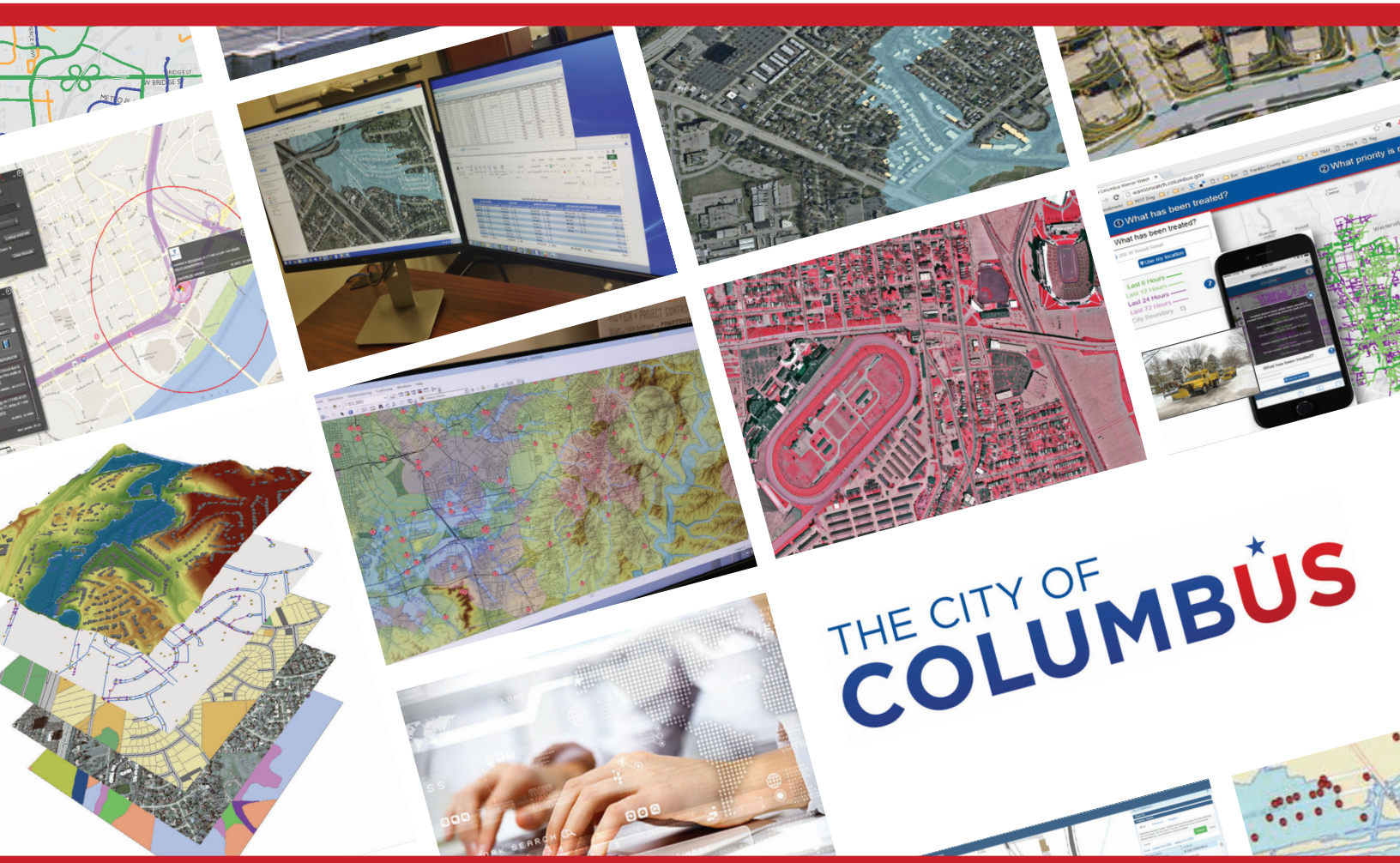
PROPOSAL
for Professional Services
for
GIS Technical Consulting Services Related to Department of Technology

November 21, 2016



Andrew J. Ginther, Mayor
H. Samuel Orth III, Director of Technology

PRIME AE®

PRIME AE®
Columbus Office
8415 Pulsar Place | Suite 300 | Columbus, Ohio 43240
P: 614.839.0250 | F: 614.839.0251

November 21, 2016

City of Columbus, Department of Technology
Attn: H. Samuel Orth III, Director of Technology
90 West Broad Street
Columbus, OH 43215

Re: RFQ003347 - GIS Technical Consulting Services Related to Department of Technology

Dear Mr. Orth III:

PRIME AE (PRIME) is pleased to submit this proposal for GIS Technical Consulting Services. Our experience performing similar services for the City of Columbus as well as other local clients allows us to deliver high quality, technical solutions. Our partner, Stantec Consulting Services, Inc (Stantec) also provides the city with GIS services that match the requirements of this proposal.

Our Advantages. The PRIME Team will meet this project's challenges while providing the following solutions to the City of Columbus:

- ✓ **Experienced Project Team.** Our project team has successfully deployed multiple projects integrating GIS solutions that are used by the city today. Our team has a variety of experience that follows the true lifecycle of GIS technology. Staff from all firms have worked together for several years and understand the team dynamic to best serve the city.
- ✓ **Experienced Project Manager.** Our project manager, Erick Lobao, brings an organized, innovative approach to our team. He has worked on projects with The City of Columbus ranging from staff augmentation and data conversion to managing sophisticated GIS applications such as Warrior Watch. He has also worked with several other municipalities and will bring this experience to the city.
- ✓ **Expertise and Innovation.** Our team consists of sophisticated consultants and leading-edge developers and analysts who provide advanced technical solutions to our approach. We create responsive applications that are focused, yet flexible and scalable for future development.
- ✓ **Strong Working Relationships.** Our established team member relationships mean that we have worked with the same professionals repeatedly. We have established standards for project management, quality control, and communications that all team members understand and respect.

Our Promise. PRIME stands ready to provide the City of Columbus with the same expertise and level of service our other municipal, county and state clients have come to expect from our team. As documented within this proposal, the city will receive the proven capability to meet the needs of this contract as demonstrated by our similar project experience and the technical insight needed to approach this contract and ensure quality, timeliness, and adherence to the budget.

Brief Executive Summary of the Solution the Offeror Plans to Provide: The PRIME team has served the City of Columbus for the past decade providing GIS solutions that are still in use to date. Our approach to this solicitation includes working with the individual departments within the city on business requirements for activities performed. This also entails looking at GIS data and applications citywide so that departments benefit from an enterprise system. As shown with our project experience, we will work closely with the Department of Technology to deliver quality applications and data that adhere to city standards as well as Esri best practices.

Statement Regarding the Offerors Legal Structure: PRIME is a Corporation with a **Federal Tax Number:** 26-0546656 and **Principal Place of Business**: 8415 Pulsar Place | Suite 300 | Columbus, Ohio 43240.

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PRIME is a City of Columbus Certified Asian Minority Business. As a Columbus-based firm, PRIME is thoroughly familiar with the City of Columbus and has completed many projects for the City and other public and private sector clients in Central Ohio.

Proposal Preparation Included: PRIME – Darlene Magold Scott, GISP, GIS Director | Erick Lobao, GISP, GIS Manager | Louie Greenwell, GISP, GIS Director | Tameeka Olverson, Executive Sales Administrator | Stantec – Andrew Faley, GIS Manager.

Should you have any questions regarding the enclosed documents, please contact Darlene Magold Scott, GISP at 614.706-1026 or dmagold@prime3sg.com.

We look forward to working with the City of Columbus on this significant project.

Respectfully,

PRIME AE Group, Inc.

Kumar Buvanendaran, PE*
President and Chief Executive Office

* Signed by an individual authorized to legally bind the offeror

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PRIME AE®

1 Firm Introduction

Section 1 Firm Introduction

PRIME AE Group, Inc.

Address: 8415 Pulsar Place | Suite 300 | Columbus, Ohio 43240 | phone: 614-706-1026; **mobile:** 614-507-6533 | **Email:** dmagold@prime3sg.com

City of Columbus Compliance Number: 26-0546656

PRIME AE Group, Inc. (referred to as PRIME) is a leader in the Architectural, Engineering, and Technology fields. PRIME has been doing business across the U.S. since 1992. PRIME technology services include Geographic Information Systems (GIS), Enterprise Content Management (ECM), and Systems Integration. We provide our public sector clients with solutions that are scalable to grow with rapidly changing technology. PRIME also provides a full range of services in architecture and engineering, construction management and inspection, transportation, and water resources. The firm's philosophy of Connecting, Creating, Conserving, and Community forms the foundation for delivering high quality, on time, cost-effective solutions.

PRIME currently has more than 370 professionals in 13 offices. PRIME's staff includes Professional Engineers, Registered Architects, Construction Inspectors, and LEED Accredited Professionals. These professionals average 20 years of experience in their respective disciplines.

In the past 23 years, PRIME has performed numerous projects for a variety of City of Columbus Departments, including Public Service, Public Utilities, Transportation, Finance and Management, Recreation and Parks, Engineering and Construction, Sewerage and Drainage, and Water.

GIS. Geographic Information Systems (GIS) technology provides a platform for communication and collaboration across many disciplines and allows decision-makers to visualize the impacts of their actions. PRIME understands the organizational benefits resulting from Enterprise GIS implementation and our team of experts is adept at helping our clients utilize GIS to connect people, communicate critical information and solve complex problems.

PRIME's GIS offering includes highly-skilled Consultants, Analysts and Application Developers that can listen to your challenge, then design and implement innovative and effective GIS solutions that span the entire project life cycle from conception to completion and beyond. Our experts have provided award-winning GIS solutions for a variety of clients including Federal, State and Local governments, Utilities and private companies.

Our Senior GIS Consultants have over 20 years of experience developing and delivering GIS projects that are tailored to unique workflows and business requirements. By focusing on the desired outcomes, PRIME can deliver enterprise GIS solutions that will quickly gain user acceptance and provide a solid platform for future integration across the organization.

OUR VISION. PRIME strongly believes that its success will be directly attributable to providing high quality, customer focused work that exceeds our client's expectations. We will provide, meet, and champion every aspect and challenge of our public and private enterprise clients. PRIME provides customer-focused, quality, results-oriented, value-added services across complex Technology Markets.

Stantec Consulting Services, Inc (Stantec)

Address: 1500 Lake Shore Drive | Suite 100 | Columbus, Ohio 43204 | **phone:** 614-486-4383 | **Email:** elie.sabbagh@stantec.com

City of Columbus Compliance Number: 11-2167170

The Stantec community unites approximately 22,000 employees working in over 400 locations across six continents. Stantec collaborates across disciplines and industries to bring buildings, energy and resource, environmental, and infrastructure projects to life. Their work—engineering, architecture, interior design, landscape architecture, surveying, environmental sciences, project management, and project economics, from initial project concept and planning through design, construction, and commissioning—begins at the intersection of community, creativity, and client relationships.

Stantec's local strength, knowledge, and relationships, coupled with our excellent expertise, have allowed us to go anywhere to meet our clients' needs in more creative and personalized ways. With a long-term commitment to the people and places they serve, Stantec has the unique ability to connect to projects on a personal level and advance the quality of life in communities across the globe. Stantec trades on the TSX and the NYSE under the symbol STN.

THE CITY OF COLUMBUS
ANDREW J. GINTHER, MAYOR
Department of Technology
H. Samuel Orth III, Director of Technology

Project Manager / GIS Needs Assessment & BPA Lead
Erick Lobao, GISP (P)

Quality Management Lead
Darlene Magold Scott, GISP (P)

Data Conversion / Field Data Collection Lead
Matt Shade, GISP (P)

GIS Staff Augmentation Lead
Andrew Faley, GISP, PMP (S)

Application Development / Integration Lead
Jesse Glascock, GISP (P)

Key Support Staff
Jon Woyame (P)
Tom Tri, PE, GISP (P)
Matt Baxendell, PE (P)
Nick Soltes, GISP (S)
Shankar Rasiah (P)
Ryan Branch, GISP (S)
Robert Sands, PS (S)

Other Support Staff
James McCallon (P)
Christopher Long (P)
Valerie Lauer (S)
Todd Saurer, RLA (S)
Cathy Ours (S)

Key: PRIME AE Group (P) • Stantec (S)

PRIME AE® Stantec

The project team that PRIME has assembled consists of professionals who have worked together in some capacity for the past decade on Columbus projects. We understand the skillsets of each member of the team and will utilize our ability to work together to provide the city with quality services for all tasks assigned.

Erick Lobao, GISP will serve as the overall Project Manager as well as the Needs Assessment and BSA Lead. Mr. Lobao has been the project manager and BSA for several projects for the City of Columbus and understands the dynamic of all city departments. He has experience coordinating with the Department of Technology and has seen projects from start to finish – successfully implemented. Mr. Lobao has worked with the PRIME and Stantec staff managing GIS tasks for several years. Using his technical experience and management skills, he will work with the project team to provide the city deliverables that are on time and within budget.

Mr. Lobao will be the point of contact for all project communication from the City. He will disseminate information to the appropriate team member within the PRIME Team. He will work with the project team to clearly communicate the needs of the Columbus staff so that the resulting task orders meet the scope of services for all GIS tasks. He will provide status reports (frequency to be determined at the start of individual tasks) as well as invoices and any other administrative duties required.

Darlene Magold Scott, GISP will serve as the Quality Management Lead for the PRIME Team. Ms. Magold Scott has worked with this team for several years. She will work closely with Mr. Lobao to provide Columbus with quality deliverables – as she has done for the past decade. Ms. Magold Scott also has unique experience working with municipal clients as seen through her project experience. She will be responsible for working with the developers, and analysts for application testing and verification that all tasks meet the criteria set by the city.

Matt Shade, GISP will serve as the Data Conversion and Field Data Collection Lead. Mr. Shade will work with the team on standardizing data conversion and collection tasks. He has worked with several municipalities and counties with highly complex Esri data models for vast datasets such as parcels and road centerlines. His experience with utility data collection for the city makes him ideal for leading this task. He will work with Erick Lobao on all tasks assigned.

Andrew Faley will serve as the Staff Augmentation Lead. Mr. Faley will assist Mr. Lobao in assigning staff to work on site with the city, if necessary. He will also assist Mr. Lobao with project management while working with Stantec GIS group. His experience with the Department of Public Utilities, specifically, make him an asset to the PRIME Team.

Jesse Glascock, GISP, will serve as the Application Development Lead. Mr. Glascock will lead all development and he will work with Ms. Magold Scott with quality control and any user interface testing. Jesse has worked with GIS applications for over 15 years, including several projects with the City of Columbus. Mr. Glascock has both GIS development experience as well as integration of several other systems. He will work with his support team to deliver custom applications as defined by Columbus.

Key Support Staff with Columbus and pertinent experience include: Jon Woyame (P), Tom Tri, PE, GISP (P), Matt Baxendell, PE (P), Nick Soltes, GISP (S) Shankar Rasiah (P), Ryan Branch, GISP (S) Robert Sands, PS (S) They will provide support to Mr. Lobao and the project team.
Other Support Staff are also available that include: James McCallon (P) Christopher Long (P) Valerie Lauer (S)Todd Saurer, RLA (S) Cathy Ours (S).

Project Management Methodology

PRIME project management methodology has been developed and continuously improved through many years of successful project implementation. The underlying concepts of this methodology are simple: deliver the products that the client asks for, within the negotiated fee and schedule. Successful implementation of this methodology, however, requires project managers that are passionately committed to serving our clients, yet also adaptive to scope changes that commonly occur during the course of a project. Regular two-way client communication is critical to enable our staff to manage expectations and deliver results.

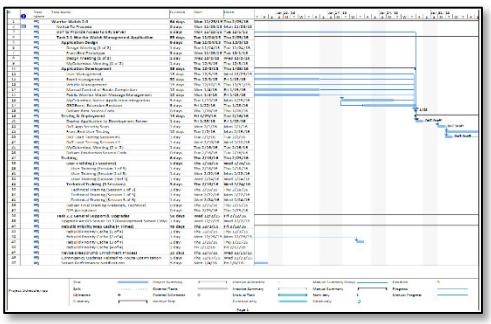
Our project managers have demonstrated success with clients and projects that are similar in size and scope to this solicitation. Furthermore, our **designated PM for this project, Mr. Erick Lobao**, has successfully managed similar technical GIS consulting tasks and led components of the original general services contract for both the City of Columbus DPU and Department of Technology (DoT). For each task order assignment, Mr. Lobao will:

- Assess and confirm your requirements;
- Determine personnel requirements and assemble task order delivery team;
- Develop/refine scope, approach, cost & schedule; and
- Deliver products to your satisfaction.

Assess Requirements. At the outset of each assignment, Mr. Lobao will meet with the designated client PM to review the unique project requirements. The goal of this meeting is to listen to the City's needs and understand the desired outcome of the requested effort. It is imperative to have clear communication and full agreement of project goals and outcomes.

Assemble Resources. With an understanding of the project requirements, Mr. Lobao will evaluate the personnel resources (3SG Plus and sub-consultant staff) needed to complete the assignment. Depending on the nature of the work, Mr. Lobao will assemble the task order delivery team with technical staff that match the unique needs of the project.

Scope/Cost/Schedule. Mr. Lobao will work collaboratively with the City to develop a technical approach that will produce the required deliverables. Technical resources from the task order delivery team will also participate in the scoping process to facilitate a consistent understanding of requirements across the entire team. With an agreed upon scope of work and technical approach, Mr. Lobao will prepare a labor estimate and associated schedule of delivery for each task. The amount of City staff labor (if applicable) will also be summarized for each task. Microsoft Project will be utilized to prepare a Gantt chart with milestones and task dependencies.



Project Delivery. A kick off meeting will be held at the initiation of the project. Regular points of communication will be established (i.e. weekly, bi-weekly, etc.) including methods (i.e. face-to-face, emails, phone calls, etc.). Mr. Lobao will manage and monitor progress and schedule and will communicate any issues to the City immediately. Regular communication is critical to achieve client satisfaction.

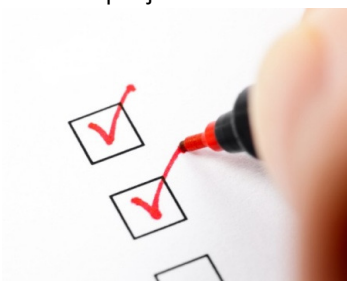
Our project managers are also experienced using web-based project management tools such as asana.com and trello.com in addition to traditional management tools such as Microsoft Project. These modern tools allow for rapid, real-time communication, document sharing, and collaboration between project team members and clients. These tools essentially provide a web-based project work plan that is dynamic and simple to modify, which in turn makes the project plan much more powerful as it is easy to update throughout the project's lifecycle and provides every project member with access to the latest information.

These project management methodologies have enabled our team to provide award-winning projects and have a repeat client ratio of over 90 percent. It has also allowed our team to develop a reputation for closely integrating with clients and serving as an extension of their staff. Building these relationships provides a smooth transition of project deliverables as we empower our clients to take ownership throughout the project so there are no surprises.

