Quality Assurance/Quality Control Plan

The Quality Assurance / Quality Control (QA/QC) procedures and processes described in this document and made a part of the Project Management Plan for any major projects undertaken by Alliance Transportation Group, Inc. are designed to provide assurance to the client that 1) the outcomes of a given project result in a quality product that meets project objectives; and 2) that adequate control is maintained during product development to ensure that products are delivered in an efficient manner with a minimum of problems due to chance errors or systemic irregularities.

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1. Introduction

The Quality Assurance / Quality Control (QA/QC) procedures and processes described in this document and made a part of the Project Management Plan for any major projects undertaken by Alliance Transportation Group, Inc. are designed to provide assurance to the client that 1) the outcomes of a given project result in a quality product that meets project objectives; and 2) that adequate control is maintained during product development to ensure that products are delivered in an efficient manner with a minimum of problems due to chance errors or systemic irregularities. The two processes, Assurance and Control, have different applications and objectives and are, therefore, treated separately in the following sections.

1.1. Quality Goals

The Alliance Corporate Leadership uses strategic quality planning to establish a Vision for the Corporation and an action plan to achieve that vision. From that Vision, a set of corporate goals has been established.

Those Alliance Corporate Quality goals are:

- Establish a corporate culture that values quality and focuses on delivering quality products that meet or exceed client specifications and expectations;

- Develop quality processes at the management level that support the development project teams responsible for the development and delivery of quality products and services to clients;

- Develop a strategic planning process to provide continual improvement in the quality of all corporate products and services;

- Identify internal and external customer requirements and make corporate decisions that support those requirements;

- Require that all employees work as a team to develop and support quality goals;

- Provide training and development to all employees on the processes and methodologies necessary to ensure the creation of quality products and services and the meeting of customer requirements;

- Establish an ongoing process for the collection and analysis of data relative to quality objectives;

- Create a process of improvements based on the analysis of that data; and

- Provide continual feedback to managerial and functional personnel for further quality process improvement.

## *2.	References for Quality Control/Quality Assurance Plan*

Alliance Transportation Group, Inc, used several quality codes and documents in the development of this Quality Assurance/Quality Control Plan including: Code of Federal Regulations, 10 CFR 50, Appendix B, and in ASME NQA-1; ANSI/ASQC Q9001 (ISO 9001); 10 CFR 830.120; and US Office of the Secretary of Defense, Quality Management Office. (1998); *Small Business Guidebook to Total Quality Management;* Washington, DC: US Department of Defense.

3. Quality Assurance Plan

Quality Assurance incorporates an established system of review procedures conducted by personnel not directly involved in the process of creating the deliverable products and services described in the relevant project work plan. The reviews are designed to verify that quality objectives have been met and to give feedback to both management and production personnel working to achieve the quality goals of the project.

3.1. Purpose of Quality Assurance Plan

The purpose of this Quality Assurance (QA) Plan is to document the process by which Alliance provides clients with the confidence that the results, conclusions, recommendations and products delivered are accurate and reliable and conform to agreed upon requirements and specifications, as well as applicable standards, laws, and regulations. The QA Plan describes a process that is comprehensive, continuous and measurable. The Quality Assurance (QA) Plan is designed to insure that the execution of the scope of work for any given project will meet or exceed all product/service specifications and fulfill all product/service quality requirements.

3.2. Alliance Policies related to the Quality Assurance Program

Alliance has adopted the following Quality Statement:

> At Alliance, It is our intention to ensure that a) every member of the Alliance team understands that he/she is responsible for producing a quality product or service and that b) the tools and resources needed to meet that responsibility are provided and available in a timely and effective manner.

Alliance has established a system of quality assurance functions that provide for review and documentation of project activities by Project Managers, Project Principals, Division Directors, Enterprise Managers, and the Quality Assurance Manager. The relationships of the functions are described in this Quality Assurance Manual and in appropriate position description policies.

