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Advance and protect the transportation system. To ensure that the existing public investment in the transportation system is maintained to improve mobility and safety through better operations, management and innovation.

Make transportation personal. To build an understanding by the public, stakeholders and employees about how Arizona's quality of life is directly impacted by an efficient and safe transportation system and that our role in delivering that system is tremendously important.

Create a high-performing organization. Build a nimble organization by evaluating, adapting, supporting and allocating funding and resources. Every group, team and individual is dedicated to quality services to stakeholders and each other.

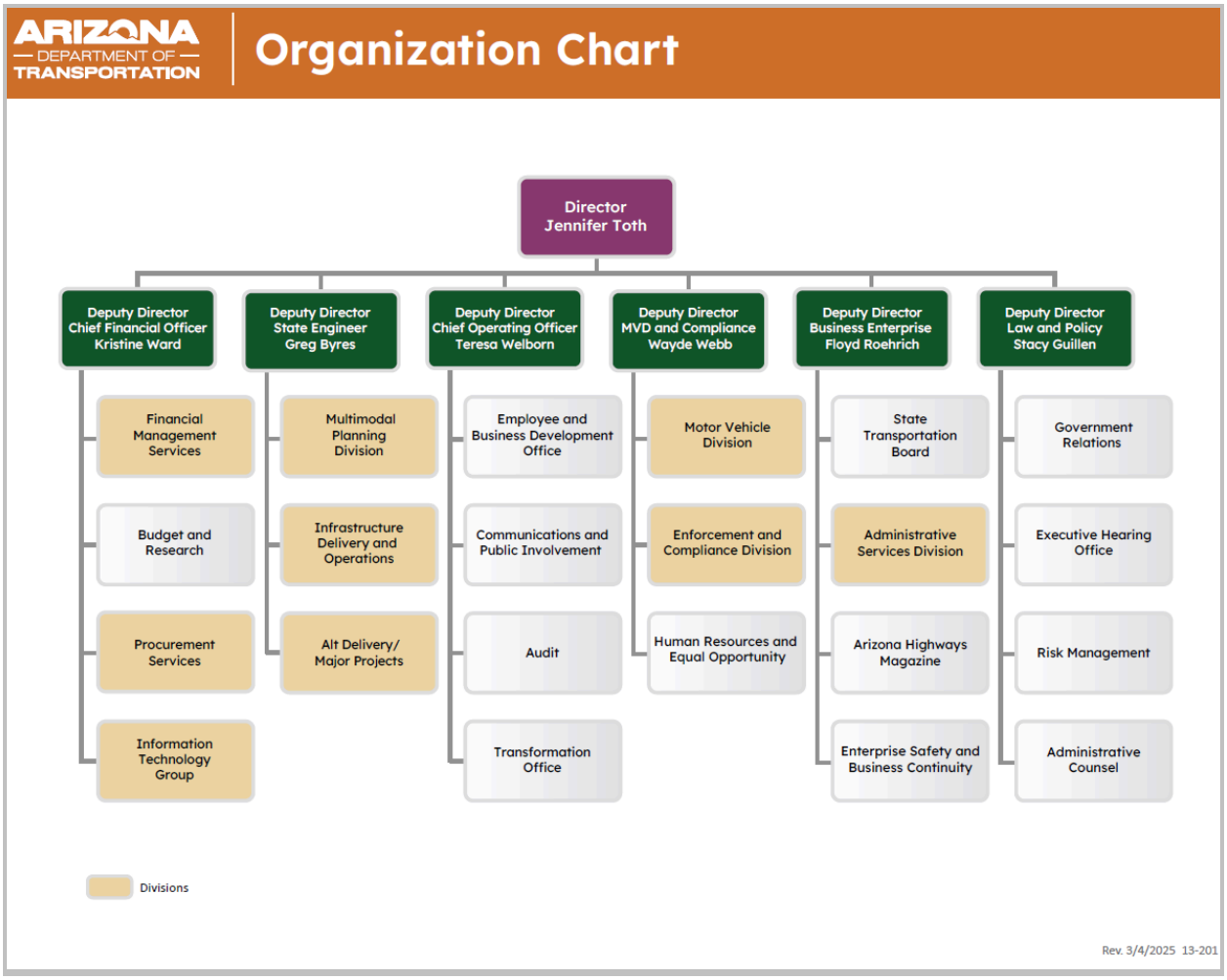


Exhibit 100-2 ADOT Org Chart

Transportation Division Organizational Chart

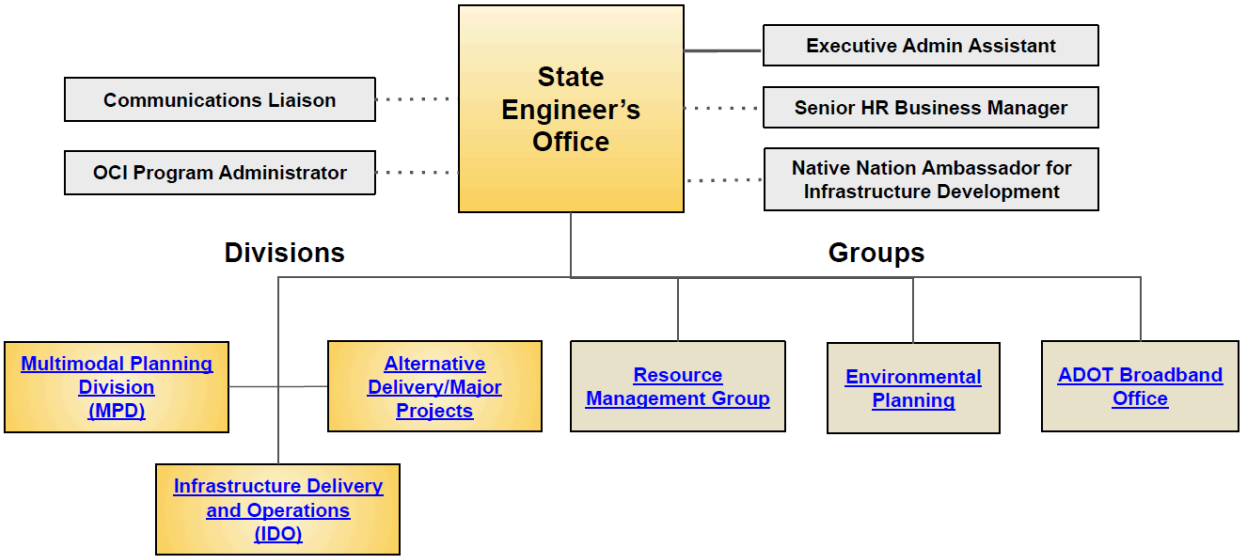


Exhibit 100-3 Deputy Director for Transportation

100 GENERAL

Department Organization

The Arizona Department of Transportation is one of the oldest state agencies dating back to territorial days. At the time of statehood, it was called the Arizona Highway Department and was managed out of a single office in Phoenix. In 1955, the Arizona Highway Department created four District Offices. Each District Office was assigned a region of the state with the duties of constructing and maintaining the roads and bridges within that district. Even today, this district operational structure is still part of the Department's organization.

In 1974, the state legislature merged the Arizona Highway Department with the Arizona Aeronautics Department to form the Arizona Department of Transportation (ADOT). Exhibit 100-2 shows the current organizational structure of ADOT.

The Transportation Director is appointed by the Governor and leads the Department in implementing transportation policy mandated by state law. An independent seven-member Transportation Board is the primary policy-making and governing body for the Department. The Transportation Board determines project priorities, awards construction contracts, presides over the State Highway System, makes local airport grants, and advises the Transportation Director on transportation policy matters. The six members are appointed by the Governor and represent geographical districts in Arizona, with one member serving on an at-large basis.

The Department's Deputy Director for Business Operations leads seven areas (Administrative Services, Information Technology, Human Resources, Financial Management Services, Arizona Highways Magazine, Environmental Services and the Budget, Planning and Research Division). The Deputy Director for Policy provides Transportation Board support and leads the Public Private Partnership component. The Deputy Director for Transportation (State Engineer) leads the Project Delivery and Operations Division (IDO) and the Multimodal Planning Division (MPD) and other Groups (See Exhibit 100-3). PDO is divided into several groups. The groups that have the greatest interaction with construction are Construction, Materials, Bridge, Traffic Engineering, Roadway Engineering, Right-of-way, Environmental Planning, Project Management, and District Operations.

The key activities of each group and their role in construction are summarized on the following pages.

Construction Group

The Construction Group provides support to help districts with managing their construction projects. This includes providing construction administrative services to supplement the workforce with temporary technicians, construction administrative services, material testing assistance, conducting independent review of workmanship, material documentation, providing training for construction technicians, maintaining instructional guides for construction methods and procedures, providing the services of a Registered Landscape Architect, processing monthly pay estimates, quantity documentation, and subcontractor approvals.

Materials Group

The Materials Group consists of Central,Regional and project laboratories. They maintain AASHTO Accreditation for the State and provide materials related technical support. Conducts research into construction materials and methods, develops test methods and specifications, performs testing of soils and aggregates, asphaltic concrete, asphalt binder, concrete, cement, steel and other structural materials. The Regional Labs are responsible for monitoring the acceptance tests performed by project labs and conducting Independent Assurance and Correlation testing in an effort to maintain uniform testing procedures statewide. Steel, geotextiles, and other structural or geotechnical related products and materials are tested by the Structures Lab within the Central Lab. Asphalt binder is tested by the Binder Lab within the Central Lab and occasionally by the Regional Labs.

Bridge Group

If the project includes any major structure, such as a bridge or box culvert, the Bridge Group is there to support ADOT construction personnel by providing technical expertise on structural concrete and structural steel construction. Usually the Designer is consulted first when plans and details require interpretation. However, when major specifications changes are needed or when construction and design standards are to be modified, the Bridge Group should be consulted.

The Bridge Group oversees the inspection of steel sign structure fabrication and sets policy regarding bridge construction standards.

Within Bridge Group is Geotechnical Services which performs subsurface investigations to aid in foundation and pavement design, geogrid reinforced pavements and retaining structures, rock scaling, and soil improvement/stabilization.

Right-Of-Way Group

The Right-of-way Group can be a valuable resource to ADOT's field construction staff. They maintain right-of-way (ROW) plans for all roadways and can provide information about property ownership around your project. Right-of-way can tell you what agreements ADOT has with adjacent landowners for temporary access, rights-of-entry, and construction easements. Information is available on ADOT's property rights and responsibilities. The Right-of-way Group has a Property Management Section that manages all properties owned by ADOT.

Roadway Engineering Group

This group performs the engineering studies and roadway designs necessary to bring a project from inception to construction. Engineering consultants perform this function when the Roadway Group lacks the necessary resources. The Roadway Group develops statewide policies and standards for roadway design and construction details. Roadway is a great source of information when a change made on the project must conform to current highway standards. This could involve a change to shoulder widths, stopping sight distances, or guardrail lengths. Roadway Group publishes the ADOT Construction Standard Drawings (C-Standards).

Within Roadway Engineering Group is part of the Pavement Design Section which performs the following:

- Uses pavement condition data provided by the Pavement Management Section
- Pavement thickness information provided by their coring crew or a materials lab
- Subsurface information provided by the Geotechnical Services Section
- Consideration for the type of pavement desired by the District and State Engineer's Office
- performs analysis to determine necessary roadway preparation and pavement thickness in the form of pavement structural sections and stationing provided in the plans
- Selects specific materials and associated specification requirements for inclusion in the project special provisions

This information is provided to the Project Manager during design in preparation for advertisement. Pavement Design also serves as a consultative resource for the project during construction.

Environmental Planning Group

The Environmental Planning Group is an important source of information on current environmental regulations, including the requirements of the National Pollutant Discharge Elimination System (NPDES) and Storm Water Pollution Prevention Plan (SWPPP) regulations. Environmental Planning can answer any questions concerning environmental regulations and historic preservation.

Partnering

The Partnering Office's mission is to lay the foundation for successful partnerships for teams and groups working on ADOT-related programs and projects. By following partnering practices, teams can achieve win-win relationships based on mutual trust and solid teamwork. Parties to the design and construction process, in agreeing to work under a partnering approach, work to create an atmosphere in which all parties are working in harmony towards common goals. Following this process ensures teams develop protocols that help establish accountability and build trust.

Project Management

The Project Management Group is responsible for getting highway construction projects planned, designed, and advertised for construction once they have been identified and approved by the Transportation Board statewide. They manage the entire project development process, described later in this subsection.

District Operations and the District Offices

As mentioned earlier, the Districts are responsible for highway construction and maintenance within their respective boundaries. Each Construction Field Office within each District manages one or more construction projects for that district.

A Regional Traffic Engineer, a Regional Materials Laboratory, and other technical personnel who provide specialized services not routinely performed by the District's construction and maintenance staff support the Districts. These regional support staff may serve two or more Districts.

Traffic Design Group

Traffic engineering deals with the planning, traffic operations of roads, sight distance, streets and highways and their networks, terminals, abutting lands and relationships with other modes of transportation for the achievement of safe, efficient and convenient movement of people and goods.

During construction the Traffic Design Group can provide assistance in reviewing the traffic needs of a project, clarity of a design or standard detail and re-evaluate an existing condition that appears to be confusing or not functioning as intended.

Quality

The Department defines "Quality" as consistently providing our customers products and services that meet mutually agreed-upon standards. This definition requires discussion of its applicability to highway construction.

The product or service ADOT's field personnel should be most concerned with is the highway project under construction, i.e. the actual building of the project. To construct quality into a highway project let's first talk about the customer.

Our "Customers"

The first step in understanding the Department's definition of quality is to discuss *"Customers"*. Anyone who uses or receives a benefit from the product or service you provide is a customer. In order for us to provide the highest quality work in construction, we have to think about who our customers are now and in the future. The construction of a highway project has many customers with varying needs. They include:

Organization	Who	Primary Needs
Traveling Public	motorists, truckers, mass transit	safety, convenience, easy to drive, maneuver, and navigate

Neighbors	residences, businesses, local jurisdictions	minimal or positive impact on their environment, accessibility
Government	Taxpayers	the best value for every dollar spent
	Representatives	perceived needs of their constituents are being met
	FHWA (when federally funded)	compliance with federal standards and regulations
Utilities and Local Governments	SRP, APS, CenturyLink, SWG, Cities, Counties, etc.	compatibility with their infrastructure and facilities
ADOT	ADOT's Project Manager	project under construction satisfies the project's design scope, completion schedule and overall ADOT budget
	Technical Groups	design and construction standards are met or exceeded
	State Engineer & Director	conformity to current public policy
the District	District Engineer	compliance with ADOT standards and District policy
	Maintenance Engineer and Foreperson	low maintenance costs (few repairs and preventative actions needed)
	Regional Traffic Engineer and Traffic Technicians	traffic control devices (sign, striping, lights, & signals) function effectively and efficiently

With so many customers and so many needs, it's easy to see why getting high quality in a constructed highway project is at the very least challenging. Fortunately, many of the needs complement each other and very few conflict. For example, an easy-to-maintain project is usually a good value to taxpayers. And everyone wants a safe highway that is compatible with the local community.

"Consistency"

The second step in understanding the Department's definition of quality is to discuss "Consistency". As it is applied to highway construction, it means achieving the same results time and again across geographic boundaries. When you provide a product consistently, you are living up to the customers' expectations for receiving the same service as before. Consistency requires effective communication with customers and suppliers as well as knowledge of ADOT's policies and procedures related to construction.

To achieve quality, ADOT must be consistent. Consistency ensures fairness to all our customers throughout the state and to our suppliers (construction contractors, subcontractors, and material suppliers). Carefully following the plans and specifications ensures consistency. Project specific requirements (for example, environmental or geological conditions) are contained in the project Special Provisions, which must be consistently enforced during construction. Choosing to ignore some specifications and enforcing others does not provide quality for all our customers.

Consistency fosters economy. When contractors know they are going to build to the same standards throughout the state, they are less likely to add contingencies to their bid for the unexpected. Furthermore, contractors who bid work in only one part of the state are more likely to compete elsewhere if they can expect the same treatment from all Project Inspectors and the District Offices.

“Mutuality”

The Third step in understanding the Department’s definition of quality is to discuss “Mutually”. Meaning both the customer and supplier agree upon how the product or service is to conform to the customer's requirements. They must agree on the standards to be used to measure that conformance.

Customer agreement can sometimes be fleeting during construction. As a project is transformed from paper to concrete, customers can now actually see what the final results are going to look like and change their requirements. Good customer service means that Resident Engineers (REs) and Project Supervisors don’t follow blindly what is in the Project Plans and Special Provisions. They continually ask themselves, Is what I’m building really going to meet the needs of all my customers? Then they communicate with those customers to reach a mutual agreement.

“Standards”

The fourth step in understanding the Department’s definition of quality is to discuss “Standards” or baselines. A baseline is a customer requirement that can be measured, quantified, or compared to something else. First, we have to know each customer’s standards and be able to measure those standards to determine whether they are being met.

In highway construction there are two sets of standards. There are formal standards which are the contract documents (the Standard Specifications, the Project Plans, the Special Provisions, Standard Drawings, and other documents referenced in the contract). Then there are informal standards—the written or unwritten policies and procedures used to implement the formal standards. These standards can be found by referring to the Construction Manual and by talking to the customers of the project like the District Engineer (DE) and the Regional Traffic Engineer. Projects must be built to both sets of standards to achieve quality. That is why Resident Engineers, Inspectors, and Project Supervisors who rely too heavily on project plans and specifications sometimes have difficulty in reaching the appropriate level of quality for both the Department and its customers. The degree to which a project strictly conforms to the contract documents should not be the only measure of quality.

ADOT is planning to set up quality indexes for each project. Important standards like workmanship, materials, timeliness, total cost, construction zone delays, and accidents will be tracked, measured, and compared. That way, we can more easily determine how well we are meeting our customers’ expectations.

ADOT and Industry partners have joined to form a Standards Committee which serves to facilitate implementation of new standards or revisions/updates to existing standard and stored specifications. This effort ensures a thorough review of proposed changes and a controlled process for implementation of new requirements. As construction practices evolve and the need for updates in requirements becomes apparent, proposals for changes may be submitted to the Standards Committee. Consultation with the Resident Engineer and the appropriate technical group or section is advised prior to making any such submission.

ADOT’s Project Development Process

ADOT construction personnel should have a basic understanding of how highway projects are initiated, developed, and placed into service. The actual construction of the project is just part of the entire process. An understanding of this process will give Inspectors, Project Supervisors and Resident Engineers a better appreciation of who their customers are (besides the taxpayers) and how to best serve them.

The project development process or highway development process (as it is sometimes called) begins with a traffic, safety, preservation, or environmental problem that needs to be solved. For example, a passing lane may be needed on a rural highway to relieve congestion and reduce accidents. The problem is usually identified locally by ADOT's Regional Traffic Engineer, a maintenance foreperson, the District Engineer, a city or county Engineer, or an

elected official. Some projects are initiated by the Department's Multimodal Planning Division who looks at traffic patterns and highway safety on a statewide basis. Most projects are initiated at the district level.

Since there are usually more projects identified than money to build them, a process of prioritizing each project, determining its overall scope, and estimating its costs is initiated. After public hearings, the results are published in the Five-year Highway Construction Program, identifying which projects will be constructed in the next five years. After a project is approved for the five-year program, it advances to the design and preconstruction phases. Here the project is turned from an abstract idea into engineering drawings and contract specifications. Additional right-of-way is purchased, as needed, and a Construction contractor is selected.

The next step is to build the project. The contractor moves on to the project site and an ADOT Construction Field Office oversees the construction work. Their job is to inspect the work, pay the contractor, and ensure the project serves the public as intended.

The final steps are to open the project to the public and to maintain the project or facility so it performs as needed.

The Project Development process is complicated and dynamic. An entire manual has been devoted to describing and managing this process (see the references at the end of this chapter). Because of its complexity, ADOT assigns a Project Manager to each project whose primary responsibility is to manage and guide the project through this process. The Project Manager achieves this by controlling a project's scope, schedule, and budget. The Project Manager consults with District personnel and personnel from ADOT's technical groups and design sections to determine design elements, construction processes, and materials that will be considered and ultimately included in the project. Scope refers to what the project is intended to do and what major components will be used to achieve the project's objectives. Schedule and budget refer to a project's overall development, design, construction schedule, and costs. Design elements refers to the major or critical features necessary to accomplish the project's objectives. Construction processes refers to the particular means and methods necessary to build the project or accomplish the work. Materials refers to the natural or manufactured materials used to construct the project.

The Project Manager

The Project Manager is an important source of information for the Resident Engineer (RE) concerning the history of the project before construction, the reason for its initiation, and the problems it is trying to solve. The Project Manager can identify the major team members involved in project development, what agreements were made, and who to contact. The Project Manager oversees the entire development and design process and can help clarify issues in design and engineering that may arise in the field (or can at least put you in touch with someone who can).

During construction, the Resident Engineer serves as the technical leader for the project in charge of all construction activities. The Resident Engineer should keep the Project Manager informed of the project's progress and milestones through the weekly meeting minutes and change order notifications. If the Resident Engineer has not followed the project throughout its development, it is the Project Manager's responsibility to brief the Resident Engineer on major project issues and important milestones prior to construction. The Project Manager has the responsibility for coordinating communication between the Resident Engineer (or Project Supervisor), as well as design and development staff regarding plan interpretation and design issues arising from the contractor's operations.

It is important for the Resident Engineer and Project Supervisor to understand the role of ADOT's Project Manager. In a sense the Project Manager is a customer. The Resident Engineer and Project Supervisor construct the project and provide the Project Manager with expertise in construction methods and contract administration policies and procedures. The Department requires the Resident Engineer and the Project Manager to work as a team. The Project Manager represents the design and development aspects of the project, while the Resident Engineer represents the construction aspects. The Project Manager needs to assist the Resident Engineer when:

- Post design services are needed for shop-drawing and specialty-item reviews
- Contract documents need to be clarified and interpreted
- Coordination with other project stakeholders is required
- Background on how the project was designed and developed, and why the contract documents were written the way they were

Similarly the Resident Engineer needs to support the Project Manager in the overall management of the project during construction by:

- Discussing any contract changes to the project that would change the scope of the project
- Providing the Project Manager with construction cost data and change order information
- Involving the Project Manager in any changes to the project milestones or contract completion date
- Providing the Project Manager with design and contract specification changes that can improve the Project development process on future projects

Communication

Communication was previously mentioned as one of the important activities needed in achieving quality in construction. Of all the activities the Resident Engineer and Project Supervisor perform, communication is one of the most important.

Resident Engineers and Project Supervisors are continually in contact with many different people during the construction of a highway project (such as the contractor's Superintendent, the general public, the Project Designer, the District Office, or the Project Inspectors). Referring to the duties of a Resident Engineer in Subsection 105.02 of this manual, you will find that oral and written communication is a fundamental skill a Resident Engineer needs to have. The effectiveness of a Resident Engineer can be directly linked to that person's communication and interpersonal skills.

Good communications can eliminate, or at least help to solve, many construction problems. Why is that?

Most problems in construction can be attributed to misunderstandings, lack of understanding, or ambiguity. The Project Plans and Special Provisions are communication tools that tell the contractor how the Department wants something built. A major responsibility of ADOT's field staff is to help convey that message. This is done through oral and written discussions with the contractor.

Preparation is important before communication. Think the matter through before you speak or send a letter. Make use of all available information including the Project Plans, Standard Specifications, Special Provisions, the Construction Manual, the Materials Manual, and other publications regarding the subject. Consider the opinions of other people, especially those close to the problem or an expert on the subject. Thorough homework will help you to communicate precisely and convincingly.

Establish the aim or purpose of the communication. Do you want approval, comments, concurrence, or action? Are you making a recommendation or just informing? Knowing your purpose will help you stay focused while you communicate.

Decide on what communication medium you will use: telephone, fax, letter, e-mail, or in person. Personal contact is the most effective means of communication because it permits the spoken word to be emphasized, assisted by gestures and expressions. If personal contact is not possible for discussing important issues, make a telephone call followed by a letter or memorandum. This repeated emphasis ensures your message is clearly understood. Few individuals like to be informed of something only by letter. An example is the receipt of a letter from the Regional Materials Laboratory recommending rejection of an out-of-specification material. The report may be correct, but the receiver will feel better if previously informed of the situation.

It is important to keep in mind that a letter or telephone should not communicate everything. There are limits on the amount and quality of information these mediums can convey. Using the wrong communication medium does result in misunderstandings, incomplete information, and rework.

Follow up on the communication. Make sure it was received and see if it was understood. In due time remind the receiver that action is necessary; don't just wait indefinitely for others to act. If the reply is important to your project, you owe it to yourself and the Department to see the matter through to resolution.

Communicating with different groups of people requires you to adjust your communication style. For instance, using highly technical terms is appropriate when talking to an ADOT Engineer but inappropriate when talking to the public. Here are some guidelines to help you communicate better with these different groups.

Communicating with the Public

When you communicate with the public you represent ADOT. Whether you're answering a telephone call, writing a letter to local residences, or speaking at a public meeting, people will identify you as ADOT. These people are our customers. They count on us for good service and responsiveness.

How you deal with the public reflects on the entire Department. Always be courteous and respectful to the public; never argue or raise your voice to them. You are considered a public official who is expected to act professionally and honorably with the public at all times.

Try to avoid getting too technical with the public, they often do not know as much about highway construction or your project as you do. Talk to them as you would talk to a spouse or a neighbor. Whatever you do, don't hide behind policies and procedures. If you can't give them a reasonable explanation on ADOT procedures, then get them in touch directly with the person who can.

Finally, be helpful to them; do not just pass them off to the next person in the ADOT system. Instead, help them through the process. If you can be of assistance to them in some unexpected way, we will keep these people as our customers.

ADOT offers classes on dealing with the public and communication skills that we strongly encourage all field staff to attend.

Communicating with the Media

Introduction

The Arizona Department of Transportation cooperates as fully as possible with the media. There are several reasons for this. As public servants we have an obligation to the public to keep them informed. Members of the news media consider themselves to be public servants as well. They serve the public's "right to know" and have a legitimate right to inquire about projects and programs that are funded by and affect the public. Additionally, we rely on the media to get information to the public about projects and issues important to ADOT, or concerning public safety and convenience, such as road closures and traffic delays.

1. Communicating with the media is very different from speaking at a public meeting or one-on-one communication with someone from the public. First of all, what you say to the media will reach a much larger audience. Secondly, there is no feedback in the communication. The public has no immediate way of asking you to clarify what you say, and you have no way of knowing if they correctly understand the information conveyed. Finally, and most important, there is now an intermediary who controls the communication channel between you and the public. This intermediary can conceal, distort, or misinterpret what you say and convey a message to the public quite different than what you intend. Communicating with the media requires a high level of skill and experience to be effective. The

Department's Communications Office has specially trained staff whose primary duty is to talk to the media.

Procedures

The project office can handle routine requests regarding construction closures and openings. However, it is preferred that these inquiries be directed to the Communications Office. Ask the media representative to direct all future inquiries to the Communications Office.

Other types of requests, regardless of how small or how quickly the media wants a response, should be handled by contacting the Communications Office first. They are a resource to the project team, and they will ensure that a clear, accurate, and consistent message is sent to the public about your project. If the media contacts you regarding your project, immediately contact the Communications Office at 602-712-7355 or after business hours and on weekends the ADOT Traffic Operations Center 602-257-1563. The Communications Office has someone on-call 24 hours a day, 7 days a week to handle media requests.

Contacts with the media initiated by ADOT personnel or consultants require the prior concurrence of the Communications Office.

Media Interviews

The Communications Office can coach you through a media interview when it is in the Department's best interests for you to talk directly to the media. They can help you formulate what you want to say to the media and advise you about how to answer questions. In some cases a conference call can be set up among you, the media representative, and the Communications Office so that they can monitor the questions from the media in an effort to ensure fairness and accuracy.

One important area that you should refrain from discussing with the media is ADOT policy and procedures. The Communications Office should answer questions regarding safety standards, closure notification requirements, administrative procedures, traffic policy, or anything else where the Department decides how something is to be done. Their job is to ensure that we accurately and consistently convey this type of information.

Media Inaccuracies

You can help the Department by reporting to the Communications Office any inaccuracies you hear or read in the media concerning ADOT, its operations, or construction activities. The Communications Office can try to clear up the inaccuracy and get a correction released. Be prompt when reporting these discrepancies since the media is unlikely to change a story or report once it becomes a few days old.

Communicating with the Contractor

Historically, relations between ADOT and the contractor have tended to be adversarial. The inevitable results of such relations have been cost overruns, construction work that is just barely in compliance, delays in project completion, and an increase in contractor claims. In response to these problems, ADOT instituted partnering practices in 1991.

Along with the Covenant of Good Faith and Fair Dealing (see Subsection 104.01 [A]), partnering serves to put the "handshake" back into construction contracts. Refer to Section 104.01(B) of the Standard Specifications (and the corresponding subsection in this manual) for details concerning partnering.

ADOT field staff should keep in mind at all times that they are representatives of the Department and, as such, need to conduct themselves in a courteous and businesslike manner in all relations with the contractor. In dealing

with the contractor, Department employees should display a spirit of partnering and cooperation in obtaining first-class work at a minimum cost.

Employees should maintain a fair, impartial attitude without displays of emotion and must not engage in heated arguments with the contractor's personnel. Should a disagreement occur that cannot be resolved to everyone's mutual satisfaction, the disagreement should be escalated to the next level as soon as possible. Any decision rendered should be accepted in a positive businesslike manner.

Employees whose assignment involves direct relations with the contractor must have a clear and thorough knowledge of the plans and specifications that govern the contract. Evidence of this knowledge gains the contractor's respect when questions are asked regarding contract interpretation.

Alleged shortcomings of the contractor's personnel or work methods are to be discussed only within the Department. Derogatory remarks, if made publicly, can be construed as libelous or defamatory and may result in liability for the Department and the individual. The Partnering Office is available to assist in getting teamwork and mutual cooperation back on track whenever requested by the Department. A partnering refresh meeting may be recommended.

Communicating with the District

Most construction related communications with the District Office involve project problems and progress, supplemental agreement requests, and construction policy and procedures. The aim of your more important communications with the district may involve:

- An approval or concurrence
- A clarification
- Information about procedures (guidance)
- Escalating an issue for a decision

Usually these types of communications require you to convey large amounts of information to the District about the project or certain project issues. Often misunderstandings and communication rifts develop between the District and the Field Office when the wrong communication medium is used.

For example, a Resident Engineer invites misunderstanding and frustration when he or she attempts to explain the merits of a $70,000 claim involving both a delay and a differing site condition by cellular phone. Some communication needs to be done face-to-face or in writing in order to be effective.