Quality Assurance/Quality Control Process

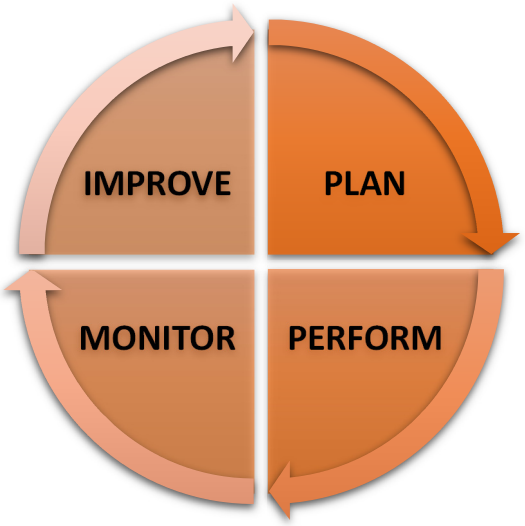
PRIME assigns the utmost importance to Quality Control. The work that we deliver is a direct indication of the capabilities of our firm. Because of this, we strive to deliver products that exceed our clients' expectations, while minimizing the cost. To accomplish this, we have developed an internal Quality Management Process (QMP) that is practiced on every PRIME project.

Our project delivery process requires continual monitoring and tracking of the quality of our work. Our entire team is involved in an iterative process that provides checks at each stage of the project. This process is integral with the project management approach that we utilize. **Ms. Darlene Magold Scott has been identified as the Quality Management Lead** for this project and she will be responsible for implementing our QA/QC procedures.



Quality Management Process

The QMP consists of four phases, which are part of ISO-9001 standards for quality management including Planning, Performance, Monitoring and Improvement. The project plan will provide the process overview for each of the four phases and will describe the roles and responsibilities of the QA/QC participants. This document will serve as a permanent framework for the implementation of the QMP.



Plan. PRIME has a systematic approach to understanding the City's expectations and for establishing appropriate quality standards for product delivery. During the planning phase of the QMP, PRIME will coordinate with the City and technical project team resources to identify deliverable requirements. These requirements will be vetted with City leadership to verify deliverables will meet their specifications and intended use. In addition, key staff will be identified that will execute subsequent quality checks at defined intervals along the project delivery timeline. These activities will be coordinated with PRIME PM during the initial stages of the task order so that an appropriate level of QA/QC labor and schedule can be allocated accordingly.

Perform. During this phase of the process, PRIME performs the project tasks and implements task-level quality control checks. Deliverables are produced in accordance with the project scope and approach with adherence to cost and schedule requirements. Any changes in scope or deliverables must be communicated and approved by the City in "near time" so that client expectations can be achieved. The project plan will be amended as needed to account for any changes to deliverable requirements or subsequent independent checks.

Monitor. As work progresses and at pre-defined intervals the Ms. Magold Scott will review the quality control documentation from the project team to confirm that task-level quality checks are being performed as planned. Based upon the satisfactory review of this documentation and/or task deliverables, work will be allowed to advance to the next task in sequence. If adjustments or corrections need to be made to the deliverables or QC procedures, she will coordinate with the technical production staff and the PM accordingly.

Improve. The hallmark of any quality management plan includes a focus on continuous process improvement. Lessons learned during the project delivery will inform future projects/tasks and may also affect the quality checks used to enforce the standards. Best management practices may also be developed and implemented to address communication, training, changes to workflow or changes to personnel assignments. The emphasis of process improvement is to optimize the process to yield the desired quality results within the constraints of cost and schedule.

Our QMP has been effective in our past projects by isolating and correcting inconsistencies within our application or database designs. PRIME realizes the importance of the QA/QC process and practices it throughout the project delivery process and for each submittal to the client, instead of performing an overall check only at the completion of the project.

Environmental Impact

Reducing waste and helping our clients operate more efficiently is an integral part of PRIME's service offering. Our services and deliverables are helping our clients conserve and protect the environment in the following ways:

- Our GIS professionals are developing systems like **Warrior Watch,** that provide vehicle location analytics to reduce fuel consumption and vehicle emissions while also optimizing the use of salt and de-icing materials;
- Our technology professionals are delivering document and content management solutions such as **OnBase** that reduce or eliminate the need for paper records and associated storage in climate controlled facilities;
- Our civil engineers are helping communities design and build **green infrastructure** solutions that reduce stormwater runoff pollution and improve stream quality;
- Our architects and engineers are designing **LEED-certified** (Leadership in Energy and Environmental Design) solutions that incorporate light pollution reduction, water efficient landscaping, water use reduction, building re-use, construction waste management, increased ventilation and low-emitting materials; and
- Our energy specialists are providing **energy audits** and designing **LED lighting systems**, which simultaneously cut energy usage and maintenance costs and reduce the strain of operation on the environment.

PRIME and our teammate Stantec, are proud to be registered business members of the City of Columbus GreenSpot program. Since joining the program, PRIME has committed to increase our environmental sustainability by implementing an office recycling program (paper, electronics, toner, packaging, etc.), identifying volunteering opportunities with local environmental nonprofit organizations and developing a plan to educate our clients, employees, families and other business on environmental stewardship and the benefits of the GreenSpot program.

2 Qualified Project Staff

Section 2 Qualified Project Staff

The PRIME Team has experience with elements highlighted in Section 6.2 of your request. Our team provides lifecycle GIS capabilities from Planning & Design to Maintenance. Our Project Manager, **Erick Lobao,** has the necessary education and experience to execute tasks for municipal operations, including the City of Columbus.

Erick Lobao, GISP

Project Manager/Needs Assessment and Business Process Analysis (BPA) Lead

Erick Lobao, GISP will serve as the Project Manager. Mr. Lobao has been the project manager for several City of Columbus projects for Department of Technology (DoT), Department of Public Utilities (DPU), and Department of Public Service (DPS). He has also worked with Department of Development (DOD) and Department of Building and Zoning (BZ). He has also managed other municipal clients similar to Columbus and will bring this experience and innovation to the team.

Total Years of Experience: 14

Education:
MA/Geography (GIS)/2002
BS/Geography & Environmental Studies/2000

Registrations/Certifications:
Certified Geographic Information Systems Professional/2007
Registered Esri Developer Network User (EDN)/2012

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Relevant Project Experience

City of Columbus, Department of Public Service, Warrior Watch Application (Internal) – Project Manager. Mr. Lobao served as the project manager, working closely with DPS operations staff and DoT GIS staff to develop a web application to track snow operations vehicle activity, street sweeping, and mowing. Mr. Lobao performed a detailed review of the existing technology in place at the city to develop a solution which leveraged the city's existing investment in Automated Vehicle Locate (AVL) and GIS technology and which would be easily maintained in the future. This review helped Mr. Lobao work closely with application development staff to create the underlying snowplow tracking data processing tools, which enhance the standard AVL breadcrumb information and make it suitable for detailed snow operations management.

Mr. Lobao also led the application development and design phase of this project to build a web interface that enables DPS staff with little GIS experience to perform complex analysis and review of vehicle activity data. Specifically, users can search for activity by street name, street maintenance zone, and via the map. Mr. Lobao worked with application developers and city staff to create mockups and user interaction use cases to develop search and reporting tools that are easy to use.

City of Columbus, Department of Public Service, Warrior Watch Application (Public) – Project Manager. Mr. Lobao worked as the project manager, coordinating the design, development, and implementation of the public Warrior Watch application. Snow removal operations is a high profile activity for the DPS. This project extended the city's existing investment on the internal Warrior Watch application to provide an easy to use, highly focused, web application designed to inform the public on the status of snow removal operations. Mr. Lobao lead City of Columbus staff from DPS, DoT, and the Mayor's Office through an extensive design phase to determine how the application should work on a desktop and mobile smartphone browsers. Mr. Lobao leveraged his thorough understanding of the internal Warrior Watch data processing to rapidly develop a new snow removal activity street centerline dataset which color codes city streets based on the time they last received treatment by DPS operations staff. The public application gained positive feedback from local media is one of the city's most visited sites during winter snow season.

City of Columbus, Department of Public Service (DPS), Lucity Asset Management / Work Order Management Integration – GIS Support. Mr. Lobao served as the GIS support staff to DPS during the implementation of Lucity asset / work order management system. He took the lead on developing a street sign geodatabase schema to be integrated with the Lucity system. The data model for street signs was developed by modifying Esri's local government data model to integrate with the City's existing street sign inventory and replacement process. Developing a clear understanding of the departments' operations was important as this knowledge helped inform the modifications to the street sign data model.

City of Columbus, Department of Public Utilities (DPU), GIS General Services Contract

- **Valve Operations Procedures, Project Management, GIS Needs Assessment and Business Process Analysis – Project Manager**. Mr. Lobao served as the project manager for the City of Columbus DPU Water Valve Operations Database. Mr. Lobao worked with engineering staff to produce a spatial database and associated work order history tables used to track valve operations throughout the City of Columbus. This work involved designing the database schema, developing the procedures to convert existing information and integrate it with the city's asset management system, and provide a draft cost estimate to complete the entire conversion project.
- **Smart ID Tool, Data Development & GIS Integration – Project Manager.** Mr. Lobao served as the project manager and technical design lead for this project and worked closely with DPU staff to develop a python tool to populate a "smart ID" field on sewer mains and sewer manholes. The tool used a combination of geometric network logic and spatial analysis to populate each feature with a logical ID. For sewer manholes, the ID field is based off the atlas sheet where the feature is located, the type of structure (storm, sanitary, combined), and a unique four digit ascending number. For sewer mains, the upstream and downstream manhole IDs are combined to populate the sewer main ID. The tool accounted for main splits and newly created areas and rapidly populates a key piece of information which is time consuming and difficult for users to populate on their own.
- **Mock Hazard Assessment, Project Management & Business Process Analysis – Project Manager.** Mr. Lobao served as the project manager for this project and assisted DPU staff in developing an initial plan to perform a GIS based hazard assessment and develop a set of GIS based hazard response tools. Mr. Lobao performed research and review of existing tools, techniques, and trends of hazard and threat analysis at the National level and developed an out-line which documented the various components of a full hazard analysis plan. Additionally, Mr. Lobao worked with GIS analysts to develop a "mock" hazard assessment report, which provided a tangible deliverable to DPU staff, allowing them to understand how these tools could be integrated into DPU at a larger scale in the future.

City of Columbus, Department of Public Utilities (DPU), Division of Power and Water (DOPW), Electric GIS Conversion Project, Project Management & Data Conversion – Assistant Project Manager / Data Support Lead. Mr. Lobao facilitated the smooth communication and transfer of data to the City of Columbus to support as the ongoing data conversion effort. Mr. Lobao has served the role of database administrator for the project team, configuring the production database hardware running SQL server 2005 and ArcGIS Server 9.3.1 SP1 as well as implementing and configuring the Schneider Electric, ArcFM data model in a multi-user, versioned ArcSDE environment. Additional responsibilities include developing automated backup and maintenance procedures to deliver optimal database performance and enforce data integrity and data redundancy by implementing a backup plan. Subsequently Mr. Lobao played a strategic role in the development of the custom ArcFM data model for use by the city, as well as providing clear documentation to support transitioning the database to the City of Columbus repository.

City of Columbus, Department of Technology (DoT), Fiber Optic Network Data Conversion Project – Project Manager / Quality Control Analyst. Mr. Lobao played an important role in this project with DoT. He facilitated the daily data conversion and database integration activities with the internal team of GIS analysts, managed support and conversion work performed by a sub consultant, and was ultimately responsible for the quality of final deliverables provided to the city.

Mr. Lobao applied his technical skills to guide DoT staff through an extensive geodatabase design and development phase prior to the formal data conversion phase. The purpose of this design and development phase is to create a customized geodatabase that extends the existing capabilities of Schneider Electric's ArcFM Fiber Optic data model to meet the needs of DoT fiber optic network staff and incorporates the city's existing Fiber Optic information stored in multiple Microsoft Access databases. Mr. Lobao also led the creation of the data conversion procedures and worked with the quality assurance leader to develop an efficient and repeatable process to create highly complex fiber optic GIS features from the City's existing set of digital and non-digital source data. The conversion procedures were written with clear and easy to follow instructions to enable DoT staff to efficiently edit and maintain the ArcFM Fiber Optic geodatabase in the future. Mr. Lobao also held train the trainer events, which allowed DoT staff to learn ArcFM functionality while using the final ArcFM geodatabase deployed to the city's database server.

City of Columbus, Department of Public Service (DPS), Bulk Refuse Routing – Project Manager. Mr. Lobao has managed, deployed, and developed applications that utilize a combination of Flex, ArcGIS Server geoprocessing services, Python, and Esri's Model Builder to support the City of Columbus's DPS Refuse Division in their daily effort of responding to an average of 300 daily bulk refuse pickup requests placed by City of Columbus citizens. Prior to these applications, city staff spent time each morning manually developing routes to pick up the bulk refuse across the city. This was due to network analysis capabilities being unavailable to users without considerable ArcMap training. Mr. Lobao was responsible for the overall quality of all deliverables. He worked closely with city staff to develop a robust set of requirements, documentation, and testing procedures for two different applications. The first application delivered utilized Model Builder and Python to provide an automated, server-side, routing solution that linked into the city's existing Business Objects reporting service.

Middlesex County, New Jersey, Enterprise GIS for Economic and Business Development – Assistant Project Manager. Mr. Lobao worked closely with the Middlesex County Parks Department to review their existing GIS layers and business processes used to maintain them as it pertains to economic development and zoning. He specifically worked with layers such as zoning, redevelopment and

commercial areas to perform suitability analysis to determine growth and development. Mr. Lobao also assisted with environmental datasets such as brownfields and wetlands.

Licking County Ohio, Location Based Response System Address Point and Centerline Creation, LBRS Data Creation and Data Integration – Quality Review Lead. Mr. Lobao served as the primary quality review lead for this project to create a countywide address point and street centerline dataset. A combination of field data collection, database integration, and extensive data validation tasks were performed to develop a normalized set of address points, which were verified. Mr. Lobao developed a set of address point and street validation tools to identify and resolve potential conflicts between existing address data sources and the information collected in the field.

Village of New Albany, Ohio, Utility Geodatabase Creation and Asset Management Implementation – Quality Review Lead. Mr. Lobao worked with Village Public Service staff to implement and maintain a spatial data infrastructure (SDI) which supports the enterprise needs of the organization field crews and utility managers. By performing interviews with staff from multiple Village departments, Mr. Lobao was able to create an enterprise GIS "from the ground up" involving data conversion from multiple sources to support the needs of multiple departments throughout the enterprise. This involved data conversion as well as extensive software and hardware configuration on desktop and server hardware. He assessed the daily workflow of the Village staff in order to develop an internal maintenance plan for the Village's Utility GIS. Mr. Lobao also integrated the Villages utility database to support their asset management system.

City of Powell, Ohio, Enterprise Utility GIS Services – Project Manager. Mr. Lobao worked closely with city engineering staff and the IT manager to develop an enterprise GIS to manage stormwater utility information and support future implementation of an asset management system. An extensive business analysis and systems integration phase was performed to identify existing hardware, software, and datasets which could be utilized or enhanced by integrating them with the enterprise GIS and other database applications. Existing CAD files, scanned as-built drawings, field survey, and mobile GIS video data capture were used to populate a Geodatabase with city maintained utilities and infrastructure.

Ohio-Kentucky-Indiana Regional Council of Governments (OKI)/Hamilton County, Ohio, Regional Asset Verification & Emergency Network (RAVEN 911), Desktop and Mobile Web Application Development – Project Manager. Mr. Lobao led the mobile application design phase of the project and successfully transferred the user interface and user experience of over twenty custom geoprocessing tasks to the mobile interface. The Regional Asset Verification & Emergency Network (RAVEN911) application is actively used by over 50 public safety organizations throughout Ohio, Indiana, and Kentucky to identify critical infrastructure during an emergency and perform powerful spatial analysis to improve the communication and situational awareness of emergency management staff responding to an incident. A key goal of this project was to develop a mobile (Tablet Optimized) version of the existing desktop (Flex) application. The design phase consisted of an extensive review of other existing mobile GIS applications and a review of the existing Flex-based application. With such a large number of geoprocessing tools and data layers to visualize it was important to develop a common user experience to keep the application simple and easy to use for people with limited experience with GIS and tablets. The mobile version of the application provides field staff to utilize the full capabilities of the existing desktop application using a variety of tablets such as iPads, Android Tablets, and Microsoft Surface / Windows tablets.

Franklin County, Ohio, Franklin County Board of Elections, Live Elections Results Viewer – Project Manager. Mr. Lobao was responsible for coordinating resources and communicating the needs of Board of Elections staff tasked with managing elections results for Franklin County Ohio. The

elections results application was designed to present election day results produced from the County's existing results tabulation system. Prior to this application, the Board of Elections staff and supporting GIS staff would spend 10-15 minutes performing a series of manual data conversion steps in order to convert the tabulation results files into the Esri local government data model for elections. With multiple desktop tools and manual configurations of Esri web application builder templates, the existing process was slow and error prone.

The new application developed by PRIME consumes the raw tabulation results output, removing all manual processing steps and allowing Franklin County to post new election results in less than two minutes. Additionally, the new application does not require users to refresh the site, making it much more scalable and providing fewer points of failure on election night. Mr. Lobao played an important role in defining the use cases and communicating how the application should work for the public to access election results.

City of Upper Arlington, Ohio, Pavement Condition Rating Mobile ArcGIS Online Integration – Project Manager. Mr. Lobao assisted the City of Upper Arlington in migrating their existing process for performing pavement condition ratings. The city was using legacy GPS hardware, which required special training and could only allow one person to perform pavement ratings at a time. Additionally, the traditional GPS unit workflow for collecting field information required a large amount of desktop processing to transfer and import data collected in the field to be displayed and managed in the city's GIS.

Mr. Lobao worked closely with the City to design and develop a web mapping application that is mobile responsive and integrates with the City's ArcGIS online data store. This new architecture and technology allows any field staff with an ArcGIS online for organization account to perform pavement condition ratings with their cellular connected smartphone or tablet. The application can take advantage of the user's location to streamline the process of selecting streets to be treated and allows field staff to collect images and attach them to the street segment for sharing and analysis back in the office.

By understanding the range of needs across the city, Mr. Lobao also suggested that the application provides a dashboard view of pavement conditions. With the budget available for this project, PRIME was able to meet the needs of field crews performing pavement condition ratings, and provide administrative staff with key summary information of which streets need to be paved first and the total number of miles that fall within each pavement condition category.

Perry County, Ohio, Perry County Auditor Parcel Fabric Development – Project Manager. Mr. Lobao worked closely with GIS analysts to develop set of data conversion procedures and associated quality assurance plan to produce a highly accurate parcel fabric dataset. Developing strong procedures and automated QA/QC checks was key to maintain high quality GIS information as multiple analyst were used throughout the project to perform data conversion.

Additionally, establishing clear communication with the client was important for a project of this scale. Mr. Lobao created and implemented a communication plan that established regular project updates which were tied to invoices and major project milestones. PRIME utilizes ArcGIS online to provide Perry County staff with a simple interface to track our conversion process and review the quality of GIS data throughout the project. Perry County staff can create comments based on our deliverables and review comments or questions that arise within the parcel fabric.

