Spark

CAMPUS TO CAREER

S&ME INTERNSHIP PROGRAM

2023

CONTENTS

OUR VISION, MISSION & VALUES

A vision statement is an ambitious declaration of an organization's overarching objective. In other words, it describes where the company is going and a preferred picture of its future.

S&ME VISION: "To enrich the world by fostering a culture of engaged employees providing unparalleled service."

A well-crafted mission statement will answer the question, "Who are we?" and focus on how a company is going to achieve its vision. Fundamentally, it describes the overall purpose of why a business exists.

S&ME MISSION: "We are employee-owners passionately solving challenges. Our great people, technical expertise, and responsiveness create exceptional client experiences.

S&ME PURPOSE: "HELPING YOU PROSPER."

S&ME Core Values:

Listen First
We must listen to understand and best serve one another.

Work and Grow Together
We thrive by collaborating as one team.

Do The Right Thing and Do Things Right
Understand what is right and act accordingly.

Do What You Say
Clear expectations and keeping commitments build strong relationships.

Lead From Where You Are
Everyone has the power to lead.

Be Safe
Safety remains fundamental to who we are. Assess the risk before taking action.

EMPLOYEE OWNED

S&ME is an employee-owned engineering and construction services firm with national reach. Our company provides expertise in geotechnical engineering, civil engineering, environmental engineering, construction engineering and inspection, and construction materials testing.

30+ OFFICES

Headquartered in Raleigh, North Carolina, we employ approximately 1,000+ people in over 30 offices across Alabama, North Carolina, South Carolina, Tennessee, Georgia, Florida, Kentucky, Ohio, Indiana, and West Virginia.

SINCE 1973

Since 1973, we have helped clients solve their challenges in the transportation, energy, industrial, commercial, residential, and government sectors.

A MESSAGE FROM MATT...

Dear Interns,

Welcome to S&ME! I am excited you have chosen to be a part of our Summer 2022 Internship team. We are looking forward to spending this summer with you during this important time in your career. Over the coming weeks, you will have the opportunity to work with colleagues across the firm and contribute to meaningful projects that impact our clients, people, and communities.

Matt Ryan

Matt Ryan
President and Chief Executive Officer

You will also enhance your education with hands-on experience and will learn professional skills that will serve you throughout your professional career, such as communications, client relationships, project management, and hands-on technical training. Please feel empowered to share ideas and ask questions throughout your S&ME experience. I hope that you will also use these newly learned abilities to excel in the remainder of your college classes.

As you begin your journey with S&ME, I would like to share some advice to help you make the most of your time here:

- **Connect with others:** Reach out and get to know fellow colleagues and interns. Hearing their stories and sharing your own could lead to promising relationships. And we are here to support each other.
- **Get involved:** Participate in projects and opportunities that are interesting to you. By doing so, you will learn something new.
- **Be open to new ideas, perspectives, and possibilities:** Challenge yourself to be constantly learning and open to understanding things from a different lens.
- **Be yourself:** Be true to who you are. The unique spark you bring will be valuable to your team.

We chose you to be a part of our internship program because we believe your education, unique talents, and recently learned skills will drive our ability to address real-world problems. Our success is a result of our own solutions to enhance the quality of life in the communities where we live, work, and play. I am excited to incorporate the knowledge you have gained so far and your ideas to our innovative teams.

I look forward to seeing the impact you can make individually and as part of our S&ME team.

Geotechnical engineering is fundamental to all construction. For over 40 years, S&ME has provided sound design advice on foundations, slopes, retaining structures, embankments, tunnels, levees, wharves, landfills, pavements, and other systems that are made of or supported by natural or engineered materials. Our geotechnical engineers understand the behavior of the earth's materials and their impact on construction projects.

GEOTECHNICAL

Founded in 1973 as a geotechnical engineering and materials testing firm, S&ME remains a leader in providing comprehensive geotechnical services. Our geotechnical engineers work directly with the engineers and scientists on your project so communication is efficient and accurate. From site selection through final construction, we provide specific solutions and recommendations so your project has a sound foundation to support your vision.

We Specialize In...

- Subsurface exploration
- Site characterization and in situ testing
- Geologic hazards evaluation
- Geophysics
- Geotechnical laboratory testing
- Geostructural engineering and design
- Earthquake engineering
- Foundation engineering
- Foundation construction support

At S&ME, we know that unanticipated environmental issues can add considerable time, public scrutiny, and expense to a project. We approach environmental management needs from a deep base of technical knowledge, provide cost-effective and practical solutions to mitigate that risk, and keep projects in compliance and on schedule.

ENVIRONMENTAL

We Specialize In...

