spell **BIG** changes in the Indoor Environmental Quality assessment and mold remediation industries. In **Florida, Senate Bill 2234** (signed into law on June 27) will require mold assessors and remediators to apply for examinations and two-year licenses when it takes full effect in July 2010. In addition, these individuals/companies will be required to have $1 million insurance policies in general liability and errors-and-omissions coverage specific for mold-related claims. Other provisions apply to home and building inspectors and other professionals, redefining warranties and setting new indemnity guidelines.*

(Continued on page 7)

Inside this issue:

PLEASE JOIN US AS WE WELCOME OUR NEW ASSOCIATES

In Lakeland

Chastain-Skillman is pleased to announce that **Charles "Chuck" Roberts** has joined the firm as Chief Operating Officer. Chuck holds a BS degree in Chemical Engineering from the University of Virginia and has 28 years professional experience providing a broad array of infrastructure and environmental engineering, design, permitting, and construction services to private and government sector clients nationwide. He has held significant management roles with nationally recognized firms and most recently served as CEO for the US subsidiary of an international engineering firm.

Dr. Noreen Poor, PhD, PE, an Associate Professor at the University of South Florida in Tampa, has chosen to join Chastain-Skillman during her year-long sabbatical. Dr. Poor earned her PhD in Civil Engineering at Virginia Polytechnic Institute and State University, a MSE degree in Mechanical Engineering at the University of Texas, and a BA degree in Business Management at the University of Maryland, University College. Over the past 22 years, Dr. Poor has gained extensive experience in environmental monitoring and computer modeling with a focus on human health impacts. Dr. Poor will collaborate with Chastain-Skillman in a technology exchange to incorporate research efforts into practical solutions. This opportunity is the result of Chastain-Skillman's on-going partnership with University of South Florida.

The Lakeland office also welcomes **Robby Brady,** Project Designer for the Civil group, **Robert "Jerry" Handley,** Project Designer for the Environmental group, and **Gil Harris,** Crew Supervisor/Assistant Project Manager who will be assisting us in the north Florida area.

In Orlando

The Orlando office welcomes **Corbett Watson**, Construction Project Representative and **David Breitrick**, PE, Senior Project Engineer. David holds a BS degree in Civil Engineering from the University of New Hampshire, Durham and has 25 years of professional experience.

In Tampa

The Tampa office welcomes **Sal Albustami**, Engineering Intern.

THREE NEW PRINCIPALS APPOINTED

Chastain-Skillman has appointed three long-time employees, Keith Dodds (Controller), Robert Du Bois (Director of Surveying), and Cindy Duhm (Chief Administrative Officer) as Principals of the firm. Congratulations to Keith, Robert and Cindy!

THEN AND NOW

By Robert "Bob" P. Schuler, PLS

I was in my office one afternoon when an old friend stopped by to say hello. We both sat for our test to become registered land surveyors back in 1975.

We started talking about the tools and equipment we use today, compared to the tools we had to use when we were first in practice.

I was introduced to surveying when I was still in high school. My father had a land surveying business and, during the summers, he would give me a job working on one of his field crews.

Back in the late 1960s, field crews consisted of three, and sometimes four, individuals. Standard equipment was a plumb-bob and sheath, chaining pins, a 200-foot long steel tape, a 20- or 30-second transit, and a level.

Steel tape with tape stretcher. Photo courtesy of National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

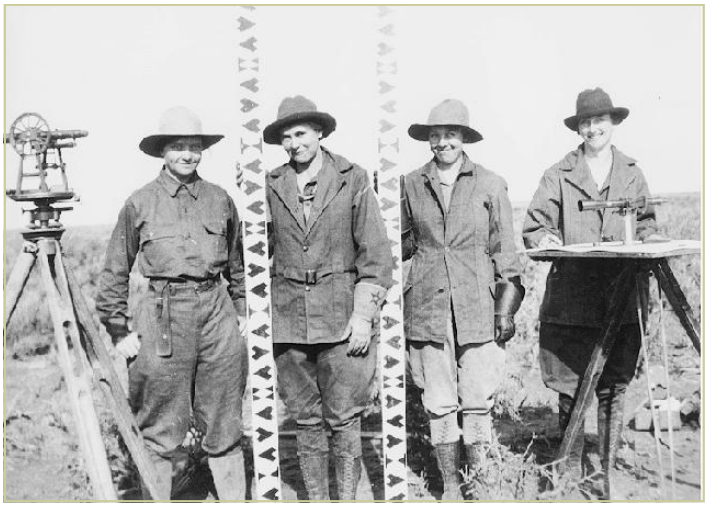
(Then and Now—Continued on page 3)