City of Toledo, Public Service Department, Information & Communications Department, Cityworks Mobile Service Request Application – Project Manager. Mr. Lobao reviewed the city's existing Cityworks configuration and led a team of application developers to develop a mobile web application that allows public citizens to create a service request from their smart phones and tablets. The application takes advantage of the city's existing Cityworks configuration and presents a pick list of service request types for the public to select. Citizens can use their location to specify where the request is needed and they are able to upload a picture to include with the service request. Mr. Lobao played an important role in documenting the existing Cityworks configuration and working with City GIS staff to develop the application requirements.

City of Dublin, Public Service Department Snow GO, Web Application Development & AVL Analytics Integration – Project Manager / AVL Integration Lead. Mr. Lobao worked closely with the application development staff and Dublin GIS staff to develop a responsive JavaScript / HTML 5 built on ArcGIS server, Microsoft SQL Server, and Windows server technologies. The application provides recent snow and ice treatment activity for the public and customized functionality for internal city employees. City employees can securely access the additional functionally such as vehicle locations and access to a metrics dashboard that provides real-time status updates indicating the percentage of streets treated within the past hour.

Darlene Magold Scott, GISP

Quality Management Lead

Ms. Magold Scott has over 17 years of GIS professional experience including managing projects of all scales. She has worked with several clients to build consensus as well help with the design of sophisticated GIS applications including the user interface and overall user experience. A strong quality control and project manager, she has the technical understanding and communication skills to effectively provide quality control for each and every stage of a GIS project. Ms. Magold Scott also assisted with the integration of daily workflow into the applications by understanding the needs of the client. Ms. Magold Scott has successfully led multiple projects for the City of Columbus for the past 9 years. She has also worked with several other municipalities on projects similar to this request.

Total Years of Experience: 17

Education:
MA/Geography (GIS)/2004
BS/Environmental Geology/1999

Registrations/Certifications:
Certified Geographic Information Systems Professional/2007

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Relevant Project Experience

City of Columbus, Department of Public Utilities (DPU), GIS General Services Contract – Overall Task Manager. Ms. Magold Scott managed field data collection for the Rickenbacker Air Force Base to produce a sanitary sewer feature classes with detailed attribution. She also facilitated tasks that included emergency management planning using GIS as well as the development of desktop tools to auto-populate attributes within a feature class for sewer infrastructure. Before her departure, Ms. Magold Scott assisted DPU with creating multiple scopes to complete projects for ArcGIS Server web development.

Valve Operations Procedures – Quality Control. Ms. Magold Scott provided quality control and review for the water valve operations procedures task. This included the development of a schema to track valve operations records performed on individual valves. A related valve operation table was created to track routine valve operation work performed by DPU field staff. A detailed set of procedures was developed to allow DPU staff to maintain the dataset in the future.

Smart ID Tool – Quality Control. Ms. Magold Scott provided quality control and testing for the Smart ID Tool that was developed using Python to populate a "smart ID" field on sewer mains and sewer manholes. The tool used a combination of geometric network logic and spatial analysis to populate each feature with a logical ID. For sewer mains, the upstream and downstream manhole IDs are combined to populate the sewer main ID.

City of Columbus, Department of Technology, Enterprise GIS Integration Universal Term Contract (UTC) – Project Manager. Ms. Magold Scott coordinated GIS activities throughout multiple departments within the City. She facilitated several discussions to prepare new workflow models to integrate GIS into the daily activities of Columbus staff. Ms. Magold Scott acted as a GIS liaison representing the city to enable departments to work together to achieve com-mon GIS goals.

City of Columbus, Department of Public Utilities (DPU), Division of Power and Water (DOPW), Electric GIS Conversion Project – Project Manager. Ms. Magold Scott was responsible for the overall project management and client manager for the conversion of the DOPW electric infrastructure into a GIS format, utilizing Telvent Miner & Miner's ArcFM software. While this project has had many challenges including budget cuts, schedule delays and multiple prior attempts at data conversion, Ms. Magold Scott developed an iterative approach that involves the close interaction with the DOPW team.

City of Columbus, Department of Sewerage and Drainage (DOSD), GIS Early Ditch Relief Sanitary Sewer System Inflow and Infiltration (I/I) Remediation Project – Project Manager. Ms. Magold Scott led the integration of modeling applications and GIS information pertaining to sewer inflow and infiltration flows for the City of Columbus. She utilized ArcGIS software, in conjunction with engineering modeling (PCSWMM) and pipeline inspection (PipeTech) software for field data management, capacity modeling, and defect assessment to develop improvement recommendations. Ms. Magold Scott was also responsible for coordinating with the engineering teams to provide up-to-date GIS information to field crews and modeling staff.

City of Columbus, Department of Public Service (DPS), Warrior Watch – Quality Control / User Testing Lead. Ms. Magold Scott worked with the internal project staff and DPS staff to create a web application capable of consuming GPS messages and signals coming from city service vehicles. The application allows city dispatchers to locate and track city snowplow vehicles as well as query historical locations of the vehicles for specified periods in time. She assisted with user-interface design and testing for the Public facing Warrior Watch Application utilized by the city today.

Middlesex County, New Jersey, Enterprise GIS Services and Planning Analysis – Client Manager / Project Manager. Ms. Magold Scott worked with Middlesex County to build and enterprise GIS as well as to establish a GIS Governance model for the County. She has worked with the infrastructure management group on several tasks including GIS Integration and Data Conversion and Development. Ms. Magold Scott managed the creation of a versioned, SDE geodatabase for storm water, roads, traffic signals, signs, parcels, and other environmental information.

Ms. Magold Scott created a sophisticated schema utilizing Esri Local Government model as well as the Lucity work order management model. Data was extracted from CAD, excel and multiple shapefiles. Ms. Magold Scott led the development of a robust capital improvement project (CIP) application. This is a (CIP) application that allows the user to directly see information linked to the county financial system. It also provides dashboards with sophisticated reporting and analysis of CIP dollars spent throughout the county.

Ms. Magold Scott led a team that provided GIS Planning and Analysis consulting services and worked with several Departments and other consultants across the organization to utilize GIS as a planning and analytical tool. **These planning services included:**

Development of a plan review process by assisting County with documenting all of the processes and workflows for the County's role in reviewing site plans and subdivisions; Sophisticated watershed analysis that includes the development of a countywide watershed catchment layer which is used to assess impact fees for new development; Creation of a municipal zoning layer and maintenance procedures for 25 separate municipalities that each have local zoning regulatory enforcement authority. Economic Development and planning including assistance to the County

Office of Economic and Business Development by organizing and maintaining GIS layers which are critical to economic growth throughout the County and using those layers to perform suitability analysis; and Community services portal creation which includes helping the County by analyzing the demographic and socioeconomic profile of the communities and the services provided.

City of Newark, Ohio, Enterprise GIS Services – Project Manager. Ms. Magold Scott managed the development of a web-based, Enterprise Utility Management System consisting of transportation, water, sanitary and storm infrastructure information named geoAsset. GeoAsset utilizes ArcSDE, ArcGIS Server web-based technology to integrate information stored and maintained in an existing work order management software and an existing utility billing system. This internal application provides City staff distributed throughout the City and across departments with a common operating picture by allowing them to efficiently and accurately analyze current utility infrastructure information through web mapping application. Additionally Ms. Magold Scott participated in the design, development, and testing phases of an ArcGIS Server routing analysis geoprocessing tool used by the water billing inspection group tasked with visiting multiple locations each day. She met directly with the engineering department and water/wastewater staff in order to provide quality results and deliverables. To do this, she provided quality control reports as well as project summaries and presented her results. Ms. Magold Scott handled monthly invoicing and detailed reports to the client for an on time within budget project. Her effective communication skills ensured the client goals were understood by all staff involved producing a successfully deployed and highly integrated GIS solution.

The Ohio Department of Transportation (ODOT) lTransportation Information Management System (TIMS) – Project Manager. Ms. Magold Scott led a team from ODOT and consultants to produce a powerful, interactive website with the ArcGIS Server Flex API. The three-month design phase included migrating ODOT from GeoMedia technology to Esri SDE and ArcGIS Server. She led a geodatabase design and deployment as the basis for all of the query and geoprocessing tools available in the application. Ms. Magold Scott worked with ODOT staff to determine workflow and detailed specifications for each tool, including the GUI. She built consensus among ODOT staff to create a successful, easy-to-use website.

Matt Shade, GISP

Data Conversion / Field Data Collection Lead

Mr. Shade has over 13 years of professional experience in GIS including data collection and conversion projects of all scales. He has implemented geodatabase data models including the ESRI Local Government Model and SDS-FIE. He has extensive experience developing enterprise geodatabases, populating attributes, and creating maps using ESRI products. His experience with the City of Columbus and data models for DPU and DPS make him ideal to lead this task.

Total Years of Experience: 13

Education:
BS/Geography (GIS)/2004

Registrations/Certifications:
Certified Geographic Information Systems Professional/2011
Certified ArcGIS Desktop Professional 10.1 - 2012;
Esri Certified Web Application Developer Associate, 10.2 - 2015

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Relevant Project Experience

City of Columbus, Department of Public Utilities (DPU), Blueprint Linden – GIS Analyst. Mr. Shade configured the ArcGIS Collector application to be used for field inspections of each property using a mobile device. The purpose of this project was to provide planning level analysis to determine the suitability of vacant and abandoned Land Bank parcels in the project area to accommodate potential storm water green infrastructure facilities. Using PRIME's ArcGIS online account, Mr. Shade published a feature service that would capture data pertaining to the suitability of each inspected property according to criteria such as the elevation of the parcel in relation to the street and existing infrastructure, the natural drainage area, land use, and right-of-way size and condition.

City of Columbus, Department of Public Utilities (DPU), Blueprint Hilltop – GIS Analyst. Mr. Shade provided GIS support for desktop review of data collected with the ArcGIS Collector application. The purpose of this project was to collect field data in preparation to perform detailed hydrologic and hydraulic (H&H) analysis of the project area. Field data was collected using the ArcGIS Collector application including location of downspouts and their connection to rain barrels, curb cuts, rooflines, and additional information for all structures and outbuildings in the project area. The collected data also included photos of all structures and downspouts and other pertinent features. Mr. Shade provided support for staff reviewing field-collected data for completeness and accuracy using ArcGIS Desktop using the same feature service used by the Collector application.

City of Columbus, Department of Public Service (DPS), Curb Ramp ADA Compliance Inspections – GIS Analyst. Mr. Shade configured ArcGIS Online and the ArcGIS Collector application for field personnel to inspect curb ramps for ADA compliance in various intersections in the City of Columbus. He entered the city's inspection form fields in the ArcGIS Online feature service so that field personnel could record information such as intersection name, ramp number, slopes, dimensions, and photos of each ramp.

Franklin County, Ohio Sanitary Engineering, District 4 Water Distribution System Valve Replacement Project – GIS Analyst. Mr. Shade was part of the team for this project whose purpose was to collect information and create a plan for the unidirectional flushing of the water distribution system in the Lincoln Village area of Franklin County. Mr. Shade configured ArcGIS Online and the ArcGIS Collector application to store hydrant condition inspection information along with photos

of the hydrants taken by field staff as they made inspections. He also configured ArcGIS Desktop with a custom HTML popup tool to display and print photos and information about the hydrants that were stored in a file geodatabase.

Perry County, Ohio, Perry County Auditor Parcel Fabric Development – Project Manager. Mr. Shade managed this joint project of the Perry County Auditor and Engineer. PRIME Staff created an Esri parcel fabric in a file geodatabase, added fields that were specified by the client to the parcel fabric schema. Using surveys, deeds, and plat maps provided by the County, staff entered coordinate geometry (COGO) for each of over 28,000 parcels in Perry County while assigning CAMA identification numbers and documenting other reference information on the source of each parcel. Discrepancies were noted when conflicting or insufficient data was found. Mr. Shade also acted in a QC capacity and trained County staff on how to make updates to the fabric.

Franklin County, Ohio, Board of Elections – GIS Analyst. Mr. Shade used historical paper-based precinct maps, Franklin County Auditor's Meta Map real estate mapping software, and an out-of-date Esri ArcView 3.1-based elections mapping toolkit that utilized US Census Bureau TIGER data to migrate to a state-of-the-art GIS running ArcGIS 10. He corrected topology errors in precinct data and edge matched it to the best available county parcel, roadway, and imagery and updated attributes for each district assignment. He generated polygons for legislative, school, and other districts for public records requests. Mr. Shade developed a Python script to perform analysis using the ArcGIS Network Analyst extension to determine routes for over twenty voting machine support technician teams and approximately seventy-precinct supply roving support staff. The goal of this project was to allocate support staff evenly across the county by balancing workload and drive times. The script output a map series that could be distributed to technicians and an overview map used by office staff to dispatch calls that were placed to the trouble-shooting telephone hotline.

Franklin County, Ohio, Board of Elections, Election Results Website – GIS Manager. Mr. Shade worked with the Board of Elections and Franklin County data center staff to implement this application, which shows data for each race federal, state, and local race within Franklin County. This project successfully developed and implemented a countywide election results application for the Franklin County Board of Elections. The application, which can be filtered by municipality or desired race, shows breakdowns by percentage, graph, and map by precinct and ward. Mr. Shade provided support for the project by reviewing data and results for consistency and providing input for the design of the application.

Andrew Faley
GIS Staff Augmentation Lead

Mr. Faley possesses over 23 years of experience within the areas of Geographic Information Systems (GIS), Information Management and Asset Management supporting utility and local municipalities throughout the United States. Mr. Faley's GIS experience consists of organizational needs assessment, enterprise GIS implementation, business process/requirements analysis, strategic planning, workshop facilitation, and organizational/change management.

Total Years of Experience: 24

Education:
BS/Geography (GIS)/1992

Registrations/Certifications:
Certified Geographic Information Systems Professional;
Project Management Professional

Stantec

Relevant Project Experience

City of Columbus, Department of Public Utilities (DPU), GIS General Services Contract – Project Manager. Mr. Faley is managing Stantec's technical contracts to where resources are supporting DOT's support of DPU's GIS needs.

City of Columbus, Department of Public Utilities (DPU), GIS Strategic Plan Update – Project Manager. Mr. Faley is leading the Stantec effort to update the current GIS Strategic Plan for the City of Columbus DPU. The process involves reviewing current GIS documentation, meeting with 30 separate sections within DPU to understand their current business process and use of GIS, researching other utility organizations' use of GIS, and culminating the information into a formal GIS Strategic Implementation Plan. The plan will provide short term and long-term projects including potential costs and timeframes as well as future trends in GIS for DPU to consider.

City of Columbus, Department of Public Utilities (DPU), GIS Laterals Conversion – Project Manager.
Supporting the Project Manager, Mr. Faley is assisting in project management activities, project start-up, project team coordination and data production activities including quality control and deliverable review.

City of Columbus, Department of Public Utilities (DPU), Responder Software Implementation – Project Manager. Mr. Faley is managing the current phase (Phase 5) of this continual Electric Conversion Program for DPU. In this current phase, Mr. Faley is coordinating with the subcontractor, Schneider Electric, on the implementation of their "Responder" software.

City of Napoleon, GIS Development – Project Manager. Mr. Faley consulted with the city on initial development of GIS for the city. Mr. Faley managed the model implementation into their current data, provided recommendations on GIS software and provided a high-level approach to their future GIS development. Mr. Faley continues to support the city in their continued GIS development.

Jesse Glascock, GISP

Application Development Lead

Mr. Glascock is experienced with developing applications both for desktop and web-based analysis. This includes developing automated GIS processes using model builder as well as sophisticated web tools using various programming languages. He specializes in web application development as well as creating relational and spatial database systems, which support mapping projects, capital improvement projects, and asset management. Mr. Glascock has excellent application development and leadership skills that include directing internal staff on projects as well as assisting clients with incorporating workflows, user interfaces, and developing configurable applications with future interests and technologies in mind.

Total Years of Experience: 13

Education:
IT Certficate in Software Development and Database Management/2009
MS/Civil and Environmental Engineering and Geodetic Science and Surveying/2005
BS/Geography/2003

Registrations/Certifications:
Certified Geographic Information Systems Professional (GISP)
Registered Esri Developer Network User (EDN)
Authorized Microsoft Developer Network User (MSDN)

Software Skills:
ArcGIS 9x, ArcGIS 10x, ArcGIS Online Integration, ArcGIS Server, ArcSDE, ArcGIS Server Flex API, ArcGIS Server JavaScript API, HTML, ASP, ASP.NET, C#, Visual Basic, Oauth, ModelBuilder, Python, Oracle, SQL Server 2005, Microsoft Office, Access, Amazon Cloud Technology (VMware)

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Relevant Project Experience

City of Columbus, Ohio, Department of Public Service (DPS), Warrior Watch (Internal) – Application Development Manager. Mr. Glascock led the development team in the creation of a web application capable of consuming the city has newly purchased ArcGIS GeoEvent Extension for ArcGIS Server, which handles and formats GPS messages and signals coming from city service vehicles. The application allows city dispatchers to locate and track City snowplow vehicles as well as query historical locations of the vehicles for specified periods in time. Additionally the application provides users the ability to generate custom reports for customer service requests, truck activity, and outpost and/or zone completion reports.

Additionally, Mr. Glascock and his team development a message management application for the public facing web site. This application allows select City staff to change the content and visibility of the ticker messages on the public facing site in order to further communicate to the public the current conditions and forecasts. Upon completion of the project. Mr. Glascock and the development team added in additional functionality that monitors and reports on the city's street sweeper and mower vehicles.

Columbus 2020 ArcGIS Online Site Tool – Application Development Manager. Mr. Glascock developed an application to work directly with ArcGIS Online with capabilities ranging from authentication, data upload, and data management. Mr. Glascock configured the application to utilize ArcGIS Online's OAuth 2.0 protocol so that users can login with their ArcGIS Online accounts. After logging in users have the ability to upload zipped shape files, publish them as feature layers, add metadata, tag them, and

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edit symbology. The application also provides users with an address locator, drawing and measuring markup tools, and a MapChannel integration tool. Additionally, users can go directly to ArcGIS Online to upload data and modify symbology and pop ups and the application adjusts accordingly. **City of Columbus, Ohio, Department of Public Service (DPS), Warrior Watch (Public) – Application Development Manager.** Mr. Glascock and his development team created an external site to communicate to the public users the current conditions and priorities of the city's streets during snow events. The site has a simple interface showing either what streets have been treated or the priority of the streets. Users can also click on a street to see any current activity and the time of activity and the priority. The site is also mobile responsive allowing users to use their current location (or by typing in an address) to see the priority and status of their location.

On the backend of the site, the team created several scripts to run at 15-minute intervals to update the status of the streets. The scripts queried the geo-enriched GPS points, joined them to the streets, and updated a citywide cached based on the status of the truck on a given street.

During this phase the project managers and development team worked with the city and another vendor to perform stress tests on the system to ensure it would continue to operate successfully during a snow event when the number of users is expected to peak.

City of Dublin, Public Service Department SnowGo | Web Application Development & AVL Analytics Integration – Application Development Manager. Mr. Glascock led the development team with the design and creation of a web application to monitor and report on the City's fleet of snowplow vehicles. The city's snowplow vehicles' GPS messages are consumed through the ArcGIS GeoEvent Processor and into the application through the ArcGIS API for JavaScript. The web application serves up data and tools to both the internal Dublin employees as well as external users.