A face-to-face meeting with the District Engineer is the best way to clear up any misunderstandings about your project. Face-to-face meetings are best used when:

- The topic is controversial and requires discussion, clarification or debate
- The topic is complex with a high probability of being misunderstood
- A dispute or behavior now involves people emotionally
- The amount of information is too extensive to write about

Never minimize the importance of these meetings. However, other forms of communication (fax, E-mail, telephone) are more efficient when:

- The topic is not controversial and a one-on-one discussion is all that is needed
- The topic is simply an exchange of information where there is a low probability of being misunderstood
- Human behavior or peoples' emotions are not an issue
- The amount of information can be easily faxed or e-mailed

There is another important communication rule to remember when dealing with the District: promptly inform the District of significant project issues. This communication is important because the sooner you can get the input of the District Engineer and his or her staff, the more effectively and quickly both the Field Office and the contractor can resolve project issues. The contractor always has the right to escalate an issue to the District Engineer for further consideration, even after prior input from the District Engineer and the District.

Communicating within the Field Office and Empowerment

Within the Construction Field Office, good communication between the Resident Engineer and project personnel is essential. Employees must know what their duties and responsibilities are and, equally important, they must be empowered to handle these responsibilities. The Resident Engineer should brief all employees relative to their duties, responsibilities with other personnel, the schedule of operations, the status of the contract, and any other information that will enable them to do their jobs better.

Employees must be empowered to solve problems as long as they remain within the limits of their authority. Successful empowerment requires accountability and communication about actions taken. Issues that cannot be resolved at the first level must be escalated promptly to the next level of authority to avoid delays to the project. Once a resolution has been reached, the Resident Engineer should explain the resolution to all staff members, giving the reasons for the resolution and emphasizing the teamwork that went into it. This is important so that all employees will understand and help support the outcome.

Communicating with ADOT Technical Support Staff

ADOT technical groups and individual employees must cooperate with each other in order to achieve quality projects (see the previous section on quality). The prompt exchange of information between team members is a key ingredient for success in this area. To avoid having a reputation for being a large bureaucratic organization that is slow to respond, ADOT's field staff should take full advantage of partnering along with ADOT's project management system to help improve the Department's responsiveness.

Communications with other ADOT sections can be strained when a project has a change that requires an amendment or exception to ADOT design policies, design standards, or technical specifications. In this case, the Resident Engineer may be asking an ADOT technical section why a certain specification is written the way it is or whether an engineering detail can be modified. Many times it is necessary to make these inquiries on behalf of the contractors.

Before you talk to ADOT's technical staff about a construction problem, make sure you fully understand the situation in the field, what the contractor is asking for and why. Meet with your Inspectors and discuss the contractor's request. Carefully review the Project Plans, Special Provisions, Standard Specifications, and the Construction Manual before you call.

When you talk to ADOT's technical staff, keep in mind that the project team (which includes the contractor) is counting on you to fully communicate their concern about the issue with their same eloquence and clarity. You are representing the team so don't let your own personal views distort the communication.

At the same time, your response to the contractor and the rest of the team must be equally as clear and expressive as the response you received from the technical section.

In this situation you are acting as a mediator. You must be fair and impartial, yet help define the issues, eliminate obstacles to communication, and explore alternatives.

This impartiality must remain as long as there is a dialogue continuing between the parties. However, once the dialogue has ended and the Department has made a decision, you are expected to fully support and implement the Department's decision.

It is very important that we demonstrate to the contractor that once the project team makes a decision, we are united in supporting and implementing that decision. This is in the contractor's best interest because it removes any lingering doubts about whether more of the contractor's time and money should be spent pressing an issue.

Communicating the Contractor's Technical Proposals

A more formal means of communication with ADOT's technical staff on project issues is the contractor's technical proposal. This is a written proposal by the contractor asking for an exception or a change to the Standard Specifications, Standard Drawings, Special Provisions or Project Plans for work already performed or about to be performed. The Resident Engineer may ask for this proposal whenever the contractor's requested exception or change is significant enough to require an in-depth engineering review.

The purpose of the contractor's proposal is to provide the Department with the information necessary to properly evaluate the effects of the contractor's proposed change. Sometimes contractors have difficulty submitting good technical proposals in a complete and timely manner. Reasons include:

- Lack of engineering expertise of the contractor's staff
- Insufficient time to put a proposal together before other project work becomes delayed
- Lack of consistency among Resident Engineers and the districts on proposal standards
- Lack of clarity as to what the Department really wants in a technical proposal and how it should be presented

The contractors often complain that it takes a long time for the Department to review and approve proposals. ADOT's Technical Managers complain that the reason it takes so long is because contractors provide incomplete information. To improve this process, the following is a suggested minimum that should be included in every contractor's proposal.

The contractor's proposal must be in writing and should include:

- A description of the corrective action, methods; e.g. equipment and materials required, using drawings, sketches, and a narration if necessary
- An explanation as to why it is not feasible to follow the requirements of the contract documents
- A discussion concerning why the Department should make this change, including an engineering analysis, cost analysis or other justification
- A deadline for responding to the proposal

The above is only a recommended format. Depending on the issue, every proposal will require a different approach, level of detail, and review process.

One of the most important things the Resident Engineer can do to improve this process is to find out ahead of time what the contractor is going to need in the proposal (what drawings, calculation, test results, etc.). Write a letter to the contractor listing these requirements. Use the four items listed previously as a starting point. It is important to talk to the people who will be reviewing and approving the proposal and find out what they want. This approach will help avoid the endless cycle of resubmittals that can accompany a contractor's proposal and will lessen the bureaucratic paper shuffling for everyone.

The Resident Engineer should give technical guidance to the contractor in developing a proposal. This doesn't mean doing the engineering for the contractor, but helping with the documentation and sources of information, then providing timely feedback to the contractor as the proposal is being developed. The Resident Engineer should guide and support the contractor through this process, even when the Resident Engineer doubts the proposal's merit. However, the responsibility for submitting a complete and technically accurate proposal is still the contractor's.

Resident Engineers need to work with proposal reviewers to ensure proposals are evaluated and returned to the contractor in a timely manner.

101 DEFINITIONS AND TERMS

This section defines words and abbreviations commonly used throughout the Standard Specifications and the project Special Provisions. Most of the words in this subsection have a very precise meaning, and their use can have a profound effect on how a specification is interpreted.

The Inspector, Project Supervisor, and Resident Engineer should take the time to familiarize themselves with terms defined in this section.

Working Day Definition Guidance

In the interest of achieving consistency statewide, this provides guidance for determining whether a working day would be charged on a Saturday, Sunday or State-recognized holiday.

Work on Saturdays, Sundays, or Holidays needs to be approved in advance. The only work the contractor can do without this approval is protecting the work already accomplished, providing dust control, or work of a similar nature. Several scenarios are provided in the table below to guide whether to charge a working day on a Saturday, Sunday or State-recognized holiday. These conditions assume there is no other work on-going.

Working On A Saturday, Sunday, or State-Recognized Holiday		
Event	WORKING DAY CHARGED	WORKING DAY NOT CHARGED
Maintenance/repairs of temporary traffic control devices		X
Installing new or modifying existing temporary traffic control	X	
Subcontractor performs work without the knowledge of the contractor	X	
Routine maintenance/repairs of SWPPP BMPs		X
SWPPP “Corrective Action” requirements identified in the Inspection & Corrective Action Report Form	X	
Contractor’s survey	X	
Hauling materials/supplies to jobsite (other than the contractor’s yard)	X	
Production of aggregates on-site (within ADOT ROW)	X	
Dust control; pre-wetting		X
Maintenance of contractor’s equipment; job site maintenance/security		X
Setting up contractor’s and/or the Engineer’s field offices		X

Available Resources:

- ADOT Standard Specifications for Road and Bridge Construction 2021
- ADOT Standard Drawings C Standards
- ADOT Traffic Signing and Marking Standard Drawing
- ADOT Traffic Signal and Lighting Standard Drawing
- ADOT Bridge Group - Structure Detail(SD) Drawings
- ADOT Temporary Traffic Control Design Guidelines
- ADOT ITS Standard Drawings
- Manual on Uniform Traffic Control Devices, 2009 Edition with Arizona Supplement
- ADOT Supplemental Agreement Guide

102 BIDDING REQUIREMENTS AND CONDITIONS

102.00 Field Office Responsibilities During Bidding

When the Department advertises a project, the Resident Engineer and the Project Supervisor may receive calls from potential bidders with questions about the Project Plans, Special Provisions, and other contract requirements. The Special Provisions will contain extra requirements for Federal Aid projects. During the advertisement the Field Office should register and download the contract documents and any addendums from the ADOT Contracts and Specifications website for distribution to other project stakeholders, ie RME, RTE or local agencies.

In the advertisement for bids the contractor is directed to submit all questions through BidExpress. If the contractors reach out to the Resident Engineer or Project Supervisor during the advertisement, the RE and PS should direct the contractor to submit the question in accordance with the advertisement instructions.

To obtain the most competitive bids, the Department needs to ensure that each contractor is bidding the same project with the same understanding of how to construct the work. Sharing information about the project site conditions may help ensure the Department receives competitive prices for the work it advertises. Cross sections, geotechnical reports, aerial photographs, and survey information are shared with the bidders through the ADOT Contracts and Specifications website.

Withholding information about site conditions or unusual regulatory requirements may lead to lower initial prices, but the low bidder will be quick to ask for extra work as soon as he or she finds actual site conditions different than anticipated. The Department, in the end, pays for the withheld information in the form of change orders and resolved contract claims.

Cross sections may not be available for pavement preservation projects (AC overlays, etc.), or small projects with very limited earthwork quantities (intersection improvements, etc.). For large earthwork projects, the Resident Engineer may want to have the survey crew stake the roadway centerline and any borrow limits. The staking can help bidders visualize the project work in relationship to its surroundings and the existing site conditions.

102.06 Interpretation of Quantities in the Bidding Schedule

Bid quantities are only approximate. They are not intended to precisely define the amount of work the contractor needs to do. The contractors should perform detailed takeoffs from the plans and specifications to accurately determine the required amount of work and quantity of materials.

The bid quantities are presented in the contract for three reasons:

1. They standardize the bid requirements so that each contractor is bidding for the same amount of work
2. Provide a method of measurement for portions of the work so partial payments can be made
3. Help to equitably adjust the contract amount when work needs to be added or deleted

The contractors should compute their own quantities when estimating work, contractors who rely on bid quantities for pricing their work do so at their own risk.

The problem of relying on bid quantities becomes particularly acute for subcontractors and Material Suppliers who may not have easy access to the project plans and specifications. ADOT's Contracts & Specifications Section (C&S) posts the Project Plans and Special Provisions to their website for anyone to download.

102.07 Examination of Plans, Specifications and Site of Work

The previous two subsections mentioned that ADOT has an obligation to contractors and their suppliers to both disclose all available site information and make contract documents readily available. The contractors have a reciprocal obligation to thoroughly examine all of this information, visit the project site, and ask for clarification of anything they don't understand about the project. The intent of this specification is that both partners have a shared responsibility to produce accurate bids that truly reflect what the Department wants built and the costs associated with that work.

An Electronic Data Temporary Use Agreement Form should be submitted when the contractor is requesting project related CADD files. This form should be signed by either the ADOT Project Manager or Project Engineer, and the requestor. This signed document should then be kept with the project files.

Taking Advantage of Errors

Occasionally the Inspector or Project Supervisor may feel that the contractor is taking advantage of an error in the plans or specifications. This usually happens when the contractor is being paid an excessive amount for some portion of the work. The reason may be due to a large quantity variation or a change in the nature of the work not contemplated by Designers. Sometimes Designers miscalculate quantities or simply misjudge what is required to accomplish the work.

Regardless of the reason, in order to get the contractor to equitably adjust unit prices, the Department must show that the error or omission was readily apparent at the time of bidding. If the error or omission becomes apparent during construction, then the Department has no case under 102.07.

Other resources the Department may pursue in this situation include:

- A reverse differing site condition under 104.02(B)
- A breach of the covenant of good faith and fair dealing described in 104.01(A)
- A violation under 105.06 if the contractor is taking advantage in some other way

Oral Explanations

As mentioned above, ADOT staff needs to be careful about what they say to contractors during the project bidding period. The intent is not to inadvertently change the contract requirements or to give an unfair advantage to one or more bidders.

Although 102.07 contains a waiver about oral explanations or instructions, contractors will still defend the legitimacy of oral explanations, especially if documentation or other evidence substantiating the communication can be produced. During pre bid conferences, the discussions between the Department and potential bidders are recorded and transcribed. These discussions are no longer interpreted to be oral explanations or instructions since a written version does exist.

The bottom line is that representatives of the Department need to be very careful about what they say to bidders. This means researching and discussing questions internally, then answering accurately and consistently.

Keeping silent can be inappropriate especially when tough questions are asked about glaring defects in the plans or specifications. The intention shouldn’t be to conceal, but to be honest and open to the bidders.

103 AWARD AND EXECUTION OF CONTRACT

Most of the provisions in this section of the Standard Specifications deal with the procedures both the contractor and ADOT must follow in awarding and executing an ADOT construction contract. The Department's Contracts and Specifications Section (C&S) handles these administrative procedures and provides the Field Office with a copy of the contractor's executed contract.

It is important for the Resident Engineer to check with C&S to ensure the contract has been fully executed before any work begins. An executed contract is a means of ensuring the contractor has met all the bonding and insurance requirements before working within the Department's right-of-way.

When bids close on a project, C&S reviews each bid for completeness and accuracy to determine the lowest responsible bidder. They check for unbalanced bid items, unit price extensions, insurance arrangements, and bonding capacity. C&S makes a recommendation to the State Engineer as to who is the apparent low bidder. The State Engineer, in consultation with the Director, makes a recommendation to the State Transportation Board for awarding of the construction contract. The Board reserves the right to table or reject the recommendation.

When a contract is to be awarded, the State Transportation Board makes the award in an open public meeting. An award letter is then sent to the contractor, and a copy is sent to the assigned Field Office for the contract. It is important for the Field Office to have a copy of this award letter in its files since contract time is based on the date of this award letter (see Subsection 108.02).

The Field Office should avoid any official communications with the contractor until after the award. Early communication with the contractor might create the perception that ADOT staff favors one contractor over another. This problem can become particularly acute when a contract bid is under protest. Award may be delayed while the contractor obtains appropriate licenses for Federal Aid projects in accordance with requirements in the Special Provisions.

Any protests or inquiries a Field Office receives regarding a contractor's bid or the awarding of a contract should be referred to C&S.

103.08 Execution of Contract

Subsections 103.08 and 103.09 of the Special Provisions may require the contractor to "Quick Start" the project. Quick start reduces the time it takes to award the project, but it does not mean the Field Office can have early communication with the contractor prior to award (see above). If the contractor fails to quick start, the project may be awarded to the next responsible bidder, or re-advertised.

103.11 Escrow of Bid Documentation

On large projects and projects of a special nature, the contractor may be required by the Special Provisions to place in storage at a local bank or escrow office all records, quotes, reports, drawings, and calculations used in determining the bid. These bid documents can then be used later as a means of analyzing the effects of project delays, plan omissions, time extensions, and other substantial changes to the contractor's costs. See Subsection 101.02 Bid Documentation, and 103.11(D) Format and Contents, for what type of documentation is required.

The Resident Engineer's use of escrowed bid documents in resolving contract claims can be very limiting since the contractor has control over the Department's access to these documents. If the Resident Engineer would like to compare a contractor's cost analysis of a particular change with bid prices, the Resident Engineer can't use the bid documents without the contractor's permission. The contractor should release documents when requesting additional compensation or an extension of time based on their bid in accordance with Subsection 103.11(C). The contractor may place restrictions on what you can see before permission is granted. The intention here is to not allow the Department to take unfair advantage of the contractor's bid. In competing to be the lowest bidder, the

contractor assumes much financial risk. It is not the Department's intention in escrowing bid documents to remove all of the financial rewards that go with assuming the risk. Instead, the intent of the escrowed bid documents is to verify certain costs the contractor may have or is expected to incur.

Bid documents are best used when the contractor is trying to prove that the Department is not paying twice for the same work. They can also be used for determining overhead rates and profit margins. Bid documents should not be used as a means of adjusting prices just because the contractor performed the work at a cost over or under the bid amount.

Bid documents should be returned to the contractor only when all claims and unresolved issues have been settled. This may occur long after the project has been accepted and final documentation is submitted.

104 SCOPE OF WORK

104.01 Intent of Contract

(A) Covenant of Good Faith and Fair Dealing

The intent of this subsection is to recognize that the Department will deal with the contractor in a professional and businesslike manner. Resident Engineers, Project Supervisors, and Inspectors are expected to be honest, fair, and impartial in their dealings with the contractor. It is not the Department's intention to take unfair advantage of the contractor or exploit a predicament of the contractor's to the Department's advantage.

The second paragraph of Subsection 104.01(A) does a good job of defining good faith. It means to proceed diligently, avoid hindering, stay within the law and delegated authority, and cooperate.

What may seem fair to you may not seem fair to another. Webster's defines fairness as "marked by impartiality and honesty: free from self-interest, prejudice or favoritism . . . conforming with the established rules." This last part is most important since the construction contract is the set of established rules by which your fairness should be measured.

Inspectors have often been called unfair by the contractor when they enforce certain contract specifications. It may not be that the Inspector is unfair; it may be that the specification itself is unfair. This is no fault of the Inspector. Sometimes Inspectors are accused of being unfair by enforcing a contract specification too rigidly. In this case the Inspector's fairness is not being measured by the contract specifications, but by the past performance of other Inspectors. In either case, having frequent discussions with the contractor and ADOT management concerning fairness can go a long way to improve the contractor's perception of your impartiality.

(B) Win/Win Solutions and Doing What is Best for the Project

A dilemma that many Resident Engineers and Project Supervisors face is how to remain impartial and be fair to both the Department and the contractor. The best solutions to project issues are the ones that meet the needs of all stakeholders. Win/Win solutions should always be explored first.

Sometimes contractors may not perceive that the solutions you propose are win/win. On the other hand, their solutions may not be perceived by you as win/win either. As an alternative, look at each project issue separately and then do what is best for the project, rather than what is best for either the contractor or the Department. This is a key step in maintaining successful partnerships. This means that sometimes the contractor will have to do more work than expected, and other times the Department will have to pay more than expected.

If you are continually doing what is best for the project, it is difficult to be perceived as biased and unfair when a win/win solution cannot be reached. Experienced Resident Engineers and Project Supervisors have a clear sense of what is best for the overall project in terms of quality, schedule, and costs. By doing their best to balance these needs between the contractor and the Department, they can help achieve good faith and fair dealing with the contractor.

(C) Partnering

An ADOT construction project is a partnership. Fundamentally, the construction contractor provides the necessary:

- Labor
- Materials
- Equipment
- Management expertise

while the owner (ADOT) provides the necessary:

- Construction plans and requirements
- Environmental clearances
- Initial utility clearances
- Money
- Inspection and oversight staff
- Time
- Right-of-way

It is these resources that are combined together to build the project. Each party controls how they apply their resources to the project and uses other organizations (subcontractors, Material Suppliers, Designers, local governments, and others) to help provide these resources.

Obviously the success of a project depends on how well these groups work together in combining their various resources. Working together is the key because these resources cannot be combined separately.

ADOT Standard Specification Section 104.01 (A) contains the Covenant of Good Faith and Fair Dealing. This section imposes the obligation on ADOT and the contractor to perform their contractual duties in an honest, diligent, and cooperative manner. Section 104.01 (B), Partnering, provides a framework for creating the working relationship by requiring a partnering workshop prior to start of work in accordance with the requirements of Subsection 108.02 and prior to the preconstruction conference.

One of the primary functions of ADOT's Partnering Office is to facilitate the partnering meeting between ADOT's construction field office and the contractor. This is done so that important lines of communication can be established as well as roles and responsibilities for the major stakeholders.

The ADOT Partnering Office web site contains partnering process manuals and guides, regarding partnering such as the Partnering Evaluation Program (PEP), Education and outreach Partnerships, Forms, Links, and Contact Information.

The Partnering website includes the following information:

- General Partnering Overview
- Types of Partnerships
- Building a Partnership
- Construction Partnering Workshop
- Issue Resolution
- Partnering Evaluation Program (PEP)
- Role of the Facilitator
- Education
- Partnering Outreach
- Partnering Process Continuous Improvement

Everyone has their own ideas about how to partner and what partnering techniques work the best. Different styles of partnering can and do work. Find one that works for you and adjust it to the needs of your other partners. As long as there is trust, mutual respect, open communication, cooperation and a commitment to continuous improvement, successful partnering can be achieved.

The Resident Engineer as a Partner:

- Champions partnering and sets an example for everyone on what a partner should be
- Ensures everyone is following the "Four C's" of partnering - Communication, Cooperation, Commitment and Continuous Improvement

- Periodically evaluates the partnering process and makes improvements
- Is proactive in looking for below-the-surface conflicts between partners
- Says the things that need to be said to maintain the harmony of the group
- Listens to the other partners
- Always recognizes the contractor's good work

The Project Supervisor as a Partner:

- Looks ahead at upcoming construction work for possible conflicts with the Special Provisions, Standard Specifications and Project Plans
- Helps the contractor's staff interpret plans and specifications
- Is flexible in staffing the project to accommodate the contractor's needs when possible
- Provides the contractor with timely feedback on noncompliance issues
- Communicates frequently with the contractor's foreperson and superintendent
- Always recognizes the contractor's good work

The Inspector as a Partner:

- Uses knowledge of the Project Plans, Special Provisions, Standard Specifications and other contract documents to warn the contractor early about potential problems
- Escalates unresolved issues quickly
- Doesn't waive contract requirements just to get along
- Anticipates noncompliance issues and brings concerns to the contractor's attention as soon as possible
- When rejecting work, remains fair and sensitive to the contractor's predicament, and works with contractor in correcting deficiencies
- Continually reviews contract documents to make sure the contractor's operations do not accidentally fall into noncompliance
- Appreciates the work the contractor is doing for the Department and the taxpayers, and both praises and encourages good performance

Partnering works best when team members are proactive, anticipating and resolving issues before they affect their partner's performance. Any known conflicts or issues should be resolved in a meeting room before the work begins; however, issues will inevitably occur on the project and that is when true partnering begins.

104.02 Revisions to the Contract

A contract change is merely something different than what the contract requires. On a highway construction project of any appreciable size, contract changes are inevitable and occur for several reasons. The Department, as the project owner, has the right to make changes that it deems necessary for the satisfactory completion of the project, and the contractor has the right to receive an equitable adjustment in payment or contract time. When the contractor perceives a change to the contract, notification in accordance with Subsection 104.03 must be provided.

The changes to the contract are specified in a supplemental agreement contract. A supplemental agreement must be issued to accomplish extra work, for differing site condition work, for suspended work by the Engineer, or for significant change in the character of the work.

Significant change requires that the character of the work be considerably altered or that the quantities of a major item of work be increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. When the quantity of a major item is not significantly changed a supplemental agreement should not be issued because contract prices should not be changed.

A supplemental agreement can be processed in three different ways. It can be processed as a letter of agreement, a change order, or a force account. Subsection 109.04 provides instructions on supplemental agreement processing.

The Department tracks and monitors the cost of supplemental agreements by categorizing them into types. The types were chosen to enable selecting areas or procedures within the department for possible improvement. The Resident Engineer specifies the type of Supplemental Agreement from the list below when the supplemental agreement is processed. The Resident Engineer should make a conscious effort not to lump types of contract changes within one change order.

General Supplemental Agreement Types:

- Value Engineering
- Work out of Scope (ADOT)
- Work out of Scope (Other Jurisdiction)
- Quantity Omissions
- Plans Revisions/Oversights
- Changed Condition
- Penalties - Bonuses
- Other

Value Engineering

This is a contract change in which both the owner and the contractor agree to alter the contract in some way in order to reduce the total contract amount. Both split the savings 50/50. The contractor usually proposes this change, and the owner accepts or rejects it.

In order to maintain statewide consistency, concurrence from the State Construction Engineer is required for all Value Engineering Proposals. These changes are examined so that future designs will include the value-engineered improvements.

Once the Value Engineering, Supplemental Agreement has been completed, it must be forwarded onto the State Construction Engineer. This is necessary so the Construction Group can accurately compile and create the required FHWA reporting documentation.

Value Engineering is discussed in greater detail within Section 104.13 of this manual.

Work out of Scope

This is for work not required nor included in the original contract, but has later been deemed desirable for satisfactory completion of the contract.

Scope refers to the project limits and the major design elements required to meet the project purpose and needs. The scope of the project was developed in the Scoping Phase and refined in the Design Phase. Changes in scope during the Construction Phase should not normally be necessary.

In general, the addition or deletion of designated elements such as a passing or turning lane would be a change in project scope. This also includes enhancements or special products requested by other ADOT departments, or outside agencies such as BIA, CAP, SRP, local governments, etc. The extending or shortening of a pipe to meet field conditions would not be a scope change. When there is doubt as to whether a contract modification constitutes a scope change, the Construction Project Manager or Resident Engineer should consult with the Design Project Manager and jointly make the determination.

Supplemental Agreements for additions or deletions which change the scope as defined in the contract documents require notification to the Design Project Manager.

The cost of these improvements may compete with funds for new projects and should only be done with a very good reason.

Quantity Omissions

Use this type when an item was shown on the plans, but was not included on the bid tab or when a major item quantity is increased or decreased more than 25 percent of the plan quantity.

These changes should be examined to determine if improvements could be made to the estimating process.

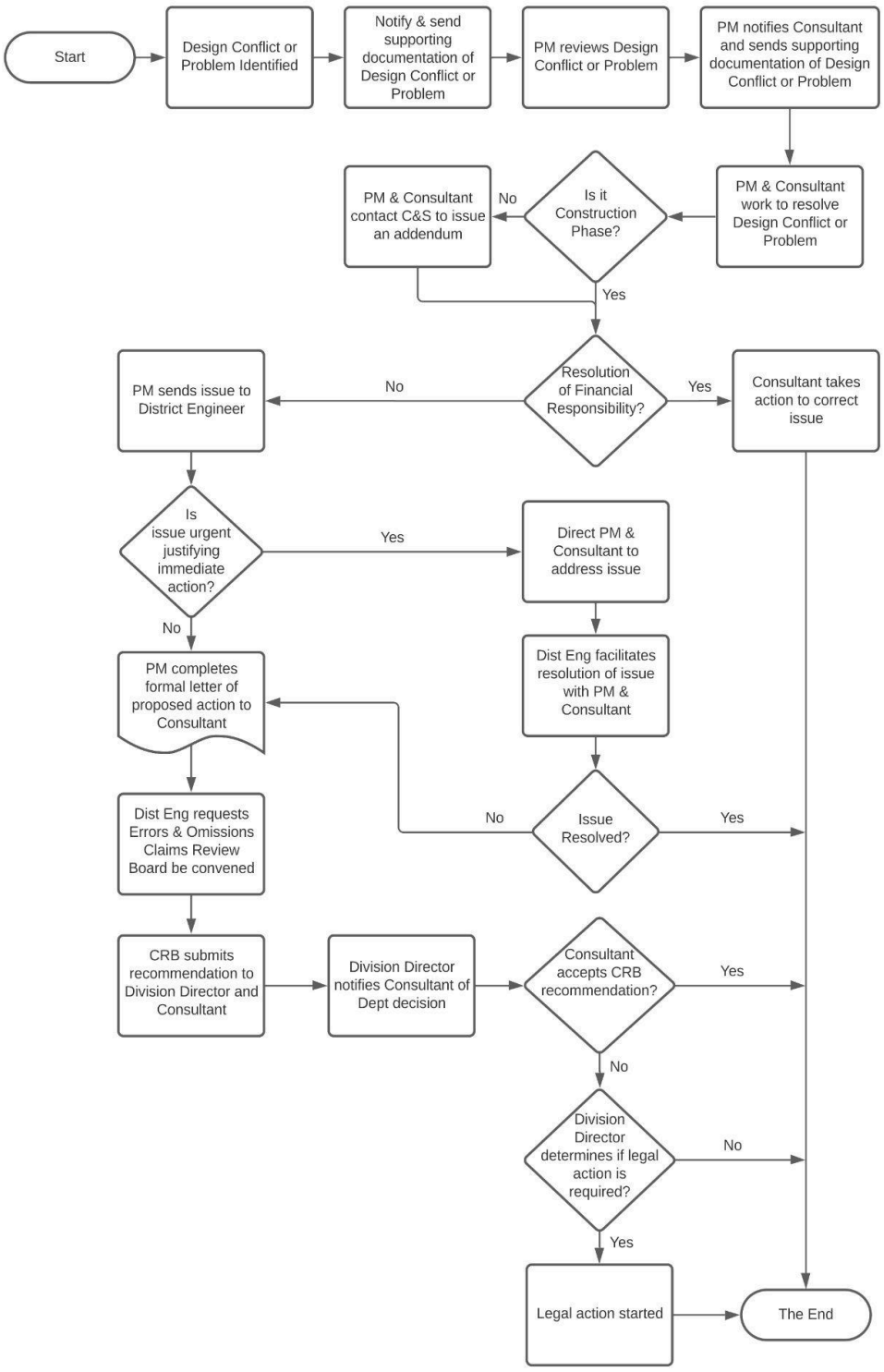
Plans Revisions and Oversights

Use this type when the plans did not accommodate existing visible field conditions, at the time of construction, and a change to the design is desirable.

Examples: Obvious design oversight or omissions.

These changes are within the original scope and should have been on the original plans. These changes should be examined to determine if improvements could be made to the design process.

Errors and Omissions Process



Changed Condition

Use this type when an unusual and unknown condition occurs on the project after award of the contract.

Examples: Unknown utility conflicts or other subsurface conditions, unknown or unusual material characteristics, unusual acts of nature, vandalism.

This type is a hidden condition that could not be known at contract award. This change cannot be controlled, estimated, or decreased. This category will allow us to explain that a certain percentage of our construction budget must be spent to fix construction conditions that cannot be predicted.

Penalty or Bonus

Use this type when paying for items where construction quality or time was modified and the change was not included in the contract documents.

Examples: ADOT chooses to accept a substandard product at a reduced price or wants to accelerate the contractor's schedule with a bonus, or accepts a different product at a penalty or bonus when the plans materials are unavailable.

Other

Used only when no other reason applies and explain in detail as to why.

Examples: Negotiated settlements should be included in any of the above categories that the change order fits if there is agreement that a contract change has occurred and the price is being negotiated. When a contract change is debated and a settlement is reached as an outcome of escalation, the change order should be included in this category and the negotiated settlement should be explained in detail. Changes in the project's scope are not to be included in this category.

