



## **Integrated Solutions. Repeatable Results.**

Upstream & Midstream Project Delivery Services

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## Why CAM?

We leverage a wealth of engineering expertise into efficient facilities solutions.

### CAM's detailed menu of services:

- FEED/FEL Studies (FEL-0 through FEL-3)
- Total Installed Cost Estimates
- Permitting Support (Environmental, DOT, County)
- Review and Compliance with Latest Regulations and Industry Standards
- Engineering and Design of Compressor Stations
- Engineering and Design of Pump Stations
- Engineering and Design of Salt Water Disposal Facilities
- Engineering and Design of NGL and Liquids Delivery and Storage
- Engineering and Design of Metering Stations
- Engineering and Design of Central Facilities
  - ◆ Inlet Treating and Dehydration
  - ◆ Natural Gas Processing / Separation Facilities
  - ◆ Amine Plants
  - ◆ Condensate Stabilization and NGL Treating
  - ◆ Trucking Loadout and Storage
  - ◆ Chemical Injection Systems
- Engineering and Design of Tank Batteries
- As Built Walkdowns and Site Reconnaissance
- Construction Scopes Of Work (SOW); Including Bill Of Materials (BOM)
- Develop Design Basis Memorandum (DBM)
- Develop Standard Operating Procedures (SOPs)
- Develop Preventative Maintenance Plans/Inspection Plans with CAM Field Services
- Develop Dewatering, Cleaning, and Hydrotest Plans
- Specify Materials, RFQs, and Procurement (Full or Support Only)
- PHA/HAZOP Coordination
- Balance of Plant Integrations
- Turn-Around / Shut-In Planning, Scheduling, and Engineering
- Operator Training





## **CAM's typical facilities deliverables include:**

### **Project Management**

- Project Schedule
- Status Reporting/KPIs, Schedules, etc.
- Engineering Job Book Assembly

### **Instrumentation**

- Control Narrative
- Cause and Effect
- Control Panel BOM, Layouts, and Wiring
- Instrument Location Plans
- I/O List
- Instrument Datasheets
- Instrument Index
- Technical Bid Evaluations
- As-Built Drawings

### **Electrical**

- Electrical and Instrumentation Symbols and Legend
- 480 VAC One Lines
- Area Classification and Details
- Cable Tray Plans and Installation Details
- Conduit Notes and Details
- Drawing Index Electrical
- Conduit and Power Plans
- Electrical Installation Details
- Grounding Plans and Installation Details

- Lighting Plans and Photometrics
- Electrical Station Lighting Details
- Conduit and Cable Schedule
- Panel Schedules
- Wiring Drawings
- Motor Schematics
- Junction Box Layouts
- Lists — Load List
- Arc Flash Study
- Load Flow Analysis
- Relay Coordination Study
- Short Circuit Analysis
- As-Built Drawings
- Technical Bid Evaluations

### **Mechanical Piping**

- Plot Plan
- Key Plan
- Equipment List
- Line List
- SP Items List
- Valve List
- Piping Plan
- Drawings
- Piping Isometrics
- Weld Inch Report
- Piping BOM
- Stress Analysis
- Technical Bid Evaluations
- As-Built Drawings

### **Process**

- Flare and Vent Stack Sizing
- PHA Planning, Preparation, and Coordination
- Start-up and Operating Manuals
- Operator Training
- Piping and Instrument Diagrams
- PSV Calculations
- Heat and Material Balance
- Blowdown Volume Calculations
- Line Sizing Calculations
- As-Built Drawings

### **Civil/Structural**

- General Civil and Concrete Notes
- Site Plan
- Grading and Draining Plan and Details
- Site Road Plan, Section, and Details
- Fencing Plan and Details
- Piping/Conduit Corridor Trench Location Plan
- Foundation Overall Key Plan, Location Plans, and Details
- Structural: Typical Details, Steel Location Plan, and Overall Key Plan
- Calculations Package
- ♦ As-Built Drawings



**Contact CAM Integrated Solutions to translate your facility needs into efficient solutions.**

## Why CAM?

We turn pipeline challenges into cost-effective and efficient solutions.