3.3. Scope of Quality Assurance Plan

This Quality Assurance Plan addresses all aspects of the execution of the scope of services and delivery of products for professional services contracts, including:

- Preparation of Project Proposal;

- Negotiation of Budget, Scope and Contract;

- Conduct of all Project Initiation activities;

- Conduct of all Accounting Activities;

- Conduct of all Project and Personnel Management Activities;

- Preparation and Execution of Project Management Plan;

- Preparation and Execution of Project Communications Plan;

- Completion of all Scope Requirements; and

- Delivery of all products.

3.4. Alliance Quality Assurance Plan Components

In addition to incorporating the general QA components described in this document into each project management plan, each project will also have supplemental QA/QC components consistent with the scope, scale and complexity of the project. The following is a partial list of the components of the Alliance Quality Assurance Plan for each specific project:

- Project specific strategies and processes to assure quality that is appropriate to the level of detail and complexity of the work being performed.

- Procedures to periodically measure and report quality performance to the client throughout the contract period;

- Time table for conducting internal audits and engaging external audit firms to conduct audits of its operations; and

- Controls to be used within the project to assure quality and consistency throughout the life of the project.

3.5. Quality Assurance Reviews

Alliance will conduct external reviews of products and services, and the processes by which those products and services are produced in order to ensure that an unbiased appraisal is made. To that end, Alliance will implement the following policies.

3.5.1. External Review Procedures will be conducted by personnel not otherwise involved in the project. Quality is assured through the use of this independent and objective review of the Quality Control process and the quality, completeness, accuracy, reasonableness, and operational efficiency of each project activity or deliverable.

3.5.2. Alliance will provide external quality reviews/audits of all sub-consultant procedures, processes and deliverables.

3.5.3. On projects where a client has established a project management team or steering committee, Alliance will work with the client to facilitate the use of the project management team or steering committee to conduct independent peer review of draft products.

4.   Quality Control Plan

Quality Control relates to the procedures and processes used to continually monitor accuracy and reasonableness, and assure that the products and services provided to the client meet the requirements of specific project agreements. Quality Control is carried out by all members of the Alliance Team on a continuous basis and includes the documentation of the results of the quality control processes.

4.1.   Purpose of Quality Control Plan

The purpose of the Quality Control Plan is to establish continuous processes and procedures that will support the achievement of the Alliance quality goals during the execution of each individual project.

4.2.   Scope of Quality Control Plan

The Alliance Project Manager will meet / conference with the client on a regular basis to ensure that there is clear and concise communication regarding each step in the QA/QC process and that there is consensus that the project objectives are being met at each stage of the process. In addition, continuous oversight and review will be conducted internally through a set of steps carried out by senior staff and the project team. The QC steps are described in detail in subsequent sections.

Client feedback regarding submitted products will be incorporated into the project team deliberation process for consideration in further product revision or refinement.   The deliberation and consultation process will continue iteratively until a consensus is reached that the product or resource successfully achieves project objectives and meets or exceeds quality specifications.

4.3.   Technical Activities

In addition to the Quality Assurance Plan, the Alliance Team will also work with clients to develop a system of routine technical activities to measure and control the quality of the products to be delivered; data and other inputs to the project from external sources; and project components. The QC system is designed to:

- Provide routine and consistent checks to insure the quality of the each product, or interim product, for each project;

- Provide routine and consistent checks to insure procedures are adhered to and that products produced by Alliance meet or exceed stated project quality criteria;

- Identify problems, resolve problems, and provide feedback; and

- Document and archive all project materials and record all Quality Control activities including accuracy checks on data acquisition and calculations, consistent use of assumptions and the consistent use of approved, standardized procedures.

4.4. *Quality Control Check Points*

Quality Control is exercised throughout the study design by every member of the Alliance Team. However Alliance will also incorporate specific quality control check points (sometimes referred to as gates) at which interim products will be assessed. These quality control check point procedures include technical reviews, accuracy checkpoints, and tests for reasonableness.