Partnering workshop expenses split in accordance with the contract are always "Other".

Selecting the proper Type of Supplemental Agreement

With any system, overlap and redundancy may occur. Exhibit 104.02-1 Choosing Supplemental Agreement Type is a flow diagram that demonstrates the proper logic for choosing the supplemental agreement type. Use the flow diagram to determine the type of change order.

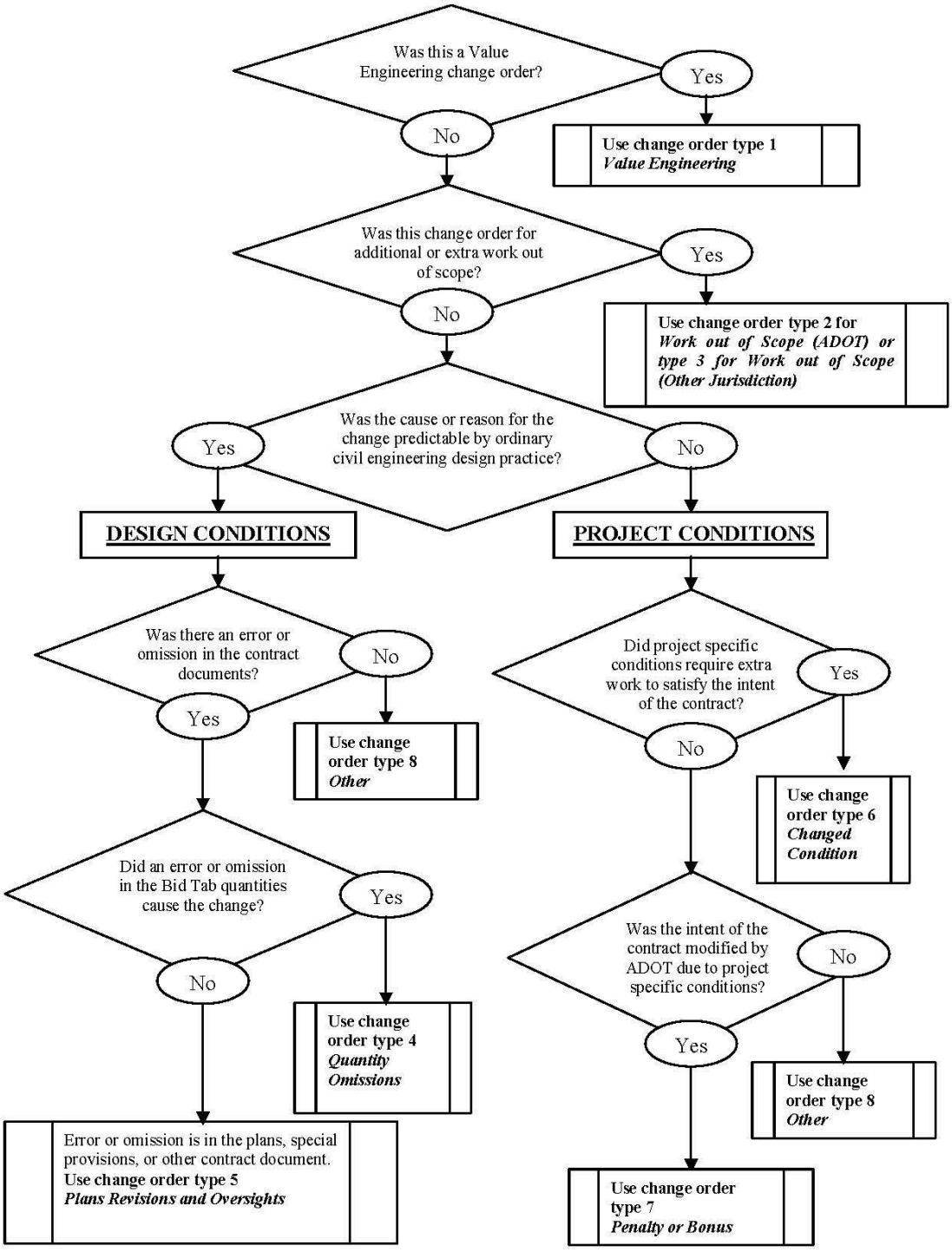


Exhibit 104.02-1 Choosing Supplemental Agreement Type

The following Subsections in the Standard Specifications reference 104.02 directly, or indirectly, and can be used for obtaining more information on the type of contract changes.

- 101.02 Delay
- 104.13 Value Engineering Proposals by the Contractor
- 105.04 Conformity with Plans and Specifications
- 105.06 Coordination of Plans, Specifications, and Special Provisions
- 105.08 Cooperation with Utility Companies
- 105.10 Construction Stakes, Lines, and Grades
- 105.16 Failure to Maintain Roadway or Structure
- 105.18 Opening Sections of Project to Traffic
- 107.05 Archeological Features
- 107.06 Historical Preservation
- 107.07 Sanitary, Health, and Safety Provisions
- 107.15 Contractor's Responsibility for Utility Property and Services
- 108.08 Determination and Extension of Contract Time
- 108.10 Termination of Contract for Default
- 108.11 Termination of Contract for Convenience of the Department
- 109.02 Scope of Payment
- 109.03 Compensation for Altered Quantities
- 109.04 Adjustment in the Contract Price
- 109.05 Eliminated Items
- 109.10 Lump Sum Payment for Structures

104.03 Notification

This specification formalizes the notice requirements a contractor must give the Department when there is a perceived contract change. It is intended to integrate the partnering process with the claims resolution process so that issues can be resolved in a win-win, cooperative atmosphere.

The contractor has a duty to notify the Department of any changes they perceive in the contract. The contractor shall use the Department's certification form. This allows the Department to take early preventative measures to mitigate any damages to the contractor that the Department may be held liable. It is very difficult for the Department to mitigate damages if it didn't even know about a contract change to begin with. Furthermore, it's unfair to the Department to have to pay for damages it was unaware of and consequently had no control over. The notice requirement puts back some of the fairness into contract changes.

Any potential "changed condition" should be well documented as soon as it becomes apparent. Unforeseen work that has to be performed is often an area of uneasiness and uncertainty for project partners. Whenever possible, the financial responsibility for the work should be resolved before the work begins. If an agreement cannot be reached, the work should still proceed to avoid any adverse impacts to the project. Daily records should be kept in sufficient detail so that the cost of doing the work can be reconstructed accurately.

It is recommended that force account daily reports be used as a means of tracking labor and equipment time as well as material quantities. The work should be treated like a force account in which there is daily agreement on time and materials.

Issue Resolution Process

To expedite the issue resolution process, a formal review process has been created within the Department with definite deadlines for reviews at each level. The contractors often complain that it takes too long to get issues resolved within the Department. This process is designed to streamline the internal review process and get decisions returned to the contractor promptly. The whole process begins when one of the partners has either a

technical or relationship issue. Examples of perceived changes (or changed conditions, see Subsection 104.02) include:

- Damages due to weather conditions
- Work performed out of sequence
- Unavailable specialty items
- Lack of free access to the work
- Time restrictions on when work can be performed
- Work stoppages
- Unexpected underground conditions
- Inspections performed to a higher standard than required by the contract
- Interference by adjacent contractors

There is a seven-step procedure the Department follows to resolve a contract issue. The goal is to try to resolve the issue at the field operations level and use litigation or arbitration only as a last resort.

1. Verbal Notice to the Resident Engineer

As soon as the contractor perceives a changed condition, the Resident Engineer should be notified about the issue. The intent is to warn the RE as quickly as possible that current project conditions are not what the contractor anticipated. At this point, there should be a complete understanding concerning the contractor's perceived issue. The Resident Engineer should not be quick to judge the merits of the issue. More importantly, the Resident Engineer should do everything to gain as much understanding as possible about the issue. This means meeting with the contractor, subcontractors, and other concerned partners to discuss the issue at length. In most cases, this discussion will help contractors clarify in their own minds. When some of the more proactive Resident Engineers perceive a situation that may lead to a contract change, they will ask the contractor up front, "Is there an issue here that needs to be resolved?" If the RE perceives that there is an issue with the contractor or project team, the RE must take action to resolve the issue immediately.

2. The Resident Engineer Verbally Responds to the Issue Notice Within Two Working Days

How the RE responds to this will usually set the tone and atmosphere for the rest of the issue resolution process. The RE needs to think carefully before responding (refer to the section on communication in Subsection 100 of this manual). The RE should go back to the office and thoroughly review the Project Plans, Special Provisions, Standard Specifications, Standard Drawings and other contract documents. Everyone, including the contractor, expects the Resident Engineer to do at least that much before responding.

The Resident Engineer should also consult any related documents such as the Materials Testing Manual, the Construction Manual, and any other industry publications that may help resolve the issue. Talk to the Inspectors, the contractor's field staff, the project management team (PM, designer, technical leaders), and one of ADOT's technical experts on the subject to help broaden your perspective. This up-front research is very important and shows that you are taking the contractor's notice seriously.

In responding to the contractor's notice, demonstrate that you have indeed listened to the contractor and describe the issue as he or she described it to you. If you are denying any contract change try to be conciliatory rather than confrontational. Sometimes a one-on-on frank discussion can be helpful in uncovering the real issues. But don't let emotions run to the point where you set yourself up for a win-lose scenario. Instead, leave the contractor an out. Suggest what approaches could be used to improve the merits of this issue and describe the next step the contractor should take.

3. Written Notification by the Contractor

If the contractor and Resident Engineer cannot resolve the issue within two working days a written notice is required by the end of the second working day. The idea behind a prompt written notice is twofold. The first

reason is to keep the issue from stagnating and poisoning the atmosphere of trust and cooperation developed through partnering. The second reason is to get an agreement at the project level of what the issues really are. Some issues raised at the project level are the result of misunderstandings or unmet expectations. Often an issue presented in writing clears up any miscommunication and results in a quicker resolution.

On projects which are not partnered, the written notice should meet the requirements of both Subsections 104.03 and 105.21. The rest of the issue resolution process follows the procedures described in Subsections 105.21 and 105.22. When this occurs it will be necessary for ADOT's field personnel to keep force account records on the work under dispute in order to substantiate the contractor's claim.

4. Issue Escalation Through Partnering

If the issue remains unresolved after the RE's review of the contractor's written notice, the issue is immediately escalated to:

- District Engineer's office, then if unresolved, to the
- State Engineer's office.

A "Routing Form for Construction Issue Resolution" and an "Issue Escalation Documentation Binder" are required for all escalations. Good documentation is important. Forms are found on the Partnering website. The State Engineer's office is the final escalation level for all issue resolution through partnering. This whole process shouldn't take more than seven working days. However, what usually happens at some point during the escalation is that additional documentation or analysis is usually needed to clarify the issue. This causes a delay in the proceedings, and before you know it seven days have already passed. If this is the case, as it will be for most issue escalations, the contractor should start to submit some of the items listed in Subsection 104.03(B). This will preserve the contractor's entitlement to damages under 104.03(C).

5. Dispute Resolution Submittal

If the contractor is dissatisfied with the outcome of the escalation hearing at the State Engineer's office, the contractor must then submit the documentation required by 104.03(B) and 105.21 to the Resident Engineer. At this point, the partnering process has ended and a more formal process described in Subsection 105.21 takes over. Usually the RE and District Engineer will informally review the contractor's submittal in a final attempt to resolve the issue. To be in compliance with 104.03 (D), the RE must respond to the contractor's submittal within 10 calendar days. The response should state that the issue is still unresolved and that a formal hearing is scheduled at the State Engineer's office (indicate the date). Basically the Department is exercising its option under 104.03(D) for additional information so a decision can be rendered.

6. State Engineer's Review of the Contractor's Submittal

Instead of an informal review of the issue in the State Engineer's office, a formal presentation of the issue is made by the contractor to the State Engineer. Typically the State Engineer will assemble a panel of unbiased ADOT professionals to hear and decide the issue on behalf of the State Engineer. The RE, with the help of the District Engineer, will represent the Department's side of the issue. The panel functions much like a dispute review board: both parties in the dispute present their side and the board makes a recommendation.

This is the same as Step III in Subsection 105.21. It is unnecessary to cover Steps I and II in 105.21 since the issue has already been addressed and left unresolved at the Resident Engineer's and the District Engineer's level. Section 105.21 of this manual should be consulted by the Resident Engineer in preparation for the State Engineer's review.

7. Arbitration, Litigation, or Mediation

After the State Engineer's review, the only options left to the contractor of resolving a contract change issue are:

- Binding arbitration if costs are under $200,000
- Litigation in court if costs are over $200,000
- Non-binding mediation (then arbitration or litigation if necessary)

See Subsection 105.21 and 105.22 of this manual for further information.

104.04 Maintenance of Traffic

It is the contractor's obligation to maintain a safe, smooth, and stable road for the traffic and to install and maintain required traffic control devices. It is the Resident Engineer's responsibility to verify that the design of the traffic control plan is appropriate and that the plan is being followed. Traffic must be able to quickly distinguish the correct path when traveling at reasonable speed. Pedestrian traffic safety and access is included in traffic control.

Construction zones require special considerations in traffic control design because many drivers are inexperienced in what to expect. Unpredictable maneuvers can result when objects are too close to the traveled way. Some drivers may veer away, while others may slow down. Loose material can be particularly hazardous and must be kept to a minimum. Positive dust control can assist in improving visibility both day and night. Such factors as road width, shoulder area, relation of curves, height of the driver's eye, and night-time visibility should be considered when placing signs, barriers, barricades, and other traffic control devices.

ADOT will pay (usually a supplemental agreement) for the maintenance of existing roadways under construction up until such time when the contractor's equipment (haul units, earthmovers, etc.) uses the road for construction purposes. The contractor should not be responsible for maintaining an existing road that deteriorates due only to normal wear and tear from ordinary traffic (detours and temporary roadways excluded).

On federal aid projects, the FHWA will not participate in any costs for roadway maintenance done by supplemental agreement. An exception does occur when a roadway is overlaid or sealed to allow higher volumes of traffic when used as a temporary detour or crossover.

The Resident Engineer should review the Special Provisions to see if the traffic control plan, including temporary detours will require approval by the county, or other agencies in order to meet air quality standards. The Special Provisions may also deduct money due the contractor when portions of the roadway remain closed outside the allowable closure period.

(A) Detours

In some cases the Project Plans will provide a designed detour; in other cases it may be necessary for the contractor to produce a design. In the latter event, the contractor prepares a drawing of the detour to a proper scale showing the transition zones, the proposed horizontal and vertical alignment, super elevation, width, base, and surface. The drawing should show proposed signs, striping, barricades, and delineators. The Resident Engineer should submit the design to the Regional Traffic Engineer for review and approval of the traffic aspects of the design.

A complete record (including plans and photographs) must be kept showing all installations and any changes in the detour or traffic control devices. Photographs should be taken in a sequence showing the detour from beginning to end. (Videotaping of the work zone traffic control is an acceptable alternative to photographs.) If possible, all construction personnel should be alerted to the problems involved in the handling of traffic by means of detours. Surprise situations should be avoided because they contribute to accidents. Detours should be drivable at night

under varying traffic and weather conditions. The State Highway Patrol (DPS) and local police can often be helpful in locating problem areas.

If it becomes necessary or desirable to use a county road or city street as a detour for an extended period of time, the Resident Engineer should discuss the matter with the appropriate local government official. The Resident Engineer should make certain that there is a complete understanding as to who will pay the cost of maintenance or any reconditioning that may be necessary. The contractor may need a permit for the detour from the local government. After the permit is obtained, the contractor should photograph all existing roadway surfaces along the detour route.

(B) Winter Work Suspension

The Resident Engineer should arrange for the district maintenance staff or the responsible superintendent to review the site prior to release of the contractor for the winter season. This should help in gaining a "meeting of the minds" as to the condition of the roadway at the time when the contractor is released from responsibility and the work that the maintenance crew needs to perform during the winter period. Where feasible, the ADOT crew should leave the project in a condition as close as possible to that when the suspension started.

See Chapter 7 for additional information about traffic control.

104.08 Prevention of Air and Noise Pollution

During the design process, each ADOT project is evaluated by the Environmental Planning Group. This evaluation will yield environmental mitigation requirements that identify federal, state, and local environmental requirements applicable to the project and mitigation measures to minimize project caused environmental impacts. These requirements are incorporated into the project contract.

These environmental clearances, mitigation measures, and commitments are implemented through contract documents containing standard, stored specifications, special provisions, and plan sheet details. Any questions regarding these requirements can be directed to your District Environmental Coordinator.

Pursuant to the Federal Clean Air Act, as implemented and enforced by the county, the Special Provisions may require the contractor to prepare a fugitive dust control plan, and may restrict burning of trash, plant materials, or other waste. The Special Provisions may also require the contractor to discontinue all current work activities if the Governor declares an air pollution emergency. If the project is located in the area covered by the Governor's declaration, then the Resident Engineer must notify the contractor immediately. The contractor must stop work as soon as possible, but no later than four hours after notification. The contractor is entitled to compensation and time extension in accordance with the Special Provisions.

Air Pollution

The U.S. Environmental Protection Agency (EPA), the Arizona Department of Environmental Quality (ADEQ), and the respective county enforce statutes and rules covering air pollution emissions. Each county has different levels of enforcement based on the historical exceedance of emission limits to the point where human health can be impacted. A county that can not reduce emissions of harmful pollutants is considered a non-attainment area. For information about if your county is designated nonattainment, you can visit ADEQ Nonattainment Areas Website.

Environmental Permits

It is the responsibility of the contractor to obtain the following permits when required by pollution control agencies.

Air Quality Equipment Permits

This category of permits covers construction equipment used for crushing and screening operations, asphalt batch or drum dryer plants, heater-scarifiers, hot or cold recycling, and concrete batch plants.

ADEQ administers the permits at the state level and issues equipment-source permits for those counties that do not have an air pollution permit program. Maricopa, Pima, and Pinal Counties have their own permit process.

A specific air quality permit applies to each designated piece of equipment and can be used on multiple sites. It is recommended that contractors obtain a permit for each piece of equipment and keep it active. These permits can take up to four months to obtain.

Site or Project Earth Moving Permits

Maricopa County and Pima County both require a site earth moving permit that covers fugitive dust generated by such operations as grading or excavating. This is covered under their Regulation III–Control of Air Contaminants, Rule 310, Open Fugitive Dust Sources. Some cities and Native Nations require contractors to have site and haul permits. The contractor should be encouraged to call and verify permit requirements at the start of each project.

Projects located in non-attainment areas for dust may include a stored specification modifying Subsection 107.14. The contractor must prepare a dust control plan and obtain a site earth moving permit. Some of the measures which the contractor may use to control or minimize fugitive dust include:

- Increase use of water or chemical dust suppressants
- Cease work temporarily during high winds
- Reduce vehicle speeds and number of trips
- Maintain freeboard of at least three inches or cover hauling equipment
- Cover or stabilize stockpiles

The contractor will be required to cover haul trucks with tarps or other suitable enclosures in some areas.

Where possible, efforts should be made to use chemicals to conserve water.

If additional information is required about air pollution requirements and the location of non-attainment areas, call ADOT's Office of Environmental Planning or reach out to your District Environmental Coordinator.

Noise Control

In areas where construction noise may be a potential issue, the Resident Engineer and the contractor should discuss noise restriction requirements with local officials prior to construction. Generally the standard maximum allowable noise level is 67 decibels.

104.09 Prevention of Landscape Defacement; Protection of Streams, Lakes and Reservoirs

NOTE: This section contains terms that may be new to the reader. A glossary is listed at the end of this section defining these terms.

Highway construction has been identified as a primary source of stormwater pollutants through soil erosion and sediment loss. All Arizona Department of Transportation (ADOT) construction projects must comply with federal, state and local water quality regulations and permit requirements. The National Pollutant Discharge Elimination System (NPDES) is a program administered by the Environmental Protection Agency (EPA), designed to control the discharge of pollutants in stormwater. The program in Arizona is referred to as the Arizona Pollutant Discharge

Elimination System (AZPDES). The Arizona Department of Environmental Quality (ADEQ) was given the authority by EPA to administer this program in Arizona. The EPA has retained the right to issue CGP permits on federal and Native lands.

Both the AZPDES and NPDES Programs require the owner (ADOT) to obtain a permit before allowing any construction discharges into protected surface waters or stormwater systems.

Construction General Permits (CGP)

For projects that are not located on Native Nations, an Arizona Construction General Permit (AZCGP, Permit No. AZG2003-001) (AZPDES CGP, Permit No. AZG2020-001) is issued by ADEQ to authorize the discharge of stormwater from a construction project to protected surface water. The current general permit was issued by ADEQ in September of 2021.

For projects that are located on Native Nations, a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) is required for stormwater discharges from construction projects to a WOTUS. The current permit was issued by the EPA in February of 2022.

Some projects are located both on and off Tribal Lands and therefore must obtain coverage for and comply with both permits.

The two General Construction Permits are similar in that they both require:

- Preparation of a plan depicting how ADOT and the contractor intend to comply with the requirements of the permit. This plan is called a Stormwater Pollution Prevention Plan (SWPPP)
- Notification to the appropriate agency (ADEQ or EPA) that ADOT and the contractor are electing coverage under one of the permits. This notice is called a Notice of Intent (NOI)
- Periodic monitoring of the controls established in the SWPPP to ensure they are operating as intended.
- Modification of the SWPPP to keep it up-to-date
- Notification to the appropriate agency (ADEQ or EPA) when construction is complete and/or final stabilization is achieved. This notice is called a Notice of Termination (NOT)

Additional information on the elements of the permits and compliance requirements can be found in the Construction Requirements of this subsection.

Other Permits

Municipal Separate Storm Sewer System (MS4) Permit

Runoff from ADOT projects located in municipalities may enter into local storm sewer systems, or into ADOT's own storm sewer systemThese municipalities operate under a Municipal Separate Storm Sewer System (MS4) permit and must ensure that their storm systems comply with regulations to prevent pollution. Prior to developing the SWPPP, the contractor and the ADOT Construction office should familiarize themselves with any local stormwater infrastructure and the applicable erosion control, stormwater quality or grading ordinances. The local jurisdictions may require separate permits or copies of the SWPPP for these activities. This requirement is not always shown in the special provisions. Therefore, the topic should be discussed at the preconstruction conference / partnering workshop. For more information about ADOT Stormwater infrastructure and MS4 permit, contact your District Environmental Coordinator.

Arizona Pollutant Discharge Elimination System (AZPDES) De Minimis General Permit (DMGP)

The DMGP permit (see AZDEQ website for latest permit) is administered by ADEQ and allows for short-term, low volume nuisance discharges that occur on construction projects located anywhere in the state. It can include subterranean dewatering, waterline flushing, and/or drilling activities. Separate coverage for activities outside the

Construction General Permit may be required under the Arizona DMGP through a separately filed NOI with ADEQ. The contractor and the Resident Engineer (RE) should determine what is required for any proposed De Minimis discharges prior to the start of construction. Any requirements must be reflected in the SWPPP and the separate NOI must be filed at least from 5 to 30 days in advance of the discharge, depending on the receiving waters. Monitoring may be required.

Multi-Sector General Permit (MSGP)

If the contractor is using a Department-furnished material source that is also used on other projects, the material source is required to have permit coverage under the MSGP. The contractor should contact ADOT Materials Group to determine that the material source is currently permitted. This permit is not required if the material source is dedicated for use on one project and the source is restored when the project is complete. In this case, the material source will be included in the SWPPP prepared under the CGP.

Commercial asphalt and concrete plants (regardless of the size of area disturbed) also fall under different sectors of the MSGP if they produce material for multiple projects. The contractor should ensure that all off-site material sources and industrial facilities have the necessary MSGP coverage.

Administrative Requirements

The RE is responsible for ensuring the following steps have been taken prior to ground-disturbing activities:

- Approve the contractor's proposed Erosion Control Coordinator (ECC)
- Review, amend and finalize the SWPPP
- Approve, certify and sign the SWPPP (submit SWPPP to ADEQ for approval on projects with impaired or unique waters)
- Prepare and file NOI (ensure the contractor does the same)
- Verify approval of the SWPPP and/or NOIs
- Fully implement the SWPPP

A flowchart (see Exhibit 104.09-1 Administrative Requirements Prior to Project Work Proceeding) has been provided illustrating the required steps to follow prior to beginning any soil disturbing activities.

Contractor's Erosion Control Coordinator (ECC)

The contractor is required to submit ECC documentation for approval by the RE prior to the start of the project. The RE should consult the 104.09 Stored Specifications for specific qualifications and certification of the ECC. Additional qualifications are required of the ECC on projects located within ¼ mile of impaired or unique waters.

Stormwater Pollution Prevention Plan (SWPPP)

The SWPPP is a management document that details what control measures the contractor and ADOT will implement to ensure that construction operations prevent or control the discharge of pollutants in stormwater runoff. This includes what Best Management Practices (BMPs) will be used, inspected and maintained to prevent erosion and to minimize the discharge of sediment and non–stormwater pollutants. The BMPs can be administrative practices such as periodic inspections, or structural such as a silt fence or track out protection.

SWPPP Development

The contractor's ECC should use the applicable Stored Specifications, project-specific Sediment and Erosion Control Plan sheets, and the ADOT Erosion and Pollution Control Manual to complete the SWPPP for the project. The Sediment and Erosion Control Plan sheets will not be considered a complete SWPPP, since they are prepared assuming standard construction practices. They also do not reflect the contractor's actual methods of construction,

access requirements, office location, materials storage locations or project phasing. A SWPPP is a site-specific living document that will be updated throughout the construction process.

The Construction Stormwater Pollution Prevention Plan (SWPPP) template is provided to assist those unfamiliar with the preparation of a SWPPP. The template serves as guidance only for the development of a site-specific SWPPP. Portions of the template may be completed in advance by ADOT Roadside Development and provided to the contractor. The template allows the user to input appropriate information after viewing instructions for each section. The template has been formatted to address all items in the ADEQ Construction SWPPP Checklist.

The contractor or the RE may contact ADOT Water Resources or the District Environmental Coordinator for assistance in the development of the SWPPP.

The ECC is responsible for preparing and finalizing the SWPPP, in a timely manner, with the support and direction of the RE before submittal of the NOI. The RE is responsible for reviewing the SWPPP and verifying its completeness. The RE is also responsible to ensure that the contractor does not perform any earth-disturbing activities prior to fully implementing the approved SWPPP and receiving permit coverage authorization. On larger projects, each 750,000 square feet sub-area must be identified in the SWPPP, along with the sequence of construction and installation plan for erosion control measures for each sub-area. The ADOT Erosion and Pollution Control Manual contains step-by-step guidance for preparing the SWPPP.

In addition, the SWPPP for non-tribal projects must address all requirements of the ADEQ SWPPP Checklist or Appendix A.1 of the ADOT Erosion and Pollution Control Manual and the requirements of the CGP. A copy of the CGP must be included with the SWPPP. A copy of the SWPPP must be kept on the project site.

On non-Tribal Land projects that are located within ¼ mile of impaired or outstanding Arizona waters (OAW), the SWPPP and NOI must be submitted to ADEQ for review and approval. On all other projects, the RE's signature will constitute approval of the SWPPP.

SWPPP Approval for Projects within ¼ Mile of Impaired or Unique Waters (Non-Tribal Lands)

Although SWPPPs must be prepared for all construction projects that will disturb one or more acres, SWPPPs must be submitted to ADEQ for review and approval if the project site is located within ¼ mile of impaired or unique waters. To determine whether any portion of the project lies within the ¼ mile buffer zone for impaired or unique waters, consult the project specifications, special provisions, and the Impaired, Unique and Not Attaining Waters Site Map via the Arizona Department of Environmental Quality webpage. A stormwater monitoring plan, prepared by the contractor, must be included as a component of the SWPPP when required by the Special Provisions. The contractor's stormwater monitoring plan shall comply with the current edition of the ADOT's Stormwater Monitoring Guidance Manual for Construction Activities Ground disturbing activities cannot commence until receipt of an authorization letter from ADEQ accepting the SWPPP and monitoring plan, or until the 32 business day review period has expired.

Stormwater Monitoring Plan Components

Monitoring may consist of visual, photographic, turbidity, and impairment parameter monitoring, depending on the classification of the impaired or unique water body and other factors. ADOT Roadside Development will determine the monitoring points and monitoring parameters within the contract documents and plans. ADEQ will make the final determination on the adequacy of the program. Special training will be necessary for ADOT construction personnel involved in the inspection and verification of the contractor's monitoring plan.

Notice of Intent

After the project SWPPP has been approved, the RE and contractor will each complete separate NOI forms for the project. On projects within ¼ mile of impaired or unique waters, the NOI and the SWPPP are submitted together for ADEQ's approval. Both NOIs must include a certification statement signed and dated by a responsible corporate

officer. The RE will act as the corporate officer for ADOT, and this responsibility cannot be delegated. The ADOT Construction Office and the contractor will submit the NOIs to ADEQ or EPA (both if the project is located on Tribal and Non-Tribal lands). Copies of the NOI and SWPPP will be maintained at the construction office and provided to the District office to be stored by the District Environmental Coordinator. The District Environmental Coordinator will be responsible for the transfer of all SWPPP documents from construction to ADOT maintenance at the end of construction.

Ground disturbing activities cannot be performed until the time frames defined by the CGP have been met and after the NOIs have been submitted. If the project has the potential to discharge into a MS4, the applicant must also forward a copy of the completed NOIs to the local municipality with jurisdiction (at the time it is submitted to ADEQ and/or EPA).

On projects with impaired or unique waters, coverage may not be authorized under this permit for 32 business days following receipt of the NOI and SWPPP. ADEQ or EPA may notify the contractor and ADOT within this time frame that there is cause for SWPPP amendment, or denial of coverage. If notification is not received in the 32 business day time frame, the contractor and ADOT may assume coverage under the CGP.

