SURVEYING WITH GREATER INTELLIGENCE
EMC HAS THE KNOWLEDGE, EXPERIENCE, AND EQUIPMENT TO MANAGE ANY SURVEY

EMC is a small surveying company based in Grenada, Mississippi. Since its inception, EMC has performed thousands of land and marine surveys in over forty five (45) states for federal, state and local government entities, as well as various private and public companies. Over the past 31 years, EMC has grown from a progressive Southeast surveying firm to a National firm through the hard work and dedication of our staff.

EMC is a multi-disciplined surveying and mapping company with services that encompass Boundary/Cadastral, Topographic, Hydrographic, Geophysical, Geodetic, 3D Terrestrial LiDAR and 3D Mobile LiDAR surveys. EMC has provided continuous leadership in land and hydrographic surveying services for federal, state, local governments as well as private clientele. Our firm has extensive experience performing and managing large scale land and boundary surveys throughout the Nation. We have built many lasting client relationships over the years based on the consistent quality of our surveying services and continue to have strong, working relationships with many of these government and private agencies today.

EMC has a team of professionals that offer turn-key solutions in the surveying and mapping industry for both the routine and complex surveying situations that our clients face on a daily basis. Currently, EMC is staffed with over forty (40) dedicated personnel with the knowledge and experience to manage all aspects of surveying and mapping for any client. EMC combines the talents of professional land surveyors and a certified hydrographer to provide our clients access to a complete range of surveying services. We are proud of the knowledge, experience, training and continuing education of our professional staff which includes 5 Professional Land Surveyors who hold licenses in 14 States and an ACSM Certified Hydrographer.

In addition to our staff, EMC owns, operates and maintains all of the necessary state-of-the-art equipment needed in today’s surveying and mapping industry. From first order levels, total stations, Trimble R8 GPS Systems, Riegl’s VZ-400 3D Laser Scanner and Riegl VMX – 450 Mobile LiDAR System, to CADD drafting and mapping software, our team has the equipment to handle any project.
EMC stands ready to provide our clients with multidisciplinary expertise and services. Employing the finest talents along with state-of-the-art tools and technology, EMC ensures our clients are provided the most complete and accurate data available.

### Topographic and Land Surveys
- High Definition Terrestrial\Mobile Scanning
- High Definition Mobile LiDAR
- Aerial Surveying Services
- Boundary\Cadastral\ALTA
- Topographic\Construction
- As-built\Design
- Data Collection (GIS)
- Horizontal\Vertical Control
- Right-of-Way
- Easement
- Route
- Location
- Elevation
- GPR

### Hydrographic Surveys
- Multibeam
- Single Beam
- Side-scan Sonar
- Sub-Bottom
- Magnetometer
- ADCP
- Dredging
- Shoreline
- Beach Re-nourishment
- Depth of Cover

## Our Best Asset

EMC has built a team of dedicated personnel who can handle any surveying or mapping task a client may request. Our team is composed of Professional Land Surveyors and a Certified Hydrographer, as well as Surveying, CADD and GIS technicians. We also have an experienced, well trained, support staff who can manage any deliverables required by our clients. Our team strives to stay current with the latest surveying disciplines, state-of-the-art equipment, regulations and laws that affect the surveying industry. We at EMC also understand that proper training and continuing education are both critical when maintaining our market position as a leader in our progressive industry. Our efforts to stay at the forefront with the latest equipment is only part of the equation; the training and ability to put those technologies to use, are not only beneficial to our team, but more importantly to the client.
Points that Matter
EMC has experience in boundary/cadastral surveying services throughout the U. S. Having the experience and knowledge of record researching, analytical thinking and applying physical evidence gained in the field, is why both government and private agencies turn to EMC for their boundary/cadastral surveying services. Our services include, but are not limited to: boundary surveys, easement surveys, section retracements, Right of Way (ROW), title (ALTA), subdivision layout & re-staking surveys. EMC has performed boundary & cadastral surveys in both “public domain” and “metes and bounds” states.