For each project, Alliance will work with the client to establish a set of quality checkpoints, or gates. The following is a sample list of the quality checkpoints and/or gates that may be employed:

- Project Initiation

  - Development of Project Management Plan

  - Development of Project Communications Plan

- Completion of each Project Deliverable

- Completion of Final Report and Documentation, and/or Delivery of Final Product

- Completion of any Training , Follow-up, Transition or Support Activity

For each project, Alliance will use the following procedures and processes to ensure the quality goals and objectives of the Project are met.

4.5. *Reasonableness Checks*

For each project, Alliance will establish a methodology for conducting reasonableness checks at scheduled points during the development of project products/deliverables. This process will be supervised by the Project Manager. All issues identified through the scheduled reasonableness checks will be resolved by the team and documented by the Project Manager. The Project Manager will inform the Quality Manager of any reasonableness issues identified and corrective actions taken. The Quality Manager will provide oversight of all Quality Control processes, and provide assistance if any difficulties are encountered that need enterprise level support. All quality documentation will be preserved by the Project Administrator.

4.6.   Peer Reviews

Interim and final products/deliverables will be evaluated by other members of the Alliance Team with the appropriate level of technical expertise. Peer Review Meetings will be facilitated by the Project Manager and results will be communicated to the Quality Control Manager. Peer review will be used to ensure that assumptions and procedures are reasonable, and that documentation is accurate and understandable to a third party. Peer reviews will be used mostly to catch large errors and to ensure good communication in the documentation of complicated procedures.

4.7.   Statistical Checks

When developing a technical product, statistical checks will be performed by the Project Manager to ensure that assumptions, procedures, and data outputs are put to a rigorous test for accuracy and reasonableness. The results of these checks will then be communicated to the Quality Control Manager. Under normal circumstances the acceptance criteria for statistical accuracy of each technical product should be established in collaboration with the client prior to initiating product development.

4.8.   Replication of Calculations

An Alliance senior manager, with appropriate skills and certifications and who has not been involved in the development of the product being reviewed, will review the procedures and quality of all project technical calculations and assumptions by replicating the calculations for the overall result and for selected components of the process.

4.9.   Quality Assurance Audits

Quality Assurance Audits will be conducted by the Quality Manager on a regular basis to ensure that all quality control processes are being properly implemented.

4.10.   Procedure Documentation

Each member of the Alliance Team is responsible for documenting the team member's individual activities related to each project on which the team member works. The elements to be documented include (but are not limited to):

- Procedures employed to assure the quality objectives of the Project are met;

- Technical approaches employed in the conduct of the Project;

- Dates of quality checks;

- Results of quality checks;

- Resolution employed to address any deficiencies identified; and

- Recommendations for future improvements to the quality control and quality assurance process.

In addition, the team member will be certain that Procedural Documentation is reviewed by the Technical Writer and approved by the Project Manager.

4.11.   Corrective Action

The following steps will be taken by all Alliance Project Team members with regard to problems or issues identified in the project processes or detected in QA reviews:

- Team Member writes a description of the identified issue as well as any actions taken or recommended to resolve the issue and submits to Project Manager and the Technical Lead for that activity, if any.

- If during a Quality Audit, the Quality Manager identifies an issue, then the Quality Manager will write a description of the identified issue. The description will include any recommended actions to resolve the issue. The Quality Manager will then submit the description to the Project Manager and the Technical Lead for that activity, if any.

- Project Manager includes all identified problems or issues at a Project Team Quality Meeting (either at a regular meeting or at a special meeting depending on the time sensitivity of the issue identified).   The Project Manager will include a description of all identified issues/problems on the agenda for the meeting.

- Project Team discusses issue and develops a planned response to the issue. The issue description, team discussion, and planned response are all documented by the Project Administrator. Project Team may also discuss additional issues that come to light during the course of the meeting.