- Contaminant nature and extent assessments
- Regulatory compliance and permitting
- Hazardous building materials assessments, management, and abatement design
- Natural and cultural resources assessments, permitting and mitigation
- Industrial hygiene and environmental health and safety
- Property transaction due diligence
- Remediation system design, installation, and operation
- National Environmental Policy Act (NEPA) assessments

Environmental issues can be complex, so good communication is essential. We assign experienced professionals to work closely with our clients to understand their needs. Throughout the engagement, we collaborate with clients intently so that we may address every environmental and regulatory concern thoroughly and expediently. Our award-winning team is exceptionally qualified to handle any environmental challenge we encounter.

Construction materials engineering and testing provides owners with the confidence that their investment is built according to plans and specifications. Our experienced engineers, professionals, and certified technicians offer a broad suite of construction tests and inspections, all performed under a Quality Program designed to meet rigorous ASTM and AASHTO requirements.

CONSTRUCTION SERVICES

Construction materials engineering and testing provides owners with the confidence that their investment is built in accordance with plans and specifications. Our experienced engineers, professionals, and certified technicians provide a broad suite of construction tests and inspections, all performed under a Quality Program designed to meet rigorous ASTM and AASHTO requirements.

We Specialize In...

- Construction materials testing
- Laboratory testing services
- Construction engineering and inspection (CEI)
- Resident Project Representative (RPR)
- Non-Destructive Evaluation and Testing (NDE/NDT)
- Pavement condition survey and design
- IBC Special Inspections
- Concrete and asphalt mix design and consultation
- Code consulting services
- Coatings inspections and consultation
- Property Condition Assessments (PCA)
- Construction Management
- Drone services

Integral to bringing versatility to our comprehensive services is our ability to create infrastructure solutions for our clients. Vibrant, healthy, livable, and sustainable communities result from talented collaborations among our development professionals. Our diverse staff affords us the unique ability to effectively solve complex issues that are centered directly on our clients.

DEVELOPMENT

We Specialize In...

- Civil and site development engineering
- Land surveying and mapping
- Transportation planning and engineering
- Environmental engineering
- Water resources engineering
- Utility engineering
- Stormwater management

From stormwater management systems to embarking on a major municipal infrastructure project, S&ME's design team has the hands-on experience and technical acumen to conceive and deliver exceptional designs and drawings, whatever your concern or challenge.

S&ME has a proven history of delivering planning, engineering, environmental, and construction services for transportation infrastructure projects. From conception through construction and beyond, we use our extensive resources and technical expertise to solve challenging problems and help our clients reach their objectives.

TRANSPORTATION

Using our award-winning blend of service and science, S&ME's expert team of engineers, designers, and scientists delivers reliable, environmentally sensitive, and sustainable transportation solutions that enrich our communities and improve our quality of life. We communicate and collaborate with our partners to understand their expectations and definition of quality to produce timely and worthwhile results.

We Specialize In...

- Design-Build, Design-Bid-Build, Public Private Partnership project delivery
- Planning and permitting
- Environmental engineering
- Traffic studies
- Roadway design
- Geotechnical engineering
- Pavement testing and design
- Water and wastewater design
- Construction management
- Construction engineering and inspection
- Construction quality assurance
- NPDES compliance

We work extensively with energy clients of all types to develop the infrastructure they need to power our country into the future. Whether siting and building a new facility or refurbishing an aging plant, we bring exceptionally relevant experience, regulatory knowledge, and safety to every project phase.

ENERGY

We Specialize In...

- Civil design services
- Mechanical engineering/HDD design
- Gas pipeline design, permitting, and routing
- Coal ash pond closure and landfill design
- Transmission line services
- Nuclear plant qualified services
- Water resources management and design
- Design, permitting, and monitoring of erosion + sediment control plans and stormwater BMPs
- Dam and levee engineering, evaluation, and permitting
- Solid and hazardous waste management
- Stream restoration/floodplain management
- Quarry design + development
- Mined land reclamation

In the face of rapidly advancing technology and regulations, the energy industry is inundated with continual change. From dams and fossil fuels to renewable sources such as wind and solar, every sector is subject to these forces and S&ME works hard to stay at the forefront of this evolution. Our team of experts collaborates with every one of our clients, enabling them to safely and reliably deliver energy to market in an environmentally responsible and technically efficient manner.

EMPLOYEE OWNERSHIP

We are proud to be an employee-owned firm and find it to be one of the secrets of our success. Since 1995, S&ME been an employee-owned company with an Employee Stock Ownership Plan (ESOP). More recently, in 2021, S&ME enhanced our strategy to promote a culture of employee ownership within the company. The new ownership strategy aims to fuel a feverish employee-owned culture within S&ME to drive our Thrive Together strategic plan. Our employee-ownership model not only allows staff to share in the firm's success, but it inspires them to work relentlessly and creatively to deliver exceptional value to our clients. We believe that being an employee owned firm drives greater collaboration, allows us to attract and keep talented people, and builds more durable bridges between our team and our clients.