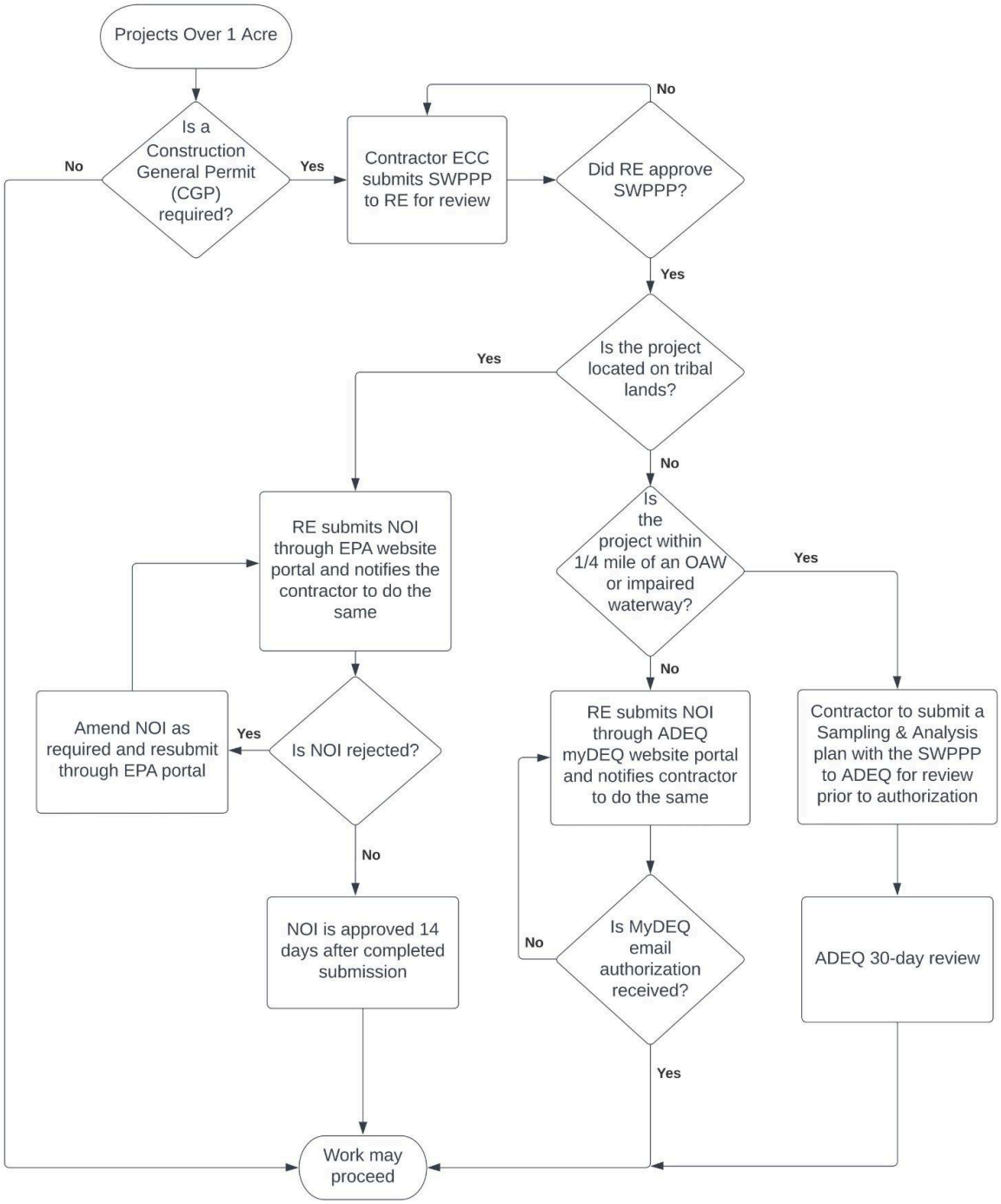


Exhibit 104.09-1 Administrative Requirements Prior To Project Work Proceeding

Construction Requirements

SWPPP Implementation

Upon receipt of the authorization letter or NOI authorization number (or expiration of the review period without notice), the SWPPP may be implemented. The contractor is responsible to ensure that:

- Installation of any Control Measures (CMs) that are required to be placed prior to ground disturbing activities. (Sediment control berms, silt fence, run-on diversions, etc.)
- Surface areas exceeding 750,000 square feet are not exposed to erosion until temporary or permanent erosion control devices have been installed and accepted by the RE. Any exceptions allowing more than one sub-area to be disturbed (such as excavation from one area and hauling to fill in another), must be approved by the RE
- Erosion protection (rock mulch, inlet and outlet riprap, and velocity dissipation) is placed immediately after the drainage structure is complete and functional
- Installation of permanent erosion control measures are given priority over reliance on temporary measures
- Stabilization measures are installed within 14 calendar days in portions of the site where construction activities have temporarily or permanently ceased, unless ground disturbing activities will resume in that area within 14 days (see exceptions in Part IV, D.4.b. of the CGP)

Inspections

The RE and the contractor's ECC are responsible for jointly inspecting the project regularly to ensure that CMs are being maintained in accordance with the CGP and associated SWPPP. During construction the RE and the ECC shall inspect the project at the frequency specified in the approved SWPPP (normally every 14 calendar days, and within 24 hours after any storm event of 0.50 inches or more).

Compliance Evaluation Report (CER)

ADOT should verify that the ECC is conducting thorough inspections and providing a timely copy of each CER. The CER can be found in Appendix F-3 of the Construction Stormwater Pollution Prevention Plan (SWPPP) template. The CER must be signed by the ECC. It is required that the ECC document these inspections and keep all documents related to the project SWPPP at the contractor's Field Office. Corrections of any deficiencies noted during inspections should also be documented and kept in the SWPPP.

The RE is advised to work closely with the contractor's ECC to make field adjustments as necessary: add CMs, maintain or repair CMs, and redesign deficient CMs. The SWPPP is intended to be an evolving plan, which should be revised as a result of changing conditions in the field. It is also the RE's responsibility to verify the use of certified erosion and pollution control materials in CMs, as specified in Section 810 of the Standard Specifications.

Construction Site Inspection Log

The Construction Site Inspection Log is a comprehensive field log that serves as the basis for completion of the CER. The ECC and ADOT Inspector should use this log during their required joint inspections. The SWPPP template includes a Construction Site Inspection Log, which may be tailored to specific projects. Deficiencies noted during inspections must be corrected within four calendar days or by the next anticipated storm event (whichever is sooner).

Construction Inspection Checklists

ADOT has implemented a process to evaluate conformance on each project. Two construction inspection checklists have been developed for stormwater discharge activities:

- Stormwater Administrative Checklist: Intended to be used by the RE and/or assistant, to ensure that submittals and documentation required by Subsection 104.09 of the Special Provisions are processed timely. One checklist per project is required
- Stormwater Erosion/Sediment Control Checklist: required to allow ADOT inspectors to document BMP conformance in the field on a monthly basis. It may be completed from the data collected during joint inspections utilizing the Construction Site Inspection Log

Additional construction inspection checklists are available for Landscape Construction, Landscaping Establishment and Class II Seeding. The checklists are required to be used by the ADOT personnel to aid in evaluating compliance. Performance evaluation statistics are collected on all projects to track overall conformity and to target areas for improvement.

SWPPP Amendments

SWPPPs must be amended within seven calendar days whenever:

- There is a change in design, construction, operation or maintenance at the construction site not previously addressed
- It is determined by regulatory officials that discharges are causing or contributing to water quality exceedance or that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges

Stabilization Record

The RE must verify that stabilization efforts are in place. These measures must be installed within 14 calendar days after construction activity has temporarily or permanently ceased for the affected sub-area. The ADOT SWPPP template provides forms for recording the following activity dates:

- When major grading activities occur
- When construction activities temporarily or permanently cease on a portion of the project
- When stabilization measures are initiated and completed (include reasons for delay, when applicable)

The contractor and ADOT must maintain the SWPPP and all associated documents for at least three years from the time that permit coverage is terminated as part of the permit requirement. ADOT is required to maintain all construction documents/records for 10 years after the FHWA acceptance date. All documentation should be made readily available to the public upon request, all such requests should be made through ADOT Risk Management. Visit the ADOT Record Retention Information and Policy Resources website for guidance and standard work.

Non-Compliance

The contractor's ECC shall be rejected if, in the opinion of the RE, the conditions of the AZPDES General Permit or the approved SWPPP are not being fulfilled. The contractor's ECC shall be rejected for any of the following:

- Failure to properly implement the SWPPP within three working days after written notification
- Failure to complete corrective measures within two calendar days after written notification. (24 hours if sediment flows directly into a body of water)
- Failure to perform routine maintenance within three working days after written notification

In the event of the ECC's failure to comply with any of the above requirements, the RE will direct the contractor to stop all affected work and propose a new ECC as soon as possible. However, all erosion and pollution control items specified in the SWPPP shall be maintained at all times. No additional work on construction items affected by the SWPPP will be allowed until the RE has approved a new ECC and all corrective measures have been completed. The contractor will not be allowed compensation or an extension of contract time for any delays to the work.

Termination of Permit Coverage

Should final stabilization be achieved and the contractor has satisfactorily completed work, both ADOT (RE) and the contractor submit their NOTs to ADEQ/EPA. Final stabilization occurs when all of the following applicable events have taken place:

- For any areas that were disturbed during construction, are not covered over by permanent structures, and over which the operator had control during the construction activities, the operator has met the requirements for final vegetative or non-vegetative stabilization in Part 3.4 of CGP
- The operator has removed and properly disposed of all construction materials, waste and waste handling devices, and has removed all equipment and vehicles that were used during construction
- The operator has removed all temporary stormwater controls that were installed and maintained during construction
- The operator has removed all fuel storage, stockpiles, or other pollutant-generating activities associated with construction. If needed for long term use by ADOT maintenance, that will be included in the meeting when transferring the SWPPP to maintenance
- A uniform perennial vegetative cover with a density of 70 percent of the native background cover for the area has been established. A Registered Landscape Architect (RLA) must verify coverage compliance
    - On an individual project basis, there are some alternatives allowed under the 2020 CGP for final stabilization. Both the RE and the contractor should review Section 3.4 of the permit and include appropriate documentation in the SWPPP before using these alternatives as a condition of termination
- Permanent stabilization measures shown in the project plans or SWPPP (such as riprap, granite mulch, gabions or geotextiles) have been employed

There are instances when final stabilization has not occurred, but the contractor has satisfactorily completed work:

Seeding Projects

Seeding may not successfully germinate, grow and become established until after the next rainy season. When drought conditions occur, it may take a year or longer to achieve final stabilization.

The RE and RLA will jointly conduct a thorough inspection of the seeding, including CMs. This will take place approximately two weeks prior to the completion of the 45 calendar day maintenance period on projects with Class II Seeding as part of the SWPPP. If this work is accepted by the RE and RLA, the contractor may file a NOT at the end of the 45 day maintenance period. ADOT assumes responsibility for all stormwater protection and cannot submit its NOT until the seeding is established as described above. (See “Procedure for Assumption of the SWPPP by ADOT” below).

Future Landscape Projects

There are some cases where the final landscaping will occur on a separate project in the future. Two weeks prior to the final walk through, the RE will inspect all temporary CM’s and verify that they comply with the project plans and SWPPP. Upon final acceptance by the RE, the contractor may file a NOT. ADOT assumes responsibility for all stormwater protection and cannot submit its NOT until final stabilization of the future landscape project. (See “Procedure for Assumption of the SWPPP by ADOT” below).

In either case (one or two above), items listed on the Construction Inspection Log, the Construction Performance Evaluation Checklist, and the CER shall be checked for conformance. Any deficiencies, including those noted on the final walk-through, will be corrected to the satisfaction of the RE. All critical or major items on the Construction Inspection Checklist shall be in 100% conformance prior to acceptance of the project. Critical or major items are those “Conforming Attributes” rated 8 or 4, respectively.

Also, prior to final acceptance, a weatherproof sign or other notice must be erected near the main entrance of the construction site. This will be done via Supplemental Agreement. This notice must contain the following information:

- The current NOI, and the NPDES or AZPDES authorization number
- A brief description of the project, and the location of the SWPPP and the contact name and telephone number if the site is inactive or does not have an on-site location to store the plan

If the project is located within a MS4, the contractor must also forward a copy of the completed NOT to the municipality at the time it is submitted to ADEQ/EPA.

Procedure for Assumption of the SWPPP by ADOT

In the case that the contractor submits a NOT, ADOT will operate the CGP. The existing SWPPP will be provided to the District, and will be their responsibility going forward. Following acceptance of the project by ADOT, the Resident Engineer will set up a meeting with the District Environmental Coordinator, the project site's responsible Maintenance Supervisor (and possibly the Maintenance Superintendent) to hand over the SWPPP responsibilities to the DEC and Maintenance. This meeting should take place at the project site so that the RE can walk the DEC and others through the site to identify installed mitigation measures and turn over the SWPPP book to the DEC for future record keeping. At this time, a conversation should take place on any landscape establishment practices or concerns that will need to continue beyond the active project.

The District Environmental Coordinator, or another person who assumes responsibility for the SWPPP, will file the updated NOI, perform the mandatory routine inspections, maintain Control Measures, complete all required reports, and file a NOT when final stabilization is achieved and all temporary CMs have been removed. The SWPPP is an original record of the construction project and should be maintained and kept in accordance with Federal Highway and ADOT Guidelines.

A flowchart (see Exhibit 104.09-2 Administrative Requirements after Construction Completion) has been provided illustrating the required administrative steps to follow after construction has been completed.

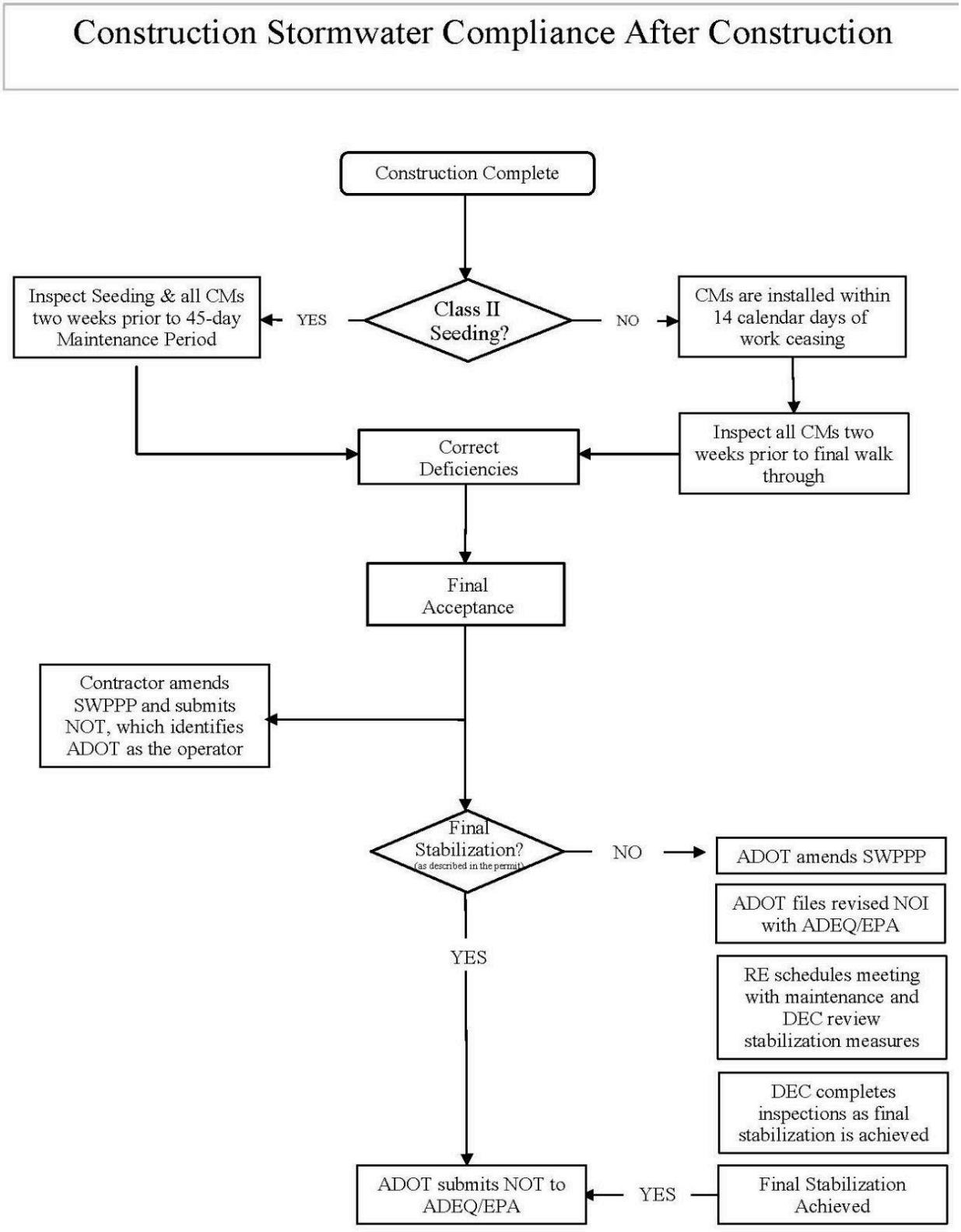


Exhibit 104.09-2 Administrative Requirements after Construction Completion

GLOSSARY OF SOIL EROSION TERMINOLOGY

Arizona Construction General Permit (AZCGP): ADEQ permit provides authorization to discharge under the Arizona Pollutant Discharge Elimination System program, in compliance with the provisions of the Arizona Revised Statutes, Title 49, Chapter 2, Article 3.1; the Arizona Administrative Code, Title 18 Chapter 9, Articles 9 and 10; and the Clean Water Act as amended (33 U.S.C. 1251 et seq.).

Arizona Department of Environmental Quality (ADEQ): state agency with primary responsibility for implementation of environmental statutes, including the AZCGP.

Arizona Pollutant Discharge Elimination System (AZPDES): ADEQ program for administering the requirements of the AZCGP (issuing, modifying, revoking, reissuing, terminating, monitoring, enforcing permits, and imposing and enforcing pretreatment requirements), incorporated by reference under Arizona Administrative Code (AAC) R18-9-A905.

Control Measures (CM): schedule of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the U.S.

Clean Water Act (CWA): an act passed by the U.S. Congress to control water pollution.

Compliance Evaluation Report (CER): inspection report that documents compliance of BMPs identified in the SWPPP.

Control Measures (CM): Formerly known as BMP's. These are the physical erosion control methods eg. wattles, berms, sediment logs, track out pads, silt fence, etc.

De Minimis General Permit (DMGP): issued by ADEQ that allows for discharges associated with potable and reclaimed water systems, subterranean dewatering, well development, aquifer testing, hydrostatic testing of specific pipelines, residential cooling water, charitable car washes, building and street washing, and swimming pool water.

Erosion Control Coordinator (ECC): person knowledgeable in the principles and practice of erosion and sediment controls, who is appointed by the contractor and approved by ADOT.

Environmental Protection Agency (EPA): federal agency with primary responsibility for implementation of federal environmental statutes.

Federal Construction General Permit (FCGP): issued by EPA that provides authorization to discharge under the National Pollutant Discharge Elimination System program, in compliance with 40 Code of Federal Regulations §122.26(a)(1)(v).

Impaired Water: waterway failing to meet water quality standards as defined by ADEQ/EPA. A list of these can be found on the Impaired, Unique and Not Attaining Waters State Map on the Arizona Department of Environmental Quality webpage.

Municipal Separate Storm Sewer Systems (MS4): municipal stormwater system that drains urban areas(including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains).

Multi-Sector General Permit (MSGP): federal permit given to a state under which certain industries may be granted a permit to discharge stormwater.

National Pollutant Discharge Elimination System (NPDES): EPA program for administering the FCGP (issuing,

modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements), under Sections 307, 318, 402, and 405 of the CWA.

Notice of Intent (NOI): forms completed and signed by construction site operators (contractor and ADOT) notifying ADEQ/EPA that the operators will comply with Arizona's or EPA's applicable stormwater general permits.

Notice of Termination (NOT): form that notifies the permitting authority (ADEQ/EPA) of an operator's intention to terminate coverage under the CGP.

Sediment and Erosion Control Plan Sheets: preliminary project plans prepared by ADOT that provide suggestions for types of structural temporary and permanent BMPs.

Stormwater Management Plan (SWMP): ADOT's statewide comprehensive plan for the implementation of the AZPDES permit requirements for MS4s.

Stormwater Pollution Prevention Plan (SWPPP): identifies construction/contractor activities that could cause pollutants in stormwater and a description of measures or practices to control these pollutants.

Total Maximum Daily Load (TMDL): The calculation of the maximum amount of an offending pollutant the stream can receive from all sources (land and air) and still meet water quality standards.

Unique Water: An unpolluted surface water classified as outstanding state resource water under Arizona Administrative Code R18-11-112. The Arizona Department of Environmental Quality and the EPA provide these waters on a registry.

104.10 Contractor's Responsibility for Work

Projects constructed in washes, creeks, rivers, and other streambeds are susceptible to flood damage. Other projects under construction may affect the drainage of adjacent properties and existing roadways. The preparation of a well thought-out temporary drainage and stormwater management plan can go a long way in both preventing unnecessary rework at the site and avoiding unwarranted conflicts with neighboring businesses and residences.

The intent of Subsection 104.10 is not to require an elaborate drainage plan, but to get the contractor to think about how to handle water flowing through the project. The plan should be integrated with the Storm Water Pollution Prevention Plan (SWPPP) discussed in the previous subsection.

Often there is confusion about the need for both a SWPPP and storm water management plan. The SWPPP discusses how to prevent erosions and spills at the job site. It may show all drainage channels (whether temporary or permanent) within the site and what erosion control measures are to be taken in those channels. On the other hand, the storm water management plan decides in a strategic sense how the site will be drained in order to minimize damage to the work and adjacent properties. It may require the contractor to construct temporary channels and berms, and phase the drainage work through the life of the project.

The storm water management plan looks at site drainage from an overall perspective. The SWPPP gets into the details of how erosion will be controlled when the storm water management plan is implemented. In some cases the storm water management plan may need to precede the SWPPP when existing or permanently constructed drainage facilities cannot be used for temporary drainage.

104.11 Damage by Storm, Flood or Earthquake

This subsection is known as the "acts of nature" provision which is common in most state DOT contracts. Acts of nature are basically natural occurrences of an unusual or extraordinary nature. The intent is to compensate the contractor for damages to the work caused by the forces of nature that ordinary foresight could not have

prevented. The acts of nature provision is similar to the differing site condition in that it protects the Department from unwanted contingencies in the contractors' bid that drive up the costs of construction. In this respect, the Department is acting as the contractor's insurer against the unusual and unforeseeable events of nature.

Of course what is unusual and unforeseeable have been open to interpretation over the years. As a result, this subsection attempts to narrowly define the types of occurrences that qualify as acts of nature. Occurrences are limited to tornadoes, strong earthquakes, storms and floods in which a state of emergency is declared and other natural events having all of the characteristics listed below:

- Catastrophic
- Unusual
- Sudden
- Unforeseeable
- Effects of the occurrence are not preventable or minimized by reasonable human foresight

To pass the test, the occurrence must meet all five conditions. If it fails to meet even one of the conditions, then it does not qualify as an act of nature.

For example, a 4-inch rain in August that washes away a partially constructed box culvert would not qualify as an occurrence. In Arizona, 4-inch rains are sudden and can be catastrophic, but are certainly not unusual or unforeseeable. Early winter shutdowns and late spring starts are not considered occurrences either. Although it may be unusual and unforeseeable, a prolonged winter could hardly be classified as sudden and catastrophic.

Subsection 104.11 also identifies the types of damages the contractor can or cannot claim.

Damages that can be claimed include:

- Idle equipment that cannot be placed elsewhere (get an agreement with the contractor for what equipment should be included)
- Repair work needed to restore the project to its condition before the occurrence,
- remobilization costs
- Direct project overhead
- Ripple effects that affect both this project and other projects (some of these costs, like lost profit, are excluded as noted below)
- Lost contract time

Damages that cannot be claimed include:

- Ripple effects from another project where an act of nature has occurred (damages need to be included in that project)
- Idle equipment and remobilization costs on federal aid projects (see the project's Special Provisions)
- Lost profit
- Home office overhead or other types of non-project overhead

To accurately determine the costs due to an act of nature, the Field Office should carefully document on a daily basis all labor, materials, and equipment used to repair damaged work and idle time for the contractor's equipment. It is suggested that the force account daily reports be completed and signed by both the contractor and the Department.

Most acts of nature are done on a force account basis and then converted to a change order once costs are agreed upon.

Ripple effects are more difficult to track and document. The best thing to do is meet with the contractor and discuss the impact an act of nature may have had on other work as well as other projects. Since the Department

may be paying for these effects, the contractor has a duty to minimize these additional costs as much as possible. The Resident Engineer has the right to be notified about ripple effects and can change the contractor's sequence and review the contractor's cost reports in order to control these costs.

104.12 Environmental Analysis

The contractor shall provide an EA for any material used on the project in accordance with Section 1001. If it is a new source that hasn't been previously approved the contractor shall prepare the document for review and approval by ADOT EPG. The contractor is to allow 60 calendar days for ADOT's review of the submittal and any subsequent submittals.

The Engineer may issue a time extension if the Department is delayed in their review AND it delays a controlling activity as shown on the contractor's schedule. It is important to make sure this review time is shown on the contractor's CPM.

104.13 Value Engineering Proposals by the Contractor

What is a Value Engineering Proposal (VEP)? Put simply, a VEP is an innovative and original proposal submitted by the contractor that delivers to the owner the intended scope of work under the original contract at a lower cost. This does not mean that work was unnecessarily deleted or a cheaper, lower quality material was used in the construction. The ultimate purpose of the VEP is to deliver the same or better product at lower overall cost to the owner. Further information is available on the Construction Group webpage regarding the VEP process, as well as previously completed VEP's on past projects.

VEP Concept

Prior to the submission of the formal VEP, the contractor shall submit a written concept of what the VEP will entail, ranging from concept of design, all proposed changes, potential cost savings, schedule impacts for both construction of the project or review of the VEP, and any other information which would aid the Department in its evaluation of concept.

When the contractor submits the initial VEP concept, the Resident Engineer, in consultation with the Designer(s), the Project Manager, State Construction Engineer, and the appropriate ADOT technical section, will need to evaluate the merits of the contractor's concept and inform the contractor, in writing, of the chance of the VEP concept succeeding. Any shortcomings will need to be discussed, including what submittals will be required to make a complete evaluation. The letter should clearly describe what the Department will want to see in the proposal. Being specific is key, the Department's response should provide more than quoting the requirements of the Standard Specifications.

It is important for the Resident Engineer to review and respond to the submittal within 10 calendar days. If the contractor is given approval to pursue the VEP, it should also be specified if some information does not need to be submitted due to the simplicity of the VEP. The submittal process should be as streamlined and expeditious as possible while still meeting the intent of the Standard Specifications.

Formal VEP Submittal

When the Department has agreed to allow the contractor to pursue the VEP, the Resident Engineer should be mindful of the time being taken on the development process. Per specification, the contractor is allowed 30 days to complete the formal submittal; therefore, the Resident Engineer should keep track of the design progress and whether the 30-day deadline is going to be met. If the VEP development process is at risk of eclipsing the deadline, the Resident Engineer should notify the contractor, in writing, of the impending deadline and for an update on the VEP's status. The Department is under no compulsion to accept a VEP. The rejection or termination of a VEP by the

Department should have no monetary or temporal ill effects on the contractor, as the contractor shall not bid a project anticipating approval of their VEP.

Once the contractor has formally submitted their VEP, the Department will need to begin their review of the VEP. Per specification, the Department has 30 days to review. During this time, the Resident Engineer will need to identify the parties needing to review the formal VEP and provide them with the contractor's documents. Once the review has been completed and a consensus has been reached, the Resident Engineer will need to respond, in writing, as to whether the Department accepts or rejects the contractor's VEP. If the Department elects to reject the VEP, the Resident Engineer should be thoroughly detailed in the response, noting the issues with the proposal, which led the Department's decision to reject it.

Administrative costs that can be included in a VEP:

Contractor	ADOT
engineering time	engineering review time
plans preparation	technical meetings and reviews
Estimating	additional inspections and testing
clerical work	additional maintenance and operating costs
reproduction expenses	

Administrative costs that cannot be included in a VEP:

Contractor	ADOT
Project Manager's time	Resident Engineer's analysis and review
home office or corporate reviews	management review
overhead savings or lost overhead	CE cost savings
lost profit	

When setting up a VEP change order (see 104.02), it is important to clearly show the savings to both the Department and contractor. The Resident Engineer needs to keep in mind that the contractor's portion of the savings is added back into the change order as a separate item. All bid item deletions, quantity adjustments, and new pay items are listed first, and then a new item called "VEP savings" is created to pay for the contractor's half of the savings. Separate pay items should be created for any administrative expenses the Department may have. However, the contractor's administrative expenses are usually included in any new items of work. VEP change orders shall utilize pay items 9248001 through 9248031 to memorialize the non-item specific costs/savings. Finally, any documents used to develop the VEP should also be referenced in the specifications section of the change order, along with any other stipulations that were agreed to as part of the VEP.

105 CONTROL OF WORK

105.01 Authority and Responsibility of the District Engineer

The District Engineer oversees all construction and maintenance activities within the district. The District Engineer represents ADOT on all transportation issues involving local and county governments and has input into what new projects are planned for the District.

All ADOT Construction Field Offices within a district fall under the District Engineer's management. Part of the District Engineer's job is to ensure uniformity in contract interpretation and consistency in how construction contracts are administered. The District Engineer decides which projects are assigned to each Field Office and assists the Resident Engineer in staffing each project.

The District Engineer can authorize contract supplemental agreements as high as $1,000,000. In addition, the District Engineer may delegate this authority to the Assistant District Engineer. The District Engineer, or the Assistant District Engineer also signs for the State of Arizona regarding change orders for Time Extensions. The District Engineer is the first point of contact in the partnering escalation process beyond the project level.

105.02 Authority and Responsibility of the Resident Engineer

The Resident Engineer has immediate charge of one or more construction projects. The Resident Engineer represents the Department on official business conducted at the project site. The Resident Engineer is seen by the contractor, local government agencies, the traveling public, and the media as a state official who can make (or get) decisions and conduct business on behalf of the State.

The Resident Engineer's main tasks are to administer and oversee construction contracts for the Department and ensure that projects are built according to the contract and the Department's requirements.

Administrative responsibilities involve managing the routine affairs of construction contracting such as recording work progress, paying the contractor, documenting changes, and ensuring compliance with state and federal regulations.

Oversight responsibilities include observation of construction activities, sampling and testing materials, interpreting contract documents, measuring work for conformity to the contract requirements, and tracking construction costs and contract time.

Senior Resident Engineers have the added responsibilities of administering more complex projects or many ongoing projects within a single highway corridor. They provide input into the project development process for upcoming projects within the District.

