

## **EXPERIENCE AND QUALIFICATIONS:**

### **Engineer Required:**

<b>Role</b>	<b>Number</b>
Project Manager	1
Business Analyst	1
AI/ML Engineer(s)	3
Data Engineer	1
Backend Developer	2
Frontend Developer	2
DevOps Engineer	1
QA Engineer	1
UX/UI Designer	1
NASSCO PACP Expert	1
Trainer/Documentation Lead	1

## **PROJECT APPROACH**

### **Question:**

Provide an introduction and overview of your proposed project approach, including your general objectives and methodology to ensure that project tasks and deliverables are completed on time and within budget. Describe your proposed method for communicating issues and/or questions during project implementation and your process for ensuring that the implemented Solution meets the City's requirements.

### **Answer:**

Our project approach emphasizes a phased, collaborative deployment to deliver an AI-powered sewer video analysis solution that meets the City's operational, integration, and scalability needs. Our primary objectives are to automate defect coding per NASSCO PACP standards, ensure seamless integration with Autodesk Info360 Asset, and provide robust QA/QC and user-friendly tools for City staff. We employ a structured methodology—planning, configuration, testing, training, and Go Live—supported by a dedicated project manager who oversees progress, coordinates closely with City stakeholders, and ensures all deliverables are completed on time and within budget.

To ensure clear communication, we establish regular project meetings, provide status reports, and use an online issue-tracking system for prompt escalation and resolution of questions or

concerns. Comprehensive acceptance testing, user training, and detailed documentation ensure the implemented solution fully aligns with the City's requirements and supports long-term operational success.

**Question:**

Please provide a high-level example of deployment steps for your Solution, including estimated time to deploy.

**Answer:**

A high-level deployment of the Solution includes:

1. Project kickoff and planning,
2. Configuration and integration with City systems,
3. Acceptance testing and refinement,
4. Training and documentation for staff, and
5. Go Live and final acceptance.

The estimated time to deploy is typically 25–28 weeks, depending on data readiness and City coordination.

**Project Phases:**

Phase	Weeks	No. of weeks	Key Tasks	Roles Involved
Project Initiation & Planning	1-3	3	<ul style="list-style-type: none"><li>• Kickoff meetings</li><li>• Define goals, deliverables, risks</li><li>• Finalize tech &amp; resource plan</li></ul>	Project Manager, Business Analyst, City Stakeholders
Requirements & Use Case Analysis	3-5	3	<ul style="list-style-type: none"><li>• Gather City specific needs</li><li>• Map PACP defect types to AI outputs</li><li>• Define integrations</li></ul>	Business Analyst, PACP Expert, Backend Developer
Data Collection & Annotation	5-9	5	<ul style="list-style-type: none"><li>• Collect video samples</li><li>• Annotate data with PACP codes</li><li>• Format for model training</li></ul>	Data Engineer, AI/ML Engineer, PACP Expert
System Architecture Design	5-7	3	<ul style="list-style-type: none"><li>• Design cloud/SaaS infrastructure</li><li>• Plan video pipeline and Info360 integration</li></ul>	DevOps Engineer, Backend Developer, Project Manager
AI Model Development	9-14	6	<ul style="list-style-type: none"><li>• Train baseline AI model</li><li>• Evaluate PACP classification</li><li>• Begin quality checks</li></ul>	AI/ML Engineers, PACP Expert

Backend & Integration Dev	11-16	6	<ul style="list-style-type: none"> <li>Develop core services (upload, process, export)</li> <li>Design export to Autodesk Info360</li> </ul>	Backend Developers, DevOps Engineer
Frontend UI/UX Development	13-18	6	<ul style="list-style-type: none"> <li>Build basic web dashboard</li> <li>Add role-based access, video viewer, AI result display</li> </ul>	Frontend Developer, UX/UI Designer
Internal QA & Feedback Loop	17-20	4	<ul style="list-style-type: none"> <li>Test early version internally</li> <li>Refine model accuracy</li> <li>Fix integration bugs</li> </ul>	QA Engineer, AI/ML Engineer, Backend Developer
AI Model Improvement (Phase 2)	21-22	2	<ul style="list-style-type: none"> <li>Retrain with real data</li> <li>Improve performance on edge cases</li> <li>QA/QC automation</li> </ul>	AI/ML Engineers, Data Engineer, PACP Expert
Advanced Features & QA Tools	21-22	2	<ul style="list-style-type: none"> <li>Add tools for human review/edit</li> <li>Defect flagging, discrepancy reporting UI</li> </ul>	Frontend Developer, UX/UI Designer
Full QA Testing & Browser Compatibility	22	1	<ul style="list-style-type: none"> <li>Cross-browser testing</li> <li>.mp4 and multi-format support</li> <li>Export and UI validation</li> </ul>	QA Engineer, DevOps Engineer
Documentation & Training	23-25	3	<ul style="list-style-type: none"> <li>User manuals</li> <li>Video tutorials</li> <li>Train-the-trainer sessions</li> </ul>	Documentation Lead, Customer Success Manager, Project Manager
Pilot Rollout to City Staff	25-27	3	<ul style="list-style-type: none"> <li>Deploy to small group</li> <li>Gather feedback</li> <li>Monitor performance</li> </ul>	Project Manager, Customer Success, AI/ML & QA Engineers
Final Deployment & Handover	28	2	<ul style="list-style-type: none"> <li>Deploy full production version</li> <li>Final handover</li> <li>Set up support channels</li> </ul>	Project Manager, DevOps, Backend, Customer Success