Process that Works
- Research all records, including adjoiners.
- Deeds are plotted & checked for closure, gaps overlaps, etc.
- Aerial photography is used as a guide to enable reconnaissance of section corners or prominent metes and bounds corners.
- Exhaustive search is conducted for all boundary corners as well as ties (Additionally, all encroachments, right-of-ways and/or easements, and existing infrastructure are located).
- All corners are evaluated to their computed positions, based upon found monumentation and record research, and a determination is made as to whether the corner is “held” or not.
- Corners are set, mindful of any scale and/or rotation that may need to be applied to best “follow the footsteps” of the original surveyor.

Recent Clients
- NRCS, Mississippi, Louisiana, Alabama & Florida
- Wildlife Mississippi
- USACE, Norfolk
- Kiewit Construction
- USFW
- MDOT
- UPS
- Numerous other Government and Private entities
Accurately Measuring the World

EMC collects all natural and man-made features of the Earth’s surface using our GPS, automated Total Station, Terrestrial and Mobile LiDAR systems. We have performed plan and specification surveys and site condition surveys in support of design and construction for many government and private entities.

All topographic surveys are performed with the latest technologies to reduce field errors and to provide our clients with an efficiently produced, professional product. All data gathered for our clients can be presented to them in a format compatible with their preferred software.

Collecting Points for

- Beaches and Breakwaters
- Dams
- Bridges
- Grade Control Structures
- Drainage Ditches and Canals
- Rivers
- Levees and Embankments
- Floodways
- Recreational Areas
- Channel Areas
- Industrial Parks
- Housing Projects
- Commercial Development
- Military Installations
- Urban Highway Route Studies
- Airport Location Studies
- Chemical Plant Mapping
- Utility Transmission Route Studies

Recent Clients

- USACE, Norfolk
- USACE, Memphis
- USACE, New Orleans
- MDOT
- Numerous other Government and Private entities
**Construction Surveying**

**Guiding Clients Through All Phases**

On a regular basis, EMC’s team of professionals perform surveying and mapping services for construction projects. EMC has experience in all the facets of construction surveying and mapping such as design, layout, as-built, quantity and control surveys. These surveys are typically done with RTK/total stations or automated hydrographic systems. These methods of data collection provide EMC with a fast, efficient and accurate survey allowing us to complete the largest of projects in a timely fashion and on budget for our clients.

**Efficient & Accurate**

- Levee Enlargement Surveys
- Revetment, Dike and Jetty Construction Surveys
- Control Structure Construction Surveys
- Lock and Dam Construction Surveys
- Minor Levee Constructions and Repairs Surveys
- Building Structure Surveys
- Road and Bridge Construction Surveys
- Pipeline Construction Surveys
- Telecommunication Construction Surveys

**Recent Clients**

- Atkins Global
- Fluor
- Kiewit Construction
- Gulf IntraCoastal Constructors
- Stantec (Greenhorne & O'Mara)
- Manson Construction Company
- Manson Gulf
- Bertucci Contracting Corporation
- Black & Veatch Corporation
- Robinson Construction
- Centex
- Kiewit Massman Taylor Construction
- USACE, New Orleans
- USACE, Memphis
- USACE, Norfolk
- USACE, Vicksburg
- USACE, Jacksonville
- USACE, Mobile
- USACE, St. Louis
EMC continues to create unique turn-key solutions for the land surveying industry. By utilizing our advanced 3D Terrestrial Laser Scanning System along with GNSS, we are able to provide our clients with survey-grade data acquisition and processing at an unrivaled pace. EMC has perfected surveying techniques with this advanced technology, allowing us to offer our clients solutions that in most circumstances exceed conventional methods of surveying. We now have the ability to collect a vast amount of survey-grade data in a fraction of the time and cost.