(Then and Now—Continued from page 2)

Let us say a request was received for a 10-acre boundary and topographic survey, without any information on the section of land in which the ten acres were located. The first task would be to traverse the four sides of the section, locating the section corners along the way. This was done with a transit and 200-foot steel tape. Once completed, the traverse was balanced and adjusted. Depending on the conditions crossed, such as heavy wooded areas or hills, this could take three to four days to complete. When the section work was completed, the breakdown of the ten acres could then be calculated. This was accomplished with a mechanical calculator and trigonometry tables. Then the boundary corners could be established in the field, and grid lines set, so the topographic phase of the survey could begin. This phase of the project was done with the level, level rod and a field book in which to keep level notes and observations. If brush and bushes were encountered on the grid line, a machete was used to open the lines of sight for observations on the grid points. This part of the project could take another three to four days to complete. Now the field portion of the survey could be turned over for drafting the 10-acre boundary and topographic survey. The field work would take seven to ten days to complete.

I can remember daydreaming about the day that there would be some type of instrument that would guide you to the corner location and collect all this data automatically, but there was no such device and I didn't know if there ever would be—after all this was a dream.

That was then.



All female survey crew - Minidoka Project, Idaho 1918. Photo from the U.S. Bureau of Reclamation, of the U.S. Department of the Interior.

Over the next twenty years, technology improved. Computers and other measuring and recording devices were created and perfected. We now have tools like the electronic distance meter (EDM), which is basically an electronic transit with a data collector that attaches to it. The data collector records all of the operations that occur in the electronic transit. Together they are known as a total station. The total station has EDM built right into it. The tool I most prefer is the Global Positioning System (GPS). A GPS receiver processes the data signal which is broadcast from a global position satellite. The onboard computer in the receiver triangulates these signals being logged from a number of satellites—sometimes as many as ten, but no less than three. The receiver then calculates the horizontal and vertical position of the GPS receiver.

This is now.

Chastain-Skillman survey crew (2005).

The same 10-acre boundary and topographical survey is requested. The field crew will now consist of one or two individuals. They will locate the section corners and then GPS their location. This can usually be accomplished in one day. Now a vertical network will be created—usually at the exterior limits of the project. Once this has been completed, the GPS receiver can be calibrated to the horizontal and vertical control points that have been established. The vertical network and calibrating might take another day. GPS can collect horizontal and vertical data while you move with the use of a QUV or small, 4-wheel drive, all-terrain vehicle, with the GPS receiver mounted on the vehicle. The topographic phase of the project can usually be completed in another day or two. The project can now be turned in for drafting. The field work for the 10-acre boundary and topographic survey has taken three to four days.

With today's equipment, a job can be completed in less time than thirty years ago but, back then, the cost to equip a field crew was probably ten times less than the cost to equip a crew today, so the technology we use now comes at a higher rate than the devices we had in the past.

One can't help but wonder what technology in the next thirty years will bring to the surveying field.

Bob Schuler is the Vice President of Surveying for Chastain-Skillman's Sebring office with over 33 years of experience in the survey profession. He can be reached at (863) 382-4160 or bschuler@chastainskillman.com

(Team Productivity—Continued from page 1)

One parameter of interest to me in a past job experience was how much of our (Public Works) work effort was driven by complaint, versus how much of our work effort was driven by a proactive work program. Such information was easily measured and able to be compared to defined goals.