### Full Service Project Management:

- Project Planning
- Cost Estimating / Risk Analysis
- Engineering/Design
- GIS / Mapping and Analytics
- CAD Mapping and Drafting
- Document Management
- Procurement Services
- Survey
- Construction Management & Inspection



### Integration of Technology:

- Collaboration and Visualization Platforms
  - ◆ Platform used for team collaboration and document management.
  - ◆ WebMap provides near real time visual project information (centerline, alternatives, landowner, environmental, photos, & permits)
  - ◆ Pipeline Preliminary Geographic Information System (GIS) “Desktop” Routing Analysis

### Integration of Operations

- Develop Standard Operating Procedures (SOPs)
- In-depth Reviews to Ensure Compliance with Current Regulations and Industry Standards

### Integration of Construction:

- Planning (Access, Footprint, crossing methodology, material staging yards)
- Construction Bid Packages
  - ◆ Contractor Qualifications, Commercial/Technical Evaluations
  - ◆ Scope of Work (SOW)
  - ◆ Construction Specifications (Welding, Coating, Dewatering, Cleaning, and Hydrotest, etc.)





## CAM's project team includes our full range of pipeline services

### Engineering

- Design of Pipeline Systems
  - ◆ All commodities (Oil, Gas, NGL, CO2, Water, etc.)
  - ◆ Gathering
  - ◆ Transmission
- Design of Mainline Valves (MLVs)
- Design of Launcher and Receiver Systems
- Design of Interconnects, Manifolds, and Riser
- Design of Metering Stations

### Design

- Alignment Sheets
- Pipeline Schematics
- Hydrotest Profile Drawings
- Class Location Drawings
- Fabrication Drawings

### Civil Drawings

- Pipe Support Foundation Details
- Foundation Location Plans
- Grading and Drainage Plans
- Material Specification Notes

### Procurement Support

- Specify Materials and Prepare Purchase Orders (POs)
- Expediting
- Receiving & Invoice Reconciliation

### Construction & Environmental "Typical" Drawings

- Right Of Way (ROW) Layout Dimensions
- Waterbody Crossings
- Dewatering Structures and Erosion Control
- Wetland Construction Reseeding Road Access Pads
- Fencing
- Warning Signs and Aerial Markers
- Pipe Coating, Grounding, and Test Stations
- Pipeline Crossings

### Site Specific

- Horizontal Directional Drilling (HDD) Drawings



### Crossing Permit Drawings

- Roads and Highways
- Railroads
- Environmental or Archeological Areas

### Electrical & Instrumentation Drawings

- Instrument & Electrical Installation Details
- Lighting and Grounding Plans
- One Line Diagrams
- Wiring Diagrams

### Reports & Calculations

- HCA and MCA Analysis
- Buoyancy Calculations and Reports
- Hydrotest Limit Calculations
- Stress Calculations for Road/Railroad Crossings
- Stress Calculations for HDD Designs

Contact CAM Integrated Solutions to translate your pipeline needs into efficient solutions.