**Applications that work for you**

- ALTA Surveys
- Levee Analysis\Inventory
- Urban Mapping and Modeling
- Airports Facilities and Runways
- Transportation Infrastructure Mapping
- Mapping Rail Corridors
- As-Built Conditions
- Construction Operation
- Site Modeling and Layout
- Volume/Quantity Surveys

- Quality Control
- Asset Management
- Deformation Analysis
- Intelligent Modeling
- Virtual Fly/Walk-Throughs
- Spool Drawings
- Demolition Plans
- Emergency Response
- Disaster Mitigation
**When Traditional Techniques Are Ineffective or Inefficient**

EMC's VMX - 450 is the most effective and efficient mobile LiDAR system on the market today, far exceeding traditional surveying techniques. Our system integrates two laser scanners as well as inertial measurement and GNSS equipment, housed under an aerodynamically shaped protective cover. The system also includes a well-designed camera platform allowing it to be mounted and setup up to six high-resolution digital cameras. The VMX system is modular in design which allows for quick setup on different vehicles (or vessels, railcars, etc.), and provides our clients with a fast, highly-accurate, laser ranging that is based upon an unrivaled, echo, signal, digitization technology with online waveform processing providing superior measurement capability.

Each of the two eye safe laser scanners provides low-noise, gapless 360° profiles at a measurement rate of 550,000 meas/sec. and a scan rate of up to 200 profiles/sec.

EMC utilizes our mobile LiDAR for surveying and mapping of roadways, bridges and rail corridors (e.g. route inventory, clearance evaluation, rail gauge determination, etc.), waterways, ports, and harbors (e.g. river banks, jetties, cliffs, etc.) as well as extended urban and rural areas. EMC also uses this system for surveying and engineering measurements, as-built surveying, road and bridge modeling and any civil engineering project where our clients need fast accurate data.

**Applications That Work for You**

- ALTA Surveys
- Levee Analysis\Inventory
- Urban Mapping and Modeling
- Airports Facilities and Runways
- Transportation Infrastructure
- Mapping Rail Corridors
- As-Built Conditions
- Construction Operation as it Happens
- Site Modeling and Layout
- Volume/Quantity Surveys
- Quality Control
- Emergency Response\Disaster Mitigation
Surveying Today, Better Transportation Tomorrow

EMC provides surveying and mapping services for the transportation industry. We offer turn-key surveying solutions for the issues facing departments of transportation, city and county road systems, bridges, airports, railroads, ports etc. Our services, for both public and private sectors, range from new and existing roadway extensions and rehabilitation to fully automated hydrographic surveys of for bridges.

Better Transportation Through our Services

- 3D Mobile LiDAR
- 3D Laser Scanning
- Construction Layout & Staking
- Planimetric & Topographic Surveys
- Boundary Surveys
- Right-of-way Surveys
- Section Line Retracement Surveys
- Automated Hydrographic Surveys
- Drainage Surveys
- Route Surveys
- Geodetic Control Surveys
- Bridge Surveys
- Airport Surveys
- Railroad Surveys

Recent Experience Includes

- Mobile LiDAR Interstate 540 near Fort Smith, AR
- Mobile LiDAR Interstate 4, Florida
- Mobile LiDAR Fort Polk Air Field
- Multibeam and 3D Laser Scanning RailRaod Bridge Inspections near Forest City, AR
- Re-establishing Right-of-Way & Adjacent Boundaries Survey along Highway 49 in Greenwood, MS
- Re-establishing Right-of-Way & Adjacent Boundaries Survey along Highway 305 south of Olive Branch
- Planimetric & Topographic Surveys along Highway 448 between Indianola and Shaw, MS for MDOT
- First order level, GPS Survey and Monumentation in south MS for MDOT
PARTICULARLY COMPLEX, CONTINUOUS, REPEATED MONITORING AND INSPECTION

EMC’s rail solutions focus on providing and managing the spatial information required for the design and maintenance of a railroad infrastructure. This requires rigorous surveying techniques, technical standards and design principles which allow us to track and associate the infrastructure to be designed, built and maintained so that trains can move safely at an optimum speed over the system. Our surveying solutions include, not only the more traditional surveying practices such as cadastral surveys and precision control, but also the more advanced technologies, such as 3D mobile LiDAR.