These are some specific responsibilities of the Resident Engineer:

- Creating and maintaining an atmosphere of trust and teamwork on the project. Good relations must be maintained with the Project Manager, Field Office Personnel, members of other ADOT groups, the contractor's staff, outside agencies, private citizens, and any other involved parties.
- Building and maintaining an organization that can administer the projects efficiently, effectively, and in accordance with ADOT policies and procedures. Sufficiently trained personnel must be allocated to provide all of the required inspection, sampling, testing, and documentation. In many cases the RE relies on staff from the Area/District lab to sample materials. In most instances the lab can accommodate the RE's request. However, it is ultimately the RE's responsibility to assure sampling occurs. A phone call between the RE (or designee) and the lab to schedule sampling is required; furnishing the lab a copy of the contractor's weekly schedule, leaving a voice mail or merely sending an email is not acceptable

notification. The lab should be notified at least 48 hours in advance. If the lab does not have personnel available, it is the RE's responsibility to provide the Inspector.

- Being involved first-hand in every major project-related issue. The Resident Engineer must visit each project as often as possible and attempt to view all the major work items underway.
- Ensuring the design is actually compatible with the conditions encountered at the project site.
- Communicating promptly and accurately—the Resident Engineer must manage the flow of project information and paperwork.
- Ensuring the Department's policies and procedures are followed in the area of construction administration.

Resident Engineers can authorize and approve contract changes that do not exceed $200,000. They can also suspend work and accept work on behalf of the Department. However, one of the most important duties of the Resident Engineer is to keep a project moving and maintain control. All highway projects (especially the larger ones) tend to get bogged down from time to time due to a major design change or differing site condition. Regardless of the cause, it's up to the Resident Engineer to lead the project team and contractor through the obstacle as most Resident Engineers are empowered with a wide range of authority so they can do just that.

The Resident Engineer should not make unilateral decisions that have a major effect on project scope, schedule, or construction costs. Under ADOT's project management process, the Resident Engineer is a member of the project management team assembled for that project. The project management process covers the entire life of the project from development and design through construction and maintenance. Administration of the project is a team effort and all decisions must be made within the framework of the project management process. The Resident Engineer should confer with other team members when making decisions affecting project scope, schedule, or budget. The Resident Engineer should realize that the Department is a large organization and that other groups that do not actually participate in building the project play an important role in achieving the final goal.

Suspension of Work

Due to the potential ramifications that it may cause to the progress and overall success of the project, suspension of work by the Department needs to be carried out in a most judicious manner and can either result from actions made on the part of the contractor, adverse weather, or unsafe/undesirable conditions of public interest. Reasons for suspension of work may include:

- Negligence by the contractor resulting in unsafe conditions for either the workers on-site or the general public, as described in Standard Specifications 107.07, project time will continue to be charged.
- Non-conformance of the construction activities with respect to the contract documents time will continue to be charged.
- Extended project delays outside of the contractor's control as described in Section 108.08 of this manual.

In the unlikely situation where a project is required to be halted or suspended for any reason, the Resident Engineer should reach out to the State Construction Engineer or the Assistant State Construction Engineer for guidance as it relates to charging time and contractor compensation.

When a stop work order is issued, the State Construction Engineer and Assistant State Construction Engineer must be copied.

105.03 Plans and Working Drawings

The definition of what constitutes working drawings or shop drawings can be found in Subsection 101.02 definitions for Plans. The Standard Specifications or the Special Provisions will specify when these types of drawings are required. The subsections of the Standard Specifications that require working drawings include:

Subsection	Drawing Description
601-3.02(A)	Falsework and Form Drawings and Calculations
601-3.02(C)	Formwork Drawings for Cast-in-place Bridge Girders
601-3.04(3)(b)	Deck Joint Assemblies Shop Drawings
602-3.01	Prestressed Concrete Shop Drawings
603-3.05	Timber Pile Splicing Detail
604-3.01	Structural Steel Fabrication Shop Drawings, Calculations, and Erection Details
605-3.01	Bar Bending Diagrams and Cut Sheets for Reinforcing Steel
606-3.01	Sign Structure Fabrication Shop drawings
608-3.01	Sign Panel Fabrication Shop Drawings (when supplements are needed)
609-1.03	Drilled Shaft Installation Plan
610-3.03	Painting Application Plan
701-1	Alternate Traffic Control Plan (when submitted by contractor)
730-4	Shop Drawings, Catalog Cut Sheets, Photometric Data Sheets for Lighting and Traffic Signal Equipment
732-3.01	The contractor changes in location and size of Electrical Conduit & Pull Boxes
734-2.01	Shop Drawings, Circuit Diagrams and Other Technical Information for Traffic Signal Controllers
806-3.01	Material and Equipment lists and Other Technical Information for installing Trees, Shrubs, and Plants
808-3.01	Material and Equipment lists and Other Technical Information for installing Water Distribution systems
808-3.05	Shop Drawings for Installation of Backflow Prevention Units
809-3.01	Material and Equipment lists and Other Technical Information for installing Sewerage Systems

There are specific time requirements in Subsection 105.03 for the Department's review of working drawings. If these time requirements are exceeded and result in a project delay, the contractor may be entitled to a contract time extension. It is important for the Resident Engineer to track drawing review times and minimize their effect on the contractor's progress.

The drawings are submitted in a reproducible format electronically to the Engineer for review. The Engineer may ask for up to three hard copies.

Some working drawings require the seal of the Professional Engineer (PE)—this means a Professional Engineer registered in the State of Arizona (see definitions in Subsection 101). The Department and the Arizona State Board of Technical Registration do not recognize out-of-state Professional Engineers. Do not accept working drawings stamped by out-of-state Professional Engineers.

105.04 Conformity with Plans and Specifications

Occasionally, contractors and Inspectors are uncertain when work is reasonably close to conformity. Although a definition of "Reasonably Close Conformity" is specified in Subsection 101, confusion still occurs. When a specific tolerance is described in the contract documents, there should be no confusion. The work is either in or out of specification. If the contractor claims they did not have to meet that specification on previous projects, then the issue is different. The issue is now the inconsistent enforcement of the contract specifications, which is something the Resident Engineer or District Engineer should handle.

When no tolerances or requirements are listed and the Inspector is dissatisfied with the workmanship or materials used, then the only recourse is to determine the industry standards for that type of work. Trade and material producer associations such as the Asphalt Institute, ACI, PCA, and AISC publish manuals that describe generally accepted practices for different types of construction work. The contractor is expected to follow accepted industry standards if the contract specifications are silent on a desired quality of materials or workmanship. For example, the Standard Specifications do not go into specific details on how to rake asphalt. This is covered in Asphalt Institute or National Asphalt Paving Association literature.

Some judgment is required in applying industry standards to the contractor's work. Sometimes, local practices take precedence over industry standards when these practices are widely accepted by the contracting community.

The contractor has a duty to perform work in strict accordance with the plans and specifications, whether the Department inspects the work or not. The presence of an Inspector does not legally relieve the contractor of the responsibility to comply with all the contract requirements. Inspectors and Project Supervisors can't catch everything. However, they do have a duty to point out defects in workmanship or materials to the contractor as soon as they recognize them.

On occasion, the Department accepts work at a reduced price that does not totally meet the specifications. This process usually involves the contractor submitting a proposal as described in Subsection 100 of this manual. The Resident Engineer then consults with the Designers and other technical experts regarding the merits of the contractor's proposal. The Resident Engineer must examine the cost involved in accepting substandard work. This should include the life-cycle costs to the Department, especially any higher operational and maintenance expenses.

If the contractor's proposal is accepted, the Resident Engineer must document the acceptance by change order or letter agreement. Some form of documentation needs to take place.

Additionally, for federally funded projects, ADOT has a stewardship agreement with the FHWA which requires all work to be constructed in strict compliance with all plans and specifications, and materials sampled and tested in accordance with the ADOT Materials Quality Assurance Program. Any deviation from these requirements must be disclosed as an "exception" in the Final Materials Certification. The Final Materials Certification is completed in DocuSign and includes the Exception Report, Materials Sample Checklist, and Certification Log. The Resident Engineer and Materials Coordinator should document circumstances related to any exceptions at the time they occur for inclusion in the Final Materials Certification. For materials-related exceptions, contact the Regional Materials Engineer to ensure the exception is addressed properly to both minimize any decrease in quality or performance of the finished product and ensure consistent administration statewide. An Exception Report Template is available by contacting the Materials Group, and serves as a guide for properly documenting exceptions and includes examples for exceptions which are more common. A Materials Sample Checklist for each project may be downloaded from the Materials Group website. A Certification Log Template is available on the Materials Group website.

105.05 Restricted Performance Specifications

This is a seldom known and little-used specification which can save Resident Engineers and Project Supervisors much frustration when contractor field personnel keep trying to push construction tolerances to their limits. The most obvious example is the concrete foreperson who tries to save materials by forming and pouring everything 1/8 to 1/4-inch smaller in dimension. Clearly this is not the intent of the Project Plans or Standard Specifications. More subtle examples include equipment that arrives on the job site that is not correctly adjusted or designed to produce materials or a finished product in the middle of the tolerance range or at the target values specified.

105.06 Coordination of Plans, Specifications, and Special Provisions

This Subsection is used to resolve conflicting specifications or contract requirements found in different contract documents. The basic philosophy is that the project Special Provisions, Project Plans and Supplemental

Agreements are site-specific and should take precedence over the more generic contract documents such as the Standard Drawings and Standard Specifications. In turn, these documents should take precedence over the MUTCD, AASHTO, and ASTM specifications when conflicts arise involving these documents.

On projects in which local government work is involved, city or county construction specifications are often cited as the requirement for certain portions of the work. When a discrepancy or conflict exists, the basic philosophy discussed above still applies; go from the site-specific to the more generic contract specifications. In the case of local government work, the order would be:

1. Supplemental Agreements
2. Special Provisions
3. Project Plans
4. City or County Standard Drawings
5. City or County Specifications
6. ADOT Standard Drawings
7. ADOT Standard Specifications

Keep in mind, local government specifications do not apply to general contract provisions such as bidding requirements, control of work, or prosecution and progress. In this case, the Special Provisions and ADOT's Standards Specifications apply exclusively.

Override Documents

There are some types of government documents that are not part of the construction contract that can override anything specified in the contract. State laws and federal regulations are examples. The contractor is not required to do anything that violates the law or a government regulation.

The more typical problem that a Resident Engineer or Project Supervisor encounters concerns prior agreements ADOT has made with other government agencies, local communities, or individuals. These could involve intergovernmental agreements (IGAs), 404 permits, Right-of-Way agreements, or environmental impact statements.

These documents obligate the Department to construct something or conduct construction operations in a certain way. When there is a conflict or discrepancy with the contract documents, a supplemental agreement is usually needed to bring the construction contract into compliance. For example, if the Project Plans show a 6 foot high noise wall and the Department has signed an IGA with the city to build a 8 foot high wall, the Resident Engineer must execute a supplemental agreement with the contractor to build the higher wall.

ADOT's Project Manager should be involved when these types of changes are needed. The Project Manager is responsible for coordinating and tracking these kinds of agreements on behalf of the Department.

105.07 Cooperation by Contractor

The intent of this subsection is to have someone from the contractor's staff who can represent the contractor at all times on site safety, traffic control, and quality issues. This representative does not need to be someone at the superintendent level. It's more important that this person be empowered to take immediate corrective action when instructed by the Department. If this person refuses or hesitates to take immediate action, then the only recourse may be to require the presence of a superintendent full-time on the project site.

105.08 Cooperation with Utility Companies

Utility relocation work is a common occurrence on most highway projects. In fact, several specifications have been set up to deal with utility related work. These subsections include:

Subsection	Description
104.06	Utility work done on the project by third parties under permit
105.08	Relocation work done by utility companies on the project site
105.12	Inspection of contractor's work by utility companies
107.15	Protecting utilities during construction

Subsection 105.08 deals with utility conflicts at the project when conflicting utilities are relocated by the utility company. The Department does its best to have all utilities that may conflict with the project work adjusted or relocated before the contract is awarded. The Department also tries to accurately represent what utilities are at the project site. Occasionally, utilities and utility work do conflict with the contractor's work.

Unless the Subsection 107.15 of the Special Provisions or Project Plans warn the contractor about specific utility work going on within the project, the contractor is generally entitled to additional compensation when utility work conflicts with project work. In addition, if the project's controlling item at the time is delayed, the contractor may be entitled to a time extension including costs for extended overhead.

Some utility conflicts are the result of utilities discovered by the contractor during construction that are not shown on the Project Plans or mentioned elsewhere in the contract documents. In these cases, the utility conflict is handled like a differing site condition (see Subsection 104.02 of this manual). Then the question is whether the contractor should have known about the utility and adjusted the construction work accordingly?

Utility conflicts can be a very costly matter for the Department. The Resident Engineer must take an active role in managing these situations. The Resident Engineer shouldn't hesitate to involve the Project Manager or ADOT's Utility and Railroad Section if help is needed in dealing with a utility company. The Utility and Railroad Section is responsible for coordinating proposed project work with utility and railroad companies, and preparing and processing agreements with these companies. See Subsection 107.15 of this manual for further information.

105.09 Cooperation Between Contractors

This subsection applies when:

- Two or more contractors are working at the same time on the same project
- Two or more contractors are working on different projects but have to tie their work together

Getting contractors to cooperate with each other can be challenging at times. Even with this subsection contractors may have difficulty cooperating. As soon as a contractor's access is restricted or the contractor has to perform work out of sequence, the contractor may attribute the difficulties to the adjacent contractor. Attempts by the Resident Engineer to order the contractors to cooperate may do nothing to diffuse the situation.

Resident Engineers must take a leadership role when contractors have difficulty cooperating. Anticipating areas of conflict and meeting ahead of time to resolve common issues are the best ways to keep contractors working together. Some Resident Engineers conduct regularly scheduled coordination meetings in an effort to get contractors to work together. Ultimately, if contractors do not cooperate and damage or hinder each other's work, it is usually the Department that ends up paying for the damages.

105.11 Authority and Responsibility of Project Supervisor and Inspectors

Project Supervisor

The Project Supervisor serves as the Lead Inspector for the project. The primary responsibility of the Project Supervisor is to oversee the Department's inspection operations at the site.

Most ADOT projects require a team of Inspectors, material testers, surveyors, and other specialists who must work together to inspect and document the project work. The Project Supervisor ensures that there is a single coordinated effort at the project site to effectively inspect and document the work. The Project Supervisor must handle other project oversight responsibilities such as safety, traffic control, and government regulation compliance.

Duties of the Project Supervisor include:

- Day-to-day inspection staffing and scheduling
- Project-wide monitoring of the contractor's operation and construction schedule
- Enforcing and explaining the Project Plans, Special Provisions, and other contract specifications
- Coordinating the documentation and payment of contract work
- Resolving site issues with the contractor's field staff
- Performing quality control over inspection work, site materials testing, and project documentation
- Maintaining the project as-built plans
- Interfacing with district surveyors, regional material labs, and other off-site ADOT groups that support the inspection and testing efforts for the project
- Inspecting and documenting the work as needed

One of the most important things the Project Supervisor can do on site is to anticipate the contractor's work, then figure out the inspection and testing requirements ahead of time.

The Project Supervisor should be the on-site expert for what is contained in the Project Plans, Special Provisions, and other contract documents. By proactively reviewing the plans and specifications, then discussing the contract requirements with the contractor's superintendent, the Project Supervisor can prevent many of the conflicts that arise between the Inspectors and the contractor's production staff. In most cases, these conflicts are either resolved ahead of time by the Project Supervisor or escalated to the Resident Engineer, limiting the Inspector's involvement. The Project Supervisor helps the Resident Engineer resolve site related issues with the contractor. The Project Supervisor does not have the authority to waive or alter the provisions of the contract, but can provide valuable information on how an issue developed and conduct the necessary research (contact Project Designers, review contract documents, talk to ADOT technical sections, etc.) to get the issue resolved.

Inspectors

Inspectors have two important responsibilities. The first and primary responsibility is to require the contractor's work and site activities to conform to the contract plans and specifications. Plans and specifications describe in detail the work that is to be constructed including the materials to be used, the workmanship required, and certain construction procedures to be followed. The plans illustrate graphically the various elements and components of the project. The specifications describe in words the materials and workmanship required.

The second responsibility is to accurately document the level or degree of conformity of the contractor's work with the plans and specifications.

Inspection duties include:

- Observing and measuring the contractor's workmanship, materials, and methods for compliance with the plans and specifications
- Communicating to the contractor's field staff the contract requirements for work under construction or about to be constructed
- Assisting the contractor with reading and interpreting the plans and specifications
- Determining the intent of the specifications when necessary
- Documenting inspection observations and measurements including summaries of labor equipment and material usage
- Measuring work for payment
- Observing construction operations for general compliance with safety regulations, traffic control requirements, and construction-related government regulations (air quality, noise levels, erosion control, equipment licensing, federal aid requirements, etc.)

Inspecting Work in Progress

Although Inspectors are not required to inspect an item until it is complete, the Department encourages Inspectors to periodically observe and inspect work in progress to assist the contractor in avoiding rework and stoppages. The contractor should be notified of noncompliant work as soon as it is detected. If the contractor fails to correct the non-compliant work, a verbal notice, then a written noncompliance notice may be issued in accordance with Exhibit 105.11-1.

For example, the inspection of reinforcing steel for a bridge deck can take place once all the rebar has been completely installed and tied. However, should there be an error in the bar spacing in the bottom mat, considerable time and effort would be expended by the contractor to correct this deficiency. Simple periodic checks of the rebar placement operation by the Inspector could potentially avoid this problem.

When conditions arise at the project site that make compliance with the plans and specifications impractical or completely unreasonable, the Inspector should immediately notify the Project Supervisor or Resident Engineer.

The Inspector as a Buyer for the Taxpayers

The Inspector is the Department's point of acceptance for most contract work. The Inspector is also a buyer of construction work. The Inspector accepts work the contractor produces and then fills out a diary to pay for that work.

The Inspector's objective should be to get the expected value or quality for the price the Department is paying. In other words, the Inspector's job is to ensure the Department and taxpayers are getting what they're paying for. This doesn't necessarily assume dishonesty on the contractor's part. The Inspector is there to assist the contractor with the contract documents and review work in progress so that produced construction work meets or exceeds the Department's standard the first time. This is how inspectors get the best value for the taxpayers and help avoid the rework, contract disputes, work stoppages, confrontations, and high risk associated with after-the-fact acceptance.

Inspector and Contractor Relations

The Resident Engineer and Project Supervisors should keep in mind that the most important relationship at the project site is between the Department's Inspector and the contractor's foreperson or superintendent. Part of the Resident Engineer and Project Supervisor's responsibility is to ensure that this relationship is a productive and cooperative one.

Some Project Supervisors go out of their way to cultivate and protect this relationship by ensuring two-way communication and timely feedback between the parties. They should guard against confrontation by mediating

disputes, resolving personality conflicts, and escalating issues quickly so that the effectiveness of the relationship is not diminished.

Subsection 104.01 discusses ways in which the Inspector can effectively get along and enhance his relationship with the contractor's staff and how to enhance the Inspector's relationship with the contractor.

Cooperation by Contractors

The contractor has a duty to cooperate with the Department's Inspectors (see Subsection 105.07).

The contractor must provide:

- Adequate warning about work requiring inspections (105.12 & 108.04)
- Adequate time for inspections to be completed (105.12)
- Accessibility to the work to be inspected including assistance (105.12)

The contractors often get so focused on their work that they often overlook their obligations to the Inspector. The Inspectors and the Project Supervisor should be proactive in bringing up potential inspection issues such as sufficient warning, adequate time to inspect, and suitable access to the work. Sometimes it requires constant reminding to get the contractor to be a little more accommodating. But keep in mind, if the contractor is producing high quality work efficiently, then the Department is getting what they want most from the contractor and the Inspectors should be a little more flexible about timing and access requirements. It's only when contractors are producing marginal work that they should be fully obligated to cooperate with the Inspectors.

105.12 Inspection of Work

Inspection Fundamentals

Inspection, in its purest form, is simply a measurement for compliance. Measuring is the act or process of regulating to a standard, while compliance means conformity in fulfilling official requirements.

When you inspect, you measure (or observe) something and then compare your measurements to the requirements of the work. The requirements are described in the contract documents (Project Plans, Special Provisions, Standard Specifications, etc.).

Construction work requirements can be divided into five elementary categories:

1. Layout
2. Material Properties
3. Dimensions
4. Workmanship
5. Performance

Any contract specification that describes construction work will fit into one of these five categories, and completely describe the work.

Inspectors can use this important information to greatly improve their effectiveness. This will be discussed in greater detail later. For now, let's more fully describe the five categories and suggest a memory aid so you can instantly recall them in the field:

Category	Examples Include	Mnemonic
Layout	location, elevation, grade, horizontal control and other survey related information	Let

Material Properties	type, gradation, strength, compaction, density, grade, certification, stability, prestress, binder content, temperature, cure time, and color	Me
Dimensions	spacing, length, width, thickness, height, clearance, slope, diameter, and other shape related information	Detect
Workmanship	finish, appearance, cure, edge and connection treatments, texture, and handling	With
Performance	smoothness, pressure test, bacteria count, pour rate, flow rate, waterproof, and mortar tight	Pride

Now you may ask, "How can remembering these five inspection categories make me a better Inspector?" As mentioned earlier, all five categories completely describe the requirements of any work to be constructed or even manufactured (such as aircraft engines, furniture, and circuit boards). When Inspectors are examining work under construction, they should continually ask themselves these five questions:

1. What are all the layout requirements for this work
2. What are all the material properties that materials used in this work must comply with
3. What are all the dimensional requirements for this work
4. What are the workmanship requirements
5. What are the performance specifications the completed work must meet, if any

Then the Inspectors search through the contract documents for all the answers to these five questions. This should be a systematic search by answering one question at a time. By following this approach, Inspectors will gain a thorough and complete understanding of the contract requirements for the work to be inspected.

Most Inspectors take the opposite approach to determining the work requirements. They search in the appropriate sections of the contract documents for any type of specification related to the work. They may find a material specification in one section, a dimensional requirement in another, and eventually they find all the specifications related to the work. Then they may see something at the site that doesn't look right and do a brute-force search of the contract documents to find the requirement the contractor must meet. After much effort, they eventually get an overall view of the work requirements.

Although there is nothing wrong with randomly searching the contract documents to catch all the work requirements, this approach alone leads to a greater chance of overlooking important contract requirements when inspecting unfamiliar work. The systematic approach described previously is a more complete way of capturing all the contract requirements for a particular item of work.

Both approaches should be used together—a random search of the contract documents followed by a review of the five questions. This is the best way to ensure Inspectors have a complete picture of all the contract requirements.

Construction Rework and Additional Inspections

Occasionally it is appropriate to charge the contractor for additional inspection work. To be fair, the Resident Engineer should be careful about how and when contractors are charged for additional inspections.

The Department's policy on back charging contractors is based on the belief that we are partners with the contractor. Both the Department and the contractor must be flexible in accommodating each other's schedule. The other belief is that sometimes contractors make honest mistakes. Back Charging the contractor for additional inspections done when fixing honest mistakes only adds insult to injury and is inappropriate.

Back Charging is appropriate when:

- The contractor chronically refuses to cooperate with the Department's Inspectors about adequate warnings for inspections that result in additional overtime expenses
- The contractor repeatedly makes the same mistakes and won't change construction methods to eliminate or reduce defects
- The contractor attempts to alter already accepted work without notice to or the approval of the Department's Inspectors

District Engineers will usually support back charges to the contractor only when there is documented evidence of a chronic lack of cooperation by the contractor. Some prior attempt must also have been made by the Field Office to resolve the issue with the contractor through the partnering escalation process.

When inspecting unique items of construction (such as electrical and mechanical equipment installations) Inspectors should take advantage of the experience and expertise of the equipment supplier. Often these people have their reputation to protect and will help the Inspector ensure the contractor installs and uses their equipment correctly. In addition, ADOT may have its own in-house experts who can assist the Inspector with reading and interpreting specialized contract requirements.

Why Document Inspection Work?

Many Inspectors question how much documentation of construction and inspection activities is needed. Some Inspectors question why they need to document at all. Others are unclear as to the value of good inspection records.

Unfortunately, there is not one good reason why it's important for Inspectors to document contract work and inspection observations. However, there are several reasons when looked at together that offer a compelling argument for good record keeping by Inspectors.

Reason 1:

Historical information on how the work was constructed is valuable in the future if a project has to be modified or rebuilt to solve a future transportation or traffic problem. Good inspection documentation will instill in future Planners and Engineers confidence in what is there and how well it is built. In addition, if there is a failure of a structure, pavement, or other project component, the Inspector's diaries can be helpful in ruling out possible modes of failure.

Reason 2:

Recording of an Inspector's observations and measurements provides valuable quality control information. This information can be used to identify performance trends, as well as determine a level of confidence in accepting work that may be marginal in other areas. More importantly, inspection documentation indicates to ADOT management, taxpayers, the FHWA, and other customers that there was an authentic compliance and quality control effort at the project site. This documentation also indicates how effective that effort was.

Reason 3:

Pay quantities are required to be measured and documented for contract payment and tracking purposes. Part of the Field Office's role is to pay the contractor for work performed. Inspectors are best suited for paying for contract work since they are the closest to the work. Good documentation of pay quantities is needed to avoid underpaying, overpaying, or double-paying the contractor for completed work.

Reason 4:

Regardless of the notice requirements in Subsection 104.03, contractors often notify the Department after the fact regarding additional compensation for work already performed. The Inspector's diary should represent a summary of the day's construction activities assigned to the Inspector. In addition to recording inspection observations and measurements, Inspectors should summarize labor, material, and equipment usage, delays, breakdowns, idle time, inefficiencies, work accomplished, and other important events that affect or explain the contractor's progress. Proficient record keeping by Inspectors has saved the Department thousands of dollars in overpayments to contractors for extra work performed.

Reason 5:

An Inspector's diary is a communication device or tool. It tells others what the Inspector did that day and what went on at the construction site. Documenting inspection work directly communicates the level of professionalism and conscientiousness an Inspector applies to his or her work. Inspectors—more than anyone else in a state highway agency—are expected to document their day-to-day work activities. Secretaries don't keep diaries, nor do Materials Engineers or highway maintenance workers. Only Inspectors are charged with the daily duty of recording the activities and events that surround them. The taxpayers of this state and the Department place a lot of faith in their Field Inspectors to assure the quality and durability of our roads and bridges. A well-written, comprehensive diary is one of the best acknowledgments of that faith an Inspector can give.

Daily Project Diaries

The Resident Engineer is required to keep a daily diary on each project and each inspector and supervisor who is assigned responsibility for any project operation is required to keep a daily diary. Each inspector’s diary should provide detailed information concerning the specific phase of work they are assigned to.

Entries should be on the appropriate form, written legibly, in ink and signed at the end of each day or entered into PEN. Dairies should be kept in such detail and manner that new personnel could take over the work at any time.

A partial list of items to be noted in a dairy:

- Weather
- Orders given to the contractor
- Important discussion with the contractor or his representatives
- Official visitors and inspections
- Work or materials rejected and reasons
- Time of shutting down or resuming of work and explanations of the delays
- Work done by contractor’s forces during the day, including the location of the work
- Accounting for any time spent by contractor’s personnel or equipment on disputable items of work and especially any work, which might be the basis of a claim
- Arrival and departure of major equipment
- Record of important phone calls, conversations in the field and/or emails
- Unusual conditions, if any such as high water, bridge construction problems, slides, unsatisfactory sub grade or foundation conditions, detour conditions, etc. Care should be used when explaining hazardous conditions
- Progress of staking and surveys
- An up-to-date inventory of contractor’s equipment and list of the contractor’s work force
- If problems are noted, explain the steps taken to correct them

All diaries are the property of the Department and shall be filed as a part of the project records. A good diary can provide valuable information and evidence in the event controversies arise. There should be no personal information entered in the project diaries.

Construction Inspections with Quantlists

Construction Inspection Checklists AKA “Quantlist” have been developed to memorialize inspections at key points in the construction process. Quantlists also serve as a reinforcement to the Department's Standard Specifications and Construction Manual, while ensuring contractor quality and uniformity within their construction processes. quantlists assist inspectors in performing acceptance inspections on most disciplines involved in highway construction projects. Quantlists may also serve to assist new inspectors in learning what to look out for during an acceptance inspection. However, inspectors should not rely on the quantlist alone and must read all relevant contract documents to ensure necessary compliance.

At the ADOT Construction and Materials Group website you will find a downloadable guide titled “Quantlist: A Comprehensive Guide”, this guide provides a more detailed explanation on the following information.

What is a Quantlist

A quantlist is a quantitative checklist, which converts attribute information into a weighted number score according to the gravity or necessity of individual attributes and how the lack of completing said specific attributes may adversely affect the quality of a finished product. This in turn allows for an objective evaluation of construction processes and the review of specification changes. Each attribute in a quantlist references the most recent specification, each specification should be reviewed independently for additional details by the inspector prior to performing any acceptance inspection. The intent of a quantlist is to affirm quality requirements at the beginning of a project, assure construction processes are in control and stabilized throughout the duration of the project and that the final product meets the Departments quality goals. Quantlist attributes complement the Standard and Specifications, ADOT Construction Manual - Subsection 105.11 Authority and Responsibility of Project Supervisor and inspectors, 105.12 Inspection of Work, and inspectors daily diaries. In doing so, quantlists serve to reinforce the Department’s quality and craftsmanship requirements. It should be noted that quantlists were developed as an aid to the inspector and do not include all items to be inspected; inspectors should not rely on the quantlist alone and must read all contract documents to ensure necessary compliance.

Setting Expectations

One quantlist should be completed after each construction process change until the process is in control and stabilized to the satisfaction of the Engineer. Once the process is in control, the minimum number of quantlists must still be completed. Inspectors should always document any reason for reducing the quantlist frequency in their daily diary. Throughout the life of a project, the Resident Engineer and Project Supervisor should continuously track the project's quantlist frequency compliance.

Printable hard copies of all quantlists are available for inspectors to use in the field. However, quantlists can only be and must be completed in the PEN System on the daily diary associated with the work. It is not acceptable to only complete hard copies. Additionally, the inspector’s daily diary must identify that a quantlist has been completed and a quantlist must be reviewed by the Project Supervisor. Quantlist are to be completed at the required frequency. In order to obtain an accurate measurement of the contractor’s workmanship, the quantlist must capture the results of each attribute at the time of the inspection.

Quantlist Frequency

Each quantlists has its own specified time as to when it should be used to perform an acceptance inspection. These specified times vary greatly and should be strictly adhered to throughout the life of the project. The minimum quantlist frequencies can be found in the current Quantlists Versions and Minimum Quantlist Frequency chart. This information is available on the Construction & Materials Group, Quantlist web page on the ADOTNet or the internet. This guideline also shows the corresponding Standard Specification numbers and most recent versions of each quantlist.