WHAT IS AN ESOP?

An Employee Stock Ownership Plan, or ESOP, is a qualified retirement plan, similar to a 401(k) plan, except that by design, an ESOP invests its assets primarily in company stock.

An ESOP has two parts; a trust which holds the assets on behalf of participants (in our case, both cash and S&ME stock) and a plan, which defines the rules of operating the plan and trust activity for the benefit of plan participants.

Because the trust holding the assets of the plan is tax-exempt, the assets that accumulate in participant accounts are not taxable until paid to participants, are generally not taxable until after employment ends.

As owner of the shares it holds, the ESOP trust is a shareholder of the company. The law recognizes the ESOP trustee as the shareholder of record, and ESOP participants are referred to as having a "beneficial ownership" interest in the shares of company stock allocated to their accounts.

OUR CULTURE

Unique perspectives, backgrounds, and experiences gained from a diverse staff are vital to our sustainability, success, and continued growth. Our goal is to foster an environment where Diversity & Inclusion are not just something that we "do," but are core to who we are. We are engaging leaders and key stakeholders to identify ways to improve our policies, procedures, and practices to ensure that every employee feels welcome and secure and that the contributions of each individual are respected.

To intentionally fuel a "culture of belonging," we have established a council for Inclusion, Diversity, Equity, and Acceptance, or the S&ME IDEA Council. Establishing this cultural foundation is key to improving S&ME's diversity, inclusion, equity, and acceptance. One of the principles of our Thrive Together strategic plan states, "People are the heartbeat of our company. At S&ME, our goal is to provide employees an environment which fosters continuous development and growth.

We encourage you to be a part of the conversation! Please engage any member of your Intern Support Network with questions and ideas.

At S&ME, we recognize the importance of a culture that attracts, supports, and develops employees from diverse backgrounds.

ORIENTATION SCHEDULE - DAY ONE

Monday, May 23rd

Human Resource Information Session (Teams Meeting)	9:30am – 10:00am EST
New Hire Online Safety Training Modules	10:00am – 3:00pm EST
Internship Safety Orientation Meeting (Teams Meeting with Safety)	3:00pm – 4:30pm EST

ORIENTATION SCHEDULE - DAY TWO

Tuesday, May 24th

Welcome to S&ME and the 2022 Spark Internship Program	8:30am – 9:00am EST
Intern Introductions	9:00am – 10:00am EST
Break	10:00am – 10:15am EST
Broad Overview of S&ME	10:15am – 10:45am EST
Social Media Introduction	10:45am – 11:15am EST
Lunch and Continue Online New Hire Safety Training Modules	11:15am – 3:00pm EST
Welcome from Matt Ryan, S&ME President and CEO	3:00pm-4:00pm EST

ORIENTATION SCHEDULE - DAY THREE

Wednesday, May 25th

Welcome Activity	9:00am – 9:30am EST
Campus to Career	9:30am – 10:15am EST
Internship Final Project Introduction	10:15am – 10:25am EST
S&ME's Connect Group	10:30am – 11:30 am EST

PROFESSIONAL DEVELOPMENT SERIES

1. What Does It Mean To Be A Consultant?
Thursday, June 2nd – 12:00pm-1:00pm EST

At S&ME, we are consultants. Our clients trust us to provide technical expertise and leverage our relationships to solve their complex problems and challenges. What does it mean to be a consultant?

2. Relationships / Networking / Client Development
Wednesday, June 8th – 12:00pm-1:00pm EST

Our work is a result of relationships we build and nurture through our emphasis on an exceptional Client Service Culture. Our entire business is based on creating genuine, sustainable relationships with clients and partners. This is a key strategic objective for our company – without the Client, we do not exist. We will learn about building relationships, networking skills, and how to create a lasting client relationship.

3. Project Management and Collaboration
Thursday, June 16th – 12:00pm-1:00pm EST

Project Management is a fundamental building block for S&ME, as all revenue is earned through managing projects. Let us explore a project from start to finish – known as the Project Life Cycle. Our goal is to offer ALL our services to our clients, not just the services we work in most of the day. Hear from S&ME team members as we explore where our collaboration efforts lead to successful project completion.

4. Business Unit Overviews - Part I
Thursday, June 23rd – 12:00pm-1:00pm EST

We offer our clients expertise in multiple services lines. Learn what our different service lines do and how they align with your career interests.

5. Business Unit Overviews - Part II
Thursday, June 30th – 12:00pm-1:00pm EST

We offer our clients expertise in multiple services lines. Learn what our different service lines do and how they align with your career interests.