We understand that the operation of a railway network relies on organization – a single change of route or track can cause hours of delay. Taking that into consideration, EMC is proud to offer our 3D Mobile LiDAR as an effective solution for railway mapping.

Our 3D Mobile LiDAR System, the RIEGL VMX-450, is a proven, fully integrated, high speed, mobile, laser scanning system with a lifting frame for crane installation. Our LiDAR system has a maximum effective measurement rate of 1.1 million measurements per second, resulting in up to 400 scan lines per second. Our RIEGL VMX-450, mobile mapping system, enables us to survey the large stretches of railway tracks at high speeds, while delivering a dense point cloud containing billions of single measurement points. The effectiveness of the system allows our surveying vehicle to pass safely between trains without causing delays.

APPLICATIONS THAT WORK FOR YOU, JUST NAMING A FEW

• Geo-Referencing of Railway Infrastructure
• Clearance Monitoring
• Determine Infrastructural Limits for Special Load transportation
• Track and Base Terrain Inspection
• Supervision and Registration of Changes in Train Station Structures
The Task:
Our client needed the road surface profile for repaving both the North and South bound lanes of approximately 8 miles of Interstate I-540 in Fort Smith, Arkansas.

EMC, Inc.’s Solution: 3D Mobile LiDAR
In order to complete this task under a very tight deadline and budget, EMC, Inc. utilized our VMX – 450 ground based mobile LiDAR system to collect the features of the road (i.e. edge of shoulder, edge of pavement, centerline, bridge clearances, etc.).

Field crews began this survey by locating existing benchmarks and laying out the reflective, laser, target sites for the project. Control monuments were set along the entire length of the project, and tie points were placed every 1500 feet along the interstate to localize the scan data. Control monuments and laser targets were used as the project’s quality control and quality assurance.

The Data Collection and Processing:
Once the field survey was complete, the files were transferred to the office for post processing. The control was processed utilizing Trimble Business Center. The scan data was processed and merged together in RiProcess, to produce one large LAS file. This file was then taken into Bentley Microstation Inroads Suite where our drafters created a DTM and other maps. The feature codes for the project included labeling the edge of shoulder, edge of pavement and the center of the road. In addition, we also mapped the bridge and power-line clearances. Our final digital deliverables were CAD drawings, DGN, DTM, the raw point cloud data (LAS) and the survey report (DOC).
Another Dimension to Our Services

EMC, Inc. now offers an entirely new perspective of surveying and mapping. With the help of our unmanned aerial systems (UAS), we can provide the latest bird’s-eye-view of any project. Our aerial surveys give you greater control over what is mapped and accuracies you wish to achieve from the flight performed at your convenience. Our UAS is easily deployable and provides cost-effective solution for mapping and monitoring any size areas quickly and efficiently, with a high level of accuracy. Adding another dimension to EMC’s surveying tool kit, allows our clients to make better decisions.

EMC has received a 333 Exemption from the FAA to operate its Unmanned Aerial System (UAS). This 333 Exemption provides EMC with a general Certificate of Authorization (COA) to operate UAS under 400 feet throughout the U.S. for the purpose of aerial data collection.

Multiple Applications, Just Naming a Few

- Surveying
- Civil Engineering Design Mapping
- Asset Monitoring
- Photogrammetry Services -3d Models
- Lidar Services
- Digital Elevation Modeling
- 3D Feature Extraction / Contour Generation
- Virtual View from New Construction
- Aerials Documenting Whole Site
- Construction Planning – Identify Potential Issues
- Construction Progress Monitoring
- Marketing for Construction
- Pipeline Monitoring
- Environmental Assessment
- Tower Inspections
- Power-Line Inspection
- Asset Verification
- Asset & Plant Inspections
- Precision Agriculture
- Vegetation Management
- Land Cover Mapping
- Biomass
- Forest Health
- Disease Detection
- Environmental Mapping
- Emergency Response Mapping
- Disaster Site Monitoring and Mapping
- Hazard Mapping
ADVANCED SYSTEMS

EMC has hydrographic surveying experience ranging from 1984 to the present on major waterways, oceans, beaches and bays from the San Francisco Bay to the U.S. Virgin Islands. We have all of the necessary office and field equipment to provide our clients with automated GPS hydrographic surveys. All hydrographic surveys are planned and checked by our Certified Hydrographic Surveyor. EMC has been on the leading edge of hydrographic technologies for over 31 years. EMC owns three multibeam surveying systems, all of which can be mounted on any of our surveying vessels. Each system is equipped with a state-of-the art Inertial GPS system POS MV for positioning. These systems can also be easily mobilized onto a vessel of opportunity if needed.