Additionally, Mr. Glascock and his team developed a set of management tools for authenticated users to control different aspects of the site. These include managing events to trigger automated emails to specified city staff, managing external facing messages to communicate conditions to the external users, and managing the different roles and users with authenticated access. Additionally, authenticated users have the ability to query past data and view actual locations of vehicles on the ground.

Ohio-Kentucky-Indiana Regional Council of Governments (OKI)/Hamilton County, Ohio, Regional Asset Verification & Emergency Network (RAVEN 911) – Application Development Manager. Mr. Glascock was tasked with upgrading existing tools and creation of new tools for the existing Raven911 application for Hamilton County Emergency Management Application, Raven911. Upgrades included revising the Twitter Widget to allow for more dynamic hyper linking, updating for new Twitter authentication procedures, and user interface upgrades as well as upgrading the existing Emergency Response Guide (ERG) widget with updated ERG 2014 guidebook standards. Mr. Glascock also led the development of a widget to estimate walk and run distances based on elevation, slope, tree cover, existence of water bodies, and land use, age of person, and time lapsed. The underlying service was designed using ArcGIS Model Builder, Spatial, and Raster Analysis. Users can estimate walk and run distance polygons by inputting the last known location a missing person/criminal as well as the time elapsed since the last known location and age of the person.

Mr. Glascock led the development of a sophisticated geoprocessing tool to estimate walk and run distance polygons by inputting the last known location a missing person/criminal as well as the time elapsed since the last known location and age of the person. He led the development of a mobile website that incorporated the current, updated and new functionality of the desktop Flex

Raven911 site. The site includes all the functionality of the Flex Desktop site as well as enhancements and updates including the ability to email tools results to other users and located the user's location on the map.

Middlesex County, New Jersey, Project Management Portal – Application Development Manager. Mr. Glascock developed a project management portal to assist the county with managing their capital improvement projects. The portal provides county administration an overview of projects and their various phases as well as pulling live data from the county's financial database in order to give an accurate representation of the current financial status and budget.

The portal also provides county staff with reporting functionality to determine what projects are planned in the future and where various projects and funds are going to and which vendors they awarded. Additionally, users can see the spatial location of projects with a Leaflet map embedded in the site.

City of Dublin, Ohio, Dubscovery and Story Map Web Application Development – Application Development Manager. Mr. Glascock served as the lead programmer responsible for the development of several tools for the city's upgrade to Esri's Sample Flex Viewer called Dubscovery. Mr. Glascock programmed these tools using Adobe's Flex environment and delivered widgets for querying and filtering layers and addresses, report generation for addresses and proximity, printing to PDF, URL parameter generation for graphics and emailing, RSS feeds, and exporting results to Excel. The Sample Flex Viewer was also modified and styled to the city's specification in order to uniquely brand the site.

Serving as the lead programmer, Mr. Glascock developed a web mapping application using the JavaScript API enabling City staff to access enterprise GIS information from mobile browsers (iOS & Android). Accessing this application via mobile devices truly expanded the use of GIS web mapping applications throughout the City of Dublin, as users were able to review and share this application with others while away from their desktop browsers.

City of Newark, Ohio, Enterprise GIS Services – Application Development Manager. Mr. Glascock served as the lead application developer for He has led the development throughout multiple platforms so that the city can perform asset management functions with the latest GIS technology, including mobile. GeoAsset, is a GIS web application linking ArcGIS Server to the city's work order management software (Lucity). His understanding of water, sanitary and storm infrastructure allowed him to efficiently develop the application. Specifically, the functionality includes the ability to create work orders and service requests from an XY location or a selected set of assets; the ability to generate routes and reports for utility inspections using city's street network; the ability to display infrastructure information from Lucity based on an asset selection from the map; Ability to display work order information from Lucity based on an asset selection from the map; the ability to jump from the Lucity screen to the map by selecting an asset or work order; and the ability to create custom letter-sized map prints.

Currently, the geoAsset application is being upgraded to utilize the new GIS web technology utilizing the ArcGIS API for JavaScript. Since the application was developed with a scalable approach, the tools can be easily transferred to the new technology.

City of Newark, Ohio, Service Request Routing Application – Application Development Manager. Mr. Glascock served developed a custom routing application using Esri Network Analyst (ArcGIS Server) that automatically retrieves the addresses from the customer service-billing database and dynamically routes the service requests. He created the routes to be automatically divided into two

service areas so that the field crews can easily divide the services requests for more efficiency. Mr. Glascock created custom scripts to pull specific information from the database to create custom directions with details of the service request, an efficient route map, and estimated time frames so that customer service representatives can give an approximate time to citizens. He also developed a desktop application using Esri Network Analyst that allows the Newark staff to add multiple services areas to account for more multiple workers. This application allows the city to generate route information through automatic SQL server procedures retrieving address information from the customer-billing database.

Key Support Staff

Jon Woyame

Senior Application Developer

Jon Woyame will serve as Application Development Support for Mr. Glascock. He has supported Mr. Glascock on Warrior Watch for the City of Columbus and has extensive experience with most software required in this RFP.

Total Years of Experience: 8

Education:
BS/Electrical Engineering & Computer Science/2010

Software Skills:
ArcGIS 9x, ArcGIS 10x, ArcGIS Online Integration, ArcGIS Server, ArcSDE, ArcGIS Server JavaScript, AJAX patterns, Mobile Web, Esri platform + API, C, C++, x86 Assembly, Coordinate systems, spatial databases, Amazon Cloud (VMware), Oauth

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Relevant Project Experience

City of Columbus, Department of Public Service, Warrior Watch Application (Internal) – Senior Application Developer. Mr. Woyame worked with the guidance of Mr. Lobao to design and build the GIS map interface, snow event management page, and report viewer. He coordinated with Mr. Glascock to create a lightweight tool-based interface that provides a variety of workflows to internal staff.

City of Columbus, Department of Public Service, Warrior Watch Application (Public) – Senior Application Developer. Mr. Woyame produced several iterations of prototypes for the public-facing Warrior Watch site, working with creative feedback from the City of Columbus and the rest of the team in order to hone the public's experience. A significant part of the project involved optimizing the site for high scalability on the city's hardware, and Mr. Woyame participated in both the front-end and back-end performance improvement efforts. He used physical devices and the Browser Stack compatibility testing service to ensure that the application would function properly on a broad range of modern and older devices.

City of Upper Arlington, Ohio, Pavement Condition Rating Mobile ArcGIS Online Integration – Senior Application Developer. The City of Upper Arlington required a mobile application for viewing and entering pavement condition ratings in the field, without Internet access. Because the PCR inventory is stored on centerline data in ArcGIS Online, the application had to cache the current centerlines and ratings locally, and sync with AGO when connectivity was reestablished. Mr. Woyame assisted in the development of a web-based solution using the latest HTML5 offline technologies. This hybrid solution allows city field staff to meet the need of entering ratings offline

in a mobile view, while management can view the same application on a larger office display to assess field progress and run statistical analyses on an interactive map.

Franklin County, Ohio, Board of Elections (BOE), Election Results Website – Senior Application Developer. Mr. Woyame created filter tools and a configurable map display that updates in real-time. Franklin County BOE's live elections site was developed by PRIME to provide the public with dynamic race results for the 2016 general election. One of the BOE's requirements was to have the results on users' screens within seconds of the totaled results file being available. For top performance, the application auto-detects new data, packages it in a consumable format, and caches it for all users, saving a significant load on the server without the need for database queries.

Middlesex County, New Jersey, Application Development Projects – Senior Application Developer.

- **Gas Tank Site -** Mr. Woyame used the design criteria to create a map-based inventory tool for underground and aboveground liquid storage tanks. The key purpose was to provide a quick means to assess the permit status of all tanks. The storage tank data from ArcGIS Server is presented to users over the web in an easily accessible manner, with visual notifications to quickly identify tanks which have a permit that is about to expire. The map icons were carefully designed to indicate tank contents and permit status. The staff can click on tanks to view and update their information, or drop new tanks onto the map.
- **Elections Site** - Middlesex County has been using their elections portal, developed by PRIME with coding by Mr. Woyame, to display historical elections results and live streaming race breakdowns since the 2015 general election. The historical site can display results going back to 1999, giving the public a clear view of specific race outcomes on a map as well as a table, which can be exported to Excel. The live site was designed to adapt to anything from phones to large screen televisions. It provides an automated results ticker along with a status message that county staff can customize dynamically on election night.

City of Dublin, Public Service Department SnowGo, Web Application Development & AVL Analytics Integration – Senior Application Developer. Mr. Woyame worked closely in a version-controlled development environment with Mr. Glascock, Mr. Woyame assisted with the user-side design and programming of the City of Dublin's SnowGo application. His focus was on creating a dynamic and intuitive visualization of current snowplow operations. This included map iconography, which visually reflect the current state of vehicles, and very flexible search tools to quickly locate vehicles. A key part of the design was ensuring that the application would scale seamlessly to the many possible device types that citizens of Dublin would be using to access the site, in order to maintain consistency and usability on all of them.

Tom Tri, PE, GISP

Senior Engineer

Mr. Tri is an innovative technology leader whose skill lies in translating ideas into action and results. As a civil engineer with a background in water resource engineering, site design, and construction, Mr. Tri has spent the last 25 years designing and implementing technology solutions including geodatabase design, customization of GIS software, developing optimized geoprocessing techniques, and integration of GIS technology in civil engineering, environmental, and water resource projects.

Total Years of Experience: 26

Education:
MS/Civil Engineering/1983
BS/Magna Cum Laude/1982

Registrations/Certifications:
Professional Engineer – KY; Land Surveyor in Training – KY; Geogrpahic Information Systems Professional (GISP); Certified Enterprise Geodatabase Management Assocaite

Software Skills:
ArcGIS 9x, ArcGIS 10x, ArcGIS Server, ArcSDE, ArcGIS Server JavaScript, AJAX patterns, Mobile Web, Esri platform + API, C, C++, x86 Assembly, Coordinate systems, spatial databases, Amazon Cloud (VMware)

PRIME AE®

Relevant Project Experience

City of Columbus, Department of Public Service, Warrior Watch Application – Senior Engineer. Mr. Tri supported an application that allowed the dispatch operators to monitor the location of each truck as well as which streets had been plowed through a browser based JavaScript application. This project tracked GPS enabled snowplows for the City of Columbus. Each GPS unit sends its position and sensor status, blade up/down and spreader off/on to a central server every 15 seconds. These GPS points are stored in a SQL Server based ArcSDE geodatabase, which annually accumulate to over 10 million records. The database was designed by the application also provided the ability to produce various reports (e.g., miles of roadway treated during an event/season). The second phase of the project (Warrior Watch) was a public facing website that allowed a user to see which streets where scheduled to be plowed based on priority as well as when streets have last been treated. During this phase several of the geo enrichment and backend geoprocessing scripts developed during the first phase by others had to be optimized because of the anticipated additional load on the computing resources. Mr. Tri was able to increasing the processing input by a factor of 10 in order to fit into the required processing window.

Middlesex County, New Jersey, Enterprise GIS Database Creation – Senior Engineer. Mr. Tri was the database architect in designing and implementing a countywide GIS platform for over 100 users in multiple departments for a highly urban county with a population of over 800,000. The design consisted of reviewing data available in each department (e.g., planning, parks, engineering, etc.) and organizing those data sets for ease of maintenance in the GIS or developing ETL procedures from other software. Role-based security was designed so that each data steward / department would maintain their own data while other pertinent departments would be able to see and leverage the data for their own purposes. The data resides in an ArcSDE repository backed by Microsoft SQL Server.

The Ohio Department of Transportation (ODOT) ITransportation Information Management System (TIMS) – Senior Engineer. Mr. Tri designed an ArcSDE geodatabase to support an internal and public facing website. The database included over 40 feature classes, 6 supporting tables, and 125 domains. The database was designed to support the website, which heavily used linear referencing and dynamic segmentation for query and analysis. The database included data sets from multiple divisions within the Department including traffic counts, crash statistics, pavement management, roadway maintenance authority, roadway characteristics, and owned facilities, in addition to the base routes in the linear referencing system. Mr. Tri was also the primary designer and lead programmer for developing extract, transform, and load (ETL) scripts for loading the ArcSDE database from an oracle based data warehouse maintained by the department.

Matt Baxendell, PE

Senior Engineer

Mr. Baxendell's experience includes numerous projects using Ohio Department of Transportation (ODOT) and City of Columbus standards and includes both project management and lead roadway design. He has a diverse background in transportation and civil design. Mr. Baxendell's has prepared all aspects of roadway plans, including drainage design, intersection geometrics and grading, ADA curb ramp design, maintenance of traffic (MOT), and traffic control plans. His project history includes roadway widening and realignment projects. Mr. Baxendell has overseen the design of nearly a hundred intersections designed in this manner since arriving at PRIME.

Total Years of Experience: 9

Education:
BS/Civil Engineering/2007

Registrations/Certifications:
Professional Engineer – OH, GA, VA; Georgia Soil and Water Conservation Commission (GASWCC) Design Professional II

PRIME AE®

Relevant Project Experience

City of Columbus, Ohio, Blueprint Linden – Design Engineer. Mr. Baxendell was responsible for the creation of a ranking system for land bank parcel suitability for future Green Infrastructure and the subsequent field investigation of the Agler/Burrell portion of the project. The rankings were based on topography, parcel clusters, proximity to drainage facilities, etc. Mr. Baxendell utilized a mobile GIS collector application using a tablet and visited over 100 parcels to come up with an engineering recommendation based on three tiers of parcel suitability.

City of Columbus, Ohio, Agler/Berrell Blueprint Linden – Design Engineer. Mr. Baxendell was responsible for field survey of over a hundred Land Bank parcels using an ArcGIS collector application and collating a list ranking potential parcels by suitability for Green Infrastructure. This required engineering judgment as well as a strong GIS knowledge to complete the task.

City of Columbus, Ohio, Parsons Avenue Pedestrian Improvements and Resurfacing, – Project Manager/Design Engineer. Mr. Baxendell was responsible for completion of final plans, including ADA ramp design, sidewalk improvements, and storm design. The project featured 42 intersections and 300 ADA curb ramps.

City of Columbus, Ohio, Arbor Hill/Gypsy Lane Roadway Improvements – Project Manager/Design Engineer. Mr. Baxendell was responsible from concept to final plans for roadway improvements, drainage design, pedestrian improvements, intersection detailing, GIS-based MOT design and right of way concerns.

City of Columbus, Ohio, ADA Ramp Design – Project Manager/Design Engineer. Mr. Baxendell was responsible for the oversight of a team of engineers who field surveyed chosen intersections to establish new curb ramp boundaries, overlaid on GIS data and superimposed upon City of Columbus aerials. These teams utilized an ArcGIS collector application on a tablet in the field to establish all of the key surface features before designing new ramp layouts and locations.

Nick Soltes, GISP

Senior GIS Analyst

Total Years of Experience: 13

Education:
BS/Geographic Information Systems/2003

Registrations/Certifications:
Certified Geographic Information Systems (GISP)

Stantec

Relevant Project Experience

City of Columbus, Department of Public Utilities (DPU), GIS General Services Contract – Senior GIS Analyst. Mr. Soltes is providing on-site GIS support to the City of Columbus Department of Technology. This work involves a variety of tasks: basemap creation & processing; third-party GIS module implementation; QAQC contractor deliverables; automated script adjustment & testing, and other tasks as assigned by the city.

Mr. Soltes supervised intern staff in a project to bring City centerline data up to Location-based Response System compliance, as well as ensure its route ability. Before the end of the effort, Mr. Soltes and staff had corrected thousands of centerline records.

Mr. Soltes helped provide the City of Columbus with a powerful and flexible tool with which any City employee can input a data form, and get a set of routed stops in return. This tool can route dump trucks, inspection vehicles, deliveries, and anything else that involves a series of stops along a road network. This project used LBRS centerline data that was also developed with the help of Mr. Soltes. This project benefitted the client through reduced time spent manually determining routes, and potentially reduced vehicle and personnel cost.

City of Columbus, Department of Public Utilities (DPU), GIS Laterals Conversion – Senior GIS Analyst. Mr. Soltes is involved in a large-scale project to populate the City of Columbus' GIS with accurate sewer lateral data. Mr. Soltes serves as the data conversion lead on this project, which involves numerous differing source material types spanning decade's worth of tap records. The team developed custom tools to expedite the conversion process and utilized out-of-the-box ESRI geoprocessing tools to place the data per the City's requirements. Mr. Soltes is responsible for overseeing the conversion staff, as well as participating in the conversion work.

City of Columbus, Department of Public Utilities (DPU), Division of Power and Water (DOPW), Electric GIS Conversion Project – Senior GIS Analyst. Mr. Soltes is involved in an extensive effort to digitize large sections of the City of Columbus' electric distribution network. This involves

referencing digital and hard copy files to ensure data completeness, quality, and traceability. The data has to be formatted to fit standard data models and has to obey strict topological rules to ensure the network can be traced from substations to individual customer locations. Mr. Soltes is also responsible for creating workflows and implementing QA/QC procedures.

Shankar Rasiah
Technical Analyst

Mr. Rasiah is a skilled application developer and OnBase implementation lead. He has integrated OnBase with several other software platforms, including Esri and Accela, to create enterprise systems for clients, including the City of Columbus.

Total Years of Experience: 13

Education:
BS/Honors/Management Information Systems/2003

Registrations/Certifications:
Diploma in Computer System Design; OnBase Certified Installer (OCI); OnBase Certified Application Programming Interface (OCAP); OnBase Workview Certification (OCWV); Cisco Certified Network Associate (CCNA); Fundamentals of ArcGIS; Updating Support Skills from Microsoft Windows Server 2003; Configuring and Administering Microsoft SharePoint 2010; Microsoft SharePoint 2010 – Application Development 2010 and Lean Six Sigma Green Belt.

PRIME AE®

<u>Relevant Project Experience</u>

City of Columbus, Department of Building and Zoning, OnBase – Accela Integration – Lead Application Developer. Mr. Rasiah developed a custom middleware to data transfer between OnBase ePlan and Accela, this enabled no changes in citizen portal and users can use the same interface to submit the permit request. Mr. Rasiah also customized a workflow solution in OnBase to electronically review the plans and update the status to citizen's portal used for permit tracking.

City of Columbus, Department of Health, OnBase Implementation – Lead Developer. Mr. Rasiah created a customized workflow solution to register and monitor the birth and death using OnBase.

United Nations Office for Project Services (UNOPS), – Lead Developer. Mr. Rasiah designed and implemented a local team site for asset tracking and vehicle movement. Additionally, he designed a site library for project cash flow tracking.

Vectren Corporation – Lead Developer. Mr. Rasiah discovered the system requirement for OnBase Enterprise client installation. He designed the OnBase architecture and also installed and configured OnBase. He has converted documents and images from CINTAS InfoPort system to OnBase. He has worked with the Vectren GIS team to integrate Arc Desktop, Arc Server ,and ArcFM Viewer with OnBase to retrieve the documets saved in OnBase and has completed PoC.