The system is simple and it consists of:

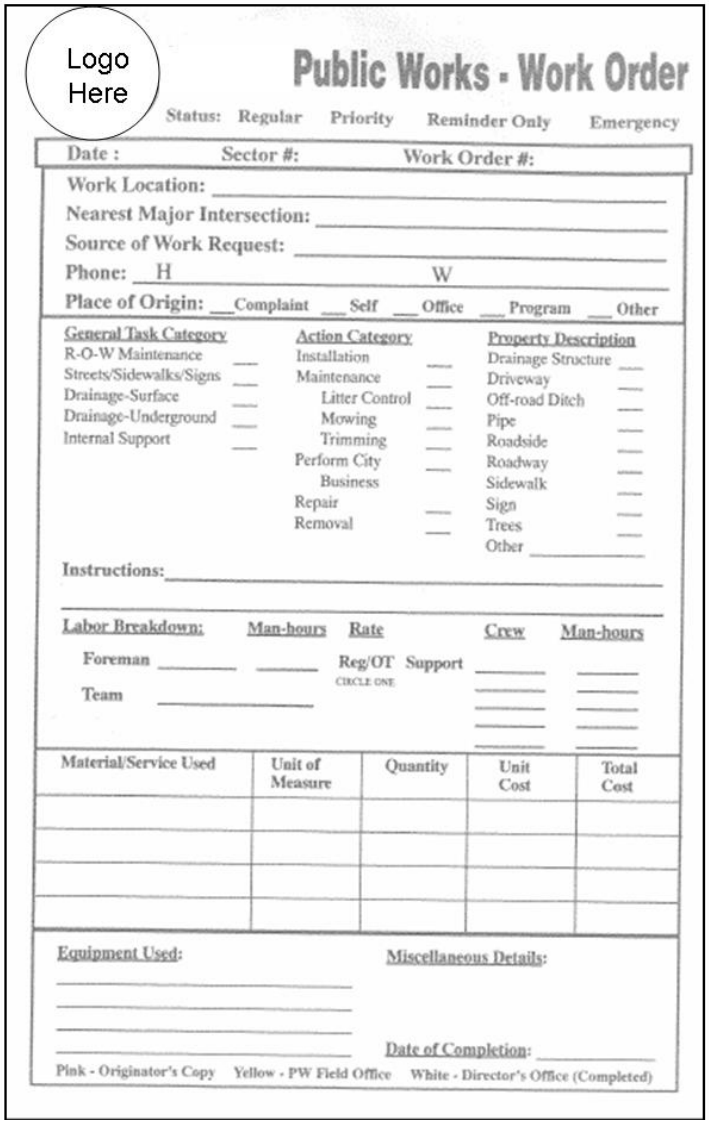
- A customized checklist (carbonless forms optional)
- Microsoft Access software (most MS Office users own this)
- A conscientious crew leader to complete the simple checklists for each Work Order
- Someone to enter the data (this step only takes approximately 30 seconds per Work Order)
- A customized reporting format or formats, examples of which might be a Quarterly Right-of-Way Maintenance Report or an Annual Expenditure Summary for a Streets/ Sidewalks/Signs Crew—all based upon the manner in which the database is queried.

The checklist is built on the premise that every work effort requires some **action** taken during a **time period** by some **worker or crew** on some **property** while utilizing some **equipment and/or supplies**—all of which represent some measurable **cost**. Each Work Order is entered as a unique set of fields that describes the activity, the "primary key". All lists or known fields may be entered from a pre-programmed familiar drop-down menu, as shown at right.

All known costs (such as wages) may be built into the database so that, for example, three hours of employee John Doe's time is calculated by simply selecting employee John Doe from a drop-down menu in the computerized entry form, and a work duration of 3 hours for the corresponding work effort. See **Figure 1** for an example of a typical checklist.

From the example, the practicality of this instrument is nearly limitless in terms of budget justifications, defining levels of service and justifying requests for additional resources. The manager is only limited by the imagination behind the query. "How much have we spent in the last six weeks to patch pot holes on Pine Street resulting from a complaint from Mr. Fussman?" is the kind of information that could be right at the end of your finger tips. This programmed database holds numerous advantages over commercially available "canned" software packages as it is easily customized for specific applications and reporting formats.

If the reader of this article should find that such a system would benefit their operation, our Orlando office can assist you in customizing a Microsoft Access database. Simply call or write (407) 851-7177, 6250 Hazeltine National Drive, Suite 116, Orlando, FL 32822.