SERVICES PROVIDED

- Multibeam
- Side-Scan Sonar
- Single Beam Dual Frequency
- Magnetometer
- ADCP
- RTK Tides

KNOWLEDGE AND EXPERIENCE

EMC has completed hydrographic surveys on numerous waterways, rivers & oceans including:

- Mississippi River
- Atchafalaya River
- Red River
- Black River
- Yazoo River
- Ouachita River
- Arkansas River
- Alabama River
- St. Francis River
- Wolf River
- Loosahatchie River
- Rio De La Plata River
- Kissimmee River
- St. Lucie Canal
- Pacific Ocean
- Atlantic Ocean
- Caribbean Sea
- Gulf of Mexico

EMC also has performed annual revetment construction surveys on the Mississippi and Red Rivers.

Our multibeam experience includes:

- Mississippi River, Grader Unit Surveys
- Mississippi River, Before-Construction Surveys
- Mississippi River, Multibeam Survey
- Mississippi River, Full Coverage Survey
- Miami Habor, Debris Survey
- Gulf of Mexico, Debris Mapping
- Key West, Dredging Survey
- Gulf of Mexico, Pipeline Inspections
- Mobile Bay, Yellowhammer, Pipeline Inspections
Surveying Solutions that Work for You

EMC understands that the acquisition of hydrographic geophysical data is a fundamental importance in the key stages of any in-shore, coastal or off-shore engineering project. The data obtained from well planned and executed hydrographic surveys provides our clients with highly beneficial information and cost savings. Being well equipped with the latest technologies, EMC provides high quality, marine, geophysical surveys to meet any and all of our clients' needs. Whether it’s to provide depth of cover of a pipeline or a full side-scan, multibeam, sub-bottom, magnetometer bathymetry survey of a ocean’s bottom, EMC has the trained staff, the technologies, the vessels and the experience to handle any geophysical surveying and mapping project.

Site Investigations Utilizing the Latest Technologies

- Side-Scan Sonar
- Magnetometer
- Sub-Bottom Profiler
- Multibeam
- ADCP

Experience Includes, but not Limited to

EMC has completed geophysical surveys on numerous waterways, rivers & oceans.

- Gulf of Mexico Debris Mapping (Client NOAA)
- Barge Location Survey (Client USACE, New Orleans)
- U. S. Coast Guard Station Miami (Client USCG)
- U.S. Coast Guard Station Venice (Client USCG)
- Gulf of Mexico Pipeline Inspections (Client Shell Pipeline)
- Mobile Bay Yellowhammer Pipeline Inspections (Client Shell Pipeline)
- Mississippi River Barge Location Surveys (Client USACE Memphis)
The task:
Our client requested EMC, Inc. to perform bridge inspection surveys both above and below the water’s surface.

EMC, Inc.’s Solution: Collect the Multibeam and Laser Scan data simultaneously
In order to complete this task under a very tight deadline and budget, EMC, Inc. utilized one of our surveying vessels equipped with our Reigl VZ - 400 Laser Scanner and our Reson 7125 Multibeam Sonar System. In addition, our surveying vessel was also equipped POS MV. The field crew began by establishing project control and obtaining the water surface’s elevation. Once the control and water surface were determined, our crews began collecting both the multibeam data and laser scan. This method allowed us to collect all the data for this project simultaneously.

