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THE LIGHT OF HOPE

The children—that was what Michel and Lydia Ouedraogo saw when they first began traveling from village to village in Burkina Faso 25 years ago. Just out of seminary, Michel had a burden to share his Christian faith with his home nation, which is located in the Sub-Saharan region of west central Africa. His wife, Lydia, accompanied him on his journey. But in every village, it was the children that drew them—thin, dirty and suffering from malnutrition. Burkina Faso, one of the poorest nations in the world, was seemingly without hope. Most families could not afford food, much less education. What kind of future would these children have? Could Michel and Lydia make a difference?

They had to try. They asked the elders of one village if they could care for one of the children. The elders agreed. Over time, the elders saw a remarkable change in the little girl who was now called Sarah. She was loved like all of the other children in the Ouedraogo family. She was clean and healthy. She was smart and proved to be an eager learner in school. Today, she is married and has children. She has completed medical training and provides leadership to one of the health clinics started by Pastor Michel.

Because of Sarah's amazing transformation, the elders were soon asking if Pastor Michel and his wife would take more children. The idea was daunting, but the Ouedraogo's had faith that this was part of their mission, and the Village of Hope was born.

Surveyors take part in a mission to build a university and bring hope to the people of west central Africa.



Left: Randy Stelzner passes out candy to children at the Village of Hope.

Below: The Ouedraogo's mission is to give hope to the children of Burkina Faso.

Opposite: A few members of the eMi survey team with local assistants.

Today, more than 400 children from 15 villages are housed, fed and educated at the Village of Hope, returning home during holidays. The school day begins early, with chapel every morning at 5 a.m. Morning chores are also part of the routine. The children are learning so well that they consistently place in the top three on the national exams.

As the children progressed through to middle school, the Village of Hope added facilities to accommodate the secondary level of education. But Pastor Michel's vision didn't stop there. He wanted to build a vocational school and a college called The Light of Hope University. To develop the plans and begin building, the Village of Hope needed the help of skilled professionals. Pastor Michel contacted Engineering Ministries International (eMi), a nonprofit organization comprising volunteer surveyors, engineers and architects whose passion is to share their faith and provide professional services to the poorest of the poor. eMi quickly got on board with the project. "We were impressed with the vision of this university coupled with the enthusiasm and drive of Pastor Michel," says Bob Smith, surveyor and project leader for eMi. "Here was a chance to help a Christian ministry administer a profound positive change in one of the poorest regions of the world."

Building the Team

In March 2009, the first team of professionals visited the site to begin developing a Master Plan for a university that would potentially educate 3,000 students on a 50-acre site. The team consisted of three civil engineers (one of whom was an eMi intern), a surveyor, two architects and a structural engineer.

The team returned home and began planning for the next phase, which would involve a much larger team returning to



Burkina Faso in February 2010. Bob, the only land surveyor on full-time staff at eMi, would lead the trip. Although Bob had participated in nearly 40 short-term mission trips (including 30 with eMi in the past 10 years), he had never worked on a project of this scale. "My initial thought was to have three surveyors work with me to complete the topographic survey for the Master Plan," he says.

He already had one surveyor on board. Steve Parker, PLS, owner of Boundary Stone Surveying PC of Colorado Springs, Colo., had been slated for a trip earlier in 2009 but had been required to postpone it due to scheduling issues. Steve was eager for the chance to serve. Bob needed to find just two more volunteers—or so he thought.

When he called Randy Stelzner, PLS, CFedS, survey manager at Inberg-Miller Engineers in Riverton, Wyo., in early November 2009, Randy was ready. "I had first heard about eMi at the ACSM annual convention in Salt Lake City, Utah, in February 2009, where eMi had an exhibit booth," Randy says. "I had spent some time talking to Bob and his wife, Marilyn, during the conference, discussing the purpose of eMi and some of its past and future projects. I knew I would be interested in the opportunity to volunteer my talents and share my faith."

As Randy was discussing the trip with Bob on speakerphone, Jay Drake, PLS, assistant survey manager with Inberg-Miller Engineers, walked by. Overhearing the conversation, Jay entered Randy's office and said that he also wanted to participate. This could prove challenging to the company. "For both the survey manager and assistant survey manager to be out of the office simultaneously for 14 to 15 days, the current workload would have to be completed or delegated to other surveyors," Randy says. "Thankfully, we were able to coordinate to cover our responsibilities, and the team of three was in place."

As the men began discussing the project through conference calls and e-mails, they agreed that they could probably complete the task for the original scope of work in the allotted time with just the four of them but that it would be nice to have two more surveyors on board just in case.