PROFESSIONAL DEVELOPMENT SERIES

6. What Does It Take To Make S&ME Run?
Thursday, July 7th – 12:00pm-1:00pm EST

Check out a behind the scenes look at how S&ME is organized to support our business operations, and learn some fun facts and trivia that may surprise you!

7. Communication
Thursday, July 14th – 12:00pm-1:00pm EST

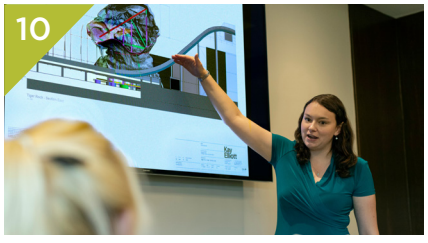
"The Way You Sell What You Do" - Whether you are providing your message in writing, speaking, or a presentation, communication is key. Learn some tips and tricks to sell your next message.

8. Womens Panel
Thursday, July 21st – 12:00pm-1:00pm EST

Join us for a panel discussion with S&ME women employee-owners as they share their real world experiences of working within our industry.

9. Career Paths at S&ME
Thursday, July 28th – 12:00pm-1:00pm EST

What does a career path look like at S&ME and in our industry? What can you do to advance your career? Learn what training, skills, certifications, and licenses are needed to progress and succeed in the Architecture, Engineering, and Construction (AEC) industry.



10. Final Project Presentation
Week of August 2nd

Your final project presentation is an opportunity for you to share what you have learned during your internship and as well as sharpen your communication and presentation skills.

INTERN SUPPORT NETWORK

We are excited that you have chosen to spend your summer at S&ME as part of our internship program. We will support you in achieving your professional goals and are committed to helping you succeed.

For some of you, one Intern Support Member may serve multiple roles. In other instances, there may be several support members within your location. During the first week of your internship, you will be meeting with your supervisor who will identify these key contacts.

GUIDE: this individual is available to answer any questions that you have, big or small. Have a question about the correct use of PPE, or where the best restaurant is to grab a quick lunch? This is your person.

Name:_____

Contact information: _____

SUPERVISOR: this individual will direct your day-to-day responsibilities and provide you with feedback throughout your internship. You'll notify this individual if your schedule needs to be adjusted, you need time off, or you have questions related to a given task.

Name:_____

Contact information: _____

TRAINER(S): this individual(s) will assist you in making sure you have the training and materials to complete a given task, whether it be in the lab, in the field, or in the office.

Name:_____

Contact information: _____

INTERN CHAMPION: this person will ensure that you are on track related to your learning objectives and will offer support to both you and your supervisor throughout your internship experience

Name:_____

Contact information: _____

Spark CAMPUS TO CAREER

Transportation Business Unit

PAVEMENT, HIGHWAYS & BRIDGES, CEI LEARNING OBJECTIVES

General

- ☐ Office layout and introductions, access, contact information
- ☐ Timesheet entry and importance of accuracy and timeliness
- ☐ Elevator speech on what you do and the company
- ☐ Networking with other interns and staff
- ☐ Importance of timely communications
- ☐ Intro to project timelines/sequencing and project management
- ☐ Intro to report writing
- ☐ Intro to proposal writing
- ☐ How to use Outlook/Teams/etc.
- ☐ How to find things on the drives
- ☐ Where to go for questions
- ☐ Importance of contracts/notice to proceed before starting work.
- ☐ How to write an email
- ☐ Safety topic delivery
- ☐ Thrive topic delivery
- ☐ Quality topic delivery
- ☐ Pre-bill review (very high level/basic)
- ☐ Project Presentation
- ☐ Organizational structure (business units, GLs, AMs)

GEOTECHNICAL
Office Logistics

- ☐ Developing a field package
- ☐ Kickoff Meeting Development and Execution
- ☐ Boring Layout in MicroStation
- ☐ Utility Locate call in 811
- ☐ Basic Terminology of drill rigs and boring logs

Field Work

- ☐ Site reconnaissance
- ☐ Classification of soils
- ☐ Field paperwork (standard forms)
- ☐ Soil test borings
- ☐ Drill rig oversight
- ☐ Overview of lab testing

Deliverables

- ☐ Engineering analysis
- ☐ gINT input
- ☐ MicroStation
- ☐ Reporting

PAVEMENT

Pavement Design Investigation (PDI)

- ☐ Office logistics
- ☐ Field data collection
  - ☐ Hand Auger
  - ☐ Dynamic Cone Penetrometer Testing
  - ☐ Core extraction
- ☐ Deliverables
  - ☐ Core thickness
  - ☐ Photos
  - ☐ DCP sticks
  - ☐ Visual pavement condition
  - ☐ GIS