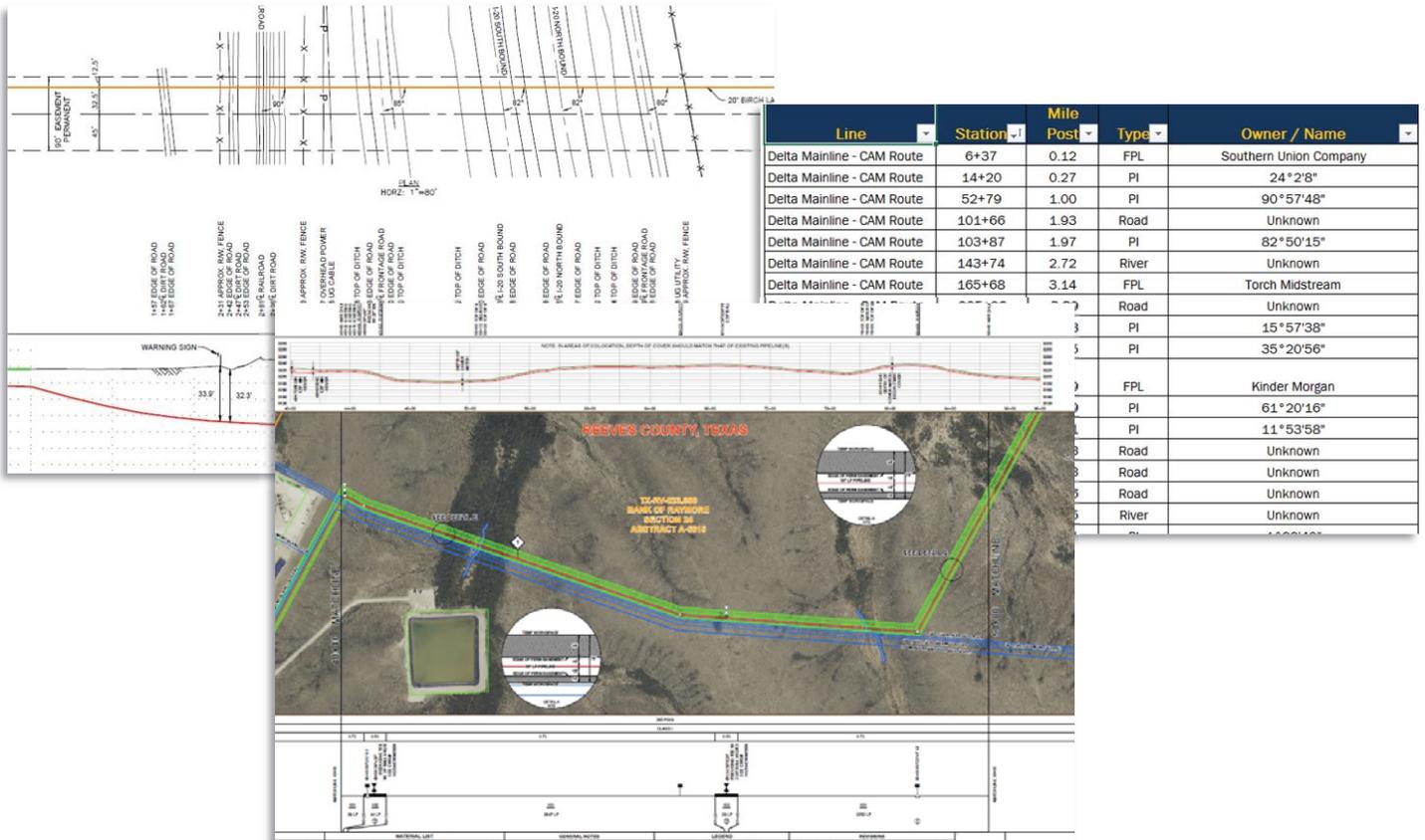
CAM Integrated Solutions (CAM) provides the experienced, seasoned geographic information system (GIS) analysts, CAD Drafters, and engineering personnel to execute the full range of GIS and Mapping services ensuring effective project communication and solutions.

### CAM is part of Blue Sky Evolution's Pipeline Titan Network



### Automated Data Output

- Engineering & design exhibits and drawings
- Alignment sheets
- HDD drawings, plats and permits
- Typical construction drawings and property sketches
- Project route maps and construction estimates
- Data import, translation, and output
- Regulatory submissions -- T4 reporting, FERC filing, DOT/HCA filings
- Project Status Reporting - crossings, colocation, ROW, Survey, and Construction Status