- Project Manager writes a high level description of issue and any planned procedures used to track and resolve issues identified and submits to the Quality Manager.

- The Quality Manager includes the issue/problem and planned procedures to address issue/problem in an External Review Meeting to either concur with planned procedures or make alternative suggestions to the Project Manager.

- If the problem cannot be resolved by the Project Manager and the Quality Manager coming to consensus, the problem will be taken to the Principal-in-Charge for resolution.

## 5.	Roles and Responsibilities for QA/QC

This section describes the roles and responsibilities of each Alliance Team member for meeting the Alliance quality goals. The specific role that each Alliance Team Member takes in the quality process may change from project to project.

### 5.1.	Corporate Leadership Roles and Responsibilities:

It is the responsibility of the Alliance Corporate Leadership to ensure that every member of the Alliance Team understands that he/she is responsible for producing a quality product or service. The Alliance Corporate Leadership has established a system of quality assurance functions that provide for review and documentation of project activities by the Alliance Project Manager, Alliance Principal-in-Charge, and the Project Quality Manager (who is also the Division Director). The relationships of the job functions are described in this Alliance Quality Assurance Plan.

The Alliance Corporate Leadership has adopted a quality policy and supports a corporate culture that values quality. The Corporate Leadership is dedicated to providing the resources and personnel to meet the corporate quality objectives, and deliver products and services that meet or exceed the client specifications.

### 5.2.	Project Principal-in-Charge Roles and Responsibilities

- The Principal-in-Charge is a member of the corporate management team who will provide direction to and oversight of the Project Manager to minimize risk and ensure quality throughout the Project duration.

- The Principal-in-Charge will also participate in client meetings, and will serve as the point of contact for the client relative to quality assurance.

- The Principal-in-Charge will resolve any identified quality problems that are not resolved by the Project Manager.

- The Principal-in-Charge will be responsible for ensuring that the Project Team receives corporate support and any necessary training and development at any point that areas of weakness are identified through the QA/QC process or by the Project Manager.

- The Principal-in-Charge will provide the oversight and communication necessary to ensure that the quality goals of the Project are met. The Principal-in-Charge also has the corporate leadership role that will allow him to quickly address any quality problems identified that relate to other areas of the corporate structure outside of the purview of the Project Manager.

5.3.   Project Team Roles and Responsibilities for QA/QC

5.3.1. Project Manager:

The Project Manager will provide daily supervision of the project, and is ultimately responsible for ensuring the Alliance Project Team completes all of the work tasks and activities in the work plan and produces all deliverables on schedule. In addition, the Alliance Project Manager is responsible for:

- Ensuring that all quality control and quality assurance procedures and processes are followed by all members of the Alliance Project Team.

- Communicating to the client to the results of the QA/QC program employed by the Alliance Project Team.

- Achieving the quality goals established in the Alliance QA/QC Plan through the daily monitoring of the quality control procedures and processes, and through the Project Manager's role in the resolution of any problems identified by those policies and procedures that cannot be resolved by the functional members of the Alliance Project Team.

- Consulting with the client regarding the establishment of quality criteria that will ensure that there is consensus on whether the Alliance Team has met the project objectives; and then communicating these criteria to the Alliance Team.

- Incorporating feedback from the client into the Project Team quality control processes.

- For projects of sufficient scale and complexity, maintaining a risks and issues register that contains a log of all risks, issues, and the resolution of those risks and issues; and publishing that register for use by the client and the Alliance Team.

- Conducting periodical statistical or other technical quality control checks to ensure that assumptions, procedures, and products are put to a rigorous test for accuracy and reasonableness.

- Directing the daily operations of the Project.

- Establishing and monitoring the results of the continuous quality processes and procedures and will ensure that the resulting project outcomes meet or exceed client requirements and expectations.