Tracking Quantlist Frequency on a project

Quantlist frequency should be tracked and checked regularly by the Project Supervisors throughout the life of a project. The mandated frequency requirements are set by ADOT in Construction Bulletins 02-04, 06-01, 07-01 and are designed to meet the project documentation requirements set by the FHWA. It is paramount that the quantlist frequencies be consistently adhered to, failure to follow the mandated quantlist frequencies can cause issues with quality control on a project. Frequency compliance will be reviewed during the Department's Internal Construction Quality Assurance Group audits, FHWA audits, and the Arizona Auditor General's Office audits.

Quantlist Tracking Through Reports

Various statistical reports regarding past performance of completed quantlists that can be accessed on the ADOT Data Warehouse web page on the ADOTNet Reports will be found under "Pen / FAST Reports", "Quantlist Tab Info". The information gathered here can be compiled per project and by date utilizing the "Quantlist Frequency Table Processor" also found on the Construction and Materials, Quantlist web page.

Quantlist Scoring

Quantlist scoring is based on the severity of the attributes on the quantlist being used, e.g. an attribute requiring a certification of compliance or analysis will be weighed less than an attribute with a safety or environmental requirement. The weight definitions are as follows: Non Applicable (NA), Administrative, Minor, Major, and Critical each weight is assigned a value that is compiled after the quantlist is completed and submitted resulting in a percentage score.

After the submission of a quantlist a compliance percentage score will be displayed. Quantlist don't necessarily have a minimum passing score to be considered acceptable in the field. However, some projects may have a contractor Incentive associated with their overall quantlist scoring, this information will be found in the project specific special provisions. All narratives in a quantlist found to be in non-compliance, should be corrected by the contractor unless approved "as is" by the appropriate authority and Project RE.

Communicating Expectations With Your Contractor

Prior to a contractor starting work on any major construction disciplines, a pre-activity meeting should be held in accordance with a project's Special Provisions. The inspectors should obtain any and all current updated copies of quantlists that may be relevant to the discipline being inspected. The Project Supervisor and field inspector should discuss the Department's quality expectations for each attribute covered by the quantlists with the contractor during these pre-activity meetings.

Before Performing Acceptance Inspections

Prior to performing any Acceptance Inspection utilizing quantlists, inspection preparation is crucial. Inspectors should investigate and or review the discipline being inspected, even if the inspector is already familiar with the discipline being inspected; specifications change and may be updated without notice. This discipline review process can be accomplished by utilizing the project guiding documents and ADOT specifications, e.g. Project Special Provisions, Project Plans, ADOT Standard & Specification, C-Standards & SD-Standards, ITS Standards, Electrical Standards, ADOT Sampling Guide - Appendix C, Construction Bulletins, and Policy Procedure Directives - AKA PPDs.

The inspector should also discuss the Department's expectations with the contractor; discuss what narratives are on each of the quantlist with the contractor in a pre-activity meeting. Additionally, some contractors may request a copy of the finalized quantlist after each inspection. This should be a formal process for project tracking purposes, utilizing email or DocuSign works best, this process should also be addressed and agreed upon in the pre activity meeting. Finally, if the contractor has not requested an inspection, then notification of the upcoming inspection to the contractor should be formally issued at least 24 hours in advance, earlier if at all possible. Surprising the contractor with an inspection can cause resentment and partnering issues on a project; remember your job is not

to catch the contractor making a mistake, but instead to assist the contractor in preventing mistakes from ending up in the final product. It is beneficial to both parties to be open and transparent when performing any type of inspection.

Performing Acceptance Inspections

If at all possible, all “Acceptance Inspections'' should be performed with a contractor’s representative present. Clearly establish and agree upon the limits of the inspection with the contractor's representative, i.e. where does the inspection start & stop and what you will be looking out for. Remember to take note of who the contractor's representative was (full name & position), what quantlist narratives were found to be deficient, along with the location of each deficiency if applicable. Taking photos of any areas of concern can be extremely useful in relocating the deficiency, when performing a reinspection, discussing issues with the Project Supervisor / RE, when notifying the contractor of a non compliance, and if a representative was not present during the Acceptance Inspection.

Following Acceptance Inspections

Review quantlist results with the contractor’s representative. If a contractor representative was not present, the inspector should notify the contractor of any non-conformance items that were found in a timely manner. A concise description of the acceptance inspection should be documented in your daily diary. This description should include: Who requested the inspection or why Inspection is being performed, arrival time, ambient temperature, weather (sunny, cloudy, raining), the inspection location/limits, what discipline was being inspected, any non-conformance issues, what additional work was being performed within the immediate area, the contractor's representative present during the inspection, along with any discussions of note that were related to the acceptance inspection, and finally your departure time.

Non-conformance

For each Attribute the inspector is required to mark Yes, No, or NA (Non Applicable) under the compliance dropdown. If an Attribute is marked as “No” under the compliance dropdown, the inspector has the option to select “Follow Up Required” prompting a reinspection. If this follow up option is chosen, when creating a new quantlist of the same type you will be required and must perform a reinspection until the deficient attribute has been marked as “Yes” under the compliance dropdown. Followup inspections for each non-conformance attribute will also need to be documented within the inspectors daily diary capturing all of the aforementioned data. A followup quantlist should be completed (at a minimum) for any initial quantlist that was scored ‘No’ on any attribute(s) weighted 4 (major) or 8 (critical). All corrective actions should also be documented in the inspector’s daily diary.

Once the contractor has corrected the nonconformance, the inspector should create a new quantlist and perform a reinspection. Inspectors should note all corrections made by the contractor in their daily diary under the section the quantlist is noted within.

If the contractor disputes a narrative requirement that has been marked as NO by the inspector, the inspector should immediately contact their Project Supervisor per the partnering escalation process. The Project Supervisor will then review the contractor's non-conformance request with the RE. If after review and only after contacting the appropriate authority, a Resident Engineer may decide to accept the non-conformity. In this instance the inspector should still select the NO option but must explain the justification as to why the non-conformance was accepted and noting the authorizing authority within their daily diary.

In the rare instance that a non-conformance was not corrected and was not accepted by the RE, the inspector will retain the default value of NO and should comment as to why the attribute was not corrected by the contractor within their daily diary. Remember to include facts only, no comments related to your personal feelings should be included within your Daily Diaries.

Independent Quality Assurance Inspections

The Quality Assurance Group (QA Group) is tasked with performing the independent reviews of statewide ADOT construction projects utilizing quantlists. The QA inspector will contact the unit for an updated contractors schedule, If any activities are of interest, an onsite visit will be scheduled with the Project Supervisor. These inspections are required by the Federal Highway Administration (FHWA) to ensure the funding provided is receiving the best quality product from the contractor and the field office.

Once an independent QA inspection has been conducted, any non-conforming attributes marked as "NO" on the quantlist will be discussed with the Resident Engineer and the Project Supervisor in an out-briefing. A QA inspector will then generate an initial QA Inspection Report, listing the non-conformities from the same quantlist completed during the initial inspection. The project Unit will have 14 calendar days (more time can be formally requested by the RE or project supervisor, reason as to why must be provided) to provide any missing documents or provide proof that any non-conforming items were corrected by the contractor. After the allotted time frame, the QA inspector will compile any updated information received from the Unit and/or may perform a re-inspection (if necessary) to create a new quantlist reflecting the efforts to correct the non-conformance issues found in the field.

Quantlist Correlation Inspections

Inspection quantlist attribute results between field inspectors and QA inspectors can vary considerably. Interpretation of quantlist attributes and the time frame at which quantlist inspections occur were found to contribute to these discrepancies. This variation in interpreting attributes can cause a number of issues on a project, such as, missed deficiencies not conforming to the Departments expectations, contractor QC / ADOT inspector frustration, and considerable frustration from contractors who are told they need to perform work one way by an inspector only to have another inspector tell them they need to do the same work in another way. To combat the issue of varraying interpretation of attributes and to achieve consistency throughout the Department, Quantlist Correlation Inspections have been implemented.

Quantlist Correlation Inspection is an inspection of a product using quantlists that are completed by a field inspector and the QA inspector at the same time and same location but independent from one another. The quantlists are then compared to each other for discrepancies in an attempt to identify the misinterpretation of a quantlist attribute.

These inspections can be extremely useful for new inspectors in learning how to look up quantlist related specifications and interpret these specifications and project documents. In addition, this process can be a useful tool for more seasoned inspectors, by establishing what the Department's conformance expectations are in relation to the work being performed on a project by the contractor. Additional Correlation Inspection information may be found in Construction Bulletin 07-01.

105.13 Removal of Unacceptable and Unauthorized Work

ADOT Inspectors can accept and reject contract work. They have a duty to immediately inform the contractor about any workmanship, methods, or materials that do not conform to the plans or specifications. When work or materials are rejected, the Inspector should make the reasons clear for the rejection. Whenever possible, don't just quote specifications; explain the reasons why it is important for the contractor to comply.

Be careful not to make a rejection look like a failure on the contractor's part. The Inspector should view rejected work as good intentioned work that was just misguided. The hardest part for most Inspectors who reject work is handling the contractor's response. Here are some points to keep in mind as you and the contractor try to work through the difficulties:

- Maintain your respect for the contractor's field staff. If it seems they are not listening or they are attempting to do things underhandedly, give them the benefit of the doubt. Often they are under pressure to produce and occasionally lose perspective of what is best in the long run for the project
- Listen to the contractor's explanation. Acknowledge that you understand why the work turned out the way it did
- Be supportive of the contractor's predicament. Instead of shifting the problem entirely to the contractor, express your willingness to work through this problem
- Avoid personality conflicts. If you make a rejection look like a test of wills between you and the contractor, somebody ends up losing every time. Instead, stay focused on both the work and the specifications, and avoid assigning or shifting blame
- If you and the contractor can't work out a mutually acceptable solution, escalate the problem quickly. Don't let a confrontation or the threat of one postpone corrective action

At a fundamental level, you should view the contractor as a partner and equal. No matter how tough things get, if you can fix this perspective solidly in your mind and behave accordingly, most contractors will feel you are treating them fairly and impartially. Truly seeing the contractor as a partner and equal will make you say the right things and behave honorably and professionally without having to think about specific behavior patterns to follow.

When work has been rejected, the contractor has several options:

- Immediately fix the problem
- Remove and replace the rejected work
- Submit a proposal as described in Subsection 100 of this manual for acceptance of the work (usually some type of alteration to the work is involved)
- Fix the problem later, but before other work is affected

The decision as to which option to pursue is entirely up to the contractor. However, as the contractor's partner, you should assist the contractor in working through this decision, but in no way should you assume any responsibility for making the decision. Often the contractor will ask what you would like them to do and try to shift the problem over to the Inspector. Be careful. Inspectors cannot direct the contractor's work. All you should do is advise them on what the plans or specifications require and avoid telling them how to achieve those requirements.

The management and direction of the work are the contractor's business. However, if methods are employed which the Inspector has reason to believe will be detrimental to the quality of the finished work, give notice to the contractor accordingly and immediately advise the Resident Engineer. The Inspector should not attempt to supervise the contractor's work or give any appearance of doing so.

Suggestions can also be dangerous. If the contractor relies on your suggestion and the work doesn't turn out as everyone expected, guess who the contractor is going to blame? Inspectors and Resident Engineers should be helpful while thoughtfully assessing the risks involved before giving advice to the contractor.

105.14 Load Restrictions

On Public Highways

The Arizona Revised Statutes require that all loads hauled on public roads in Arizona comply with the limits stipulated in the statutes (except those which are authorized in writing by the Transportation Board to exceed such limits). The Transportation Board has designated the Enforcement Section of the Motor Vehicle Division (MVD) as its agency to administer this part of the law, determine policies pertaining to extra-legal loads, and grant permits for such loads and collect fees for the permits.

Any load restriction issues should be discussed with the contractor first. ADOT construction personnel are not expected to be MVD enforcement officers, but they are expected to notify and cooperate with the MVD when they

believe anyone coming to or from the project site is violating legal load restrictions. ADOT maintains roads as well as builds them, and no one should be allowed to damage our pavements including our own contractors and Material Suppliers. The same applies to city and county roads.

Within Limits of Construction Projects

The following guidelines have been prepared for project personnel in allowing overweight vehicles to haul within the project. These guidelines may be considered written authorization for contractors to exceed legal loads. This written authorization is subject to modification or revocation by the Resident Engineer as provided below:

- Hauling overweight loads on subgrade and base courses (primed or unprimed) will be limited to an axle loading that will not result in undesirable stresses in the structures or the roadbed being crossed. Suitable cover and/or shoring must be provided over pipe culverts and small boxes to protect them from damage and excessive stress. A minimum of two feet of cover is required over any pipe or box culvert before crossing.
- Only legal loads will be allowed to cross bridges (including overpass structures) and hauling will be permitted only after the concrete has attained the anticipated compressive strength required by the specifications.
    - An exception is when structures have been designed in accordance with the "Bridge Construction Overload Policy" (contact ADOT Bridge Group) applied when economics, safety, or other reasons dictate that overload vehicles be allowed to haul excavation or borrow over bridge structures during construction.
    - When overloaded vehicles are used, it is standard practice to cushion the deck with a nominal thickness of twelve inches of suitable material to protect the deck. For additional information refer to the Bridge Design and Detailing Manual.
- Hauling operations over Lean Concrete Base (LCB) and Cement Treated Base (CTB) will be limited to legal loads.
- All hauling operations over new asphaltic concrete, asphaltic concrete finish course, or other types of bituminous mixtures will be limited to legal loads. (See #1 for prime coats)
- All hauling operations over new concrete pavement will be limited to legal loads. Absolutely no hauling will be permitted until:
    - The joints have been sealed
    - The concrete has obtained a compressive strength of at least 3,000 psi
    - The concrete has been in place for seven days
- Whenever practicable, hauling equipment will be routed so as to avoid concentrations of traffic (channelization) in any particular area.
- The weight of loads being hauled will be reduced, or all hauling operations will be suspended when, in the judgment of the Resident Engineer, continuation of the hauling operations being performed will result in distress to any part of the roadbed, base, or pavement structure.
- Special circumstances and conditions affecting structures that are not covered by these guidelines should be submitted in writing to the Structures Section for recommendation.
- Since hopper scales have become more common for weighing items such as AB and AC, a problem has developed in documenting and enforcing legal size loads. In the event this type of scale is proposed, it will be allowed if tare weights of individual hauling units are obtained and documented as follows:
    - Tare weight for each individual hauling unit will be considered acceptable if each unit has been tared within a twelve month period prior to or at the beginning of hauling operations.
    - Tare weights must be provided by an authorized state employee. An acceptable document of tare weights will include (but not be limited to) the date a unit is tared, truck and trailer number, license plate number of each individual unit (or combination)
    - Tare weight of each individual unit.

105.15 Maintenance During Construction

The contractor is expected to maintain finished work until it is accepted by the Department. This includes removing graffiti, sweeping sidewalks, maintaining landscaping, and repairing work hit by traffic.

The contractor may be reluctant to repair newly constructed work at their expense when damaged by the traveling public or by natural causes. However, both Subsection 105.15 and 104.04 place the responsibility of repairs on the contractor.

For example, guardrail and tubular markers have been hit on some projects only days after they were installed. The contractor is responsible for replacing these items at their expense until the roadway is accepted as part of either a partial or final acceptance in accordance with Subsection 105.20. Although the work itself may have been accepted by the Department, the responsibility of maintaining it does not shift to the Department until a formal acceptance of the project, or one of the following exceptions occur:

- The Department orders the roadway opened as specified in Subsection 105.18
- The Special Provisions specify payment for detour work per Subsection 104.04(A)
- Maintenance is required during winter shutdown per Subsection 104.04(B)
- The Resident Engineer orders the contractor to perform maintenance for public safety per Subsection 104.04(C)

Construction Bulletin 21-01 provides guidance to the Districts for when the Department will participate in the repair and when the contractor is to perform the repairs at their cost.

For example: The work to be performed for the project is in the median protected by the contractor's workzone. There is a guardrail hit and damaged on the outside shoulders which is not within the contractor's protected work area, the District should look to maintenance forces to repair this guardrail or pay the contractor to repair with an NFA change order.

105.18 Opening Sections of Project to Traffic

To help clarify when ADOT takes over responsibility for maintenance and repairs, project work can be divided into two general categories:

1. Work constructed under traffic
2. Work constructed away from traffic

Work Constructed under Traffic

In this situation traffic runs through the project exposing the work to potential damage by the traveling public. Common examples include shoulder improvements, lane widenings, and passing-lane construction. Lane closures and restrictions are used to control traffic, while phased construction is used to move traffic through different parts of the project. In most cases, a line of barricades and perhaps a small buffer zone are the only means that separate the traffic from the work.

In this case the contractor is responsible for maintaining and repairing work damaged by either the public or natural causes until formal partial or final acceptance is given. Regardless of what construction phases have been completed or what new lanes are opened to traffic, the contractor is still responsible until acceptance.

Work Constructed Away from Traffic

In this situation the work is physically separated from traffic and protected from damage. A detour may be used or the work may be on a new roadway alignment. Traffic cannot get to the area of work.

Under this scenario, the contractor is completely responsible for all damages and maintenance to the work until the roadway is opened to traffic. Of course, this includes maintaining any detours (Subsection 104.04).

When a roadway is opened to traffic, the responsibility for maintenance and repairs depends on why the road was opened.

- If the road is opened formally under a partial or final acceptance, then ADOT assumes responsibility.
- If the contractor (with Department consent) opens the road before all the work is completed or opens the roadway under a substantial completion described in Subsection 105.19, the contractor is still responsible for maintenance and repairs until final acceptance. This also applies to work constructed under traffic.
- If ADOT orders the road opened ahead of its scheduled opening, the Department assumes responsibility, regardless of the condition of the work.
- If the contractor has fallen behind schedule and ADOT orders the road opened after its scheduled opening date, the contractor is responsible for all maintenance, repairs, and traffic control until acceptance.

There are two reasons why the Department holds the contractor responsible for maintenance and repairs until some type of formal acceptance is given. The first has to do with damage to the work by the contractor's own operations. Until all work is completed, the Department does not want to get into a situation in which it has to determine whether damage done to existing work was done by the contractor or by traffic passing through the project. The second reason involves liability for the project. By assuming maintenance and repairs responsibilities, the Department is implying acceptance of the project. This can leave ADOT liable for the work before final inspection or acceptance has been made.

105.19 Substantial Completion

Substantial completion should not be confused with partial or final acceptance. Substantial completion is a point reached in the project where enough work has been completed to stop contract time. Subsection 105.19 defines what work needs to be finished to reach substantial completion. Substantial completion does not necessarily imply acceptance of the work. When the contractor reaches substantial completion, the Resident Engineer holds a final inspection. The final inspection has four objectives:

1. To determine if the project is in fact substantially complete as defined by 105.19
2. To review the completed project work for compliance with the plans, specifications, and the requirements of the district, local government, FHWA, or other important project stakeholders
3. To determine if the traffic can safely travel through the completed work
4. To develop a punch list of items that need to be completed before final acceptance

The Resident Engineer should invite, as a minimum, the District Engineer, the FHWA representative (if the project contains federal aid), local government representatives (when applicable), the Project Manager, the Maintenance Foreperson, and the contractor's superintendent.

The Resident Engineer and the inspection staff should try to be as thorough as possible during the final inspection, leave no stone unturned; check everything. The contractors allocate equipment and staff to finish the project based on the size and complexity of the Department's punch list. What contractors find most frustrating is how punch lists tend to grow after the final inspection. During the final inspection, there should be ADOT Inspectors and Engineers crawling all over the place so a thorough and complete punch list can be developed at the outset.

Substantial completion does not imply acceptance. It does not relieve the contractor of the obligation to finish the rest of the work nor does it relieve the contractor of the duty to maintain and repair work until acceptance.

Once the final inspection is complete, the Resident Engineer should write a letter to the contractor disclosing the results of the final inspection. If project time is stopped, the Resident Engineer should indicate the number of accumulated project days. If a punch list has been developed, the Resident Engineer should attach it. The Resident Engineer should close the letter with a statement to the effect that the contractor is still responsible for maintenance and repairs of any project work until final acceptance.

Within five working days after substantial completion is reached, the Resident Engineer must complete the DocuSign template "ADOT Start/ Completion Memo". The substantial completion notice will be distributed to a list of individuals who opt and/or require this notification. When ADOT's Field Reports Section receives this notice, the completion date is input in the Completion Memo field in the FAST - Contract Card. The completion date should be input into the End Date field in CPE, by the Field Office.

No traffic control shall be paid after substantial completion is given per 701.403(F) or after contract time has expired.

105.20 Acceptance

Acceptance is another important project milestone. This is the point at which all of the work has been completed to the extent that the Department is willing to assume responsibility. We are taking delivery; the work is ours.

This is the Department's last chance to have the contractor fix any problems, repair any damage, or perform any cleanup (see Subsection 104.14). Once the work has been formally accepted any repairs or alterations to that work will require a supplemental agreement.

Since the responsibility for the work shifts from the contractor to the Department, it is very important for the Resident Engineer to make certain that all the required contract work has been completed in accordance with contractor documents. This includes all punch list items and any cleanup work. Any performance tests should be rerun if possible, and the work should be re inspected for any signs of unusual wear, damage, deterioration, or missing hardware.

Keep in mind that the Department can always re-inspect the work even after a final inspection has been performed (see Subsections 105.19 and 105.04). Final inspections are used to determine substantial completion and may not result in final acceptance of the work.

Acceptance Letter

Once all the working drawings are submitted and accepted and all the punch list items and follow-up inspections are complete, the Resident Engineer should write an acceptance letter for the District Engineer's signature. Any assessment of liquidated damages should be discussed and any conditions attached to the acceptance. If there are any unresolved contract issues, they should be summarized as well. It is important to write a final acceptance letter. The letter clearly outlines when responsibility for the work shifts from the contractor to ADOT. Utilize the DocuSign template "Final Acceptance for Construction" to submit the letter. This will ensure all the pertinent individuals receive it. The distribution list includes FHWA on federal aid projects, Field Reports, BECO and many others. When ADOT's Field Reports Section receives this notice, the Final Acceptance date is input in the Acceptance Letter field in the FAST - Contract Card.

Requests for partial acceptance should be disapproved. Disapproval shall be in writing noting reasons for rejection including citing Construction Bulletin 15-04: Partial Acceptance.

Final Acceptance

The final acceptance process can become administratively complex and tedious for the Resident Engineer. Here is a partial list of the things the Field Office should do in preparation for a final acceptance and close-out of the project.

Inspection Before Acceptance:

- The contractor cleanup of: detours, roadway, contractor's yard and processing sites, and adjacent private land should be completed. Pay particular attention to oil and air filters, material wrappings, crew trash, lumber fragments, AC, striping tape, and survey stakes/flagging
- Develop a punch list. This must be participated in by all project personnel, including the Electrical, Water, Utility, and Landscape Inspectors
- Utilities should be connected and working
- Salvage items are to be removed to a final location
- Any intergovernmental agreements drafted as part of the project must have been complied with. Contact the Project Manager
- Refer to 105.19

Accepting a Project:

- Remember that a project should not be accepted until all materials have been verified as acceptable. This includes certifications, but it also means that concrete poured toward the end of the project must have the cylinders broken before acceptance
- All quantity surveys and measurements must be completed (and preferably undisputed)
- All paperwork needs to be completed. Payrolls must be corrected, quantities checked and submitted to the contractor, and force accounts transmitted and approved
- Letters of acceptance should have been received from landowners, pit owners, etc
- All keys, etc. are to be handed over to the state, utility, or local municipality
- All bills must be paid such as electricity, water, and royalties
- Money is to be deducted for re-surveying, damaged salvage items or other property, or for liquidated damages
- As-built plans must be received and verified by project personnel
- The contractor or manufacturer must conduct meetings on how to operate, adjust, and maintain systems such as the irrigation system or a pump station
- All operating manuals and instruction sheets are to be accepted at the office
- All warranties and guarantees should be transferred to ADOT (or other final owner) as if they were the original purchaser, as specified
- ADOT specifications require the contractor to provide a 6-month warranty for in-service operation of electrical and mechanical components. This should be noted in the project acceptance letter, and a copy should be forwarded to the owner/operators of all the new equipment, along with the Operator's Manual. Include a cover letter that tells these people to route all ADOT complaints/claims through the Resident Engineer
- Final acceptance should only be given when all punch list items have been completed, and the Resident Engineer is satisfied that all of the contractor's field work is completed. The Resident Engineer should contact both the District Engineer and the Maintenance Foreperson before writing the acceptance letter in case either wants to make one last tour of the project. The Maintenance Foreperson should accept the project before the District Engineer
- Final acceptance should not be given until all working drawings have been submitted and accepted in accordance with subsection 105.03
- Project Close-Out, Refer to Chapter 12

105.21 Administrative Process for the Resolution of Contract Disputes

This subsection is intended to be used on projects that are not partnered or when an issue on a partnered project has not been resolved to the contractor's satisfaction through the escalation process.

Notice Requirements

Subsection 104.03 requires the contractor to notify the Department regarding any work disputes or potential contract claims as soon as they arise. The Resident Engineer needs to be careful about notice requirements. Many inexperienced Resident Engineers have been caught off guard by claims filed for work already completed.

Failure to give adequate notice can be grounds for denying any additional compensation. Resident Engineers try to get the claims disallowed based on lack of notice (Subsection 104.03). However, it is the Department's policy to review any contract claim or issue under dispute, even if the contractor did not provide the notice requirements specified in Subsection 104.03. The Department will consider noncompliance with 104.03 as part of the decision to accept or deny the claim.

The Resident Engineer should inform the contractor of the notice requirements. If the contractor appears to be ignoring the notice requirements, then write a letter advising and warning the contractor of the consequences. Often the Department's contractual interests in a claim can be severely compromised because the Field Office staff did not know that the current work was under dispute and had no opportunity to both mitigate costs and adequately document the work. If in doubt, bring the issue to a head and escalate it (if you must). Most importantly, be proactive and up front with the contractor on any potential project issues.

Often the courts and arbitrators give the contractor much latitude in what constitutes notice. The contractor does not necessarily need to follow the Department's exact procedures in order to meet the written notice requirements. In some cases, a summary in the weekly meeting minutes or a contractor's letter requesting clarification has been interpreted as meeting the notice requirements. The best the Resident Engineer can do is find out the course of action the contractor intends to pursue when a dispute or issue arises.

Dispute-Resolution Process

Subsection 104.03 of this manual outlines the dispute-resolution process for partnered projects. The process is slightly different for projects that are not partnered. The main difference is that there are no escalation meetings. In their place are formal reviews by the Resident and District Engineers.

The dispute-resolution process and time lines are summarized below:

1. The contractor gives verbal notice in accordance with 104.03
2. The Resident Engineer and contractor have two days to resolve the issue
3. After two days, the contractor gives written notice in accordance with 104.03(A)
4. The Resident Engineer reviews written notice with the District Engineer and both attempt to informally resolve the issue within seven days
5. After seven days, the contractor provides a dispute resolution submittal in accordance with 104.03(A) and 105.21
6. The Resident Engineer conducts a formal review within 10 days
7. After the Resident Engineer's review, the contractor has 15 days to request a review by the District Engineer
8. The District Engineer must conduct a review meeting within 15 days of the contractor's request.
9. The District Engineer has 15 days to make a decision after the review meeting
10. After the District Engineer has made a decision, the contractor has 15 days to request a review by the State Engineer
11. The State Engineer must conduct a review meeting within 15 days of the contractor's request

12. The State Engineer has 15 days to make a decision after the review meeting
13. The contractor has 15 days to accept the State Engineer's decision
14. After that, the contractor has up to 15 days to file for arbitration or mediation if the contractor does not agree with the decision (the contractor may file for litigation up to 2 years after the State Engineer's decision)

The Resident Engineer should notify the contractor in writing of the result of each review at each level. If the Department denies the contractor's claim, the Resident Engineer should explain the next step and specify the time limits the contractor has for initiating the next step. The intent of the written notification is to avoid any misunderstandings the contractor may have regarding the status of the claim.

The State Engineer is the highest level a claim or dispute can go within the Department. The Director or Deputy Director does not review unresolved issues or contract claims. However, they typically do provide input to the State Engineer when an issue has been escalated to that level, and the State Engineer does discuss review decisions with the Director before they are rendered.

On federal aid projects, the FHWA should be included in the issue resolution process. See Subsection 107.04 of this manual for further information.

105.22 Arbitration of Claims and Disputes

Contract claims are merely unresolved contract changes. Upon project completion, issues arise on a project for a variety of reasons and can be classified as listed below.

Contractor Practices

- Inadequate investigation before bidding
- Incomplete cost estimating
- Unbalanced bidding
- Bidding below costs and over optimism
- Poor planning and use of the wrong equipment
- Failure to follow authorized procedures

Owner's Practices

- Changes in plans and specifications
- Inadequate time for bid preparation
- Inadequate bid information issued by the owner
- Excessively narrow interpretation of plans and specifications
- Restrictive specifications
- Contract requirements for socioeconomic objectives unrelated to the construction process

Personnel Factors

- Perception of being treated unfairly
- Win-lose attitudes of construction personnel

Institutional Factors

- Lowest bid requirements
- The contracting process

A construction claim involves two key elements: entitlement—which refers to the merit of the claim, and quantum—which refers to the time and costs involved. The contractors can claim just about anything, there are no

restrictions in the Standard Specifications for what a contractor can or cannot claim. Of course, what damages, if any, a contractor can collect depend on the merits of the claim and the degree to which the Department is responsible. The contractors cannot ordinarily refuse to do work under a claim unless the work is clearly outside the scope of the contract. The contractor must rely on the remedies in the contract to settle questions of time and costs.

Claims Analysis

The analysis of a contract claim follows the same approach described in Subsection 104.02 for analyzing contract changes. The entitlement element of the claim involves answers to the first two questions regarding what has changed and who caused the change. The quantum element involves answers to the last two questions regarding the impacts of the change and the costs.

Analyzing claims can become a tedious and cumbersome process. This is especially true of delay claims and earthwork claims; the two most expensive types of contract claims on transportation projects. ADOT's Construction Group can assist in claims analysis and preparation. If necessary, outside professional help may also be used by the Department in seeking satisfactory claims resolution. Although the Resident Engineer and Project Supervisor must still direct the preparation of a contract claim, they should be free from extensive and time-consuming forensic analysis so they can proactively run their current projects.

The Claim Defense Package

One of the best ways to present an effective claim defense and to ensure that all the necessary documentation has been assembled and presented is to create a claim defense package. This package can be in the form of a simple bound pamphlet. It should contain all of the appropriate claim information from an overview of the contractor's position to an in-depth cost analysis.