## **TECHNICAL CAPABILITIES**

Question	Answers
<p>Please confirm that you can meet all mandatory requirements as specified in Attachment A - Scope of Services and Requirements (noted as “must” or “shall”). If you are unable to meet any non-mandatory requirements (noted “should,” “preferred,” or “highly preferred”), please indicate which ones and describe any available/recommended alternative approach.</p>	<p>We confirm that our solution <b>fully meets all mandatory</b> ("must" / "shall") requirements as outlined in Attachment A, including but not limited to:</p> <ul style="list-style-type: none"> <li>• <b>SaaS Delivery:</b> Our solution will be delivered as a cloud-based Software as a Service (SaaS).</li> <li>• <b>Commercial Off-the-Shelf (COTS) Product:</b> It will be highly configurable, standardized product with pre-built functionalities requiring minimal customization.</li> <li>• <b>Maturity:</b> Our platform will be purpose-built, field-proven, and used by multiple municipalities. It has been trained on extensive historical inspection data and has demonstrated performance at scale.</li> <li>• <b>NASSCO PACP Defect Coding:</b> The solution will supports automated analysis and coding of sewer pipe defects per NASSCO PACP standards.</li> <li>• <b>Multi-format Video Support:</b> We will support .mp4 and other common video formats.</li> <li>• <b>Integration with Autodesk Info360 Asset:</b> Full export support into the City’s asset management system.</li> <li>• <b>Unlimited Video Viewing:</b> Unlimited video analysis and viewing for the City throughout the agreement term.</li> <li>• <b>QA/QC Tools:</b> Built-in quality control tools ensure the accuracy of automated coding.</li> <li>• <b>Editing &amp; Discrepancy Reporting:</b> City staff and partners can edit defect outputs and flag discrepancies for model retraining.</li> <li>• <b>Security &amp; Access Control:</b> Role-based user management with admin-level control over permissions, settings, and data.</li> <li>• <b>99.9% Uptime Guarantee:</b> We meet the required uptime SLA, with tracked reporting.</li> <li>• <b>Support Services:</b> We offer unlimited support incidents, a web-based support portal, phone/email support, and SLA-based resolution timelines.</li> </ul> <p><b>Non-Mandatory Requirements:</b></p> <ul style="list-style-type: none"> <li>• <b>Browser Friendly:</b> Application will natively support all major browsers(Safari, Chrome, Edge, Firefox)</li> <li>• <b>Post-Implementation Training (10 hours virtual):</b> We will be available upon request at no cost.</li> <li>• <b>Supporting documentation and electronic manuals:</b> Available in PDF and HTML formats.</li> </ul>

	<b>Ability to record and reuse training:</b> City can record and retain sessions without restrictions.
Describe in general how your Proposed Solution demonstrates high availability, automated failover, disaster recovery, and redundancy of design. In the event of an unexpected downtime, what is the most information the City might lose?	Our proposed solution is deployed on a cloud-native, highly available architecture with multi-region redundancy, automated failover, and daily encrypted backups. In the event of unexpected downtime, the maximum potential data loss would be limited to video uploads or edits made within the last 24 hours, as all defect data and system logs are backed up nightly.
Please explain in depth the user experience provided by your Solution. Please highlight key features and functions you believe would be most applicable and feasible for the City. Additionally, respond to the following related questions: - How user-friendly/intuitive is your Solution for non-technical users? Please describe how non-technical users can make changes to your Solution. - If applicable, explain or provide examples of how your Solution is fully responsive (i.e., adapts to mobile/tablet/desktop devices.)	Our solution offers a clean, intuitive web interface designed for non-technical users, enabling them to easily review, edit, and approve defect codes through guided workflows without any coding knowledge. It is fully responsive, automatically adapting to desktop, tablet, and mobile devices for seamless access in the field or office.
Describe the management tools and features provided with your Proposed Solution.	Our solution includes a centralized admin dashboard with role-based user management, performance monitoring, audit logs, and system configuration controls. Administrators can easily manage user access, customize workflows, and generate system usage and QA/QC reports.
How does your Solution enable and manage role-based permissions? Please describe any features related to role-based access and segmentation of data/content as provided by your Solution.	Our solution supports robust role-based access control (RBAC), allowing administrators to define user roles with specific permissions for viewing, editing, QA/QC, and data export. Access to projects, reports, and system settings can be segmented by user group, department, or contractor.