Falling Weight Deflectometer

- ☐ Use of equipment
- ☐ Analysis and Reporting
- ☐ Overlay design
- ☐ Joint Transfer Efficiency

Pavement Design

- ☐ Input Data/Parameters
- ☐ State requirements and procedures
- ☐ AASHTO 72/93
- ☐ MEPDG

Full Depth Reclamation

- ☐ Deciding on FDR sample locations
- ☐ Laboratory testing and mix design
- ☐ Final recommendations for pavement design

Pavement Condition Survey

- ☐ Data Collection
- ☐ ASTM
- ☐ LTPP
- ☐ ITRE/NCDOT
- ☐ Engineering Analysis
- ☐ Automated Survey Discussion
- ☐ Recommendations – preservation/rehabilitation
- ☐ Budgeting
- ☐ NCDOT PCS Discussion

Pipe Camera

- ☐ Field Logistics
- ☐ Use of equipment

Profiler

- ☐ Use of equipment
- ☐ ProVal analysis
- ☐ Reporting

Laboratory Testing

- ☐ FDR Mix Design
- ☐ Compressive Strength Testing of Concrete
- ☐ Aggregate testing
- ☐ Soil testing (gradation/moisture content/etc.)

ENERGY LEARNING OBJECTIVES

WEEK 1 & 2: Introduction to S&ME Standards and CAD Standards

- ☐ Understand S&ME Data management and File Structure
- ☐ Review S&ME AutoCAD Standards
- ☐ Understand AutoCAD basefile creation
- ☐ Review Importing/Exporting data in AutoCAD
- ☐ Briefly discuss AutoCAD Civil 3D Grading
- ☐ Review various regulations for different projects
- ☐ Business Unit Overview: Meeting with the BUD/CDL about the services, markets, key projects, etc.

WEEK 3,4, & 5: Hydrology & Hydraulics Analysis

- ☐ Understanding how to read contours
- ☐ Develop Drainage Areas using AutoCAD
- ☐ Conduct a Watershed Analysis
- ☐ Compute a Curve Number using SCS/NRCS Curve Number Method
- ☐ Calculate a Manual time of concentration for drainage areas
- ☐ Using HydroCAD®, calculate a peak runoff from drainage areas
- ☐ Size culverts for various projects using HY-8 Program
- ☐ Analyze roadside ditches on linear utility projects
- ☐ Design various SCMs/BMPs for an Erosion & Sediment Control Plan
- ☐ Conduct Construction Quality Assurance (CQA) Inspections

WEEK 6 & 7: Developing Client Deliverables

- ☐ Prepare preliminary reports for client review and permitting
- ☐ Develop various calculation reports
- ☐ Prepare geotechnical & environmental reports for review
- ☐ Prepare Issued for Construction Drawings
- ☐ Develop an Erosion & Sediment Control (E&SC) Plan and/or a Comprehensive-Stormwater Pollution Prevention Plan (C-SWPPP)
- ☐ Develop a Floodplain Development Permit Application (FDPA)
- ☐ Produce deliverables for regulatory review (production)

WEEK 8: Landfills

- ☐ Attend a CCR Landfill Site Visit
- ☐ Prepare a ROROCS Plan Semi-Annual report
- ☐ Assist in run-off calculations for a proposed Landfill

WEEK 9: Regulated Dam Work

- ☐ Visit a dam and complete a Dam Inspection
- ☐ Compile an Emergency Action Plan (EAP) for regulatory review
- ☐ Review/Develop a Dam Breach Inundation Map

WEEK 10 & 11: In the Field

- ☐ Conduct E&SC Environmental Inspections
- ☐ Conduct a BMP/SCM annual inspection
- ☐ Perform a GPS Mapping Grade Survey & layout E&SC measures in the field
- ☐ Pulling data from the field into AutoCAD
- ☐ Provide field oversight of exploration activities
- ☐ Conduct groundwater monitoring and sampling activities
- ☐ Conduct instrumentation data collections

WEEK 12: Project Management

- ☐ Assist Project Manager in developing a proposal
- ☐ Enroll in an S&ME Learns course on Project Management
- ☐ Review cost estimates
- ☐ Assist in preparing bid documents for projects

ENVIRONMENTAL LEARNING OBJECTIVES

WEEK 1-4: *Introduction*

- ☐ Business Unit Overview: Meet with BUD and/or CDL
- ☐ Timesheet entry and importance of accuracy and timeliness
- ☐ Importance of timely communications
- ☐ How to use Outlook/Teams/etc.
- ☐ How to find things on the drives

☐ **BASIC KNOWLEDGE OF FIELD EQUIPMENT**
- Multimeter
- Hand auger
- GPS
- Sample collection equipment