A few weeks later, the team got a call from David C. Lee, PLS, CFedS, survey

BURKINA FASO

Burkina Faso is located in the Sub-Saharan region of west central Africa. A developing country, it is slightly larger than the state of Colorado and has a population of nearly 16 million people. With an estimated GDP per capita of \$1,200, Burkina Faso is one of the poorest nations in the world. According to the United Nations Human Development Report, the country also has one of the lowest adult literacy rates at 28.7 percent.



THE AFRICAN HOPE INITIATIVE

The Mission:

“Inspired by the love and actions of Jesus Christ, we are dedicated to enhancing educational opportunities and the health of our brothers and sisters in Africa.”

Initiatives:

- **Village of Hope:** A boarding school for village children who would normally not have access to quality education or the opportunity to be exposed to the message of Jesus Christ.
- **Light of Hope University:** A multi-disciplined Christian university taught from a Christian worldview that will develop godly leaders for Africa.
- **Ephphatha School for the Deaf:** A quality education for deaf children that will also ultimately be a training school for deaf educators.
- **Source of Life Medical Clinics:** Two medical clinics that make medical care available to poor communities.
- **Village of Hope Automotive School:** A vocational school that will provide auto-mechanic training and opportunities for jobs.
- **Church Development:** Building and developing churches in partnership with local initiatives.



The objective was to complete a topographic survey of 500 acres for a 30,000 student university. The site turned out to be much larger.

manager for Forsgren Associates in Idaho and Wyoming. As Dave was cleaning out his e-mail on New Year’s Eve, he found several messages from eMi asking if he would be interested in participating in this project. Having just returned from a third trip to Africa in less than two years, Dave wasn’t sure it would be fair to his family to go again so soon, so he set the e-mails aside. But he couldn’t stop thinking about them. After a week or so of deep thought and prayer, Dave decided to join the team.

He also contacted Cameron Forth from Driggs, Idaho, a very capable survey technician whom he had worked with over the years. Cameron was also fired up for this trip and immediately began making preparations for the mid-February 2010 departure.

The team of five surveyors was in place. We had no idea what challenges we would encounter on our journey—only Bob and Dave had any experience working in a third-world country. But we all had faith that we would be able to complete the task at hand.

Making the Journey

“Team Ouaga,” as we were called, also consisted of two civil engineers, two landscape architects, an eMi intern, and a married couple who would work with the teachers at the Village of Hope and share some of their ideas on education. Bob and his wife, Marilyn, were the trip leaders.

The engineers would have to determine the feasibility of a wastewater treatment facility (something new to the region) and the availability of fresh water. The landscape architects would then design the layout of the university. The surveyors, of course, would handle the topographic survey work.

Initially, Jay and Randy were planning to bring the RTK GPS equipment owned by Inberg-Miller Engineers. All they needed was the nod of approval from the insurance company. What they got instead was the fairly standard “no way.” They were disappointed but soon developed a new plan.

Given the size of the project, RTK GPS was still the best choice. Dave had a personal Leica 530 system and was able to fit the receivers, GPS antennas, battery charger and cables into one carry-on size Pelican Case. Cameron’s employer, Jorgensen Associates of Jackson, Wyo., provided a surplus 530 receiver that Cameron would carry on the plane in the slightly oversized Leica case. A PDL modem, tribrach, antenna poles, and other equipment were packed in padded soft cases and stuffed into a hard SECO tripod case that would have to be checked through security. Our instrument package was now complete with an RTK GPS base and two rovers, a Leica total station provided by Steve and as much conventional survey gear as he could reasonably check onto the plane, a Topcon total station owned by eMi, and additional tripods, a data collector, field books, and miscellaneous survey tools secured by Randy and Jay. Even though most of us had yet to meet in person, we were already functioning as a team with a plan to get sufficient resources to the site.

International travel with survey equipment can be a hassle, to say the least. Checked tripods, prism poles and their odd-shaped packaging catch the attention of security and customs officers. It’s a given that if you’re traveling with a total station,

it will be your carry-on. Most instrument cases are oversized and overweight before adding any personal items. A modern total station with all its internal circuitry looks really cool in a security X-ray machine, but most security officers have never seen one before, and they get suspicious when they do. It's nearly certain that you will become better acquainted with one or more security personnel prior to reaching the boarding gate.