Clinicas del Camino Real, Inc. – Lead Developer. Mr. Rasiah discovered the system requirement for OnBase installation. He designed the OnBase architecture and installed and configured OnBase. He also configured the workflow process for employee's personal actions.

Ohio Department of Administrative Services – Lead Developer. Working with the Hyland team, Mr. Rasiah discovered, designed, installed, and configured OnBase for HR solutions for agencies.

Ohio Turnpike and Infrastructure Commission – Lead Developer. Mr. Rasiah converted documents and images from DocuWare to OnBase.

Ryan Branch, GISP

GISP Analyst

Mr. Branch is a Geographic Information System (GIS) Analyst with over nine years of professional experience in cartography, with an emphasis in Flood Hazard Analysis studies and municipal infrastructure. Mr. Branch is a proficient user of ESRI ArcGIS software, Model Builder, Flood Map Desktop (FMD), Trimble GPS, Hazus, image editing software (such as GIMP), and Microsoft Office products.

Total Years of Experience: **10**

Education:
BA/Geography/2006

Registrations/Certifications:
Certified Geographic Information Systems Professional (GISP).

Stantec

<u>Relevant Project Experience</u>

City of Columbus, Department of Public Utilities, GIS Sewer Laterals Conversion Project – GIS Analyst. Mr. Branch was part of a large team responsible for interpreting sewer tap locations from information provided on installation and repair permits and other sources. He provided QA/QC services and worked with the project managers to get the project completed on time.

City of Marysville, Ohio Utilities, Utility Asset Data Development Project – GIS Analyst. Mr. Branch was part of a team that collected and digitized large quantities of data for the City of Marysville. Utilizing scanned and rectified plat files, as well as orthophotography, Mr. Branch generated stormwater and easement data.

City of Columbus, Ohio, Early Ditch I/I Remediation Project – GIS Analyst. Mr. Branch collaborated with the project team throughout the duration of this project by providing regular GIS data management and editing supporting the field data collection and management and supported the project team on the creation of a series of maps and figures for this effort.

Vinton County, Ohio, Tenaska; Rolling Hills Power Plant, Power Plant Expansion – GIS Analyst. Mr. Branch served as the primary GIS analyst coordinating with project managers and clients in the development of water intake and outfall pipeline routes, developing many varied figures and deriving environmental impact data as needs arose, often with a necessarily quick turn-around. Mr. Branch created easement areas, updated pipeline routes, created models to automate these updates, georeferenced and digitized pump station structures, determined forestation impact areas, evaluated land owner impacts, identified road and drive access to sites, analyzed the topography and its effects on the pipeline. Mr. Branch created map books for the field teams, assisted with Trimble field GPS unit troubleshooting, set up an online map, which was used by project managers and clients to view and stay up-to-date on project progress, and managed the spatial database that contained these project files.

Robert Sands, PS
Professional Land Surveyor

Mr. Sands has over 27 years of survey experience. As manager of our Columbus Survey/Geomatics Department, his responsibilities include managing the day-to-day operations of the survey department. Mr. Sands is responsible for determining and negotiating project budgets and scopes of services with internal and external clients. He performs traverse and boundary computations, field and office research, and transportation and utility right-of-way plans. His technical skills include the preparation of ALTA/NSPS Land Title surveys, boundary and topographic surveys, construction staking calculations and oversight, easements, right-of-way, and zoning and annexation descriptions and exhibits.

Total Years of Experience: 27

Education:
AS/Applied Science in Civil Engineering/1989

Registrations/Certifications:
Professional Land Surveyor – OH; Right of Way Prequalification / ODOT

Stantec

Relevant Project Experience

Near North and East Large Diameter Condition Assessment – Land Surveyor. Mr. Sands was responsible for leading the survey team to deliver a physical inspection and condition assessment of approximately 80,000 feet of sanitary, storm, and combined sewers in the OSU Campus and Olde Towne East Neighborhood in Columbus. The sewers consist of 25,000 feet of 39"-48" pipe; 10,000 feet of 51"-60" pipe, 18,000 feet of 66"-78" pipe, 23,000 of 84"-96" pipe, and 4,000 feet of 105"-144" pipes. The purpose is to determine the debris accumulation, structural integrity, and update the spatial information of the system. Responsible for preparation of the field investigation work plan in coordination with the field survey, manhole inspection, pipeline investigation, and data processing task leads. Responsible for coordination with OSU, various Columbus departments, subconsultants, and subcontractors to perform the investigations in high visibility and heavily trafficked areas of the city.

Big Walnut Trunk, Outfall, and Rocky Fork Sanitary Large Diameter Condition Assessment – Land Surveyor. Mr. Sands was responsible for leading the survey team to deliver the first physical inspection and condition assessment of approximately 150,000 feet of sanitary sewer along the east side of Columbus. This sewer consists of 20,000 feet of 48"-54" concrete pipe; 89,000 feet of 84"-96" diameter concrete pipe; and approximately 30,000 feet of 136" by 87" to 108" diameter concrete pipe along the east side of Columbus. The purpose is to determine the debris accumulation, structural integrity, and update the spatial information of the system. Responsible for preparation of the field investigation work plan in coordination with the field survey, manhole inspection, pipeline investigation, and data processing task leads.

3 Relevant Project Experience

Section 3 Relevant Project Experience

The PRIME Team has several examples of projects that are applicable to your request. We also have provided the City of Columbus and other entities with unique, innovative solutions that utilize GIS as the core technology. Our experience goes beyond just GIS fundamentals. We have the subject matter expertise to provide solutions for Utilities, Public Service, Development and Building and Zoning. Our past performance shows this unique skillset to integrate GIS into many types of workflows. Our projects in this section, many with an "ongoing" timeframe, show that our team has repeat clients due to exceptional service and high quality deliverables.

	PRIME AE® Stantec	Data Conversion, Cleansing, Development	Needs Assessment Business Process Analysis	Field Data Collection Staff Augmentation	Application Development	Integration Solutions	GIS	Public Utilities/Public Service	Development Building and Zoning
Example Project Name									
1	City of Columbus, Department of Public Service - Warrior Watch	●	●		●	●	●	●	
2	Columbus Blue Print Projects	●		●		●	●	●	●
3	Columbus Hilltop Area – Palmetto/Westgate Integrated Solutions Project	●		●		●	●	●	
4	City of Columbus, Department of Building and Zoning – OnBase – Accela Integration	●	●		●	●			●
5	City of Columbus, Department of Health – OnBase for Vital Statistics	●	●		●	●			
6	City of Columbus, Department of Public Utilities – GIS Strategic Plan Update		●				●	●	
7	City of Columbus, Department of Public Utilities – Sewer Laterals Data Conversion	●			●	●	●	●	
8	City of Columbus, Department of Technology – GIS Technical Support	●	●	●	●	●	●	●	●
9	City of Columbus, Department of Public Utilities, DOPW – Electric GIS Conversion	●				●	●	●	
10	City of Columbus, Ohio – Plum Ridge Sewer System Remediation I/I Study	●		●		●	●	●	
11	City of Columbus – Early Ditch Relief I/I Remediation Project	●		●	●	●	●	●	
12	City of Upper Arlington Pavement Condition Rating Mobile ArcGIS Online Integration	●	●	●	●	●	●	●	●
13	Perry County Auditor Parcel Fabric Development	●		●	●	●	●		●
14	City of Newark, Ohio GIS Services	●	●	●	●	●	●	●	●
15	Middlesex County, New Jersey - General GIS Services	●	●	●	●	●	●	●	●
16	Franklin County, Ohio, Franklin County Board of Elections, Live Elections Results Viewer	●	●		●	●	●		
17	Columbus 2020 ArcGIS Online Site Tool	●	●		●	●	●		●

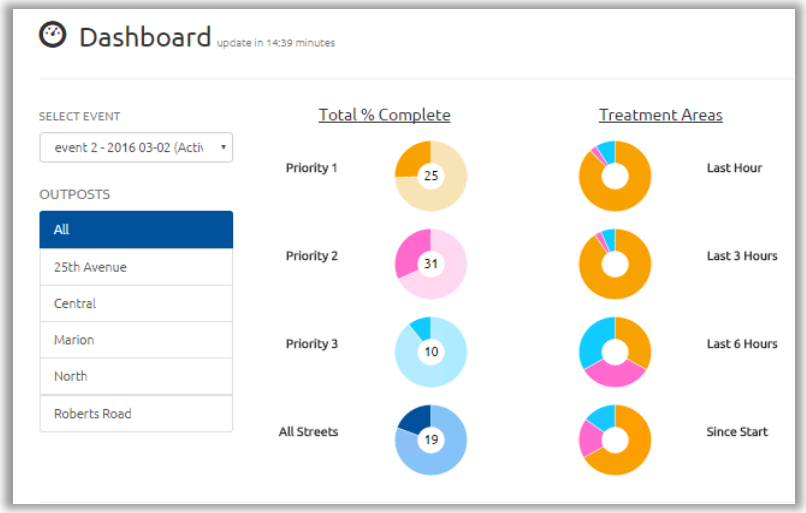
City of Columbus, Department of Public Service - Warrior Watch

Client Name:	City of Columbus, Department of Public Service
Contact Person:	Frank Williams
Contact Phone:	(614) 645-5711
Type of Project:	GIS Application Development, GIS Integration, Data Conversion/Cleansing/Development, Needs Assessment/Business Process Analysis (BPA)
Dates of Activities:	January 2013 – Ongoing

Description of Activities:

The 3SG Plus GIS team (PRIME) has helped the City of Columbus manage and analyze snow and ice removal activities through the ongoing development of Warrior Watch, a web based GIS application that integrates with the City's existing Automated Vehicle Location (AVL) equipment. This application extends the City's capabilities and provides snow operations managers and dispatchers with real-time information allowing them to track where and City resources are being deployed during a snow event. Warrior Watch allows City staff to measure how many streets have been treated during each and every snow event. Additionally, Warrior Watch enables the public to view real-time street treatment information from their smartphone. For the past 12 months, PRIME has worked to deliver Warrior Watch 2.0, which involved upgrading several legacy technologies used for the backend of the application and adding new front-end features such as a real-time operational metrics dashboard.

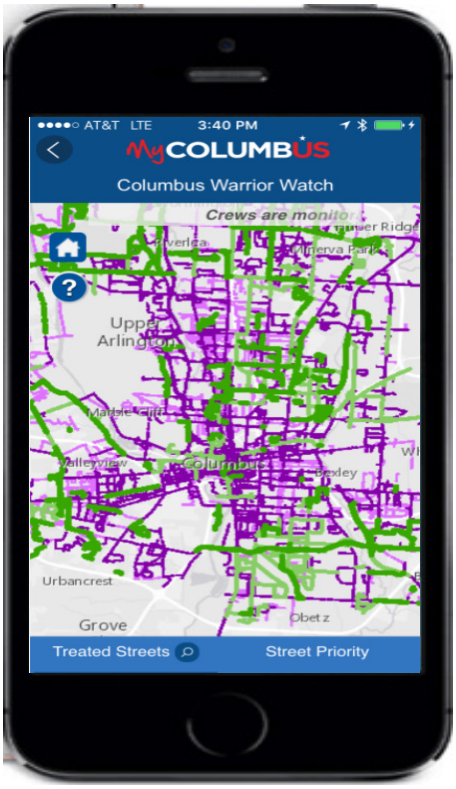
GIS Application Development. The PRIME project manager worked closely with Department of Public service staff to establish a detailed use case for the core functionality of Warrior Watch. The interactions for each front-end component of Warrior Watch were defined in detail using wire-frames and simple mockups. Additionally, the PRIME project manager worked closely with PRIME application development staff to ensure that the underlying GIS data and AVL data stream could support the city has desired functionality. By developing a simple user interface and a streamlined data schema, PRIME was able to easily incorporate street sweeping and mowing into the application.



PRIME also worked closely with city GIS staff and the city's AVL vendor (Networkfleet) to configure Esri's ArcGIS server extension (GeoEvent processor)

to translate and enrich the incoming data stream of snow operations vehicles. PRIME follows best practices when developing applications and data models and worked closely with DoT staff to migrate the application from a development server environment, to a stage server environment, and finally a production environment. Following these best practices is always important, especially for large enterprise organizations tasked with supporting IT infrastructure and applications. Additionally, our development team utilizes a JavaScript and HTML5 framework is used for the internal and public web applications. The internal web application also takes advantage of modern web browsers support of WebSockets, which enable real-time two-way communication between servers and browsers. This enables live truck information to update in real-time in the users browser without requiring them to refresh the map to see where and when a vehicle has moved.

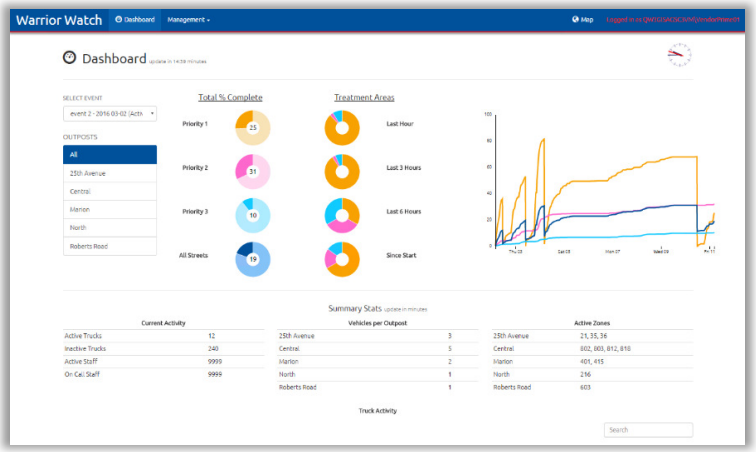
Additionally, for the upcoming 2016-2017 snow season, PRIME has developed a snow operations dashboard, which provides Department of Public Service staff with a real-time summary of key operational metrics. Our teams experience working with service departments and deep knowledge of GIS data and application development skills allowed us to produce this cutting-edge dashboard and help the City in their mission of serving citizens of Columbus more efficiently and effectively.



GIS Integration. A key element of this project is the integration with Networkfleet. The City of Columbus has standardized their AVL system and equipment (Verizon Networkfleet). PRIME developed the front end and server side tools to work in conjunction with Networkfleet and did not require or propose changing AVL vendors. Additionally, during the most recent phase of this project PRIME has incorporated with the Networkfleet API to develop a real-time monitoring system that checks Networkfleet and the City's AVL database to check for missing data.

Data Conversion, Cleansing, Development: Throughout this project, PRIME staff have also worked closely with Department of Public service staff to review street centerline attribution and street centerline data quality to improve the performance and analytical capabilities of Warrior Watch. Our experience working closely with DPS and DoT on data management allows us to quickly propose data architecture solutions that are scalable and can be easily maintained by DPS GIS staff and supported by DoT staff.

New Technology: For Warrior Watch 2.0 the public facing application was updated to take advantage of vector caching. These process stores individual centerlines as vectors and allows for rapid updates to the styling of the street centerlines based on the last time a street centerline was treated. This technology moves the logic to style street centerlines out of the server and into the web-client and thus dramatically increases the performance, refresh rate, and scalability of centerline treatment information. For example, using existing ESRI map tile-cache tools, the public application could present updated treatment information to the public every 15-minutes as a dedicated caching server was required to re-build a map cache at a regularly scheduled interval. With the new technology in place, refreshing the map takes minutes and is performed within the client's browser, removing the need for a separate map cache server.



Columbus Blue Print Projects

Client Name:	City of Columbus, Division of Sewerage and Drainage
Contact Person:	Michael Griffith
Contact Phone:	(614) 645-2416
Type of Project:	Data Conversion/Cleansing/Development, GIS Integration, Field Data Collection
Dates of Activities:	January 2013 – Ongoing

Description of Activities:

Agler/Berrell Blueprint Linden Project, CIP 680870-100703

The Agler/Berrell project is part of the Linden Blueprint Project and is a mixture of residential and commercial properties in the East Linden area of Columbus. The purpose of the project is to analyze the study area to establish whether green infrastructure and inflow/infiltration controls would help meet future stormwater regulations. Storm water quality will be addressed by green infrastructures prior to its discharge into storm sewers. Another aspect is the examination of private property through the Columbus Land Redevelopment Office to see whether abandoned and distressed parcels could be utilized for the implementation of Green Infrastructure.

PRIME performed following tasks for this project:

- Reviewed record plans, storm water reports, maps, etc.
- Created a ranking system to judge all potential Land Bank Parcels for GI suitability based on a number of key factors.
- Completed Field Investigations into the suitability of numerous parcels for GI development and created recommendations for land use – using ArcGIS Online custom application and Data Collector.
- Designed and laid out storm sewer improvements based on field investigation and in accordance with the larger Linden Blueprint area.
- Assisted the City with communications with businesses and residents, obtained all necessary permits for field investigations and acted as the Public Outreach Consultant.

Cooke/Glenmont Integrated Solutions, CIP 650870-100005

The Cook/Glenmont project is part of the Clintonville Integrated Solutions Project. The project site is primarily a residential area. The purpose of the project is to address Sanitary Sewer Overflows (SSOs), basement back-ups and stormwater quality. The SSOs and the basement back up will be addressed by removing inflow & infiltration (I/I) from the sanitary sewer system. I/I removal will be accomplished by rehabilitating the sewer pipes and laterals. Stormwater quality will be addressed by green infrastructures.

PRIME reviewed record plans, stormwater reports, and GIS maps. Field work included hand delivering residential notifications and performing house to house field data collection using a collector application and tablet- the data included downspout locations, downspout and sump pump discharge locations, lateral locations, gutter conditions, and other features relevant to the drainage of the property.

PRIME also provided assistance for preparing street occupancy permits for CCTV, prepared property exhibits for 280 properties and prepared green infrastructure design drawings, including design of three regional bioretention basins, seven curb bump outs, and five rain gardens. PRIME also designed the storm collector system for each GI structure, water line relocations, and prepared maintenance of traffic plans.

Columbus Hilltop Area – Palmetto/Westgate Integrated Solutions Project

Client Name:	City of Columbus, Department of Public Service
Contact Person:	David Krier
Contact Phone:	614) 645-8241
Type of Project:	Data Conversion/Cleansing/Development, GIS Integration, Field Data Collection
Dates of Activities:	January 2013 – Ongoing

Description of Activities:

As part of this project, PRIME reviewed all pertinent reports, construction plans, stormwater and sanitary flow data, stormwater quality data, and other Division of Sewerage and Drainage (DOSD) records that have a bearing on the project. PRIME also performed construction and site plan surveys, which included downspout locations, downspout and sump pump discharge locations, lateral locations, gutter conditions, and documentation of related features. This information was inputted and downloaded via an iPad tablet in GIS format. In addition, PRIME distributed door hangers for each of the properties investigated.