☐ **SHADOWING/ASSISTING SKILLED WORKERS IN THE FIELD**
☐ **BASICS OF FIELD REPORTS**
- ☐ who/what/when/where/how
  - Overview projects and scope of work
  - What information is the client seeking
  - File structure
- ☐ Sample collection summary sheets
- ☐ Map interpretation
- ☐ Intro to KMZ files on electronic devices for real time geographic location

☐ **IMPORTANCE OF FIELD DATA TO REPORT WRITING**
☐ **HOW DO WE TRANSLATE DATA FROM THE FIELD?**
- ☐ Excel
- ☐ AutoCAD
- ☐ ArcView

**software introductions will be location and project specific*

WEEK 5-8: *Continue work as second person for field work*

- ☐ Site Reconnaissance
- ☐ Field work layout
- ☐ Media sampling techniques

☐ **CALIBRATION OF FIELD EQUIPMENT**
☐ **REPORT WRITING BASICS**

- ☐ Report support documents.
- ☐ Field reports to client deliverables
- ☐ Laboratory report review
- ☐ Data tabulation
- ☐ Regulatory forms

☐ **SHADOWING IN THE FIELD WITH OTHER ENV DISCIPLINES AND/OR BUSINESS UNITS**

WEEK 9-12: *Begin to work independently on small tasks*

☐ **PARTICIPATE IN CLIENT MEETINGS AND BUSINESS DEVELOPMENT MEETINGS WITH PROJECT(S)**
☐ **OVERVIEW OF PROJECT MANAGEMENT WITHIN THE ENV BU**

- ☐ Opportunity to review or assist in developing a proposal
- ☐ Review and Understand project budgets
- ☐ See and/or help prepare a bid document

☐ **OPPORTUNITIES TO CROSS-TRAIN OR BE EXPOSED TO OTHER AREAS WITHIN THE ENVIRONMENTAL BU MANAGERS OR OTHER SENIOR PROFESSIONALS, AS APPROPRIATE**

- What is the role of the consultant in those meetings?
- What do we document from those meetings and why is important?

☐ **INDEPENDENT FIELD ACTIVITIES UNDER DIRECT SUPERVISION**
☐ **MORE INVOLVED REPORT WRITING**

Development Business Unit

GEOMATICS LEARNING OBJECTIVES

WEEK 1-4: Field Operations

Objective: Understand Geomatics field operations; make connection between academic theory and actual survey practice

- ☐ Week 1 - General Field Operations 3rd man
- ☐ Week 2 - Learn (hands on) instrument set up and operation GPS, Total Station, Data collection, differential leveling – learning objective pulse check
- ☐ Week 3-4 - Learn how and why we collect our data. Work directly with crew chief.
- ☐ Week 4 - Review learning objectives and field wrap up

WEEK 5-8: Office Operations

Objective: Understand Geomatics office operations, project set up and execution

- ☐ Week 5 – Project set up; field pack assembly and briefing
- ☐ Week 6 – Network file set up; data download and storage
- ☐ Week 7-8 - CAD map making; data processing; Intro to Civil 3d/Carlson
- ☐ Week 8 - Review learning objectives and office wrap up

WEEK 9-12: Professional Tasks

Objective: Understand Professional Level Tasks and Issues

- ☐ Week 9 – Writing Proposals and Developing Budgets; Client Relations (Internal and External)
- ☐ Week 10 – Project Management, Budget Management
- ☐ Week 11 – Statutory, Ethical and Professional Obligations
- ☐ Week 12 – Coaching, Mentoring and Developing Staff


CRAIN

GEOTECHNICAL LEARNING OBJECTIVES

1.0: General Objectives

Most of these will be introduced within the first two weeks but will apply and be reinforced throughout the Internship.

- ☐ Office layout and introductions, access, contact information.
- ☐ Timesheet entry and importance of accuracy and timeliness.
- ☐ Importance of timely communications.
- ☐ Introduction to project timelines/sequencing and project management.
- ☐ How to use Outlook/Teams/etc.
- ☐ How to find things on the company drives.
- ☐ Where to go for questions and when you run out of work to do.
- ☐ Commitment to safety and safe practices in the field.
- ☐ Business Unit Overview: Meeting with the BUD/CDL about the services, markets, key projects, etc.

2.0: Geotechnical Project Specific Objectives

Fundamental Learning Objectives (Prerequisites/Office Learning Prior to Field Work)

- ☐ Drill rigs and terminology, overview of drilling procedures.
- ☐ Boring logs and terminology.
- ☐ Soil testing borings / CPT soundings / rock coring.
- ☐ How to lay out boring with GPS.
- ☐ Site reconnaissance.
- ☐ S&ME Learns Videos:
  - Geotechnical – Site Reconnaissance
  - Construction Material Testing – Problems with Undercutting
- ☐ Utility Locate Call-In (811) and importance).
- ☐ Classification of soils (ASTM D2487 and 2488) (and AASHTO)
  - Hands on experience classifying local soil with an experienced trainer / mentor in the Location
- ☐ Open Ground Boring Log Software
- ☐ S&ME Learns Videos:
  - Applicable Open Ground Learning modules
- ☐ Overview of lab tests and purpose (i.e. index testing, CBR, triaxial shear)
- ☐ Use of hand auger/DCP's (Sowers and Kessler)

2.1: Applications of Fundamental Learning Objectives

Developed as workload dictates and/or provides opportunities.