Bob had done an excellent job of preparing travel documents for the trip that included visas and scheduled departures from several major U.S. airports. Team Ouaga would all meet at Charles De Gaulle International Airport in Paris, France, the next day. The last leg of the journey would take us to Ouagadougou, Burkina Faso, with one short stop in Niamey, Niger. All together, depending on each member of the team's original boarding location, the time spent in the air or in airports was 25 to 30 hours.

Finally, exhausted after the long flight and losing seven hours to time zone changes, we landed in Ouagadougou. The heat was oppressive. Many of us had left home in blizzard conditions less than two days prior. Even late in the day, the temperature was still near 100°F as we stepped onto the tarmac and headed to the terminal to gather our luggage. Pastor Michel and Lydia met Team Ouaga at customs, helped us through, and guided us out to the streets of Ouagadougou. We departed the airport in a retired school bus as the sun was setting. Traffic is heavy in Ouagadougou with an inconceivable number of mopeds and small motorcycles. The red dust combined with exhaust and the smoke from numerous open cooking fires hung in the air. After a dusty ride through the city, we traveled several miles west out of the city on a paved highway to the Village of Hope and our home for the duration of our stay.

Conducting the Survey

We arrived at our new home after dark on a Friday evening and were pleasantly surprised with our accommodations: a large area to set up our work stations, comfortable beds, flush toilets, sinks with running water, showers and, most important, ceiling fans. We had been given the best living quarters at the Village. The

eMI: FAITH IN ACTION

eMi is a nonprofit Christian development organization comprising volunteer surveyors, engineers and architects whose passion is to share their faith and provide professional services to the poorest of the poor. Volunteers design facilities (including hospitals, orphanages, schools, clean water projects and more) that directly impact communities by meeting physical needs and communicating God's love in a practical way. The organization partners with Christian workers, pastors, and other nonprofits who have a vision to help the poor and preach the Gospel of Jesus Christ. The goal is to transform lives by providing hope.

Incorporated in 1982, eMi has sending offices in Colorado Springs, Colo.; Calgary, Canada; and Colchester, UK, with field offices in Mussoorie, India; Atenas, Costa Rica; and Kampala, Uganda. The organization has completed more than 800 projects in over 80 countries and donates nearly 60,000 service hours each year to its partners.

next morning, after introductions and orientation, Pastor Michel gave us a tour of the proposed site.

The objective was to complete a topographic survey of 500 acres for a 30,000 student university—nearly 10 times larger than the original plan. The survey team set up the GPS base hoping to tie any monuments we might find and establish azimuth pairs for the conventional survey. To safeguard the base from the curiosity of more than four hundred students at the Village of Hope, we placed it on top of the masonry porch roof of our lodging.

The first hurdle that we had to overcome was that one of the rover's RTK links didn't work. No problem—we would just post process fast-static data from the receiver. By noon, the temperature was well over 100°F and the base PDL modem failed due to heat saturation. Regardless, we tied several monuments and gained a perspective on the job ahead of us.

"Maybe it's just the heat, but doesn't this site look bigger than 500 acres?" Randy remarked at one point. We spent the remainder of the hot afternoon hours sorting out the rest of our gear and creating a cooperative survey plan for Monday.

As the temperatures cooled in the evening, we explored more of the site and existing village. As we walked, we acquired a following of curious children that would tag along in varying numbers throughout most of the project.

On Sunday, Team Ouaga attended a church service with an Assembly of God congregation in Ouagadougou led by Pastor Michel. We were introduced to the several hundred people in the congregation and were fortunate to have two interpreters sitting among us to translate the

service, which was in French. We then returned to our "camp" and attempted to repair and boost the reliability of our RTK links, but one of them refused to function. The PDL modem failed again in the extreme heat, even after shading it from the sun. By now, it was obvious that much of our GPS data would need to be post processed.

With several staff members from the Village of Hope joining the survey team, we formed two RTK GPS crews and two total station crews. The first area of interest to architectural and engineering team members was a wide, shallow ravine running along the eastern portion of the site. Engineering would use this area for sewage lagoons, so the architects would need to avoid it while creating a concept for the Master Plan for the proposed Light of Hope University. The ravine was the most heavily wooded portion of the site and naturally became the domain of the conventional survey crews.