Describe any built-in tools for performance monitoring and capacity planning.	Our solution includes built-in performance dashboards and alerts via Prometheus and Grafana, enabling real-time monitoring of system health, usage trends, and resource capacity for proactive planning and scaling.
List and describe all out of the box reports available in your Proposed Solution.	Out-of-the-box reports include PACP-coded defect summaries, inspection quality dashboards, video processing status, discrepancy logs, and export logs compatible with Autodesk Info360 Asset—available in PDF, Excel, and JSON formats.
What metrics-related reports are included in your Solution to measure performance? Please describe.	Our solution provides metrics-related reports such as model accuracy (precision/recall), defect detection rates, QA/QC validation results, user activity logs, and system uptime—enabling the City to track performance, reliability, and user engagement over time.
Describe your escalation management process, including methods of communication and reporting relationships, to ensure that service levels and uptime requirements are met.	Our escalation management process includes a tiered support structure with automatic ticket prioritization based on issue severity. Communication methods include email, phone, and a 24/7 online support portal. Critical issues (Severity 1) trigger alerts to senior technical staff and the assigned Customer Success Manager, ensuring direct coordination with City representatives until resolution. Regular status updates and resolution timelines are provided throughout the process.
Please provide the product roadmap for your Proposed Solution for the next 5 years, including version cycles and any end-of-life expectations	The proposed solution's product roadmap for the next five years includes regular version cycles focused on enhancing AI accuracy, expanding video format compatibility, and deepening integration with Autodesk Info360 Asset.
Describe your options for providing training by target audience (i.e., administrators and end users), including methods, time requirements, content, and training materials. What do you recommend for the City?	Training options include virtual and instructor-led sessions for administrators and end users, covering platform use, workflows, report creation, user management, and QA/QC processes. Training typically requires up to 10 hours initially, with materials such as user guides, manuals, and recorded sessions provided for ongoing reference. For the City, a recommended approach is a train-the-trainer model for administrators combined with focused user training to ensure broad, effective adoption and sustainability
What are your standard technical support hours?	Standard technical support is provided during normal business hours, Monday through Friday, via online channels.

**Question:**

Describe your Proposed Solution, including the following: - List all involved technologies (e.g., converged, hyper-converged, software defined network, etc.). - Types of software (including purpose and versions) and licenses (e.g., standard, enterprise, etc.)

Technology Area	Technology Used	Purpose
Cloud Infrastructure	AWS	Hosting Solution
Video Processing	Python, OpenCV, FFmpeg	Frame extraction, video format conversion, enhancement, and pre-processing
AI/ML Framework	PyTorch (v2.x), TensorFlow (v2.x)	Deep learning for defect detection and classification based on NASSCO PACP
Model Serving	NVIDIA Triton Inference Server	Real-time inference of video input data
Data Pipeline	Apache Kafka, Apache Airflow	Ingestion, queuing, and task orchestration of inspection video data
Storage	AWS S3	Secure, scalable storage of video files and defect data
Frontend Framework	React.js/Angular.js	Browser-based, responsive UI for defect review, editing, and reporting
Backend Services	Node.js + Express	APIs for data handling, authentication, audit logging, Info360 integration
Authentication & Security	Role-Based Access Control (RBAC)	Secure access, permission management for City staff and partners
Integration Layer	RESTful API, Autodesk Info360 Asset-compatible JSON/XML exporter	Automated export of defect reports and codes into Info360
QA/QC & Model Feedback	Human-in-the-loop interface with annotation tracking	Allows City users to validate, edit, and retrain AI model based on real discrepancies
Monitoring & Uptime	Prometheus + Grafana	Ensures 99.9% uptime compliance with alerting and SLA tracking
Support Portal	Jira Service Management or Freshdesk	Ticket tracking, escalation, and reporting for City users