Logo Here

Public Works - Work Order

Status: Regular Priority Reminder Only Emergency

Date : Sector #: Work Order #:

Work Location: _____

Nearest Major Intersection: _____

Source of Work Request: _____

Phone: H W

Place of Origin: ___Complaint ___Self ___Office ___Program ___Other

General Task Category		Action Category		Property Description	
R-O-W Maintenance	___	Installation	___	Drainage Structure	___
Streets/Sidewalks/Signs	___	Maintenance	___	Driveway	___
Drainage-Surface	___	Litter Control	___	Off-road Ditch	___
Drainage-Underground	___	Mowing	___	Pipe	___
Internal Support	___	Trimming	___	Roadside	___
		Perform City Business	___	Roadway	___
				Sidewalk	___
		Repair	___	Sign	___
		Removal	___	Trees	___
				Other _____	

Instructions: _____

Labor Breakdown:	Man-hours	Rate	Crew	Man-hours
Foreman _____	_____	Reg/OT Support (CIRCLE ONE)	_____	_____
Team _____			_____	_____
			_____	_____
			_____	_____

Material/Service Used	Unit of Measure	Quantity	Unit Cost	Total Cost

Equipment Used: _____

Miscellaneous Details: _____

Date of Completion: _____

Pink - Originator's Copy Yellow - PW Field Office White - Director's Office (Completed)

Figure 1

Tib Tiblier is a Senior Project Engineer of Chastain-Skillman's Orlando office. Tib holds a Bachelor of Arts Degree from Drury University, Springfield, MO, and a Master of Science in Environmental Engineering from the University of Central Florida, Orlando. He is a registered Professional Engineer with 22 years of experience in civil engineering and environmental engineering of which 10 years were spent serving local government at the level of Department Director. Tib is a Past-President of the Daytona Beach Chapter of the Florida Engineering Society and a veteran State Committee Member of Florida MATHCOUNTS. He can be reached at (407) 851-7177 or ftiblier@chastainskillman.com.

(Work-Zone—Continued from page 1)

These courses will be offered in "Opportunity States" that have been identified by the Federal Highway Administration as having the largest number of work-zone related fatalities and injuries. This will provide the greatest chance to have those numbers reduced. According to the ATSSA website, the 15 "Opportunity States" are Alabama, Arizona, California, Florida, Georgia, Indiana, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Pennsylvania, South Carolina, Tennessee and Texas.

ATSSA will be working with several different partners over the next four years to help administer and promote the grant. One of these will be J.M Morales and Associates. Many will recognize Mr. J.M. Morales as the instructor having provided your current Maintenance of Traffic Training. The ATSSA office in Kissimmee was the location where many of us took the Advanced Work Zone Traffic Control Refresher Course to renew our Maintenance of Traffic certification. While some states, such as Florida, require safety training such as that offered by ATSSA, there is currently no intention of making this additional training mandatory. It is my belief, however; that the additional safety measures and guidelines being developed will make it into the existing maintenance of traffic training and even into the FDOT Standard Indexes. ATSSA representatives have stated that since the additional training will be low cost, "people would have to be crazy not to take advantage of this training. They would have to be anti-safety not to take advantage."

There will be more to come as these training efforts are formalized and new guidelines developed.

Ron Cauthan is a Principal/Senior Project Manager for Chastain-Skillman's Civil Engineering Department in Sebring. His work focuses on private and municipal roadway and drainage projects. Ron received a Bachelor of Civil Engineering Degree from The Citadel in 1975. He can be reached at (863) 382-4160 or rcauthan@chastainskillman.com.

[1]Roads and Bridges Magazine, January 2007

RECENT PROJECTS AND CONTRACTS OF INTEREST

- Chastain-Skillman is providing site-work engineering design and permitting services for the **Highland City Town Center** development at County Road 540 and Highway 98, between Lakeland and Bartow, Florida. The Center will be anchored by a 46,000 sq. ft. Publix Super Markets store. In Phase I of this development, there is an additional planned retail space of approximately 50,000 sq. ft. to be built by the Watkins Group, as well as six out-parcels which are scheduled to contain an additional 47,000 sq. ft. of retail/office space. The total site consists of approximately 87 acres, 29 acres of which will comprise Phase I. Site construction began in June 2007.