5.3.2. Project Team Members:

Under the direction of the Project Manager, the entire Alliance Project Team for a project, including any sub-consultant members of the team, will review and clarify project requirements and client criteria for measuring product quality; and will be responsible for the following quality activities:

- Be familiar with and follow all appropriate elements of the Alliance Team's Quality Assurance Plan;

- Build, test and integrate all QA/QC processes and procedures establish in this plan and/or specific project related QA/QC process or procedures added to the plan by the Project Manager;

- Ensure that all data or other project inputs meet quality standards;

- Ensure that all deliverables meet quality standards.

- Make a conscientious effort to incorporate established best practice standards and procedures in accomplishing project activities.

- Participate in Peer Review Meetings called by the Quality Manager and/or Project Manager to evaluate the work of team members and report any quality problems. Peer reviews will focus on identifying large errors and establishing good lines of communication among the members of the Project Team.

- Document all of activities relative to quality control conducted by the individual team member, and conveying copies of that documentation to the Project Manager, Quality Manager, and Project Administrator for retention in the Project Files.

5.3.3. Quality Manager:

The Quality Manager for each project will by the respective Division Manager unless the Division Manager is the Project Manager. If the Division Manager is the Project Manager, then a different Enterprise Manager will be assigned as the Quality Manager.

The Quality Manager, in coordination with the Project Manager, will be responsible for calling Peer Review meetings and for ensuring that all results of quality control efforts are documented by the Project Manager and archived by the Project Administrator.

The Quality Manager will be responsible for documenting all of his activities relative to quality control and conveying copies of that documentation to the Project Administrator for retention in the Project Files.

The Quality Manager will also conduct periodic Quality Assurance Audits to detect technical errors. The Quality Manager reports directly to the Alliance Project Manager for purposes of this Project.

5.3.4. Project Administrator:

For each project, a project administrator will be appointed. The Project Administrator will be responsible for maintenance of all project files, documents, meeting notes, and all documentation of the quality processes and procedures employed in the Alliance Team related to the project.

The Project Administrator will also participate in the Peer Review Meetings and other Quality Meetings called by the Quality Manager and/or Alliance Project Manager, and will be responsible for taking minutes of the meetings.

The Project Administrator will also perform such other support functions as the directed by the Alliance Project Manager.

The Project Administrator's primary role within the Quality Process is to ensure that all documents are preserved in an orderly and retrievable manner, and are easily assessable to all appropriate Managers and Team members.

5.3.5. Technical Lead:

For each project in which a Technical Lead is designated to assist the Project Manager in directing large scale or complex tasks, the Technical Lead will focus on ensuring the chosen technology and tools are used appropriately and efficiently to produce the highest quality products.

The Technical Lead will work with the Alliance Project Manager to coordinate and perform all development lifecycle activities including analysis review and confirmation, system design, build and test, technical knowledge transfer, conversion activities, and documentation and construction of all project deliverables.

The Technical Lead has responsibility for ensuring the quality control procedures and processes are followed in relation to data and technical product development under the tasks for which he/she is responsible.

The Technical Lead will be responsible for documenting all of his activities relative to quality control and conveying copies of that documentation to the Project Administrator for retention in the Project Files.

The Technical Lead will also participate in the Peer Review Meetings and other Quality Meetings called by the Quality Manager and/or Alliance Project Manager.

5.3.6. Technical Writer:

Each project will have an assigned Technical Writer. The Technical Writer is responsible for working with the Project Manager to ensure that an appropriate document style template is adopted for use in all project final documents.

The Technical Writer is responsible for ensuring that all written products submitted to the client:

- Adhere to standard English spelling and grammar usage

- Are prepared using a single project document style template

- Are consistent in style and composition

The Technical Writer is also responsible for ensuring that all documents are reviewed for the criteria listed above by a qualified copy editor, other than the original writer, prior to submission to the client.

The Technical Writer is responsible for establishing a process for the retention of draft and final documents in a manner that is easily understandable and retrievable by other members of the Project Team.

The Technical Writer is responsible for submitting all final documents, after approval by client, to the Project Administrator for archiving.