The following format has been used successfully by many Field Offices and is recommended as a good foundation for your claim defense.

Claim Documentation

Accurate and complete documentation is a key element in the successful settlement of contract claims. It has been said that the side with the best documentation wins 90 percent of claim disputes, and that winning a construction claim without good documentation is an uphill battle.

Documentation includes such things as copies of the original contract documents, any addenda, project schedules, inspection diaries, correspondence, telephone conversations, lab memos, pay records, and supplemental agreements. One of the very best forms of documentation is a picture, which can be extremely effective. Since all districts now have video equipment, still photographs can be supplemented by video. A 5- to 10-minute recording while driving through a project on a weekly basis will establish a project time record showing equipment, personnel, and material use as the project progresses. The result is a video "as-built" of the project.

Many claims are dropped or never pursued beyond the notice of claim when the contractor discovers that ADOT has sufficient documentation to successfully defend its position. One case in point is a claim filed by a contractor demanding payment for removal of an unsuitable portion of a bridge deck. At this point, ADOT requested a meeting to discuss the claim with the contractor. When the contractor's representatives arrived, they were confronted with an enlarged photograph that showed the contractor's staff frantically shoveling water and sloping off the bridge deck during a heavy rainstorm. The contractor dropped the $59,028.55 claim on the spot.

When a contractor indicates that a claim may be filed or when it becomes obvious that a claim is imminent, project personnel should enhance their documentation. Section 108 should be used as a guide when preparing claim documentation. This activity will discourage the contractor from filing speculative claims and will facilitate the achievement of agreeable settlements at the project level. Usually claims which are settled at the lowest level are

the least costly to the Department. Far less time and effort are required to produce good documentation, including pictures, than to try to defend a debatable claim without them.

Claims Against Design Consultants

Because of the large number of highway and bridge projects administered by the Department in recent years, the services of outside Designers and other consultants have been used more often than in the past. As a result, the Department has experienced more claims filed by contractors based upon purported errors in plans and specifications created by consultants. Any resulting litigation, however, is brought against the Department. At that point, the right to pass damages on to the consultant comes into play.

It is the position of the Department to seek recovery from consultants when a claim is based on a wrongful act of the consultant. In order to recover actual (not merely potential) damages, legal liability must be shown. This could cause a problem as to the issue of liability, especially when ADOT personnel engage in settlement negotiations with a contractor. One way the Department can be protected against the awkward possibility of having to prove the liability issue is to offer the consultant the choice of:

- Approving the settlement
- Taking over the defense of the case and agreeing to hold the Department harmless before any settlement is concluded

If the consultant declines to take either course, then the Department will be free to proceed with the case and will be required to show only potential liability in order to support its claim against the consultant.

The Department requires the Resident Engineer and Project Manager to notify all outside consultants as soon as a design related claim arises. The consultant must be given the opportunity to participate and become involved in all aspects of the claim, even to the extent of offering the defense of the claim as stated above.

The Resident Engineer must coordinate all indemnity claims against design consultants with the Project Manager, who will involve the Engineering Consultants Section. There should be a consensus among the Resident Engineer, District Engineer, and Project Manager regarding the recovery of damages from design consultants. If federal aid is involved, the FHWA should be notified of all potential claims against design consultants. The Assistant State Engineers for both Design and Construction must approve any indemnity claims against design consultants.

106 CONTROL OF MATERIALS

106.01 Source of Supply and Quality Requirements

Subsection 106.01 requires the use of new materials unless noted otherwise elsewhere in the contract documents. New means unused, not previously placed in service, and the same appearance, quality, dimensions, and performance as material direct from the factory or fabrication plant. For example, corrugated pipe salvaged by the contractor from a previous project does not qualify as new pipe. The Resident Engineer may still allow the pipe, but at a reduced unit price. On the other hand, unused concrete pipe that has been sitting in a pipe supplier's yard for a few years may qualify as new if it is undamaged and in the same basic condition as the day it was cast.

Inspectors should be careful about the water the contractor uses for dust palliative, compaction, cleanup, or landscape establishment. Untreated effluent from industrial or mining operations must not be used. Effluent from these sources may contain hazardous microbes or chemicals that pose a health risk to everyone at the site. In general, potable water or water from an approved lake, stream, or irrigation canal is acceptable for construction work.

106.04 Tests and Acceptance of Material

When contractor Quality Control is specified it is the intent to place the responsibility of materials quality control (or process control) with the contractor. Only certain construction materials will fall under this quality control specification. When the bid quantity for the following items exceeds the minimum amount then Special Provisions will require contractor Quality Control: Subsections 106.04 (B) & (C) are geared toward the sampling, testing, and control of these materials. No quality control plans will be required. See Special Provisions for item 9240170 for contractor Quality Control measurement and payment.

Type of Material	Subsection	Minimum Bid Quantity
Earthwork	203-2.02	5,000 cubic yards
Aggregate Bases & Subbases	303-3.04	1,000 cubic yards
End Product AC & MA	416-5	Any and all
SHRP End Product AC & MA	417-5	Any and all
Pipe Bedding & Backfill	501-3.01(A)	60” diameter, or length>600 ft.
Concrete (Structural & Paving)	1006-4.01(A)	300 cubic yards

The specification requires the Quality Control Manager to be a qualified employee of the contractor. Qualified is interpreted to mean someone who is empowered at the project site to reject materials without the approval from someone else within the contractor's organization. This could be a superintendent, foreperson, quality control supervisor, or any other person who has management authority. However, this person must be at the project site during all construction activities related to the materials covered under the quality control specification.

The Quality Control Supervisor and the Testing Technicians are required to be employees of the same lab that has been certified for materials testing work on the project. This requirement ensures that only testing equipment and employees covered by the lab certification are used. The Contractor cannot use their own employees to do material testing unless they have their own approved testing lab.

The contractors often ask why ADOT needs to enforce the qualification requirements for the contractor’s quality control personnel. They point out that ADOT still does acceptance testing anyway.

One reason is that ADOT wants competent people doing the testing so the test results are accurate and unbiased by the testing procedure itself. Qualified people provide some assurance that a testing person is competent enough under various work conditions to minimize the influence of the testing procedure on the test results.

Another reason is that the contractor's materials testing procedures must consistently meet some minimum standards so ADOT's acceptance testing won't turn out to be the contractor's actual quality control. If the acceptance testing becomes the quality control for the contractor, the chances for rework are high since acceptance testing is usually done after work completion.

Resident Engineers may withhold payments for quality control work if the contractor does not follow the sampling and testing requirement in the Standard Specifications and Special Provisions. In addition, failure of the contractor to submit current Weekly Quality Control Reports will be grounds for the Engineer to deduct monies from the contractor's progress payment. Refer to Section 9240170 of the Special Provisions for determination of amount to be withheld. In some cases the Resident Engineer may need to temporarily shut down material processing operations until the contractor can comply with the sampling and testing procedures required by the Department.

Even though the contractor is performing quality control sampling and testing, Inspectors and Project Supervisors still need to sample and test for acceptance. This "side-by-side" testing may seem redundant; however, ADOT's testing should be done as the final and independent check of the materials. The frequencies for acceptance sampling and testing should be at the same rates as in the Sampling Guide Schedule of the ADOT Materials Testing Manual.

106.05 Certificates

Materials incorporated into the project and devices used during construction of the project - are accepted either by sampling and testing, or by certification. Materials accepted by certification are certified to meet project specification requirements (Certificate of Compliance) and may also require associated test results to confirm conformance (Certificate of Analysis). All components of the certification as stipulated in Section 106.05 must be included in the certificate.

When a certificate is required, the section of the specification associated with the bid item will state which type(s) of certification is necessary. For some materials, in lieu of a certification, sampling and testing by the Department may be performed and allowance for such will be stated in the specifications.

Some materials are pre-certified by the Department and the documentation for such resides with the associated technical group or section When pre-certified material arrives to the project, before it may be incorporated into the project, the construction unit must verify that proper documentation is on file with the Department for the production lot(s) to which the material is associated. If no certification is on file, the contractor must provide an acceptable certification or material must be sampled, tested, and certified by the Department prior to it being used on the project.

Some materials have additional certification requirements, such as "Buy America," which must be adhered to depending on funding sources. Refer to the "Buy America" section of the Project Special Provisions for more information on materials and bid items to which the Buy America requirements apply.

With regard to materials requiring certification and contractor payments, the Department should only pay for materials which have been properly certified, meaning the Construction Unit has received from the contractor an acceptable certification for the material and the material for which payment has been requested is represented by such certification. No payment will be made for materials which the Department does not have proper certification. Therefore, upon receipt of a contractor request for payment by the Construction Office, the list of items and quantities for which payment has been requested should be provided to the Materials Coordinator to confirm that acceptable certifications and test results are on file. In the event that acceptable certification or test results are not on file, the Materials Coordinator should notify the Office Manager immediately to afford the

contractor the opportunity to gather and provide necessary documentation prior to the contractor payment deadline.

The project team must maintain a log of all materials/items on the project that require certification. The Certification Log is maintained by the Project Materials Coordinator and the completed Certification Log is included as an attachment to the Final Materials Certification. To ensure no certifications are overlooked, prior to the Pre-Construction Meeting, the Materials Coordinator should review the bid items included in the project and the associated sections of the Standard Specifications and Project Special Provisions and identify all materials, items, and ancillary features which require certification and pre-populate the Certification Log.

Sometimes overlooked are certifications for products which appear on the Department's Approved Products List (APL). Despite being on the APL, receipt of proper certification for the specific materials/products incorporated into the project must be provided by the contractor.

On occasion, commercially available products will be utilized for which no certification documentation is readily available and it is impractical for the contractor to attempt to provide such. If this occurs, consult with the appropriate technical section to determine if use of the material is acceptable or if further testing is necessary.

Some products such as release agents, geogrid, and other geotextiles have been evaluated by the National Transportation Product Evaluation Program (NTPEP) and project specifications may require use of products which have been certified under this program. For these products, if not provided directly by the contractor, the Materials Coordinator may access NTPEP's DataMine on the NTPEP website and confirm that the appropriate certifications exist for the specific product intended to be used by the contractor. This typically includes the requirement for a Certificate of Analysis to be on file with NTPEP, the Materials Coordinator should maintain a separate copy of the certification for the project file.

All Certifications are reviewed by the Materials Coordinator for correctness and completeness. Certifications that do not meet requirements should be returned promptly and the reasons for rejection communicated to the contractor. However, if at any time the validity of a certification for material is questionable, the Materials Coordinator should contact Materials Group to confirm adequacy.

106.09 Storage of Materials

Material stored on the project should be observed to determine whether the storage practices may be harmful. Potentially harmful practices include stacking too high (causing bending, denting, or crushing), exposing to weather, or providing inadequate base (causing soiling, staining, or rusting).

Aggregate and similar materials are also subject to certain storage requirements. Specific requirements are discussed in the section associated with the type of material for which the aggregate will be used. It is important to be aware of the condition of the stockpiled material at the time of sampling for acceptance and to ensure that the material has not deteriorated or become contaminated prior to being used for production.

No partial payments should be made if materials are not stored in a manner that will provide adequate protection. Adequate protection is that which will preserve materials in their original condition.

If material is damaged in storage, any payment for material allowance should be recovered until the damage is repaired or the material is replaced.

106.11 Unacceptable Materials

When materials that are incorporated into the project fail to meet the requirements of the Specifications, the standard course of action taken by the Resident Engineer shall be to order the contractor to remove and replace the failing materials with such materials meeting the requirements of the Specifications. In some cases, the

Specifications allow for failing material to remain in place at a reduction in cost, otherwise known as a “penalty”, depending on the property and severity of the deviation.

In instances when no penalty structure exists in the Specifications, but the Department allows for the material to remain in place, the Resident Engineer will need to obtain written concurrence from both the State Construction Engineer and the State Materials Engineer, stating that the material may remain at a reduce unit cost, and will then need to memorialize the penalty with a procedural change order.

106.12 Department-Furnished Material (DFM)

When ADOT furnishes material for the contractor to use on the project, the Department is responsible for the quality and quantity of the material supplied. When the contractor takes control of the material, the contractor becomes responsible for the material.

Requesting DFM for a construction project during the design phase:

- The project design team makes a determination that the normal process of bidding the project, and requiring the contractor to provide the traffic signal or lighting materials as part of the standard pay items, will not allow the work to be finished prior to the scheduled completion date.
- The Project Manager identifies whether there is federal funding for the traffic signal or lighting construction
    - If so, the Project Manager must submit a letter of justification to the Federal Highways Administration (FHWA) project administrator outlining the reason the project should use DFM
    - The letter of justification to the FHWA must be approved by the project administrator prior to advertising for bid
    - For federally funded projects less than 25 million dollars (<25M), the Project Manager submits a letter of justification to the State Traffic Engineer for approval
- Upon receipt of the FHWA approval, the Project Manager should forward the letter of justification to use DFM and the FHWA authorization to the Traffic Operations Manager for Signal and Lighting
    - The request to the Traffic Operations Section (TOS) should have a cover letter that identifies the anticipated project time frames and the estimated equipment and quantities that are needed
    - Note: Typically the traffic signal and lighting designer will be able to provide the estimated traffic signal and lighting equipment quantities that are needed at the 60% stage of the design. The request may require modification of the type and number of items by the PM when the project design is completed
- TOS will inform the Project Manager of their decision
- If the project does not have federal funding the FHWA authorization is not necessary and that entire step can be eliminated
- The traffic signal and lighting designer must insert project specifications that explain what procedures are required of the contractor to be issued the DFM from TOS. The specification is available electronically
- The designer must use the correct item number and description (identified on the Agreement Estimate) for those items being supplied by TOS
    - Typically the item number has “Department Furnished” in parenthesis following the item description
    - It is important that the correct bid item number is used to provide an audit trail
    - The designer must verify with the Traffic Design and the Contracts and Specifications representatives that the correct bid item numbers are being used in the estimate
- The designer must submit, through the Project Manager, the final and complete list of DFM to TOS when the project is advertised. This allows TOS to know what and how many items they must have on hand to issue to the contractor
    - Items that are not in stock, or normally not carried in stock, must be ordered and that process will not take place until the project is advertised

- During the design phase of the project it is important that the signal designer communicate through the Traffic Design representative to ensure that the type and quantity of materials needed for the design will be available for the project at the estimated construction date
- Once a project that requires DFM is advertised, the designer must provide the final plans, special provisions, and the complete list of all items to be furnished to TOS
- When the project is awarded and the pre-construction/partnering meeting is scheduled, the TOS representatives should be included so those specific questions relating to DFM can be resolved. It is also important that the initial construction schedule for the entire project be provided to the TOS representative. If TOS cannot send a representative, the Resident Engineer should provide a copy of the construction schedule to TOS
- When the time approaches for the contractor to receive the materials, the RE must submit to the TOS, in writing, the date and time that the contractor intends to pick up the materials. Before any materials are released from the TOS Warehouse, the RE must provide a copy of the Agreement Estimate showing the DFM. TOS should verify that all items released to the contractor are approved and included in the contract
  Note: The special provision requires "10 days written notice from the contractor before picking up the materials. The department-furnished materials will not be issued without a contractor supervisor and an ADOT inspector present at the supply center to verify and sign for the materials"
- After all the materials have been issued to the contractor, TOS submits an invoice, identifying the item number, description and quantity from the Agreement Estimate, and the purchased material cost charged against the project TRACS number to Contract Accounting (and a copy to the RE for filing in the project DFM folder), with a copy of the initial request/approval to use DFM, and the TOS response, if applicable. A copy of the FHWA letter approving the use of DFM must be provided along with the invoice, in order for the costs to be charged to the construction project TRACS number as a federally eligible cost
- Contract Accounting reviews the invoice and transfers the cost of the materials from the TOS TRACS number for DFM to the construction project TRACS number, accompanied by the appropriate construction Org number

Sometimes these project elements are identified as advance procurement items. The project manager still follows the outlined process with the exception of setting up a 01X subphase. This can only be done if this phase can be funded. If this path is chosen then the Field Office administering the construction project will need to be involved. The designer, project manager and the RE work together to provide the specifications and quantities to obtain quotes from vendors. An ADOT yard will need to be identified for delivery. Depending on where the yard is located drives what group will issue the Purchase Order. For instance, if an ADOT construction yard is available then the field office will have to issue the PO. If an ADOT maintenance yard is identified then that office will need to assist with issuing the PO.

Requesting DFM for a construction project during the construction phase:

- The Resident Engineer (RE), in consultation with the Regional Traffic Engineer, determines that a Change Order is necessary requiring additional, or different, traffic signal materials than what was originally called for in the project plans
- The designer or RE determines if the contractor can receive the necessary materials through his vendor in time to meet the project time constraints. If so, the materials are provided by the contractor
- If the contractor cannot provide the materials in time to meet the project time constraints the designer or RE contacts TOS to determine if the materials needed for the Change Order are available
- If the RE determines that DFM is necessary, the RE must submit a formal request to TOS outlining the justification for the request. The request must include the project description, project number, TRACS number and if the project is federally funded
- The contractor's bid item should be reduced by the invoice amount of the DFM in the Change Order
- Generally, the contractor shall not be eligible for any additional incentive payment due to their request for DFM that would not be earned without the DFM. All projects with this incentive situation should receive approval from the Assistant State Engineer for Construction prior to making any incentive payments

- If the project is federally funded, the RE must receive prior written approval from the FHWA administrator to use DFM on the project. For federally funded projects less than 25 million dollars (<$25M), the Project Manager must submit a letter of justification to the State Traffic Engineer for approval
  Note: Sample request letters to FHWA are available electronically
- The request for DFM is submitted to TOS, with the FHWA authorization if federally funded
- If TOS approves, TOS will respond to the RE with the time and date the requested DFM materials will be available for the contractor to be picked up
- The RE must execute a Change Order that includes sealed traffic signal sheets reflecting the design modifications. Other requirements are: DFM specifications, bid items that reflect the material and related installation cost of DFM, and price deduction for materials not used, (or salvaged to ADOT for the new materials no longer to be installed on the project)
- After the field office issues the Change Order the contractor can pick up the materials. The contractor must submit in writing the date and time that he intends to pick-up the materials. No materials will be released from the TOS Warehouse unless the fully executed Change Order is provided to TOS
  Note: The special provision requires "10 days written notice from the contractor before picking up the materials. The department-furnished materials will not be issued without a contractor supervisor and an ADOT inspector present at the supply center to verify and sign for the materials"
- After all the materials have been issued to the contractor, TOS submits an invoice for purchased materials charged against the project TRACS number and the applicable construction Org to Contract Accounting (and a copy to the RE for filing in the project DFM folder), with a copy of the Change Order to use DFM, and the TOS response, if applicable. A copy of the FHWA letter approving the use of DFM must be provided along with the invoice, in order for the costs to be charged to the construction project TRACS number as a federally eligible cost

Salvaged Material

Materials may be designated by the project plans and/or special provisions to be removed and salvaged from the project and delivered to the supervisor of a designated ADOT yard. In these cases the following must be adhered to:

- The project supervisor must coordinate with the Traffic Signal and Lighting Operations Manager to determine if any of the material is suitable to transfer to the Warehouse
- Inspection must occur to determine material condition is adequate prior to transport
- The determination should be documented
- If the determination is made that the material is not needed or the condition does not warrant transfer, it is imperative that a Change Order be executed to document the disposal of the material. Any questions should be directed to the Traffic Operations Manager for Signal and Lighting (MD013R)
- Complete the Receipt for Salvaged Materials form and keep in project files. At final closeout, submit a copy to Field Reports

The Resident Engineer should document the condition of the material and verify its quantity before it is released to the contractor. This protects the Department if the material is later mishandled. Some testing may need to be done on the material to accurately determine its quality. A letter or another form of documentation should be used to establish when the material was officially turned over to the contractor.

106.15 Domestic Materials

On projects with federal aid funding the Special Provisions will require the contractor to certify that certain materials were produced, or processed in the United States. The Inspector must read the Special Provisions for each project and ensure contractor compliance.

ADOT
Infrastructure Delivery and Operations

RECEIPT FOR SALVAGED MATERIALS

The miscellaneous salvaged materials listed below have been received as follows:

From Project No: _____

Contractor: _____

Materials were delivered to:

Location _____

Field Office (Unit) _____ Date Received: _____

Description of Materials:

Guardrail Panels: _____LF End/Terminals: _____Ea

Guardrail Posts: _____Ea Block: _____Ea

Bridge Rail: Type:_____

Traffic Signals: Type:_____ No. _____

Light Poles: Type:_____ No. _____

Sign Structures/Post: No. _____

Signs: _____

Drainage Pipe: Type:_____ Dia.: _____inch _____LF

Piling: Type:_____ _____LF

Milled AC: _____CY AB: _____CY

Other: (BCT, assemblies, fence, gate, delineators, etc.)
Describe:

Received From: _____ _____ _____ (Contractor Rep.)
Printed Name Signature Date

Received By: _____ _____ _____ (ADOT or LPA Representative)
Printed Name Signature Date

Project Engineer/Inspector: _____ _____ _____
Printed Name Signature Date

Original: Project Files
cc: Field Reports

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107 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

107.02 Permits, Licenses and Taxes

The Department requires the contractor to comply with all local, tribal, county, state and federal regulations, laws, and ordinances, and bear any costs or inconveniences associated with those requirements. Regulations or permit requirements unfamiliar to either the contractor or the Resident Engineer do not relieve the contractor of the obligation to comply. The Special Provisions will often identify some of the requirements, but they should not be construed to be the only requirements.

Local ordinances such as noise limitations, haul restrictions, and permit fees are usually the most cumbersome for the contractor. For example, most cities require a connection fee and permit when a contractor taps into a city waterline. Some cities require a permit to use and haul explosives. Usually permits associated with construction and installation activities such as hauling, dust control, and connecting to utilities are the contractor's responsibility. Specialized permits that could not be foreseen by the contractor at bid time and royalties are usually the Department's responsibility.

Permits required to construct the project in the first place, such as 404 Permits for the Corps of Engineers or utility relocation clearances, are usually the Department's responsibility.

The contractors are responsible for paying all existing federal, state, county, and local sales taxes associated with the work. This includes future taxes or tax increases passed into law before bid opening. Any new taxes or tax increases passed after bid opening will be reimbursed to the contractor through execution of a supplemental agreement.

107.04 Federal Aid Participation

Most of ADOT's highway projects are funded by the U.S. Government. When federal funding is involved, a project has additional federal contract requirements that both the contractor and ADOT must meet. These additional requirements are numerous and contained in the project Special Provisions.

The requirements that have the biggest effect on administering a project are summarized below.

Disadvantaged Business Enterprise Program

Most federal aid projects require that a certain percentage of the contract work be given to a certified disadvantaged business such as a minority-owned or woman-owned business. The contractor is responsible for selecting a disadvantaged business enterprise (DBE) firm and subcontracting a portion of the work to them. Some DBE firms are material suppliers, so the contractor may purchase a portion of their materials for use on the project. The contractor is required to submit DBE affidavits when submitting a bid. These affidavits list the DBE firms the contractor intends to use and certifies that the DBE goal for the project will be met.

At the preconstruction conference the contractor is required to submit copies of all DBE subcontractors, purchase orders, or quotes to the Resident Engineer (see Subsection 108.03). During construction, the Resident Engineer should monitor the contractor's use of DBE firms to ensure that the DBEs are performing their committed share of the project work. The Field Office should have a copy of the DBE's approved subcontract or quote for materials. The Resident Engineer's job is to ensure the contractor lives up to the terms of the subcontract or quote. DBE compliance and work should be discussed at each weekly meeting when DBEs are on the project. Any questionable situations or apparent non-compliance situations should be reported to ADOT's BECO Office.

Compliance means meeting the numerical percentage shown in the Special Provisions and using all the firms shown on the DBE affidavit. The contractor is not free to drop or replace DBE firms without the approval of the BECO Office. The Special Provisions explain the requirements for changing DBE firm commitments on the project.

At the end of the project, the Resident Engineer must ensure that the contractor submits the required Certification of Final Payment form for each DBE. The certification must be forwarded promptly to the Business Engagement and Compliance Office. Once BECO accepts and approves the final certifications, BECO prepares a DBE & OJT Compliance Record letter and submits it to Field Reports for the project final.

Bulletin Board Requirements

Certain postings and notices are required on all projects that receive federal aid. These are supplementary postings beyond the usual postings required in a place of business. The Resident Engineer is cautioned to differentiate between those postings required by a business and those postings required to be on a construction project bulletin board. The Resident Engineer should ensure that the following postings (as included in the contract) are displayed prominently by the contractor on the bulletin board.

These are examples of the posters that need to be included on the Job Bulletin Board, the Resident Engineer should check for up to date requirements and available posters on the ADOT Construction Group's webpage:

- Fraud Poster (Form PR-1022) required by Title 18 of the United States Code
- EEO Poster (Form GPO 1984 O. - 438-915) in English and Spanish
- Wage Rate Information Poster (DOL poster WH-1321)
- The Wage Decision listed in the project Special Provisions
- EEO Policy of the contractor and major subcontractors
- List of safety officers for the contractor and major subcontractors
- The Notice of Intent for Stormwater Discharges (EPA form 3510-618-98)
- Name and telephone number of contractor's EEO policy enforcement officer
- Emergency contact telephone numbers
- OSHA postings and other project safety and security information

The Resident Engineer should see that the contractor furnishes a bulletin board of sufficient size to accommodate all of the required posters: generally, a minimum area of 12 square feet is sufficient. The bulletin board should be suitable for outside installation and covered with a transparent window for the purpose of displaying required posters on the project.

The Fraud Poster, required by Section 1020, Title 18, United States Code, must be displayed during the course of the work. The poster is normally displayed on the contractor's and subcontractor's bulletin boards, in the engineering office, and in the project laboratory. This poster points out the consequences of impropriety on the part of any contractor or Departmental employee working on the project. The Deputy State Engineer's name and address appear on the poster, as does the name and address of the Division Administrator of the Federal Highway Administration (FHWA).

NOTE: The size, location, lighting, and visibility are not specified in the contract, except as noted in the quotations below (taken from the federal requirements in a typical special provision):

The "contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the state highway agency setting forth the provisions of this non-discrimination clause."

"The wage determination...shall be posted at all times by the contractor and their subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers".

On-The-Job Training

Most federal aid projects have a requirement for on-the-job training (OJT) of construction trade workers. The intent of ADOT's OJT program is to build a competent workforce to meet current and future highway construction hiring needs with a focus on the recruitment and inclusion of those who have experienced historical underutilization: minorities, women and disadvantaged individuals The training must be part of a recognized apprenticeship program approved by the Department and FHWA. The Business Engagement and Compliance Office (BECO) is responsible for the oversight of the OJT program.

During construction, the Project Supervisor or Inspector should verify that apprentices are:

- Performing the type of work normally performed by their craft, e.g. carpenter apprentices should not be tying rebar or operating heavy equipment
- Being supervised by a journeyman or journeywoman of the same craft

During construction, the field office staff should:

- Verify the required submittals (outlined in the project Special Provisions) are uploaded to the Department's DBE & OJT Online Reporting System (DOORS)
- Verify trainee is enrolled in the OJT module of DOORS
- Reimburse all training hours approved in the OJT module of DOORS
- Use LCPTracker to verify trainees are being paid Davis Bacon Wages per approved trainee level
- Verify the total CPE payment for OJT hours match the total on the DBE Completion Cover letter at project close out
- BECO will notify Field Offices if any sanctions/liquidated damages are applicable

Apprentices are paid less than Davis-Bacon wage rates and each hour an apprentice works is partially paid for by the Department. The project Special Provisions establishes the minimum number of training hours the contractor must provide as well as the hourly rate at which the Department will subsidize on-the-job training.

Liaison with the FHWA

The Phoenix office of the FHWA oversees all federal aid projects in Arizona. Federal aid projects can be divided into two categories:

1. Delegated Oversight are projects in which the FHWA has very little involvement except at the final inspection and acceptance. Most projects off the Interstate Highway System are delegated oversight. These projects have an "A", "T" or "D" at the end of the federal aid project number
2. Full Oversight projects are projects in which the FHWA oversees the contract administration activities of the Department. These projects are typically the interstate highway projects and some other specialized or unusual projects. Full Oversight projects can be identified by the last letter in the project number; "N", "X", "S" or "F"

In recent years the FHWA has given the state more responsibility in administering federal aid funds. FHWA staff members conduct fewer reviews and inspections for specific projects than previously, focusing instead on reviewing operational processes. ADOT's own Construction Operations Section has been charged with ensuring compliance with federal requirements, including conducting periodic field inspections.

Local Public Agency Projects

Local government projects require special consideration. Coordination for project development is provided by ADOT's Local Public Agency (LPA) Section. The LPA Projects Manual will provide additional information.

Project sponsors may be cities, counties, towns, or tribes. Funds for local government project construction are provided by the FHWA with matching funds provided by the sponsor. Usually no state funds are involved.

The construction for all local government projects is administered by ADOT or by the LPA through Self-Administration (SA) and/or Certification Acceptance Program (CA). The CA Program sets forth the policies to be used by ADOT in the administration of projects financed with federal aid highway funds. An "A", “T” or “D” after the parentheses in the federal aid project number identifies CA Program projects. There are currently eight CA agencies within the State of Arizona, these agencies include: Maricopa County Department of Transportation, Pima County Transportation Department, City of Tucson, City of Phoenix, City of Scottsdale, City of Tempe, City of Chandler and City of Mesa.

On LPA projects administered by ADOT, the local and Regional standards are often used In lieu of, or in conjunction with ADOT Standards. Daily construction inspections and contract administration will normally be under the direction of an ADOT Resident Engineer. However, the sponsor's employees (who are adequately trained) may perform inspection and administration for the Resident Engineer. Additionally, ADOT’s Materials Independent Assurance and Construction Quality Assurance inspection groups will be required to perform random inspections on LPA projects.

Full Oversight Projects

The FHWA is an active partner with ADOT in the administration of full oversight projects. The FHWA Area Engineer will make periodic inspections of both the project work and the project inspection records (including test results and material certifications).

The FHWA Area Engineer is required to be contacted (per The FHWA and ADOT Stewardship and Oversight Agreement for Arizona) and concur on all supplemental agreements before an agreement is reached with the contractor. Also the FHWA Area Engineer should be invited to the preconstruction conference / partnering workshop, as well as to the final inspection.

It is important to involve the FHWA Area Engineer in all escalation hearings beyond the District level. Since the Area Engineer recommends federal aid participation on all contract changes, early involvement of the Area Engineer in a contract dispute is highly desired. Early involvement will help avoid any misunderstandings or courses of action that may result in the FHWA's withholding federal aid participation.