- Construction is anticipated in late 2007 or early 2008 on **Saddle Creek Community District**—an "active adult" multi-purpose development in Bartow, Florida. Chastain-Skillman has provided site-work design and permitting services for this 640-acre site, located within a triangle formed by Highway 98, E. F. Griffin Road and Lyle Parkway. There are multiple planned phases in the development. Phase I will consist of a combination of townhouses, single-family dwellings and an amenity center with a pool and other conveniences. Other phases will consist of both residential and commercial properties, and when completely built out, the development is planned to hold a total of 1,350 residential units.

- Chastain-Skillman was recently designated as an approved Engineer/Architect firm for continuing services with the **Department of Environmental Protection** for Districts 3, 4 and 5. These districts encompass an approximate 200-mile radius around our Sebring office. Work will focus mainly on park facilities and environmentally sustainable "green design" principles.

- On August 13, 2007, Chastain-Skillman and the **City of Auburndale** held a groundbreaking ceremony during the City's "Day with the Commissioners" for two separate projects. These projects involve the existing Regional Wastewater Treatment Plant (WWTP) and a new Water Treatment Plant No. 3. Chastain-Skillman is designing an expansion from 2.0 MGD to 4.0 MGD for the wastewater treatment facility located just south of Interstate 4 on the west side of the Polk Parkway. The proposed design will allow the City to treat residuals to Class AA standards. Chastain-Skillman is also responsible for the design and construction of Water Treatment Plant No. 3, which will have the capability of producing 2.5 MGD of potable water from two new wells drilled on the site. Water Treatment Plant No. 3 is in the same vicinity as the WWTP, but on the east side of the Polk Parkway. In addition, Chastain-Skillman is designing the transmission and distribution mains for both facilities to serve the City's needs.

DOING MORE WITH LESS – THE BENEFITS OF A LOGISTICAL ANALYSIS

By Chuck Roberts

In today's economic climate, businesses and government entities alike are challenged by the need to accomplish more using fewer resources, whether those resources are financial, human, capital equipment, or supplies. This need for improved efficiency can apply regardless of whether the organization is experiencing growth, maintaining its current size and capabilities, or contracting. Careful consideration is required in the identification and implementation of such efficiency improvements to ensure their technical and economic feasibility, and to prevent undesired adverse impacts to the organization's cost structure, quality of products or services, and employee morale.

A proven, proactive method for identifying feasible efficiency improvements is to conduct a Logistical Analysis. This begins with an examination of current practices, definition of the existing work flow, and identification of how and why resources of various types are applied in the work process. This approach is analogous to performing a mass or energy balance on an industrial process. However, it takes into consideration other factors such as human resources and the four dimensional aspects (three physical dimensions plus time) of introducing labor and materials to the process, as well as methods for delivery of the work product. The Logistical Analysis can also be instrumental in identifying external factors that impact the process under study, and can be used as the basis for implementing changes to those external factors that will produce a positive effect.

The time required for initial data gathering depends on the size and complexity of the work process, and involves a visual examination of work areas, review of work procedures and products, and interviews with management and staff. Once the initial data is collected, a variety of analytical tools can be used to identify opportunities for improvement. Such tools can include Root Cause Analysis, Front End Analysis, Performance Based Supportability Analysis, Life Cycle Cost Analysis, Risk Analysis, Failure Mode and Effects Analysis, and Reliability Centered Maintenance Analysis, among others. The results of these analyses are then typically compiled in a report that presents proposed modifications to the work process or facility layout likely to result in greater efficiency and reduce the quantity resources required to achieve the same or better output. It is important to review these recommendations with both management and staff to ensure financial, technical, and operational (i.e., ability to achieve the desired personnel cooperation) feasibility, as these factors will greatly influence attainment of the desired results.

Once recommendations are reviewed and accepted by management, a plan is then typically developed defining the strategic approach and tactical actions necessary to effectively implement the selected modifications. The implementation plan generally also includes a system of metrics for evaluating implementation progress and assessing changes in performance. This provides a feedback mechanism for ensuring that the modifications produce the desired results, and facilitates the identification and implementation of adjustments to the approach, if needed.