City of Columbus, Department of Building and Zoning – OnBase – Accela Integration

Client Name:	City of Columbus, Department of Building and Zoning
Contact Person:	Mike Bowen
Contact Phone:	(614) 645-3239
Type of Project:	Data Conversion/Cleansing/Development, Needs Assessment/Business Process Analysis (BPA), Application Development, Integration
Dates of Activities:	October 2015 to current

Description of Activities:

PRIME implemented an electronic plan (ePlan) review solution for Building and Zoning Department in OnBase. This included custom integration with the permitting system, Accela. End users use Accela portal to apply for their permit and make payment. PRIME edited functionality in the same portal for the end users to upload vector-based PDF files before they make the payment. If the payment is successful, the application will pull those uploaded files into OnBase and route it

through the workflow process. It is a parallel workflow process, which will have multiple reviewers looking at the plans simultaneously. The current status in OnBase workflow is sent back to the Accela portal, so end users can continue to use that one portal to see the status.

City of Columbus, Department of Health – OnBase for Vital Statistics

Client Name:	City of Columbus, Department of Health
Contact Person:	Abdoul Shmohamad
Contact Phone:	(614) 645-7206
Type of Project:	Data Conversion/Cleansing/Development, Needs Assessment/Business Process Analysis (BPA), Application Development, Integration
Dates of Activities:	January 2016 to current

Description of Activities:

PRIME replaced the line of business application with OnBase to track Birth and Death certificates. The install allowed the department to complete copy requests for birth and death certificates. PRIME customized OnBase for the department providing more fields to track than what the state offers. These fields allow the City to run statistics upon cause of death and employee processing stats as examples.

City of Columbus, Department of Public Utilities – GIS Strategic Plan Update

Client Name:	City of Columbus, Department of Public Utilities (DPU)
Contact Person:	Todd Pulsifer
Contact Phone:	(614) 645-7825
Type of Project:	Needs Assessment / Business Process Analysis
Dates of Activities:	June 2014 – December 2015

Description of Activities:

Columbus Department of Public Works (DPU) developed an IT Master plan in 2004 with components for a foundational GIS defined. However, with the plan being over eight years old along with new developments in technology, and the changing of organizational needs and business processes, it was advisable that DPU review the current state of GIS within the organization and define a formal GIS Strategic Plan based on the current needs of the organization. Having an updated, current GIS Strategic Plan would re-enforce and allow focus to be placed on the important

prioritized items, which would allow resources (time, talent, dollars) to be properly allocated to those GIS activities that provide the most benefit. Thoroughly analyzing internal business culture and work processes in relation to GIS and evaluating its impact on the department's performance allowed Stantec and DPU the opportunity to identify opportunities, set realistic objectives, identify and address areas for better communication and internal coordination of activities, and ultimately provide a plan to show what DPU aspired to as well as providing a frame of reference for budgets and short, mid and long term plans. Stantec addressed this scope of work via three defined stages of work: Review and Assessment, Analysis and Plan Update, and Deliverable Submission and Presentation.

The deliverables included an assessment document and discussion/presentation to DPU for review and confirmation. With the assessment completed, the business functions and needs along with current applications and data defined, a draft implementation plan was developed and presented to DPU.

City of Columbus, Department of Public Utilities – Sewer Laterals Data Conversion

Client Name:	City of Columbus, Department of Public Utilities (DPU)
Contact Person:	Todd Pulsifer / Greg Horch
Contact Phone:	(614) 645-7825 / (614) 645-1487
Type of Project:	Data Conversion and Development; Quality Control; GIS Application; Development; Integration Solutions
Dates of Activities:	January 2014 – January 2016

Description of Activities:

Stantec assisted the City of Columbus, Department of Public Utilities with the data conversion of sewer laterals for the City. During this project, Stantec created approximately 230,000 laterals within the GIS sewer network for the City of Columbus. The results of this effort is the development of sewer lateral data layers that can now be used by the city to determine the impact on sewer customers during the repair/replacement of sewer mains. Additionally, the data can also be used in sewer modeling efforts such as estimating the number of customers that may be affected by "water in basement" by various proposed sewer upgrades.

Data Conversion and Development

Stantec developed a detailed GIS conversion process to be utilized by the conversion team, which included staff from Stantec as well as sub-consultants. The first step in the conversion process was to geocode the city's sanitary sewer customers using customer and premise number information provided by the city. By using a custom "geo-locator" built on the best available address data along with point locations derived from Franklin County Auditor building polygons, Stantec created customer locations placed inside building polygons, ensuring that the lateral lines created for this project would always be drawing from the sewer main to the edge of an appropriate

building. Any gaps in the building footprint data were addressed using orthophotos to locate buildings, and any addresses that could not be located were reported to the city for review.

Once the points were located, a permit table was developed for use during the conversion effort. Record Plan and Permit Link fields were also added to the table to allow hyperlink access to scanned permits and engineering plans, which allowed for increased efficiency during the data conversion process, and QA/QC. The hyperlinks were provided to the city and adjusted to use the city's file system locations. The actual sewer lateral lines creation occurred by inserting manholes along existing sewer mains. Associated tap location, customer cleanouts and sewer tap point features defined by using standard Esri geoprocessing tools as well as customized tools.

The project was delivered in multiple phases consisting of a pilot area (10%) and subsequent submittals each containing an additional 22.5% of the total project area.

Quality Control

The QA/QC processes consisted of both manual and semi-automated checks, as well as continual communication with the City. Stantec set up a secure Sharepoint site that was used to report data source conflicts. The City was able to access the site and provide guidance on the proper fix. On Stantec's end, we manually selected 3% of all data and visually checked it against the source data and corrected all incorrect information. For the semi-automated checks, we created a temporary tap location point layer that was generated by using linear referencing tool to place points where taps should be on the main based on information from the permit. We then examined these "check points" to the actual location of the tap created by the conversion staff. Any discrepancies were checked and adjusted as necessary. Any consistent errors that required a process change to fix had their change incorporated into the conversion process utilized by the Stantec Team.

GIS Application Development

To maximize efficiency and accuracy, a number of custom ArcGIS add-in tools were developed to support the pre-conversion processing as well as the conversion team. For example, one tool allowed conversion staff to enter information found on the permit or record plan and have the tool perform a linear referencing process to place the lateral on the sewer main. This tool also streamlined the creation to other attributes that were placed on the lateral, such as source document information, distance measures, flags for potential follow-up from the City in the case of source data conflicts, and other values useful in future QA/QC tasks. The tool also ensured that all lateral lines were snapped to the sewer main on one end, and the customer point on the other end, thereby reducing the level of geometric QA/QC required for the overall project. Overall, the tools allowed the team to improve on their conversion efficiency throughout the project.

City of Columbus, Department of Technology – GIS Technical Support

Client Name:	City of Columbus, Department of Technology (DoT)
Contact Person:	Shoreh Elhami
Contact Phone:	(614) 645- 2109
Type of Project:	Data Conversion and Development; Quality Control; GIS Application Support; GIS Staff Augmentation; Integration Solutions
Dates of Activities:	April 2015 - Current

Description of Activities:

Stantec has supported the City of Columbus through supporting needs defined by the Department of Technology. The items being addressed are items focused on the needs of the Department of Public Utilities based on the previous 2011 General Services Contract. Those projects that have been supported include:

Parcels Update

The city maintains two parcel feature classes: and requested Stantec's support to revise the process to enable the parcel layers to be updated more efficiently. The initial process involved documenting the data directory structure and confirm software versions and configuration; discuss specifics of how Accela utilizes data/views; confirm user account names and versions for SDE and obtain copy of all Python and SQL files for data processing. From there, with the most current parcel data for six counties gathered, Stantec reviewed the current update tools and determined areas for improvement. The recommended improvements were then addressed and tested on data loaded to their staging repository and tested. With the process now modified and working, Stantec provided assistance on the weekend parcel production update.

Base Map Update/Support

The City's base map was outdated and needed to be re-evaluated for improvements in appearance and function so that is was similar to Esri's topo base map. Stantec worked with the city to determine specifics of base map needs and acquire the necessary data layers. Updated data models and Python scripts were created to migrate into the Local Government Data Model along with an MXD with updated symbology. This process was documented and is currently being run on a regular basis.

ArcFM Session Manager

ArcFM Session Manager is an additional component of the ArcFM solution utilized by Public Utilities. This add-in works by isolating the edits to a geodatabase made by users, and gives supervisors the ability to review the edits before they are incorporated into a particular GIS dataset. It also provides some workflow functionality, such as the ability to hand off edit reviews to another staff member. Stantec assisted the city with configuring the deploying ArcFM Session Manager on

their test database, and provided training to DPU staff on its use, as well as documenting the steps needed to deploy the solution on the city's production server.

Batch Processing Script Update

DoT stores GIS data for every city department and has a number of different servers that are utilized for production, testing, and application hosting. GIS users across the city need their data updated in a timely manner, and so DoT has created a number of automated processing scripts that run on a schedule to perform the update duties. Stantec assisted the city in updating a script that handles this task for GIS data used by the Electric group at DPU. During this task, Stantec was also able to streamline the script by identifying and resolving a redundant use of the notification email module implementation, a small change that made the script more consistent with its counterparts.

Contractor Delivery QA/QC

The DoT utilizes outside vendors to process intense aerial imagery datasets. This critical data is key for use in the city's base map, as it provides the best-available view of the city, as well as providing a view into the past through the use of historic imagery. Stantec was involved in quality-checking aerial photo deliverables for the City. We compared the base data that the city provided to the contractor and compared these inputs to the outputs delivered to the city. Through this effort, Stantec was able to identify any discrepancies or missing areas that were present in the data.

City of Columbus, Department of Public Utilities, Division of Power and Water (DOPW) – Electric GIS Conversion Project

Client Name:	City of Columbus, Department of Public Utilities, DOPW
Contact Person:	Larry Moore
Contact Phone:	(614) 645-8925
Type of Project:	Data Conversion and Development, GIS Integration, ArcFM Responder Implementation
Dates of Activities:	January, 2010 – 2015

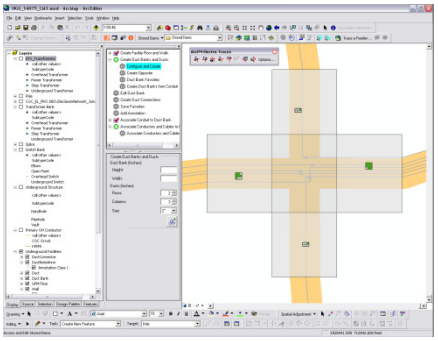
Description of Activities:

Data Conversion and Development

Electric utility data is currently maintained by the City of Columbus in a series of AutoCAD drawings, an Access field inventory database, and hand drawn sketches that show the duct assignments for conductors within each manhole/vault throughout the city. To create a seamless digital Geographic Information System (GIS) for the city's electric transmission and distribution systems, Stantec is utilizing Esri's ArcGIS 9.3 software in conjunction with Telvent Miner & Miner's ArcFM and Conduit Manager Products to develop a comprehensive solution that will allow for improved facilities management as well as electric tracing/analysis. Stantec staff has worked closely with DOPW GIS and field staff to carefully review the data to create a product that is as

accurate as possible for the city staff to utilize upon delivery. Stantec's hands on and iterative project management methodologies have led to the successful conversion of the underground system in the downtown area in a GIS/ArcFM format.

GIS Integration



With the completion of this project, the city can quickly identify the location and attributes of conductors and devices by searching a single enterprise repository while in the field or in the office. By integrating the data with ArcFM and Conduit Manager, users can also trace circuit flow upstream/downstream to determine which features are energized, based upon the current open/closed status of switches, fuses, and other devices helping to improve the operational awareness and safety of field crews as well as overall project planning efficiency. A compilation of documented procedures and methods will be prepared to empower the DOPW to take full ownership of the delivered system.

Quality Control

Methods used included working with the DOPW staff to define general rules/default values (e.g. ducts were assigned default values of Diameter = 4", Material = Fiber). This increases accuracy when adding new data since the fields are automatically populated, as well as speeds up QA/QC by DOPW in the future. This is also an approach that the city can repeat internally once the data is delivered.

ArcFM Responder Implementation

Stantec supported the city through the process of the ArcFM Responder Implementation. Coordinating directly with the sub consultant, Schneider Electric, Stantec was able to coordinate and ensure that Schnedier was meeting the city's expectations for implementation.

City of Columbus, Plum Ridge Sewer System Remediation I/I Study

Client Name:	City of Columbus, Department of Public Utilities
Contact Person:	Hunter Kelley
Contact Phone:	614-645-0239
Type of Project:	Data Conversion and Development, Field Data Collection, GIS Integration
Dates of Activities:	January, 2010 – 2013

Description of Activities:

This project was undertaken to investigate the locations and magnitudes of inflow and infiltration in the Plum Ridge Priority Area. Stantec conducted a detailed study of the sanitary collection

system to identify locations of sewerage overflows out of manholes, sanitary reliefs, sewerage system surcharging, and sewerage back up into basements (water-in-basement-WIBs), and identify the causes of these occurrences. To support the fieldwork and data collection, GIS was an integral part of the project to locate and document system attributes.

Stantec performed cleaning and CCTV inspection of approximately 31,000 lineal feet of sanitary sewer within the project area. Stantec has installed the project flow monitors, conducted periodic site visits for maintenance and download, and conducted a maintenance and service request investigation. Additionally, Stantec coordinated with the public and performed over 100 private source I/I investigations.

The project has provided valuable data on the sources of I/I in the Plum Ridge Priority Area. The project team developed and calibrated a hydraulic model based on data obtained for the sanitary sewer system.

Once sufficient data was compiled and modeling efforts were completed, I/I and SSO mitigation alternatives were developed and evaluated. This robust analysis effort identified cost effective solutions achieved full compliance with the Wet Weather Management Plan approved level of service.

City of Columbus – Early Ditch Relief I/I Remediation Project

Client Name:	City of Columbus, Department of Public Utilities
Contact Person:	Greg Barden
Contact Phone:	614-645-1953
Type of Project:	Data Conversion and Development, Field Data Collection, Application Development, GIS Integration
Dates of Activities:	January 2005- 2013

Description of Activities:

The Early Ditch Infiltration and Inflow Remediation project targeted over 100 miles of sewer in a primarily residential neighborhood built in the 1930s and 1940s where street, yard, and basement flooding and sanitary sewer and manhole surcharges were prevalent. Stantec was retained to conduct a study of the system to identify locations of sewerage overflows, system surcharging, sewerage backup into basements, and identify the causes of these problems. Project tasks include undertaking a comprehensive flow monitoring and rain gauge program, cleaning and televising all sewers according to NASSCO's Pipeline Assessment and Certification Program (PACP) standards, investigating and quantifying private and public I/I sources, investigating the area's Maintenance and Service Requests over a seven-year period, and developing and applying a hydraulic computer model for the sewershed.

GIS Integration (Utilities, Hydraulic Modeling, & GIS)

Stantec developed a hydraulic model of the sanitary sewer collection system in the Early Ditch study area to aid in identifying capacity-related deficiencies and analyzing alternatives for improving system performance as a result of removing inflow and infiltration (I/I) and increasing the size or augmenting the capacity of the existing sewers. The model was developed using PCSWMM 2009 and ArcGIS that utilizes the enhanced USEPA SWMM 5 engine. The model consisted of 2693 Junctions, 2779 Conduits, 7 outfalls, 4 storage units, 1 pump station and 10 weirs. The developed model was calibrated for wet weather and dry weather flow events using the flow monitoring data collected during rainfall events, water billing information and field investigation findings.

Results were integrated into ArcGIS in order to evaluate the existing system capacity performance using the hydraulic model and verified if the system meets the Level of Service Criteria for Sanitary Sewer Overflows, Designed Sanitary Sewer Relief activations and Water-in-Basement occurrences. Stantec then developed several alternatives utilizing various strategies to mitigate/eliminate the sewer capacity problem areas to meet the level of service objectives. These alternatives were modeled in PCSWMM and ArcGIS to evaluate the benefit-costs and evaluate the level of service.

City of Upper Arlington, Pavement Condition Rating Mobile ArcGIS Online Integration

Client Name:	City of Upper Arlington Ohio
Contact Person:	Jacolyn Thiel
Contact Phone:	(614) 583-5351
Type of Project:	GIS Application Development, GIS Integration, Field Data Collection, Business Process Analysis
Dates of Activities:	July, 2015 – September, 2015

Description of Activities:

Migrate Legacy GIS Application

Prior to this project, the City of Upper Arlington was using a custom ArcPad application running on a hand-held Trimble GeoXT unit, which provided customized pull downs and a set of question-based forms, which prompted users to rate the condition of the streets. The City began to see the limitations of collecting pavement ratings in the field when using the GeoXT and worked with PRIME to update the process of performing pavement conditions ratings to take advantage of

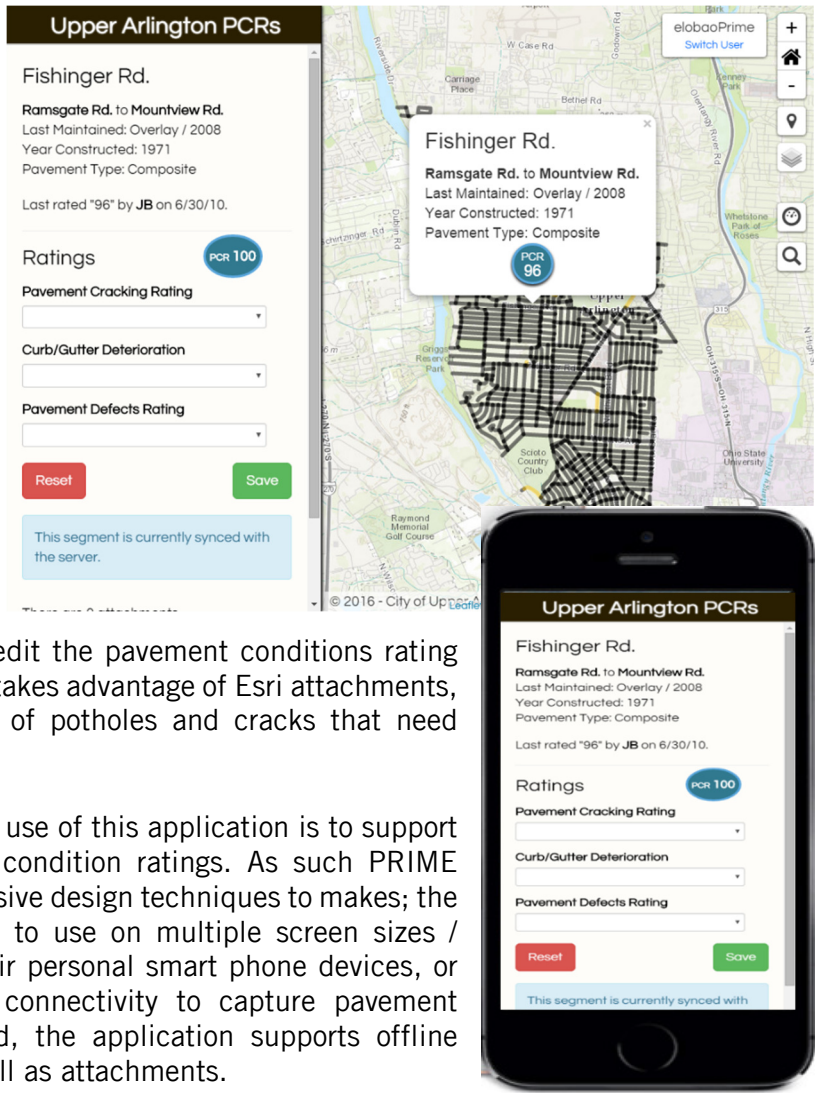
modern smartphones and recent mobile GIS capabilities and the city's investment in ArcGIS Online.