- ☐ Introduction to report writing.
- ☐ Pavement thickness recommendation procedures/options.
- ☐ Engineering analyses to support recommendations (deep/shallow foundations, retaining walls, soil parameters, pavements, etc.
- ☐ Building Report Appendices.
- ☐ Drill rig oversight and filling out Field Logs.
- ☐ Review of laboratory test results on samples you classified.
- ☐ Existing pavement evaluations during site reconnaissance.
- ☐ What constitutes potential flags for sites (shallow rock, GW, high plasticity materials, soft materials).
- ☐ Examples of site grading recommendations.
- ☐ Importance of contracts/notice to proceed before starting work.

2.2: Additional Learning Objectives

These will depend on availability, location and current workload.

- ☐ Introduction to proposal writing.
- ☐ S&ME Learns Video:
  - Geotechnical – What to Do Before You Write a Proposal
- ☐ Field Resistivity / Shear Wave / MASW.
  - (if applicable – will depend on location and workload)
- ☐ Full depth reclamation.
  - (if applicable – will depend on locations and workload)
- ☐ Footing evaluations.
- ☐ Proofrolling observations.
- ☐ Undercut observations.
- ☐ Rock descriptions, classifications, recovery and RQD.

2.3: Typical Geotechnical Equipment

List of equipment to be trained to use. Will cover procedures and how to use safely.

- ☐ Mohs hardness testing
- ☐ Pocket Penetrometer (office specific)
- ☐ Torvane (office specific)
- ☐ Sowers DCP
- ☐ Kessler Dual-Mass DCP
- ☐ Hand Auger
- ☐ Drill rigs
- ☐ Hydroaxe Clearing

CONSTRUCTION SERVICES LEARNING OBJECTIVES

CONSTRUCTION SERVICES IS DIVERSE!

- Location and Group sizes vary from 5 to 45 employees.
- Needs of each location vary depending on technical capabilities and current project needs.
- Following is a comprehensive list/summary of "Everything Construction" related
- You will work with your Group Leader and mentor team to develop learning opportunities based on your location, project needs, and interests.
- You are not expected to complete each task below.

GETTING STARTED

- Orientation and Safety
- Get to know your local support team
- EQ (broad overview) and working with different personality types

THE PROJECT LIFE CYCLE

- Owner with 100 acres of undeveloped property (example)
- All the services S&ME can provide – very broad overview
  - ✓ Review of Master Planning, Site Grading, Landscape Architecture packages
  - ✓ Review of an Environmental Phase I
  - ✓ Review of Geotechnical Exploration (preferably multiple)
  - ✓ Review of natural resources services (endangered species/wetlands/etc.)
  - ✓ Review of Architectural and Structural plans (by others)
  - ✓ Actual construction (and our role in it)

THE CONSTRUCTION SERVICES PORTION OF THE PROJECT - OVERVIEW

1. **The Construction Services Team**
2. **Initial Site Grading**
3. **Building Construction**
4. **Finished Site Grading**
5. **Forensic / Investigative / Destructive Testing**

THE CONSTRUCTION SERVICES TEAM 1

THE ROLES AND RESPONSIBILITIES

- ☐ Field Technician
- ☐ Laboratory Technician
- ☐ Special Inspector
- ☐ Metals/Fireproofing Technician
- ☐ Project Manager
- ☐ Senior Reviewer
- ☐ Admin Support / scheduler
- ☐ Quality Assurance Supervisor
- ☐ Radiation Safety Officer
- ☐ Organizational Chart for Business Unit/Area/Group

HOW WE GET INVOLVED IN A PROJECT

- ☐ Proposal solicitation and response
- ☐ Preparing cost estimates

INITIAL SITE GRADING 2

FIELD DENSITY TESTING

THE ROLE OF THE FIELD TECHNICIAN AND/OR SPECIAL INSPECTOR

- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Reading and understanding plans and specifications
  - The geotechnical exploration
- ☐ Hands on field testing (nuclear, sand cone, drive tube, one-point Proctor, etc)
- ☐ Observe proofrolling (under guidance of experienced staff)
- ☐ Reporting
  - Metafield reporting of density testing and field observations

THE ROLE OF THE PROJECT MANAGER (PM) AND SENIOR REVIEWER (SR)