Greg Van Lint, 3SI Operations Manager for Europe, and Bart Milissan, 3SI Executive Vice President and General Manager, discuss how to best meet client needs outside the 3SI facility in Zaventem, Belgium.

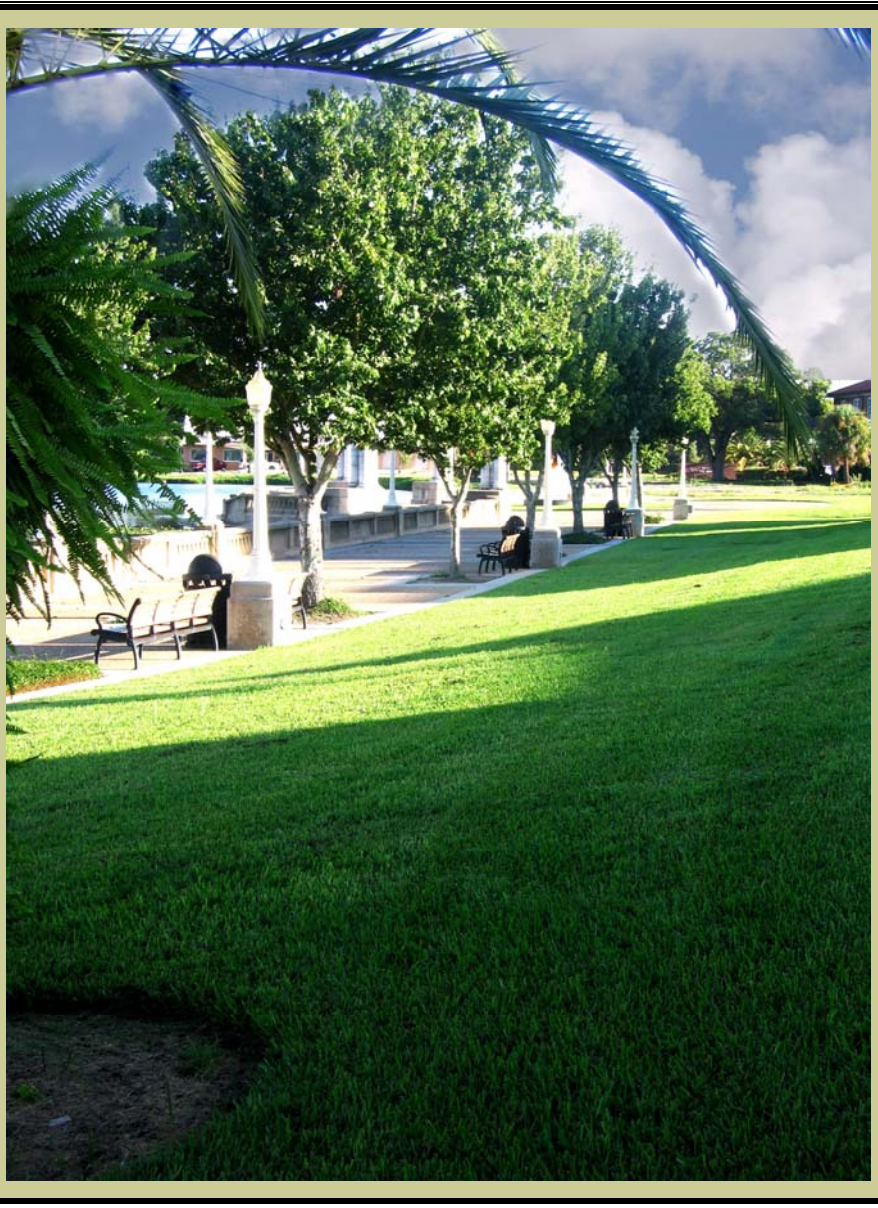
Chastain-Skillman is currently conducting a Logistical Analysis to assist 3SI Security Systems, Inc. (3SI) in improving the efficiency of their operations in Zaventem, Belgium. 3SI, which manufactures cash protection systems used in banks and Automated Teller Machines (ATMs) worldwide, has experienced record growth for the past 18 years. As its operations expanded, inefficiencies resulted from the inability of the existing work flow process to accommodate the need for additional space, raw materials, labor, product modifications, output, and other related factors.