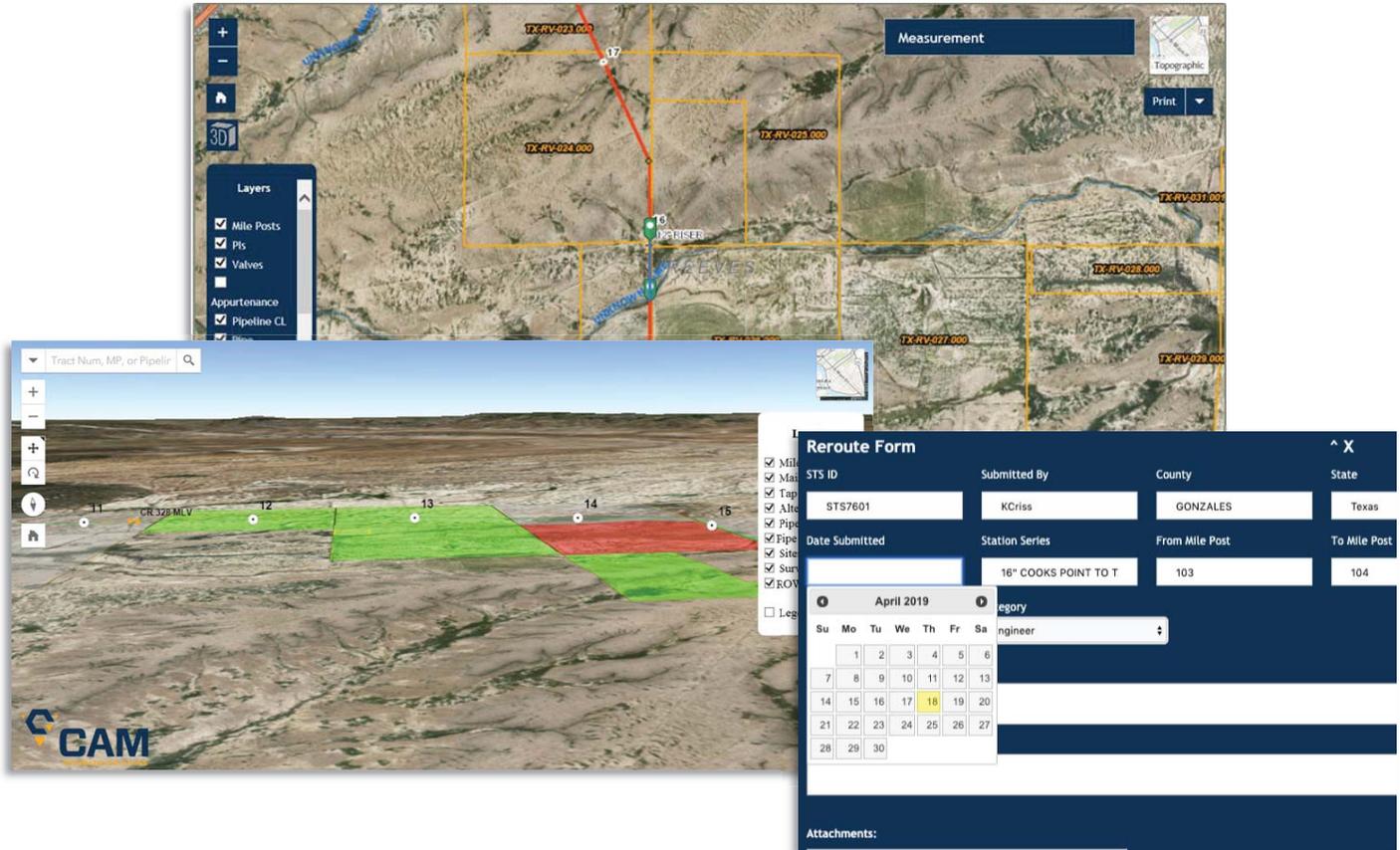
Line	Station	Mile Post	Type	Owner / Name
Delta Mainline - CAM Route	6+37	0.12	FPL	Southern Union Company
Delta Mainline - CAM Route	14+20	0.27	PI	24° 2' 8"
Delta Mainline - CAM Route	52+79	1.00	PI	90° 57' 48"
Delta Mainline - CAM Route	101+66	1.93	Road	Unknown
Delta Mainline - CAM Route	103+87	1.97	PI	82° 50' 15"
Delta Mainline - CAM Route	143+74	2.72	River	Unknown
Delta Mainline - CAM Route	165+68	3.14	FPL	Torch Midstream
			Road	Unknown
			PI	15° 57' 38"
			PI	35° 20' 56"
			FPL	Kinder Morgan
			PI	61° 20' 16"
			PI	11° 53' 58"
			Road	Unknown
			Road	Unknown
			Road	Unknown
			River	Unknown
				Unknown



# Your Projects Benefit from CAM's Pipeline Project Portal

## Data Input

- Latest technology with the Pipeline Project Portal provides benefits and integration with other systems throughout the lifecycle of pipeline projects.
- GIS Project Viewer includes 3D views of pipeline routes and related facilities. Clients get instant access to current design.



## Communications

- CAM GIS tools provide our clients with access to the most accurate, consistent, and secure data. We make it easy to find, share, and analyze GIS information.
- Pipe Spatial Ticketing System documents changes along the project ROW to promote project team collaboration, communication, and efficiency, whether for O&M, repair project, or new construction.
- Pipeline Project Portal provides information sharing for data entry and conversion support when generating reports for crossings, materials, mileage, acreage, client specific custom maps, including Survey/ROW/Construction/Drilling/EHS support maps, and daily progress reports.