The Data Collection and Processing:
Once the field survey was complete, the files were transfered to the office for post processing. The control was processed utilizing Trimble Business Center. The scan data was processed and merged together in RiProcess to produce one large LAS file. The multibeam data was processed using HyPack to produce an xyz. These files were then taken into Bentley Microstation Inroads Suite where our drafters created a DTM and other maps. Our final digital deliverables were CAD drawings, DGN, DTM, the raw point cloud data (LAS) and the survey report (DOC).
EMC, Inc. provides our clients in the oil and gas industry with pinpoint surveying and mapping services. By accurately and efficiently collecting the correct and precise data, we provide our clients with the information that affects well-site position and construction. From mapping the physical features of the terrain to locating hazardous structures, EMC, Inc. maintains the professional staff and the state-of-the-art equipment needed to handle any surveying and mapping project to meet the needs of our oil and gas industry clients.

**Gathering Data For**

- Drill Site Location Surveys
- Well-Site Location Surveys
- Well-Site Construction Surveys
- As-Built Surveys
- Area Computations Surveys
- Pipeline and Well Detection Surveys
- Right-of-Way Surveys
- Easement Surveys
- Acquisition Surveys
- Alignment Surveys
- Boundary Surveys
- Topographic Surveys
- Map Preparation and Reproduction

**Recent Clients**

- Texas Gas Transmission, LLC
- Gulf South Pipeline Company, LP
- Statoil
- EOG Resources
- Shell Pipeline Company
- Chevron
- Exxon Mobil Corporation
- Loop, LLC
- Justiss Oil and Gas
- Enterprise
- Central Louisiana Energy Pipeline Co, LLC
LOCATION, LOCATION & LOCATION
EMC, Inc. has extensive experience surveying oil and gas pipelines. Whether it is a small project or a project requiring multiple phases over several years, EMC has the equipment, the knowledge and the experience to manage any pipeline survey. Our experienced surveyors have performed pipeline construction surveys including design, construction staking and as-built surveys, as well as managing many right of way and easement surveys for a number of pipeline companies nationwide. When locating existing pipelines, EMC uses the most efficient technique to locate the pipeline. Once EMC’s professional field crews have located the pipeline, we capture point locations using our state-of-the-art equipment. From these point files, we provide our clients with highly accurate maps and profile drawings.

LEADING THE WAY IN:
- Pipeline Construction Surveys (design, staking, and as-built)
- Pipeline Location Surveys
- Pipeline Depth of Cover
- Right of Way/Easement/Route Survey

RECENT CLIENTS
- Texas Gas Transmission, LLC
- Gulf South Pipeline Company, LP
- Statoil
- EOG Resources
- Shell Pipeline Company
- Chevron
- Exxon Mobil Corporation
- Loop, LLC
- Justiss Oil and Gas
- Enterprise
- Central Louisiana Energy Pipeline Co, LLC
GOING THE DISTANCE

Telecommunication surveys encompass a broad spectrum of surveying services; and as a result, many companies seek the services of EMC, Inc. to manage and perform these surveys. EMC has the knowledge, the experience, the staff and the equipment to handle any surveying services needed by the telecommunication industry.

RANGE OF SERVICES

- Boundary Surveys
- Site Construction Surveys
- Right of Way / Easement
- Cellular Tower Surveys
- FAA 2C and 1A
- Topographic Surveys
- As-Built Surveys
- Tower Surveys
- ALTA Surveys
- Title Reviews

RECENT EXPERIENCE INCLUDES

Multiple Cell Tower Site Surveys

- Verizon
- Cspire
- AT&T

Detailed Survey of all Telecommunications at:

- Fort Polk
- Fort Hood
- Fort Leavenworth
- Fort Myer
- Fort Riley
- Fort Rucker
- Fort Sam Houston,
- Fort Shafter
- Fort Still
- Redstone Arsenal
- Yuma Proving Ground

Underground Telecommunication Survey techniques using Ground Penetrating Radar were used at U.S. Coast Guard Station Belle Chasse and New Orleans
Delivering Excellence in all areas of Surveying

Boundary
Topographic
Terrestrial Laser Scanner
Mobile LiDAR
Hydrographic
Geophysical
Geodetic
GPS Data Development

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