Business Process Analysis

Additionally, PRIME understood the full life cycle of the pavement condition rating process. Rather than simply use ArcGIS collector to perform condition ratings, PRIME was able to incorporate many of the existing question based forms into the data collection process using a custom web application. While this helps streamline data collection in the field and required no application installation, it also allowed PRIME to incorporate a pavement condition results dashboard into the application. This dashboard allows the city engineer to review condition ratings and easily communicate pavement condition information to City Council or others throughout the organization. A single, focused application is able to meet the needs of both field staff and city management.

GIS Application Development

PRIME application development team followed Esri best practices for integrating with ArcGIS online to develop a custom JavaScript and HTML5 web application that consumes a feature service published to ArcGIS Online. The application also enables off-line editing allowing pavement rating staff to continue rating streets if / when cellular connectivity is lost. The application also integrates with ArcGIS user management and security, requiring users to authenticate using their ArcGIS online for organizations account information in order to securely edit the pavement conditions rating information. The application also takes advantage of Esri attachments, allowing users to collect images of potholes and cracks that need immediate attention.



Field Data Collection The primary use of this application is to support field staff performing pavement condition ratings. As such PRIME development team utilized responsive design techniques to makes; the application was simple and easy to use on multiple screen sizes / devices. City staff can utilize their personal smart phone devices, or city issued iPads with cellular connectivity to capture pavement conditions ratings. As mentioned, the application supports offline editing and synchronization as well as attachments.

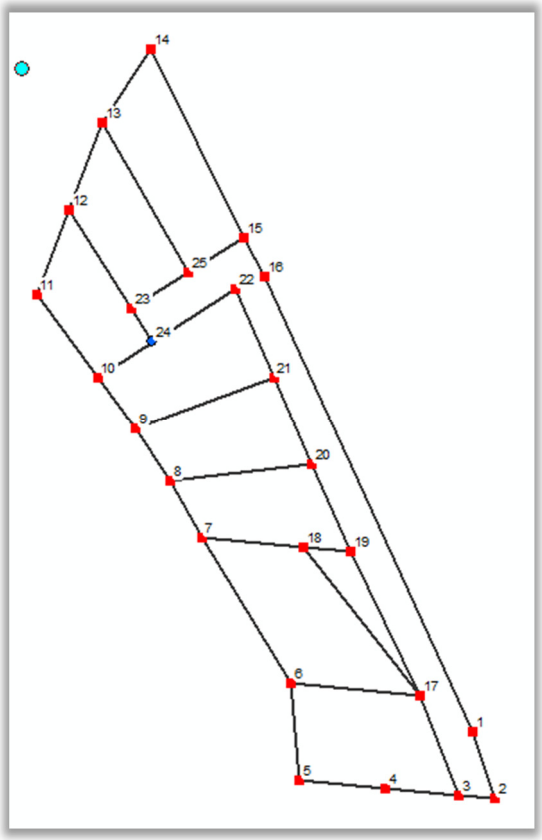
Perry County Auditor Parcel Fabric Development

Client Name:	Perry County, Ohio Auditor
Contact Person:	Drew Cannon Moore
Contact Phone:	(614) 645-8925
Type of Project:	Data Conversion/Cleansing/Development, GIS Integration, GIS Application Development, Staff Augmentation
Dates of Activities:	July, 2015 – Ongoing

Description of Activities:

Data Conversion and Development

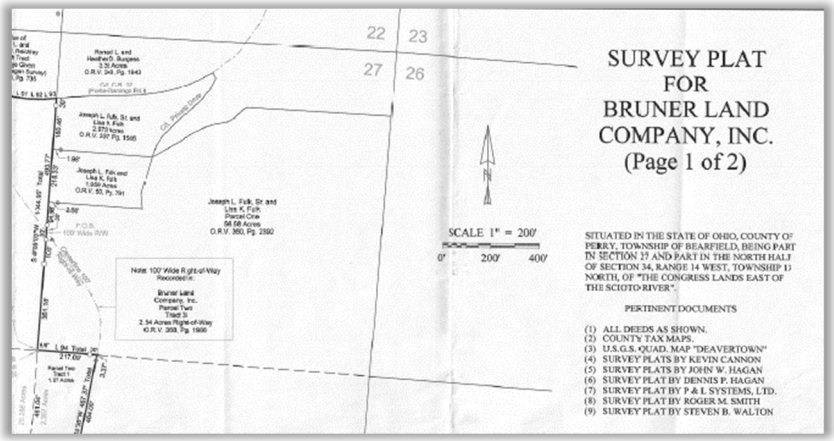
PRIME worked closely with the Perry County Auditor and Perry County Engineer to convert their existing paper based parcel map into an ESRI parcel fabric with a direct linkage to the County's computer-assisted mass appraisal (CAMA) system. In order to perform this work efficiently and effectively, PRIME developed a set of conversion procedures, which take advantage of existing tools and workflows integrated into ArcMap. GIS analysts review existing scanned deeds and enter coordinates for each parcel directly into the parcel fabric. Once each parcel boundary is captured, PRIME staff utilize map fabric join tools to adjust the position of parcels to match other surrounding parcels and existing survey monuments. This process assures that parcel geometry matches real-world locations as best as possible and provides quick access to the original legal surveyed description without the need to pull a deed.



GIS Integration

For a project of this scale, establishing regular communication, and regular data updates is significant. PRIME utilizes ArcGIS online to provide Perry County staff with a simple interface to track our conversion process and review the quality of GIS data throughout the project. Perry County staff can create comments based on our deliverables and review comments or questions that arise within the parcel fabric. As an additional integration, PRIME has linked each deed used to each parcel.

This provides Perry County with a simple way to check the data conversion quality, and allows them to dramatically improve their ability to access deeds. With this information linked, they are now able to retrieve deeds from a map, rather than having to search for deed by owner name or township information.



Quality Control Plan

Developing a detailed quality control plan was an important for this project. With four full time analysts and three part-time analysts, working on the project it was important that each staff member produced high quality data using the same methodology. Our project management team worked closely with Perry County Engineering staff and our own staff to develop a quality control plan that emphasizes continual improvement in both the process of parcel conversion and the quality of the parcel fabric we deliver. The quality control plan will be utilized by the Perry County Engineer during future maintenance of the parcel fabric.

GIS Application Development

PRIME created a web viewer using ArcGIS Online & Web App Builder technology so that the county can review updates, as parcels are complete. This is also used to communicate quickly to resolve data anomalies.

City of Newark, Ohio – GIS Services

Client Name:	City of Newark, Ohio, Water & Wastewater Department
Contact Person:	Roger Loomis
Contact Phone:	740.670.7945
Type of Project:	Data Conversion/Cleansing/Development, GIS Application Development, GIS Integration, Field Data Collection, Business Process Analysis
Dates of Activities:	July, 2015 – Ongoing

Description of Activities:

Enterprise Utility GIS Services

Since 1999, the City of Newark, Ohio, has proactively managed and maintained its utility infrastructure utilizing asset management and GIS software. The Division of Water and Wastewater initiated the conversion of infrastructure information from paper documents to a digital asset management system in order to comply with EPA regulations and cMOM requirements.

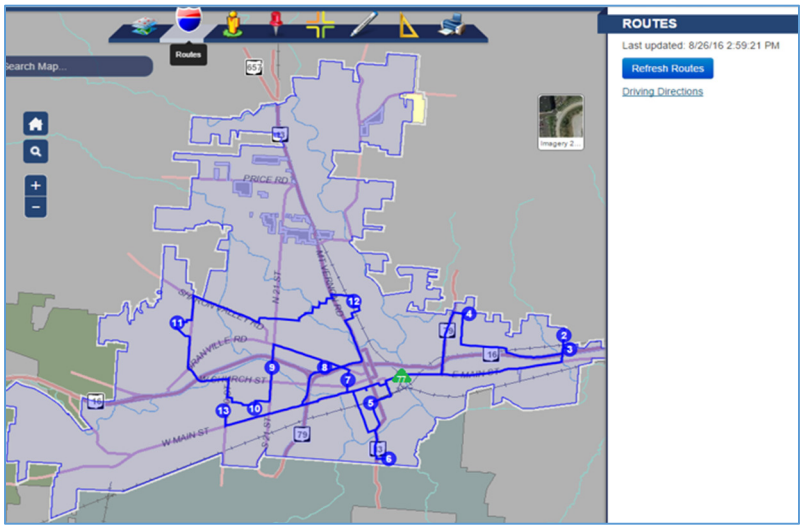
PRIME serves as the primary GIS consultant for the City of Newark and our staff has performed numerous tasks including the conversion of parcel, water (210 miles), storm, and wastewater (230 miles) infrastructure into digital GIS format using GPS technology. This conversion led to the design and creation of a utility geodatabase that links to inspection, maintenance and work order information. PRIME staff has also assisted with the linkage of geographically referenced photos, documents, engineering plans, TV inspections to individual assets within asset management software and ArcGIS.

GeoAsset, Work Order Management System

GeoAsset serves as the enterprise utility management system that consists of water, sanitary and storm infrastructure. geoAsset utilizes ArcSDE (SQL Server2005) and ArcGIS Server web-based technology to integrate information stored and maintained in existing work order management software (Lucity) and an existing utility billing system (Eden). Customer service and other utility staff use this application on a daily basis to analyze and track customer complaints, create work orders and route field crews. This site was originally created by the development staff using the ArcGIS Server Web ADF, then migrated to Flex and finally to JavaScript.

The City utilizes geoAsset to communicate across departments, field crews and the public. This enables all users to view the same information seamless across multiple divisions throughout the city. By linking GIS infrastructure, complaints and work order maintenance, the city has modified common operating procedures so that they are more efficient and cost effective. Service requests from billing accounts are tied into the application with a routing configuration so that field crews can constantly communicate with the administration office and the public. This has assisted with adhering to EPA mandates and improving overall responsiveness of the city staff.

Programmers used the JavaScript and Lucity API to create widgets for a variety of uses. Specially, users can create work orders and service requests from an XY location or a selected set of assets; generate routes and reports for utility inspections using city's street network; review infrastructure information from Lucity based on an asset selection from the map; review and display work order information from Lucity based on an asset selection from the map; migrate from Lucity to the map by selecting an asset or work order; and a custom print widget to create custom maps and PDF files.



Live trucks are now shown in geoAsset based on work orders routes generated on the fly by customer service staff.

We Plow – Snow Operations Site

PRIME GIS staff worked closely with City of Newark Public Works department staff to design a custom, front-end, web application that integrates with the city's existing GIS data layers. The new application consumes AVL data hosted by Network fleet. This application is fully hosted by PRIME using a secure Amazon Cloud instance.

Snow operations dashboard functionality includes:

Secure Access - The operations dashboard will be a secure web application. Users will be required to enter a username and password in order to access the dashboard.

View Truck Location - Last known location information for active vehicles are visible from a map.

Search Truck History - Ability to retrieve vehicle breadcrumbs during a specified time interval. Search history can be performed for individual vehicles, multiple vehicles, or for activity occurring within a specified area such as a service district.

Snow Event Management - Operations staff will record the start time and cleanup end times for individual snow events. This information will be used by the analytics dashboard and the activity map.

Activity Map - The activity map displays street centerlines based on the last time a public works department vehicle visited a street.

Analytics Dashboard - The dashboard will present summary information that is automatically refreshed at a predetermined interval (i.e. every 15 minutes). The dashboard shows a percent of streets visited by priority during a given snow event. This provides snow operations staff with the percent of priority 1 streets visited during a snow event.

Middlesex County, New Jersey – General GIS Services

Client Name:	Middlesex County, New Jersey
Contact Person:	John Pulomena, County Administrator
Contact Phone:	(732) 745-3040
Type of Project:	GIS Application Development, Staff Augmentation, GIS Integration, Business Process Analysis, Data Conversion/Cleansing/Development
Dates of Activities:	July, 2015 – Ongoing

Description of Activities:

Over the past several years, PRIME has worked with Middlesex County, New Jersey to build and enterprise GIS as well as to establish a GIS Governance model for the County. The governance structure emphasized data ownership and maintenance, which leverages subject matter expertise within the County government personnel structure. This included the creation of a versioned, SDE geodatabase for storm water, roads, traffic signals, signs, parcels, economic development and other environmental information. Underlying data layers were documented with associated business requirements for each user agency. PRIME created a sophisticated schema utilizing industry standards for multiple departments. Data was extracted from CAD, Excel and multiple shapefiles. A geocoding model based on the combination of parcel data and street centerlines was also created so that the users of all GIS applications utilized the same information across the enterprise.

PRIME also provided the County with a five-year growth and strategy presentation in order to integrate other departments. PRIME assisted with the hiring of several GIS staff to work across several County departments. PRIME continues to serve in a GIS Administration role and provides direction and coordination for all GIS projects conducted by the County.

Development Plan Review

PRIME assisted the County with documenting all of the processes and workflows for the County's role in reviewing site plans and subdivisions. PRIME led a team of internal and external stakeholders in reviewing the current processes and made recommendations for how the workflows could be optimized to gain efficiencies and streamline government approvals. PRIME also developed GIS tools and interfaces that County Planners use during the review process.

Watershed Analysis

Based upon LiDAR acquired after Hurricane Sandy, PRIME developed a countywide watershed catchment layer, which is used to assess impact fees for new development. Over 450 county-owned stormwater assets (i.e. bridges and culvers) were used as inputs along with a hydro-enforced DEM. Outputs included individual catchment areas as well as all upstream/downstream accumulated flow areas. Assessed fees are used by the County to perform asset maintenance or replacement. These watershed areas will also be used to support ongoing Stormwater and Wastewater Master Plan updates.

Municipal Zoning Layer

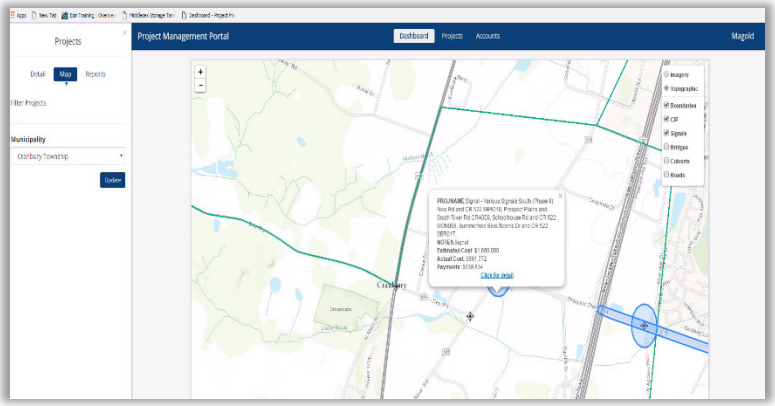
Middlesex County has 25 separate municipalities that each have local zoning regulatory enforcement authority. PRIME worked with the County to develop a process of collecting all official zoning information (i.e. zoning maps and adopted ordinance resolutions) and combing all zoning boundaries into a seamless parcel-based GIS layer. PRIME also authored a maintenance procedure manual and provided training so County staff could incorporate future zoning changes. This process has enhanced coordination and communication between the County and the Municipalities and has eliminated the need for redundant data entry by municipalities.

Economic Development & Planning

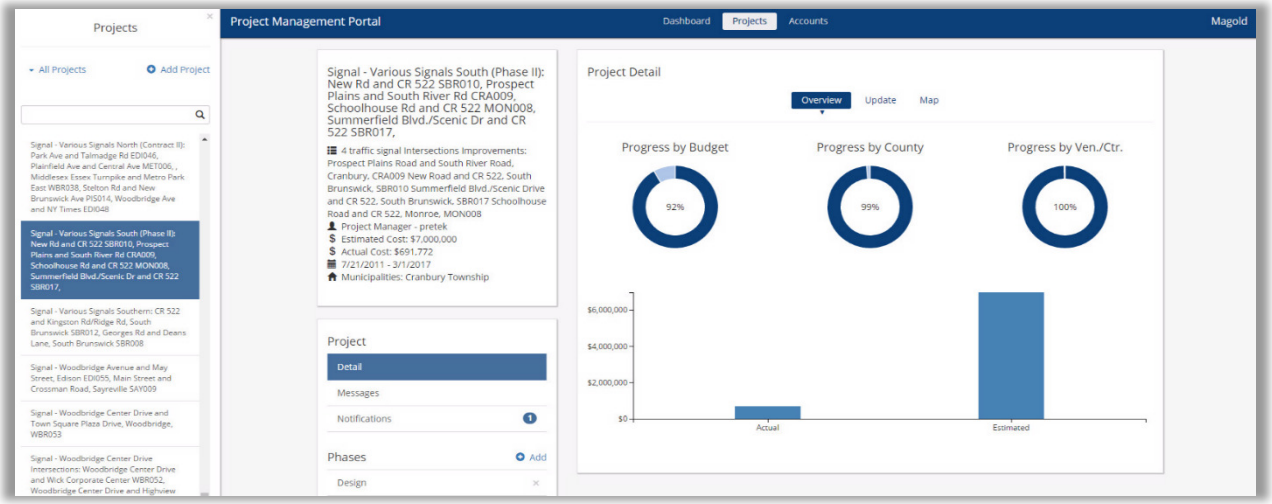
PRIME has assisted the County Office of Economic and Business Development by organizing and maintaining GIS layers, which are critical to economic growth throughout the County. PRIME provided project management and technology support for the development and release of an externally facing web-based portal used by developers and others to market properties, which are available for development. PRIME provided data maintenance and coordination for many GIS layers including zoning, redevelopment areas and special improvement districts.

Capital Improvement Project Management System

The project management application provides Middlesex County Engineering with the ability to manage Capital Improvement Projects (CIP) through a variety of functions. These include the creation and organization of projects through GIS and infrastructure. Management has the ability to track a project throughout its lifecycle including phases and tasks with milestones and dependencies. Detailed reports are used to summarize projects on an as-needed basis through the application as well as the GIS interface.



The application was developed using Microsoft's MVC (Model-View-Controller) 4 model with the Razor View Engine. Incorporated with this will be a combination of jQuery, Foundation, ESRI's JavaScript API, JavaScript, and HTML5. Mapping data is displayed utilizing services



consumed from ArcGIS Server. If other applications require data from the application database, users can consume REST services using Microsoft's Windows Communication Foundation (WCF).