Contact CAM Integrated Solutions to translate your GIS needs into efficient solutions.



## FABRICATION

CAM Process Technologies, LLC provides project experience and expertise to design, engineer, procure, fabricate, assemble, and test modular and skidded packages.

### Facility Overview

- 9 acre property
- 85,000 sq. ft. covered shop space
- 2,400 sq. ft. covered climate controlled I&E workshop
- 3,600 sq. ft. covered warehouse
- 50,000 sq. ft. secured outdoor yard storage
- 1,000 sq. ft. secured indoor storage - For customer supplied components
- 30-ton high bay lifting capacity
- 3-, 6-, and 18-ton fork lift capacity
- 5-, 10-, and 30-ton overhead crane capacity
- Automated profiling - *Piping and all structural materials*
- Advanced MIG welding processes
- Sub-arc welding capability



### Manufacturing Capabilities

- ▼ ASME Pressure Vessels
- ▼ Gas Processing Plants
- ▼ Amine Plant
- ▼ Dehydration Packages
- ▼ Manifold Skids
- ▼ Slug Catchers
- ▼ Launchers/Receivers
- ▼ Pump Skids
- ▼ Meter Skids
- ▼ Fuel Gas Skids
- ▼ LACT Units
- ▼ Separators
- ▼ Standardized and Customized Packaged Manufacturing

## Manufacturing Services



### Engineering & Design

We create efficient turnkey solutions to meet all fabrication and modular construction manufacturing requirements for our clients.



### Procurement & Inventory Control

Full services of purchased materials, complete tracking of receiving, issuance, and shipping documents for both internal use and to meet customer requirements.



### Superior Modular Designs

CAM teams understand that the key is to maximize output while minimizing the overall footprint.



### ASME Certified Pressure Vessels

Certifying all pressure retaining bottles in accordance with ASME and customer specifications.



### Blasting & Coating

Onsite blasting and coating services eliminating additional time and costs of outsourcing.



### Packaged Systems

Complete in-house design, fabrication, assembly, instrumentation testing, and electrical systems, saving our clients save time and labor in the field.



## Why CAM?

Technology centric approach converting challenges into cost effective and efficient solutions

### Full Service Survey

- Route Selection and Surveys for HCAs, MCAs, Line Class, and Obstructions
- Reconnaissance Surveys for Environmental Assessment
- Control Surveys (network and project)
- Topographic Surveys
- Pipeline Right-of-Way and Easement Footprints
- Electrical Right-of-Way and Easement Footprints
- Lease Roads and Access Easements
- Exhibits and Legal Descriptions Plats for Acquisition and Filing
- Facility Design Surveys
- Site Layout and Development
- Alignment Sheets
- Project Route Maps
- Construction Survey Support (Control, Centerline, Stake files)
- Profile for Permit Application, (HDD's, Railroads, Roads)
- As-Built Surveys (pipe tally, weld mapping, materials, in-ditch and post construction data collection)
- Boundary Surveys
- Utility Locating

### Integration of Technology

- Collaboration and Visualization Platforms
  - ◆ Platform used for team collaboration and document management.
  - ◆ WebMap provides near real time visual project information (centerline, alternatives, landowner, environmental, photos, & permits)
- GIS Database modeling and conversion to standard database models (PODS, APDM, Blue Sky Seed file, etc.)

### Commitment to Excellence

Surveying is a vital, necessary and an integral aspect of every pipeline project. While sometimes challenging and difficult, CAM Field Solutions' comprehensive and proficient approach in a constantly evolving and highly competitive market stands alone. As their respected, experienced and talented team of professionals utilize the latest in technology and equipment, we guarantee precise accuracy and unparalleled client satisfaction.





# 3D Laser Scanning

## CAM Provides 3D Point Cloud Options

The 3D Laser Scanning Teams are involved in the full term of the project life cycle. From the definition of the project through the operation of the engineered system, the 3D Laser Scanning group is involved. This ensures that all of the pertinent data is captured and more importantly that all of that data is utilized, sometimes beyond the original intent. The Direct interface with the Engineering and design team helps in the understanding of the data as well as giving the 3D Laser Scanning Team a better idea of how to help the project meet its goals.