- ☐ Communication between the field technician, special inspector, PM, and SR

LABORATORY TESTING (IN SUPPORT OF FIELD DENSITY TESTING)

THE ROLE OF THE LABORATORY TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Hands on laboratory testing (Proctor, Atterberg, Grainsize, moisture, general classification)

STORMWATER OBSERVATIONS

THE ROLE OF THE FIELD TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Hands on field observations (with a senior stormwater inspector)
- ☐ Reporting
  - Metafield reporting of stormwater

THE ROLE OF PM AND SR

- ☐ Communication between the field technician, PM and SR

LABORATORY TESTING (IF SAMPLING IS REQUIRED)

- ☐ Coordination with subcontract laboratory

BUILDING CONSTRUCTION 3

CONCRETE, REINFORCING STEEL (REBAR), FOUNDATION EXCAVATION OBSERVATIONS

THE ROLE OF THE FIELD TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use

THE ROLE OF THE SPECIAL INSPECTOR

- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Reading and understanding plans and specifications
- ☐ Hands on testing of concrete (slump, unit weight, temperature, air content), hand auger and dynamic cone penetrometer (DCP) testing in foundation excavations
  - Correlations between DCPs and standard penetration testing
  - Correlations of those values and allowable bearing pressures
- ☐ Reporting
  - Metafield reporting of concrete and field observations

THE ROLES OF PM AND SR

- ☐ Communication between the field technician, special inspector. PM, and SR

LABORATORY TESTING (IN SUPPORT OF CONCRETE TESTING)

THE ROLE OF THE LABORATORY TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Hands on testing of concrete beams, cylinders, etc.
- ☐ Reporting
  - Metafield reporting of laboratory testing results

BUILDING CONSTRUCTION 3

MASONRY CONSTRUCTION OBSERVATIONS

THE ROLE OF THE FIELD TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use

THE ROLE OF THE SPECIAL INSPECTOR

- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Hands on testing of mortar, grout, sampling of masonry block
- ☐ Reporting
  - Metafield reporting of masonry

THE ROLES OF PM AND SR

- ☐ Communication between the field technician, special inspector. PM, and SR

LABORATORY TESTING (IN SUPPORT OF MASONRY)

THE ROLE OF THE LABORATORY TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Hands on testing of mortar, grout, masonry block
- ☐ Reporting
  - Metafield reporting of laboratory testing results

BUILDING CONSTRUCTION 3

STRUCTURAL STEEL AND/OR FIREPROOFING OBSERVATIONS

THE ROLE OF THE METALS AND/OR FIREPROOFING TECHNICIAN

THE ROLE OF THE SPECIAL INSPECTOR

- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Reporting
  - Metafield reporting of structural steel and/or fireproofing

THE ROLES OF PM AND SR

- ☐ Communication between the metals (or fireproofing) technician, special inspector. PM, and SR

LABORATORY TESTING (TYPICALLY FOR FIREPROOFING)

- ☐ The role of the laboratory technician
- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Reporting
  - Metafield reporting of structural steel and/or fireproofing observations

FINISHED SITE GRADING 4

ASPHALT AND/OR CONCRETE PAVING OBSERVATIONS

THE ROLE OF THE FIELD TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use
  - Asphalt coring
  - Concrete coring
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Reporting
  - Metafield reporting of asphalt and/or concrete paving

THE ROLES OF PM AND SR

- ☐ Communication between between the field technician, PM and SR

LABORATORY TESTING (IN SUPPORT OF ASPHALT AND/OR CONCRETE PAVING)

THE ROLE OF THE LABORATORY TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Reporting
  - Metafield reporting of asphalt and/or concrete paving

FORENSIC / DESTRUCTIVE TESTING / NON-DESTRUCTIVE TESTING 5

THE ROLE OF THE FIELD TECHNICIAN / FIELD PROFESSIONAL

- ☐ Safety first – Job Hazard Analysis review and equipment use
  - Ultrasonic testing
  - Ground penetrating radar
  - Impact echo evaluations
  - Windsor probe / rebound hammer
  - Crack monitoring
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Reporting
  - Metafield reporting

THE ROLES OF PM AND SR

- ☐ Communication between between the field technician, PM and SR

LABORATORY TESTING (IN SUPPORT OF FIELD INVESTIGATIONS)

THE ROLE OF THE LABORATORY TECHNICIAN

- ☐ Safety first – Job Hazard Analysis review and equipment use
- ☐ Importance of Training and Certifications
- ☐ Training/certification opportunities for the intern
- ☐ Reporting
  - Metafield reporting

S&ME

2724 Discovery Drive
Suite 120
Raleigh
North Carolina
USA

+1-800-849-2517
www.smeinc.com