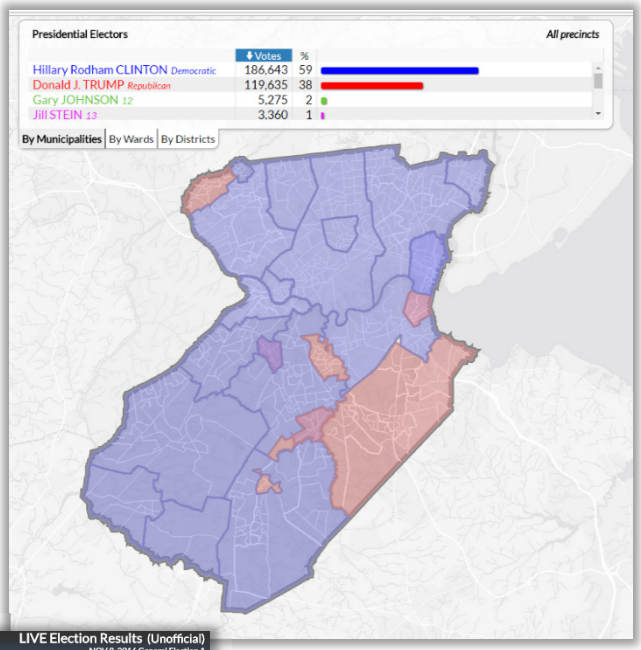
The application consists of a tiered security approach. Users of the application have the ability to review, and in some cases create and edit projects as well as view them on a map located on each project page. Mapping functionality includes the associated assets as well as any necessary tools to zoom, pan, query, or edit CIP polygons.

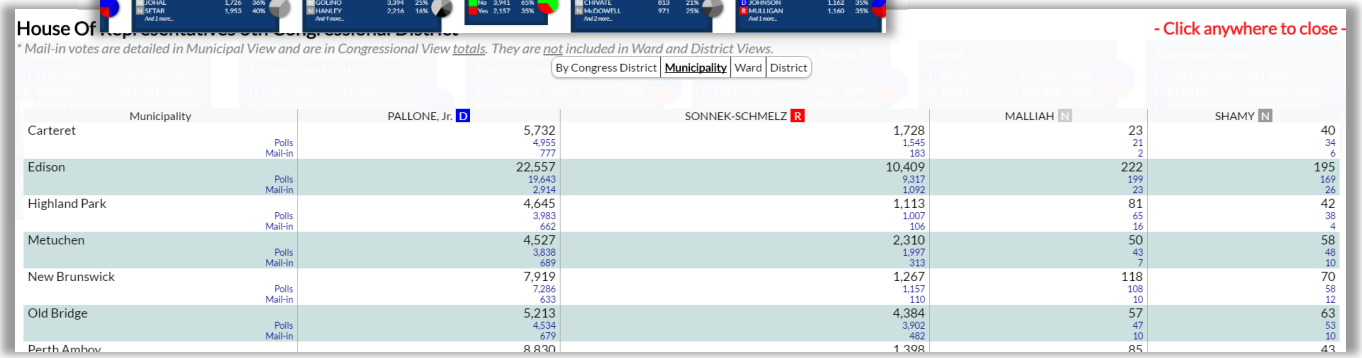
Community Services Portal

Middlesex County provides and coordinates many services for the elderly, disabled, veterans, children and low- income families. To optimize these services, PRIME is helping the County by analyzing the demographic and socioeconomic profile of the communities and the services provided. For example, the County provides transportation shuttle service to elderly residents to/from doctor appointments to enhance their mobility and improve basic health and quality of life. However, as neighborhoods change over time, shuttle routes should be adjusted accordingly to serve the intended elderly population. This same analytical approach is being used to optimize mental health, children, housing, veteran and other community & social services.

Election Site

Middlesex County has been using their elections portal, developed by PRIME to display historical elections results and live streaming race breakdowns since the 2015 general election. The historical site can display results going back to 1999, giving the public a clear view of specific race outcomes on a map as well as a table, which can be exported to Excel. The live site was designed to adapt to anything from phones to large screen televisions. It provides an automated results ticker along with a status message that county staff can customize dynamically on election night.

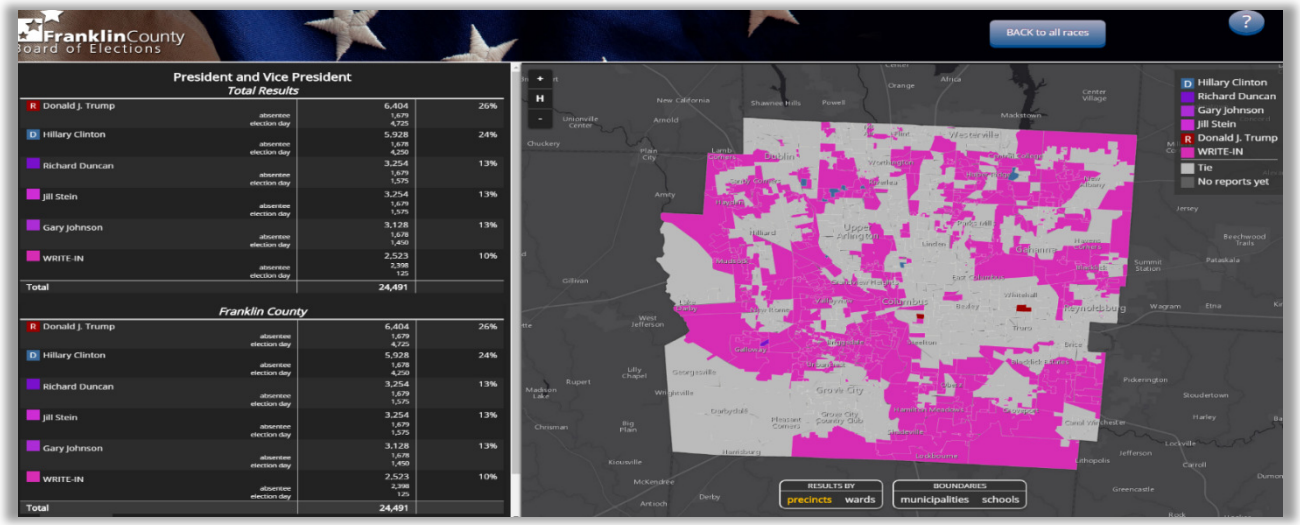




Franklin County Board of Elections Live Election Results Viewer

Client Name:	Franklin County, Board of Elections
Contact Person:	Terri Bettinger
Contact Phone:	(614) 525-3006
Type of Project:	GIS Application Development, GIS Integration
Dates of Activities:	July, 2016 – November, 2016

Description of Activities:



The PRIME GIS team worked closely with the Franklin County Board of Elections to develop a mobile responsive website allowing citizens to view real-time election results. This application was used with great success during the 2016 general election and provides an integrated map, allowing users to see how votes are cast across the county for each race administered by the Board of Elections. Prior to this application, the Board of Election host two separate applications to provide the same functionality. One site was dedicated to providing live results and the second site was dedicated to providing a map. The existing sites required two different teams to perform a series of manual steps to update these sites with new information as votes were tabulated by board of Elections officials. With so many manual steps, the average turn-around time to post updates was approximately 10 minutes. With the new site, this turn-around time dropped to under two minutes.

GIS Integration

The PRIME GIS development team designed and developed a server side-processing tool that consumes raw output from the County's voter tabulation system (unity). The existing sites required multiple manual steps to convert the raw output, which was time consuming, and error prone. PRIME integrated with the existing voter tabulation system to dramatically streamline the process of posting updates to the public.

GIS Application Development

PRIME GIS application development team utilized HTML-5 and JavaScript to create a mobile responsive front-end web application that scales to display elections results on large format screens such as TVs and projectors as well as small screens such as tablets and smartphones. The application also utilizes vector caching of County voting precincts. This makes the site easier to scale as it reduces the load sent to a GIS server as the users' browser stores the geometry in memory. This also improves overall application performance, as the browser no longer must wait for a GIS server to provide geometry or attribute information.

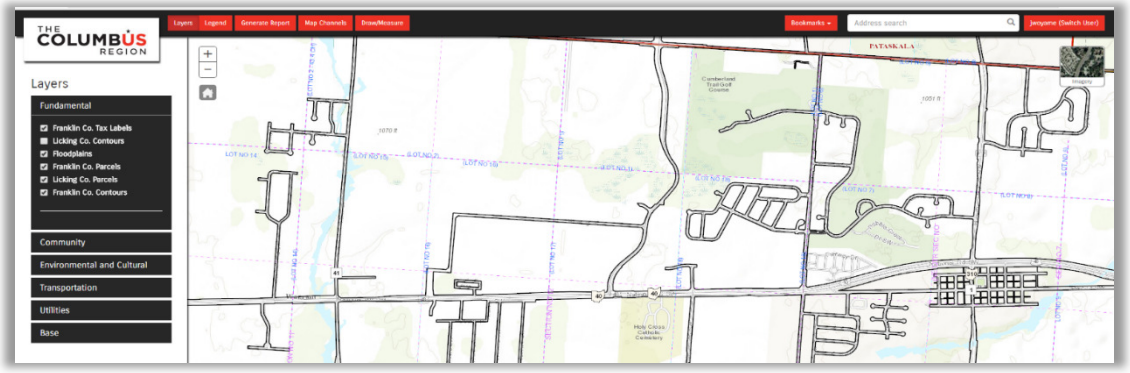
The application was also built with a robust server-side data processing component, which provides users with dynamic updates. Once a user loads the application, he/she will receive new election updates automatically without needing to refresh the site.

Columbus 2020 ArcGIS Online Site Tool

Client Name:	Columbus 2020
Contact Person:	Chris Strayer
Contact Phone:	(614) 746-6872
Type of Project:	GIS Application Development, GIS Integration, Data Conversion/Cleansing/Development, Needs Assessment/Business Process Analysis (BPA)
Dates of Activities:	July, 2016 – October, 2016

Description of Activities:

PRIME created a custom web-mapping portal to upload outside data sources through ArcGIS Online or GIS files. The Web App Builder was used to modify simple symbology and custom draw tools. The site also leveraged ArcGIS Online's OAuth 2.0 capabilities for authentication. By tagging feature layers on ArcGIS Online, users will be able to upload information instantly onto the portal to begin analysis. Custom reports with metadata were built to disseminate information quickly to possible investors to the Columbus Region.



4 Proposed Rates

Section 4 Proposed Rates

Labor Classification Descriptions. The following section describes the labor classifications for key personnel and other staff (organized by firm) as requested.

PRIME AE GROUP LABOR CLASSIFICATIONS

CLASSIFICATION	PRINCIPAL
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	Professional Engineering License (PE) or Geographic Information Systems Professional (GISP) certification as appropriate
Average Years of Experience:	15-20 years
Typical Promotion Track:	Staff in this category would have previously served as a Senior Project Manager or GIS Manager and would be working towards a role as an Office Leader.
Typical Responsibilities:	Serve in an operations role and work with office leadership to ensure appropriate technical resources are available. Work with clients to conceptualize and develop project opportunities. Coordinate technical and project resources across offices to ensure project and client needs are being addressed. Assist Project Managers as needed.

CLASSIFICATION	GIS DIRECTOR
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	Geographic Information Systems Professional (GISP)
Average Years of Experience:	10-15 years
Typical Promotion Track:	Staff in this category would have previously served as a GIS Manager and would be working towards a role as a Principal.
Typical Responsibilities:	Coordinate operations for the GIS Practice Area across all offices for the company. Assess client needs and personnel capabilities. Review industry trends in GIS and support advancement and adaptation of staff capabilities for our projects. Manage projects and review project deliverables for key clients.

CLASSIFICATION	SENIOR GIS ANALYST
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	Geographic Information Systems Professional (GISP)
Average Years of Experience:	4-8 years
Typical Promotion Track:	Staff in this category would have previously served as a GIS Analyst and would be working towards a role as a GIS Manager.
Typical Responsibilities:	Serve as a task leader for assigned GIS projects. Perform database design and development. Provide data editing and processing including QA/QC. Perform complex analyses of geographic data. Work independently or as the team lead to design the methodology, document procedures, perform

the analysis and prepare presentations. Develop procedural, technical, or training documentation.

CLASSIFICATION	GIS ANALYST
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	None identified
Average Years of Experience:	1-4 years
Typical Promotion Track:	This is an entry-level professional position and staff in this category would be working towards a role as a Senior GIS Analyst.
Typical Responsibilities:	Perform data development including digitizing, scanning, and conversion. Provide data editing and processing including QA/QC. Develop maps and other cartographic products. Provide technical support to staff on various GIS projects.

CLASSIFICATION	SENIOR APPLICATION DEVELOPER
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	None identified
Average Years of Experience:	4-8 years
Typical Promotion Track:	Staff in this category would have previously served as an Application Developer and would be working towards a role as a Project Manager.
Typical Responsibilities:	Leads the design, develop, document, and maintain public-facing web mapping sites and applications through concept, design, and delivery phases. Works with clients, GIS Manager and/or Project Manager regarding system architecture. Manages Application Developer team.

CLASSIFICATION	APPLICATION DEVELOPER
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	None identified
Average Years of Experience:	1-4 years
Typical Promotion Track:	This is an entry-level professional position and staff in this category would be working towards a role as a Senior Application Developer.
Typical Responsibilities:	Assist with design, develop, document, and maintain public-facing web mapping sites and applications through concept, design, and delivery phases.

CLASSIFICATION	PROJECT MANAGER
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	Professional Engineer License (PE) or Geographic Information Systems Professional (GISP) as appropriate
Average Years of Experience:	8-10 years
Typical Promotion Track:	Staff in this category would have previously served as a Senior Engineer and would be working towards a role as a Department Mgr.
Typical Responsibilities:	Coordinate and work with clients to make sure projects are delivered to client's satisfaction. Manage projects and review project deliverables.

CLASSIFICATION	SENIOR ENGINEER
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	Engineer in Training (where applicable)
Average Years of Experience:	6-10 years (or more)
Typical Promotion Track:	Staff in this category would have previously served as a Project Engineer and would be working towards a role as a Project Manager.
Typical Responsibilities:	Serve as task lead for assigned projects. Perform advanced or complex engineering analyses. Attend client meetings with Project Manager and present project findings. Provide instruction/oversight to other staff. Review project deliverables.

CLASSIFICATION	PROJECT ENGINEER
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	Engineer in Training (where applicable)
Average Years of Experience:	1-4 years
Typical Promotion Track:	This is an entry-level professional position and staff in this category would be working towards a role as a Senior Engineer.
Typical Responsibilities:	Perform engineering analysis for assigned tasks on projects. Provide documentation support for explanation or report of findings.

CLASSIFICATION	CLERICAL
Minimum Education:	High School Diploma, 2-year university degree preferred.
Required Education & Certifications:	None identified
Average Years of Experience:	2+ years
Typical Promotion Track:	This is an entry-level position and staff in this category would be working towards a role as an Administrative Assistant.
Typical Responsibilities:	Proficiency in MS Word, Excel and Access. Assists with organization and preparation of written reports, invoices and memorandums. Performs data entry using Excel or other similar programs.

STANTEC LABOR CLASSIFICATIONS

CLASSIFICATION	SENIOR GIS ANALYST
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certifications:	Geographic Information Systems Professional (GISP)
Average Years of Experience:	8-10 years
Typical Promotion Track:	Staff in this category would have previously served as a GIS Analyst and would be working towards a role as a GIS Project Manager.
Typical Responsibilities:	Perform database design and development. Provide data editing and processing including QA/QC. Perform complex analyses of geographic data. Work independently or as the team lead to design the methodology, document procedures, perform the analysis and prepare presentations. Develop procedural, technical, or training documentation.

CLASSIFICATION	GIS ANALYST
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certification:	None
Average Years of Experience:	1-4 years
Typical Promotion Track:	This is an entry-level professional position and staff in this category would be working towards a role as a Senior GIS Analyst.
Typical Responsibilities:	Perform data development including digitizing, scanning, and conversion. Provide data editing and processing including QA/QC. Develop maps and other cartographic products. Provide technical support to various staff.

CLASSIFICATION	GIS MANAGER
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certification:	Geographic Information Systems Professional (GISP)
Average Years of Experience:	10+ years
Typical Promotion Track:	Staff in this category would have previously served as a GIS Project Manager and would be working towards a role as a Principal.
Typical Responsibilities:	Manage day-to-day activities for the GIS Department in an office location. Coordinate staffing resources across offices and within project teams. Coordinate and work with clients to make sure projects are delivered to client's satisfaction. Manage projects and review project deliverables.

CLASSIFICATION	PROJECT ENGINEER
Minimum Education:	University degree in applied science, engineering or related field.
Required Education & Certification:	Engineer in Training (where applicable)
Average Years of Experience:	1-4 years
Typical Promotion Track:	This is an entry-level professional position and staff in this category would be working towards a role as a Senior Project Engineer.
Typical Responsibilities:	Perform engineering analysis for assigned tasks on projects. Provide documentation support for explanation or report of findings. This position is in training to gain GIS skills utilizing ESRI software.

CLASSIFICATION	REGISTERED SURVEYOR
Minimum Education:	University degree in geodetic science, engineering or related field.
Required Education & Certification:	Professional Surveyor License (PS, PLS)
Average Years of Experience:	6-8 years
Typical Promotion Track:	Staff in this category would have previously served as a Land Surveyor and would be working towards a role as a Senior Survey Project Manager.
Typical Responsibilities:	Manage project tasks and review project deliverables. Coordinate and work with clients to make sure projects details meet the client's expectations and are delivered to client's satisfaction.

CLASSIFICATION	CLERICAL
Minimum Education:	High School Diploma
Required Education & Certification:	None Identified
Average Years of Experience:	2+ years
Typical Promotion Track:	This is an entry-level position and staff in this category would be working towards a role as an Administrative Assistant.
Typical Responsibilities:	Proficiency in MS Word, Excel and Access. Excellent communication skills. Ability to understand and follow written and verbal instructions. Strong organizational, problem-solving and analytical skills.

Labor Classification Rates. The below table shows the maximum (cap) hourly rate for all labor categories for 2017, 2018, 2019. **The hourly cost multiplier (HCM) for this project is 300% (3.0 x Hourly Rate).**

Labor Classification	2017 Max Hourly Rate	2018 Max Hourly Rate	2019 Max Hourly Rate
PRIME AE GROUP, INC.			
Principal	$81.73	$84.18	$86.71
GIS Director	$72.36	$74.53	$76.77
Senior Engineer	$51.76	$53.31	$54.91
Project Manager	$49.38	$50.86	$52.39
Senior Application Developer	$44.72	$46.06	$47.44
Project Engineer	$42.20	$43.47	$44.77
Senior GIS Analyst	$34.62	$35.66	$36.73
Application Developer	$25.65	$26.42	$27.21
GIS Analyst	$24.00	$24.72	$25.46
Clerical	$22.10	$22.76	$23.45
STANTEC			
GIS Manager	$70.00	$72.10	$74.26
Senior GIS Analyst	$45.00	$46.35	$47.74
Registered Surveyor	$45.00	$46.35	$47.74
Project Engineer	$42.00	$43.26	$44.56
GIS Analyst	$36.00	$37.08	$38.19
Clerical	$25.00	$25.75	$26.52

5 Summary

Section 5 Summary

The PRIME Team has shown exceptional expertise throughout this submittal with our staff and project experience. We have demonstrated our capabilities with:

- ✓ Data Conversion/Cleansing/Development
- ✓ Field Data Collection
- ✓ GIS Staff Augmentation
- ✓ GIS Needs Assessment and Business Process Analysis (BPA)
- ✓ GIS Application Development
- ✓ GIS Integration Solutions

We also have shown that we have the subject matter expertise to work with multiple departments within the City of Columbus. Our team has worked with Columbus for over a decade bringing new ideas and inspiration for cutting edge technology and innovation. With this, our team will be proud to help the City of Columbus with these and other Smart Cities initiatives.