## CAM provides Full Service 3D Laser Scanning

- Point Clouds to Assess Existing Conditions (As-Built)
- Equipment Fit Up Checks
- Piping and Equipment Modeling
- Pad, Pedestal, Structural, and Connector Modeling
- E&IC Modeling
- P&ID Tracing
- Site Grading
- Volume Calculations
- Project Progressing
- Construction Progressing
- Safety Training
- New Employee Training
- Security and Evacuation Mapping
- Ensure Project Datum and Control
- Investigation and Post Accident Reporting
- Lifting and Rigging Planning
- Point to Point Measurements
- Intuitive Free Point Cloud Viewers
- Fabrication Inspections and QC
- Deformation Mapping
- Flatness and Slab Thickness Reporting
- Legal Archiving



Provides instant, real-time field data collection

Captures as-built and as-found information from any man-made or natural structure for any application

Collects complete surface geometry safely and accurately in just minutes

Captured data can be used to generate complete 2D drawings and 3D models

Works on operating principle of pulsed light induced detection and ranging (LIDAR)

Integral scanning software analyzes and calculates time, angle, and distance from scanner to laser-detected surfaces

Computes data to real-world X,Y,Z coordinate points

Collects more than one million points per second, resulting in 3D digital point cloud, which can be modeled into a virtual 3D environment

**Contact CAM Field Solutions to translate your survey needs into efficient solutions.**



## **RIGHT OF WAY**

CAM recognizes the shift from conventional to unconventional oil & gas production has created a more challenging land acquisition environment. Our proprietary methodology assures a fit-for-purpose and efficient project with safe on-time and on-budget project delivery while still maintaining positive community relations and the client's reputation.



### **CAM provides Full Service Right-of-Way support for all stages of your project**

- Project Management
- Feasibility Studies
- Route & Site Selection
- Non-Environmental Permitting
- Title Research & Management
- Document Preparation & Management
- Database Administration
- Due Diligence
- Survey Permission & Assistance
- Non-Environmental Permitting
- Acquisition of Easements, Leases & Fee Purchases
- Construction Liaison & Damage Settlement
- Eminent Domain Support
- GIS & Mapping
- Agent Training & Development
- Public Relations & Stakeholder Outreach
- Operations & Integrity Support



Ascend Automation & Controls provides the experienced, seasoned Automation and Controls specialists to execute the full range of required products and services to ensure effective and efficient solutions.

## Your Projects Benefit from Ascend Automation & Controls Solutions

### Automation and Control

- Process Control Systems (PCS)
- Safety Instrumented Systems (SIS)
- Burner Management Systems (BMS)

### Information Systems

- SCADA/HMI Applications
- Database Applications
- Report and Data Analysis Tools
- Alarm Management
- Servers and Clients

### Communications

- Industrial Ethernet and Serial Networks
- Radio Networks and Propagation Models

### Security Systems

- Access Control
- Video Surveillance

By smoothly integrating information technology with return on investment (ROI) goals, Ascend Automation & Controls experts help our clients harness the full value of their asset, while accelerating high-performance operations.

### Control System Design and Fabrication

- Overall System Architecture Design
- Control Narratives
- Cause and Effects (C&Es)
- Control Panel Design and I/O Loop Drawings
- Control Panel Fabrication
- PLC/PAC/RTU Configuration and Programming
- SCADA/HMI Application Development
- Pneumatic/Hydraulic Wellhead Control Panels

### Packaged Systems

- Hydraulic Power Units (HPUs)
- BOP Closure Units
- Power Distribution Racks and Buildings
- Analyzer Racks and Buildings/Shelters

### Instrumentation and Electrical Field Services

- Installation & Construction
- Maintenance & Inspection
- Troubleshooting & Field Repair
- Site Engineering



### Project Support

- Operations and Maintenance Training
- System Maintenance and Lifecycle Planning
- Management of Change (MOC) Procedures
- SIS Interval Testing Plan and Procedures
- On-Call Support Plans

Contact Ascend to translate your system integration design and automation needs into efficient solutions.

# **FOUR DIVISIONS. ONE TRUSTED PROVIDER.**

## **AUTOMATION & CONTROLS**

CONTROL SYSTEMS



## **FIELD SOLUTIONS**

SURVEY, RIGHT-OF-WAY, &  
CONSTRUCTION MANAGEMENT

## **PROCESS TECHNOLOGIES**

FABRICATION

## **INTEGRATED SOLUTIONS**

ENGINEERING & DESIGN

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