The Logistical Analysis is being conducted in advance of 3SI's relocation of operations to a larger facility and involves considerable interaction with management and line personnel in various departments. This approach will ensure that the new facility is configured in a manner that will exhibit a high level of efficiency upon startup, and provide the flexibility to efficiently accommodate continued growth. The Logistical Analysis will also be used to identify other opportunities for improvement, such as standardization of product components and modifications to the front end of the product sales and product development cycle, which will provide more accurate forecasting, leading to more efficient procurement and application of resources.

Chuck Roberts is the Chief Operating Officer of Chastain-Skillman, Inc. He has a Bachelor of Science degree in Chemical Engineering from the University of Virginia and 28 years professional experience providing a broad array of engineering, environmental, and construction services to private and government sector clients. Chuck is located at the firm's headquarters in Lakeland, Florida and can be reached at (863) 646-1402 or croberts@chastainskillman.com.

Project Spotlight

Morning shadows accentuate the sloping hillside on the eastern shore of Lake Mirror in downtown Lakeland. Chastain-Skillman's civil engineers have performed the site-work engineering for the series of city parks that now completely encircle this lake in the heart of downtown.
The parks are a favorite destination of residents for concerts, fireworks, art festivals and relaxation.



(**EOH News**—*Continued from page 1)*

*New **OSHA Hexavalent Chromium Standards** effective May 30, 2007 for employers with 19 or fewer employees:*

- *29 CFR 1910.1026 General Industry*
- *29 CFR 1926.1126 Construction*
- *29 CFR 1915.1026 Maritime Industry*
- *PEL 8-hr TWA is 5.0 ug/m^3 with an Action Level 8-hr TWA of 2.5 ug/m^3*

(Standard was effective Nov 27, 2006 for employers with 20 or more employees.)

*New asbestos legislation, **The Bruce Vento Ban Asbestos and Prevent Mesothelioma Act of 2007 (H.R. 3339)**, introduced August 2 by Rep. Betty McCollum (D-Min.) would ban/prohibit the import, manufacture, processing, or distribution of products containing asbestos, and ensure that all products containing asbestos are no longer on store shelves in the country within two (2) years. The Bill would amend the **Toxic Substances Control Act**. The Bill is a companion measure to S. 742, sponsored by Sen. Patty Murray (D-Wash.), that unanimously passed the Senate Environmental and Public Works Committee July 31 (37 OSHR 203, 3/8/07)*

This newsletter is provided solely for informational purposes and presents only highly condensed summaries relating to the topics presented. Therefore, it should not be relied upon as a complete record for purposes of regulatory compliance, nor is it intended to furnish advice adequate to any particular circumstances. For additional information on any of the topics in this newsletter, please contact the author, or Allan Duhm, (863) 646-1402, or e-mail us.

General Information	Info@chastainskillman.com
Architecture	Architecture@chastainskillman.com
Civil Engineering	Civil@chastainskillman.com
Environmental Engineering	Environmental@chastainskillman.com
Structural Engineering	Structural@chastainskillman.com
Environmental/Occupational Health & Safety	EOH@chastainskillman.com
Hydrogeology	Hydrogeology@chastainskillman.com
Survey	Survey@chastainskillman.com

WE'RE ON THE WEB!

CHASTAINSKILLMAN.COM

Atlanta, Georgia
Phone (770) 980-9880
Fax (770) 980-9810

Lakeland, Florida
Phone (863) 646-1402
Fax (863) 647-3806

Orlando, Florida
Phone (407) 851-7177
Fax (407) 851-7123

Sebring, Florida
Phone (863) 382-4160
Fax (863) 382-3760

Tallahassee, Florida
Phone (850) 942-9883
Fax (850) 878-0945

Tampa, Florida
Phone (813) 621-9229
Fax (813) 626-9698

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chastain skillman incorporated

4705 Old Highway 37
Lakeland, FL 33813-2031