First thing Monday morning, after setting up the GPS base on our rooftop, one of the RTK crews established azimuth pairs while the other RTK crew visited with a local surveyor to gain a better understanding of existing monuments and boundaries. We now were able to implement our preconceived plan. The RTK crews would take shots on a predetermined grid for most of the site, which was relatively flat, and also measure the top of the ravines and centerlines of heavily traveled paths to help us orient ourselves on the site. Without mountains as natural landmarks and fences and roads running along cardinal lines of the Public Land Survey System, it was difficult for us "foreigners" to determine orientation

Right: Steve Parker and local assistants set up the total station to collect topo data. Below: David Lee sets up the base on the rooftop point.

on this site for the first few days. The heat was well into triple digits by early afternoon with reported temperatures as high as 122°F. Generally working until noon, we would then retreat to the relative coolness of our masonry quarters until the outside air began to cool around 3:30 or 4 p.m. This break provided an opportunity to review our data and general progress.

Monday set the stage for the rest of the week: In the field at first light, collect topo data until the heat forced us indoors by early afternoon, crunch data until around 3:30 p.m., more topo until dark, followed by more data reduction and drafting in the evening. Conventional crews carried control through the ravine as they worked along it. RTK was used to supplement and verify secondary conventional control. The RTK crews gridded much of the site using the line staking mode as a reference to stay on parallel lines 30 to 50 meters apart. Vegetation generally consisted of thorny brush interspersed with small cultivated farm plots and large trees. There were many baobab trees, which we were required to locate so the design would include these huge, interesting landscape features. With four crews collecting topo data, we began to rapidly define large portions of the project.

As the survey team compiled data and developed a base map, the engineering and architectural team was using these elements to design the proposed campus. As with any design project, areas were identified where additional survey detail was necessary. By midweek, it was clear the proposed site was nearly twice the size of the originally estimated 500 acres. The decision to increase the survey staff for this project and their willingness to serve proved to be a Godsend. As darkness fell Friday evening, the survey team was beginning to mop up detail areas and gaps in topographic data. We had a variety of survey tasks to complete in the next several days, but we had a good feel for the overall site. The team had collected more than 5,000 topo points in an area measuring approximately 1,100 acres.



Presenting the Master Plan

As the survey was starting to wind down, the engineers and architects were working long days and late nights to prepare for the final presentation to the ministry. The site required for the proposed number of students was considerably larger than originally anticipated and would overlap property claimed by adjacent villages. We didn't have a clear understanding of land tenure in Burkina Faso, and eMi cannot become involved with legal boundary issues. The task at hand was to document space and design requirements and then clearly communicate those details to those who would be able to make the final boundary determinations.

After the engineers and architects concluded their design of the Master Plan, members of the entire Team Ouaga each had an important role in building a three-dimensional cardboard model created from the topographic mapping overlaid with the proposed campus layout. The design team generated a PowerPoint presentation depicting technical findings and the conceptual plan of the completed campus.

On Sunday evening, only nine days after our arrival, Team Ouaga presented the proposed campus design as depicted on the 3D model in the chapel at the Village of Hope to Pastor Michel and Lydia. Many dignitaries were in atten-

dance, including government officials and representatives of neighboring villages.

Response to the design concept was overwhelmingly positive thanks in large part to the success of the Village of Hope. Even non-Christians in the region respect the impact of this ministry. Orphans that would otherwise have little hope in this society are now being educated at the Village of Hope and, in the near future, will have the ability to be educated further to become compassionate adult leaders for the country of Burkina Faso. Area villages recognize this fact and send their children to be educated at the Village of Hope. Community enthusiasm surrounds the university project.

Pastor Michel hopes that construction will begin within one year and that the first phase of the university will be completed in two years for its first students. It's a lofty goal, but as Pastor Michel noted, he has a big God who provides all the resource and receives all the glory. If Michel's accomplishments, determination and faith are any indication, the Light of Hope University will soon become a remarkable success.

Reaping the Blessings

eMi's goal for each of its projects is not only to provide the necessary professional services for deserving projects that will expand God's kingdom, but also to make sure that each team member comes away with a better understanding of the love and compassion that is required for the ministries in which he or she has served and for the other team members. For this project, Pastor Michel described his vision to our team the first day on site. When our work was completed, we participated in a debriefing session, sharing our thoughts about the project and about each team member so that we could come away from the project with ideas that could be shared with many. It is truly amazing how a team of professionals from all over the country can come together and perform in harmony.

Since our return home, countless hours have been spent completing the design for the Master Plan. Pastor Michel and his wife have visited with the staff at eMi in Colorado Springs and have given several other presentations to encourage support for the Light of Hope University

vision. Every member of Team Ouaga has received the gift of humility and has been enriched personally and spiritually. 🌍

To learn more about eMi and find out how to volunteer for projects, visit www.emiworld.org. For more information about the Ouedraogos and the Village of Hope, visit <http://africanhopeinitiative.org/>.

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