107.07 Sanitary, Health, and Safety Provisions

Safety is an integral part of construction. Every construction activity has specific safety considerations. Safety issues are inseparable from the construction activity. Safety is discussed throughout this manual in conjunction with the different activities.

The most effective safety programs include assessing the unique hazards associated with the actual work activity. This takes many forms, but a common one is a Job Hazard Analysis completed by the crew performing the activity. This analysis is critical for those work activities where there is no regulatory basis for safety program elements. Examples would be lowering falsework, temporary decking between bridge beams, or any work that is so specialized to the project that the regulations could not anticipate this. A hazard analysis can be completed on any activity that potentially affects worker safety and/or protection of the public.

In its most basic form, a job hazard analysis takes the following form:

- Identify the steps to complete the work
- Identify the hazards associated with each step
- Identify control measures to mitigate each hazard

Most worker injuries stem from two causes: an unsafe physical condition or an unsafe act. The unsafe physical condition is often a product of the environment; the general conditions at the site of the work, the equipment and materials used, or the process employed.

The unsafe act can usually be traced to inadequate training, a momentary lapse of attention or inexperience. Construction sites are unpredictable places and employees must be constantly aware of what is going on around them.

The rest of this subsection will introduce the various safety regulations that govern a construction site and indicate where to find additional information on safety.

Occupational Safety and Health Administration (OSHA) Standards for the Construction Industry (29 CFR Part 1926)

These standards apply to all construction sites in Arizona. This may include projects that ADOT defines as maintenance activity, but may be classified as construction by FHWA / OSHA. The Office of Safety & Risk Management can assist if there is any question about which standards apply to a particular project.

Everyone on a construction site must comply with these minimum standards. In many cases the general contractor will develop a safety plan with rules or policies more stringent than OSHA standards. In that case, ADOT and all subcontractors must comply with the contractor's safety plan. These policies can be enforced by an OSHA enforcement officer.

The state of Arizona generally adopts all federal OSHA standards verbatim. The standards are available at www.osha.gov or they may be purchased in book form from the Arizona Industrial Commission. Every Inspector and Resident Engineer should have access to these standards.

The Arizona Industrial Commission, Department of Occupational Safety & Health (ADOSH) is responsible for enforcement of the standards within the state. On tribal lands and some federal lands, the federal OSHA office in Arizona may have enforcement responsibilities. The Office of Safety & Risk Management can assist if there is any question about enforcement jurisdiction.

Hazardous Materials

All workers on a construction project, including ADOT, the contractor, and subcontractor must be informed about any hazardous material they may come in contact with at the workplace. The contractor is required by law and by the contract specifications to make available safety data sheets (SDS) to everyone at the project site. The location of these SDS must be identified and communicated to all personnel. Refer to Section 1926.59 of OSHA standards for further information on right-to-know requirements.

When hazardous materials are spilled, accidentally discharged, or encountered at the project site, Subsection 107.07 describes how ADOT requires the situation handled. When ADOT's field staff is notified of a hazardous material situation, the following actions should be taken:

- Ensure all workers are removed from the contaminated area
- Ensure the area is secured to the extent that no one else can become contaminated
- Call the Resident Engineer

Depending on the seriousness of the situation and how much the public is affected, contact 911. In addition, contacts should be made with the:

- District Office
- ADOT Office of Safety & Risk Management

- ADOT Traffic Operations Center (ask for hazmat response)

Resident Engineers and Lead Inspectors can download a copy of the Emergency Response Guidebook published by the U.S. Department of Transportation. This book helps identify hazardous materials, the potential danger of hazardous materials, and some basic precautionary measures that can be taken. However, experts should handle the more serious hazardous material incidents. Resident Engineers and lead inspectors should be to isolate and seal off the area containing the hazardous material until qualified help arrives.

ADOT Office of Safety & Risk Management

The ADOT Office of Safety & Risk Management (SRM) has full-time Safety Professionals whose sole responsibility is safety issues and regulations affecting the Department. The staff can be a valuable resource in interpreting OSHA standards, identifying safety hazards at the project site, and recommending reasonable protective measures.

ADOT SRM office should be notified when:

- An employee of ADOT or the contractor is seriously injured at the project site
- There is a serious injury or fatal crash on the project
- There is a chronic safety problem suspected at the project site which is not being corrected
- Dangerous hazardous materials are spilled or encountered

Safety Program Enforcement

Resident Engineers are empowered to shut down unsafe operations at the project site. However, some judgment is needed in deciding whether to shut down unsafe activities or to let them continue until corrective action can be taken. Here are some questions to consider as the Resident Engineer and Project Supervisor arrive at their decision.

- Is an unsafe condition away from the main site activities? Can the area be isolated or barricaded until the condition is made safe
- Most serious accidents are caused by unsafe acts. Are the workers' activities jeopardizing their own or other people's safety? How high is the risk of serious injury
- Assess the risk to the general public. Could the contractor's operation cause property damage or injury to those not associated with the construction
- Call the contractor's superintendent and safety supervisor to the site. Review the situation with them. Involve one of ADOT's safety consultants, if available
- Can something be done to make the hazard temporarily safe? Can someone be assigned to closely monitor the hazard full-time while people are at risk
- Consult the OSHA standards as well as any available safety experts. Do the standards or previous enforcement actions offer any direction on what to do

Answering these questions will help prepare the Resident Engineer for making a well-thought-out, carefully deliberated decision.

For example, an unsecured, infrequently used, 10-foot (3-meter) high ladder at a remote corner of the job site is probably not enough to warrant a stop work order. Even if the contractor does not rectify the problem for a few days, the most a Resident Engineer should do initially is to strongly warn the contractor in writing about the hazard.

On the other hand, workers found in an unprotected 10 foot (3-meter) deep vertical trench is a serious safety violation, which obviously warrants an immediate stop work order and a meeting with the contractor.

Unfortunately most safety hazards lie between these two extremes. Making a good decision that balances strict adherence to safety standards with the perceived risk of injury can be difficult. For those difficult decisions, the best words of advice are “err on the side of safety!”

Industrial Commission

The Industrial Commission’s Division of Occupational Safety and Health (ADOSH) is divided into two sections. The enforcement section makes site inspections, issues violation notices, assesses fines, and shuts down unsafe projects. Resident Engineers should call the enforcement section as a last resort when chronic safety problems cannot be quickly resolved with the contractor.

The other section is a consultation section that advises business owners, such as contractors, how to improve worker safety. This section has safety consultants who inspect job sites and point out safety hazards and violations. These Inspectors do not issue citations but are there to advise on safety issues. When there have been chronic safety violations, some Resident Engineers have required contractors to invite these Inspectors to the site instead of calling the enforcement section.

107.08 Public Convenience and Safety

Traffic Disruptions

Much of ADOT’s construction work is situated in and interfaces with traffic. As a result, there is often a conflict between how to construct the work and how to least disrupt traffic. The contractors sometimes want to perform the work in the most efficient manner, but at the expense of disrupting traffic. The Resident Engineer must then decide how much of a traffic disruption is tolerable.

A Resident Engineer’s number one concern is public welfare and safety. This is the Resident Engineer’s legal and ethical duty, both as a Professional Engineer and an ADOT employee. Traffic restrictions have two impacts on the public. First, they are an inconvenience that causes travel delay, extra fuel consumption, vehicle wear, economic loss, and driver stress. Second, they are a safety hazard. The restrictions eliminate some of the safety features of the road, e.g. shoulders, require quicker adjustments in driving behavior, and expose drivers to unusual situations resulting in higher vehicle accident risk.

In addition to decisions regarding safety, the Resident Engineer must carefully consider and investigate all the alternatives and weigh the impacts on public safety and the project work. For instance, shutting down the road for a day or two may be a significant disruption and inconvenience to the traveling public, but it may be preferred to several weeks of lane closures that might be more of a disruption and cause more accidents. On the other hand, a series of lane closures may be preferred to a full road closure. This situation can occur when previous full closures have resulted in accidents, frustrated motorists behaving erratically, and very long traffic lines. In deciding what to do, the Resident Engineer’s priorities should be:

- Risk to public safety (accident risk in particular)
- Major public inconvenience
- Construction efficiency

The risk of an accident involving personal injury must be weighed against the alternatives that are available. Assessing the risks ahead of time requires judgment, experience, and sometimes expert advice. Resident Engineers are often pressured by the contractor to favor construction efficiency. The Resident Engineer should also draw on the experience of traffic control experts including the Regional Traffic Engineer, a city or county Traffic Engineer, and the contractor’s own traffic control coordinator and barricade subcontractor in weighing the alternatives.

Sometimes there is no feasible alternative, and the disruption and accident risk must be endured. However, the Resident Engineer should be the one to make the decision. Do not remain passively silent and let the contractor do

what they think is appropriate. The Resident Engineer should proactively approve or disapprove each closure or traffic restriction, even when there is a previously approved traffic control plan.

Liaison with Local Government Officials, Business Owners, and Residences

During construction, phasing of the site work and public information are crucial elements of ADOT's desired coordination effort with the surrounding community. Construction sequencing, local access, and traffic control should be outlined at the preconstruction conference and at other critical milestones during construction. The local government officials should be kept informed of these matters at least monthly or more often so all affected parties can be alerted to ongoing construction impacts.

The Resident Engineer should hold periodic meetings with local business owners/managers and neighborhood associations, preferably at one of the business establishments or at a local community center or school. The Resident Engineer should invite the contractor and all affected businesses and residences to attend. The Resident Engineer and the contractor's representative can explain the construction schedule and answer questions about ongoing work. The contractor needs to feel a sense of accountability to the community concerning project progress and construction impacts. ADOT's Communications and Government Relations office can assist the Resident Engineer in coordinating and conducting the meeting.

When construction is completed, the Resident Engineer should contact each business and resident to ensure that any cleanup or property damage issues are resolved. If there has been a significant involvement by local individuals or groups, then a letter expressing appreciation for their participation is recommended. ADOT's Communications and Government Relations office can assist.

Local Access and Signing

Adjacent businesses should be contacted to establish the level of access and hours of high use. Signs stating "Business Access" or "Driveway Entrance" may be used to denote access driveways to individual businesses or business complexes. Other special construction signing may be identified on a project-by-project basis. Signs should not identify business names and must not be furnished or altered by the businesses. Special signs can be made by ADOT if unavailable from the contractor.

Traffic control plans should require that local cross streets have access across construction activities whenever possible. This cross street access should be a smooth, well-graded subgrade material or base course material with a paved surface where feasible.

Temporary access must be provided to businesses, commercial and institutional properties during construction. Access roads should be made of a base course, material at least one half the width of the property's driveway. The minimum driveway width should be 20 feet (6 meters). If possible, driveway grades should be maintained at less than a 10:1 slope.

Whenever possible, open trenches for utilities or culvert work must be provided with steel-plate crossings for cross streets and driveways.

Stranded Motorists

Occasionally some of ADOT's customers need immediate help. ADOT field staff may give stranded motorists limited assistance.

This assistance may include:

- Notifying the Department of Public Safety (DPS) of the stranded motorist
- Telephoning a roadside service for the stranded motorist
- Making a phone call to get in touch with a relative or acquaintance

- Providing drinking water and other first-aid assistance

The assistance does not include:

- Phone calls to more than one relative or acquaintance
- Calling a towing company (DPS does this)
- Running errands
- Transporting stranded motorists, their passengers, or their cargo, unless there is an immediate safety hazard

Site Specific Safety Plan Submittal

The safety plan a contractor submits at the preconstruction conference must be site specific and customized for the project. A corporate plan that covers general topics as fall protection, scaffolding, crane safety, and confined spaces by itself is rarely adequate for a project.

ADOT and the AGC have developed a "Site Specific Safety Plan" checklist that can be a reference guide for reviewing contractor's safety plans. This is available from the ADOTNet Forms directory. The checklist is useful for identifying hazards on a project and what elements are required in a safety plan.

As the contractor develops the site specific plan, the safety issues specific to the type of work should be combined with general safety practices so a coordinated, unified plan is developed. The general contractor must also address all subcontractors in their plan, or may review and approve, then submit a subcontractor's safety plan for those specific exposures or work activities.

The Resident Engineer shall review and approve the safety plan. ADOT's office of Safety & Risk Management can assist with the technical questions. Their staff may make recommendations about whether to approve the plan and any suggested changes needed to make the plan acceptable.

Some of the key elements that the Engineer should look for in a site specific plan include:

- Hazard identification or Risk Assessment (Often called a Job Hazard Analysis)
- Site Security and Loss Prevention
- Contractor Safety Training and Education Program
- Contractor Medical/First Aid Services Program
- Contractor Fire Prevention/Protection Program
- Contractor Personal Protective Equipment Program
- Special regulatory programs such as Trenching and Excavation, Crane Operations, and Confined Space Entry.
- Contacts lists including: emergency, safety, and competent persons.
- Contractor Emergency Procedures and Reporting of Recordable Injuries or Fatalities to OSHA

Certain special activities may require additional planning or require special permits. For example, onsite living quarters on a project may require compliance with local zoning and building codes for a trailer park. Potable water, sanitary waste disposal and fire protective systems may be required that are beyond what is provided in a typical RV that may be brought onto the site.

Accident Notification

When any workplace incident occurs that seriously injures ADOT personnel or any construction worker, 911 emergency services should be called first. ADOT's office of Safety and Risk Management must also be notified immediately. The District should be notified as well. ADOT's Communications and Government Relations Office should be notified if the media covers any on-site emergency operation.

Incidents involving injuries to many people at the site or injuries involving the traveling public require more extensive notification requirements. ADOT's Traffic Operations Center can be contacted 24 hours a day via radio or telephone, and their staff will handle all the required contacts.

All serious project incidents should be documented regardless of who is involved (a construction worker, an ADOT employee, or the general public). The amount of detail and the form of the documentation depends on the seriousness of the incident and ADOT's potential liability. Documentation can take the form of:

- Diary entries
- Completed accident forms
- Police reports
- Photographs
- Video
- Drawing and sketches
- Measurements
- Approved traffic control plans in use

ADOT's Office of Safety & Risk Management can provide guidance regarding the documentation requirements for a particular incident.

Temporary Fencing and Protecting the Project Site

One of the intents of this subsection is to make our construction sites reasonably safe after working hours. Inspectors and project supervisors need to actively enforce temporary fencing requirements. During non-working hours, curious adults, transients, lost travelers, children, and others must be reasonably prevented from entering the more dangerous areas of the construction site. Temporary fencing will probably not stop the determined trespasser, but fencing should prevent people from accidentally entering a dangerous area and serve as a warning to those who try.

Children are impulsively drawn to construction sites and often do not understand the dangers involved. Under the "attractive nuisance" legal doctrine, the contractor and the Department must reasonably protect trespassing children from hazards at the project site. Temporary fencing is an effective method of keeping children away from these attractive nuisances. In addition, the contractor should take other precautions such as but not limited to removing ladders, blocking openings, locking equipment, etc. in order to make the site reasonably child and teenager proof.

Temporary fencing should be supplemented with barricades, flashing lights, flags, and other traffic control devices to direct motorists, bicyclists, and pedestrians away from the hazard.

In heavily traveled areas where trespassing is a chronic problem, "no trespassing" signs should be placed in key areas around the site. To be legally enforceable the signs should read:

State Property
No Trespassing
Violators Will Be Prosecuted
ARS 13-1502A.1 ARS 13-1503A ARS 13-1504A.1

The signs are usually 12 x 24 inches in size with black lettering on a white background. They should be posted at all possible entrances to the project site or in the more hazardous areas. Good coverage is important to make the signs enforceable. These signs can be ordered through the Regional Signing and Striping Supervisor or can be purchased by supplemental agreement from a signing subcontractor.

Inspectors should not allow the use and amount of temporary fencing to be minimized when public safety is at risk. Temporary fencing can become an acute problem for the contractor during trenching or mass excavating. Arrange

to meet with the contractor ahead of earthwork operations so that both of you can discuss public safety and the precautions that should be taken.

Sometimes temporary fences can be eliminated by laying back slopes or by suitably covering excavations. Erecting permanent fencing where it will not conflict with the contractor's operations is another important method of protecting the public. The Inspector should communicate public safety requirements to the contractor ahead of time, and then work with the contractor to minimize temporary fence use.

107.10 Use of Explosives

See Subsection 203-3.03(C) of this manual.

107.11 Protection and Restoration of Property and Landscape

For erosion control and temporary drainage measures to protect adjacent properties refer to Subsection 104.09 of this manual.

The contractors sometimes use private property or adjacent public land as a staging area, construction yard, stockpile area, or for improved access to the project. Regardless of the reason, the contractor must have written permission from the property owner or the operating public agency (Subsections 106.09 and 107.11).

It does not matter where the property is located or who owns it. If the contractor needs to use the property in order to carry out or accomplish any activities for the project, then written permission is needed.

The written permission should clearly describe what the property is to be used for. This is important, because many times the Department has been drawn into disputes between the property owner and the contractor as to what can or cannot be done on the property. For instance, if the property owner is allowing the contractor to store a few materials, the contractor should not be setting up a fully equipped construction office on the property.

The contractor must furnish evidence that the owner is satisfied with the cleanup and restoration of the property at the completion of the project. Unless the owner states otherwise, private property should be cleaned and restored to its original condition.

Lack of written permission to use private or public property is grounds for withholding part of the contractor's monthly progress payment (5 to 10 percent range). In addition, any material stockpiled on private or public property should not be paid for until written permission is received.

107.12 Forest Protection

The primary intent of this subsection is to minimize the environmental impacts of construction activities on Forest Service land. This includes preserving the natural condition of the land and the vegetation in and adjacent to the project.

When working on Forest Service property, the Forest Service strictly regulates the Department's activities, including those of our Construction contractor. This Subsection, as well as requirements in the project Special Provisions, identifies what the Department and the contractor must do when working on Forest Service land.

The Department has a memorandum of understanding with the U.S. Forest Service on how we will cooperate with them in meeting their environmental objectives. The Roadside Development Section has a copy of this document.

The Department has a good working relationship with the Forest Service. The Resident Engineer, Project Supervisor, and Inspectors can help sustain this relationship by ensuring the contractor meets the environmental requirements and concerns listed in the Project Plans, Special Provisions, and Standard Specifications. The

Department needs the continued cooperation of the Forest Service as the state continues to grow. How the Resident Engineer and inspection staff handle the Forest Service concerns on each project does have a long-term effect on our relationship with the Forest Service.

If the contractor enters into a special-use permit with the Forest Service, a copy should be furnished to the Resident Engineer.

107.14 Insurance

When a contract is issued for a project, the insurance requirements are detailed in that agreement. In all cases, every ADOT contractor is required to carry general liability and automobile insurance with certain minimum limits. They are also required to carry worker's compensation insurance.

A certificate of insurance from the contractor is required by the executed contract. ADOT's Contracts and Specification (C&S) Section will ensure all insurance requirements are met. C&S will coordinate with the Office of Safety & Risk Management on technical issues regarding insurance and meeting the contract requirements.

During the course of construction the contractor's insurance policy may expire. As a result, it is important for the Resident Engineer to check the insurance certificate for the policy expiration date. When the policy has expired, make sure the contractor submits a new certificate. The field office and Accounts Receivable office should get a copy of the new insurance certificate. To assist the field office, if the contractor's insurance policy expires within a few months of the execution of the contract, C&S will send a letter to the Resident Engineer advising of the expiration date.

The contractors must not be allowed to work without insurance. Lack of proper insurance is grounds for stopping all work on the project and withholding progress payments.

Third-Party Damages and Claims

Motorists, pedestrians, property owners, neighboring businesses, and others who come in contact with construction activities are sometimes harmed by those activities. They could be injured, their property could be damaged, or they could suffer some other type of loss.

Although the contract and contractor's insurance policy protects the Department from third-party damage claims, it is a good idea to document any third-party accidents or incidents. Documenting incidents that occur on weekends can be difficult. However, a police report can be obtained for the more serious incidents. The time you spend documenting an incident, even after the fact, can potentially save the Department thousands of dollars.

The level of documentation should depend on:

- The seriousness of the incident
- The potential liability for the Department and the contractor
- The documentation effort by others, such as the contractor or the law enforcement
- How much factual first-hand information you can obtain about the incident

For example, an Inspector's documentation of an incident that occurred over a holiday will probably be just a note or short paragraph in a daily diary. The police report should be the primary source of documentation. On the other hand, a serious traffic incident in the construction zone occurring during work hours should be well documented including photographs and sketches. In documenting a traffic incident or worker injury, avoid duplicating much of what would be found in a police or accident report. Instead, refer to those reports in your documentation and supplement their information. The important documentation that is often not included in a police report is the specific location of traffic control devices or temporary signs and structures.

It is important for the Resident Engineer to investigate any incidents involving third-parties in order to detect and correct any unsafe conditions or hazardous construction operations.

When the traveling public calls about property damage or injury alleged from an ADOT construction site, the caller should be referred to the ADOT's Office of Safety & Risk Management. They will ensure the caller receives the correct state of Arizona Notice of Claim form and filing instructions. Do not discuss the details of the claim or admit any liability for the caller's alleged damages. Instead, advise the caller that the State of Arizona Department of Administration Risk Management will review and adjust their claim. In order to do so, they must complete the State of Arizona Notice of Claim form in accordance with the instructions.

Do not refer a claimant to the contractor, even though the contractor has third-party liability insurance. The claimant must still file a claim with the Arizona Department of Administration in order to protect his or her legal rights should the contractor's insurance company refuse the claim. The Arizona Department of Administration Risk Management will tender the claim to the contractor for processing.

107.15 Contractor's Responsibility for Utility Property and Services

General

Arizona state law (ARS 40-360.21-.29) requires anyone excavating in public streets, alleys or utility easements to first identify the location of all underground facilities in the vicinity of the excavation. The contractor is responsible for contacting the Blue Stake Center (Arizona 811) and locating all utilities before excavating. See the Special Provisions for the Blue Stake phone number, and known utility conditions and arrangements. The Resident Engineer and Project Supervisor should have a copy of How To Locate Underground Utilities Before You Dig, published by the Arizona Blue Stake, Inc.

The preconstruction conference should deal with known conditions and discuss the arrangements for cooperation between the contractor and the utility company.

On projects where utility companies relocate their own utilities, the Resident Engineer should obtain copies of all permits. The Field Office is responsible for inspecting this work and ensuring that all requirements and conditions of the permit are fulfilled. The results of the inspection should be provided to ADOT's Utility and Railroad Engineering Section.

Notifications

When unforeseen problems are encountered or when a contractor serves notice of a potential claim due to utility conflicts, the Resident Engineer should follow these procedures:

1. At the first indication of a utility-related problem, the Field Office must notify the District and the Utility & Railroad Engineering Section
2. Utility & Railroad Engineering will provide the Field Office with copies of all related documents, agreements, permits, and utility company commitments, etc.
3. The project office should notify the appropriate utility company representative by certified mail of the potential claim. This will allow the utility company the opportunity to eliminate or mitigate potential damages by accelerating relocation work, rescheduling the work to avoid the conflict, or adjusting the location to avoid a conflict, etc. The Resident Engineer should contact the Utility and Railroad Engineering Section to obtain the appropriate utility company representatives contact information
4. If the contractor files notice under 104.03, any negotiations conducted with the contractor should involve the utility company. Input from the utility company should be sought concerning proposed claim settlements or supplement agreements to which the utility company has liability
5. Under the terms of the construction contract, the contractor's claim is filed with the Department, not the utility company. The Resident Engineer should encourage the contractor and the utility company to

resolve the problem between themselves. However, it is important for the Resident Engineer to receive the details of any settlement agreement in order to avoid possible ripple effects or future claims against the Department

6. The project office should send any utility claim settlements paid by change order, force account, or supplemental receiving report to the Utility and Railroad Engineering Section for review and processing
7. If the Department determines that there is a utility company liability, the Utility and Railroad Engineering Section will seek recovery. If the company does not reimburse the Department, the documentation may be transferred to the Attorney General's Office for legal action

Like any other potential dispute, the Resident Engineer and Inspectors are advised to keep good records of conditions relating to unforeseen problems.

108 PROSECUTION AND PROGRESS

108.01 Subletting of Contract

All subcontractors (regardless of the subcontracting tier) must be approved by the Department. This approval is required before a subcontractor mobilizes and begins any work on a project. If a subcontractor is found working on the project without consent of the State Construction Engineer, the Engineer will immediately stop the subcontractor from continuing work, and an early start sanction of $1,000 will be withheld from the next monthly pay estimate. In the event a contractor feels the sanction was unjust and formally disputes a sanction, the Engineer shall first obtain approval from the State Construction Engineer prior to waiving any such sanctions. Additionally, if the contractor does not include the subcontract with the subcontractor SRF, the subcontract must be submitted to the Department and be approved within 30 days of the original approved SRF. If the contractor fails to submit the subcontract then the approved SRF will be revoked and sanctions will apply.

The State Construction Engineer, through ADOT's Field Reports Section, approves and disapproves all subcontractors. Subcontracts are submitted by the contractor electronically to Field Reports.

ADOT has multiple definitions of subcontractor roles. The second paragraph of Subsection 108.01 of the Standard Specifications defines precisely who is considered part of the "contractor's own organization". Everyone else is considered a subcontractor, including those who provide services to a construction site such as barricade companies, cleanup and sanitation services, surveyors, material testing firms, and trucking firms. All are counted toward the subcontracted work, which cannot exceed 60% in the 2021 Standard Specifications. The intent is that everyone who works on the site for the contractor is either part of the contractor's organization or is a subcontractor.

Material Suppliers have to be careful how they deliver materials to the project, or they can be considered subcontractors as well. Material Suppliers can deliver and stockpile materials at the project site. However, they should not be allowed to set their materials in place either manually or by machine. For example, a commercial asphalt plant that supplies asphaltic paving materials cannot run the laydown machine. Their trucks can load the machine, and independent truckers can work for the Material Supplier, but either the contractor or subcontractor must place and compact the material.

Companies that supply temporary concrete barriers and other traffic control devices cannot set these materials in their final place without being an approved subcontractor. However, these companies can perform basic maintenance on their materials. They can pick up these materials from a storage area away from or adjacent to the work area. They cannot remove their materials from the roadway or directly from a work area.

For subcontract requirements, refer to Chapter 12 of this manual.

108.02 Start of Work

When the State Transportation Board awards a construction contract, a Notice-of-Award Letter is sent to the contractor by ADOT's Contracts and Specifications Section. The Field Office must obtain a copy of this letter so it can accurately track project time. Contract time begins on the date specified in the letter.

Special Provisions may require the contractor to "quick start" the project within a certain number of calendar days of the Notice of Award Letter. See subsections 103.08, 103.09, and 108.02 of the Special Provisions for "quick start" requirements.

108.03 Preconstruction Conference and Partnering

Most of the important contract issues are raised and discussed during the partnering workshop, although a preconstruction conference is still needed to:

- Allow the contractor to submit the required documents before construction can begin
- Give the contractor, ADOT construction office staff, and applicable stakeholders, the opportunity to discuss technical details prior to construction starting work.

Contract Submittals

The following is a list of key documents that the contractor must submit at the preconstruction conference according to the Standard Specifications:

Document	Subsections
Project Schedule	108.03
Authorized Signature Form	108.03
List of Proposed subcontractors and Material Suppliers	108.03
Traffic Control Plan(s)	108.03
Designated Traffic Control Coordinator	701-3.01, 108.03
Safety Plan	107.08, 108.03
Designated Safety Supervisor	108.03
List of Items of Special Manufacture	106.02
List of Items in Short Supply	106.02
Prime and subcontractor Equipment List to be used on the Project	109.04(D)(6)
Prime and subcontractor Equipment and Labor Rate Sheet	109.04(D)(6)
List of Materials and Equipment for Trees, Shrubs, and Plants	806-3.01
List of Materials and Equipment for Water Distribution Work	808-3.01
List of Materials and Equipment for Sewage System Work	809-3.01
Traffic Signal and Highway Lighting Materials List	730-4
Erosion Control Measures (for projects without a SWPPP)	104.09, 108.03
Designated Quality Control Manager (for projects in which 106.04 is applicable)	106.04(C)(1)
Additional Submittals for Federal Aid Projects	
DBE Subcontracts, Invoices, and Purchase Orders	108.01, 108.03
List of Trainees and Training Schedule	108.03
Designated DBE Program Representative	DBE Provisions
Designated EEO Officer	FHWA 1273
Disclosure Form to Report Lobbying (if applicable)	Form LLL
EEO/AA Policy and Statements	—
List of Supervisory Personnel and Emergency Contacts	—

The project's Special Provisions may have additional submittal requirements. The Resident Engineer should review the Special Provisions and inform the contractor of any additional requirements. Documents required after the preconstruction conference include:

- A temporary drainage plan (104.10)
- A letter securing all the plant material for the project (806-2.01)

It is important for the contractor to submit all of the required documents at the preconstruction conference. These documents are a direct reflection of how prepared the contractor is to begin the work. Missing or unfinished documents, such as an incomplete schedule or an off-the-shelf safety plan, demonstrate that the contractor has not put enough effort into preparing for the contract work. Although this is not enough to stop the contractor from beginning work on the project, it is enough to withhold mobilization payments (see Subsection 901-5).

The intent of withholding the mobilization payment is to encourage the contractor to demonstrate that some basic preparation has been done in the areas of scheduling, traffic control, safety, and federal aid requirements before the Department pays for any of the contractor's start-up costs. Usually, telling the contractor ahead of time that all mobilization payments will be withheld until complete preconstruction documents are received is enough to get prompt compliance.

Conducting the Conference

The preconstruction conference may be combined with the partnering workshop as long as the preconstruction conference is still documented. It is not necessary to invite everyone who attended the partnering workshop to the preconstruction conference. However, the Resident Engineer should consider inviting:

- The District Engineer
- All lead Inspectors and Project Supervisors
- The Design Engineers
- The Project Manager
- The contractor's project management staff
- All key subcontractors
- Major Material Suppliers
- Utility company representatives (gas, water, cable, sewage, telephone, power, irrigation)
- Local government officials (city, county, tribal)
- Local business owners and neighborhood leaders
- Federal representative such as the Forest Service, Park Service, the BIA, and the FHWA
- Environmental enforcement officials such as air pollution and ADEQ officials
- The Regional Laboratory Supervisor
- The Civil Rights Office
- Any other technical personnel from ADOT

The Resident Engineer is responsible for arranging the conference, inviting the participants, preparing the agenda, conducting the conference, and making a written record of the conference discussions. Copies of the written record should be distributed to the District Engineer, State Construction Engineer, State Materials Engineer, Field Reports, FHWA, Public Information Office, and the principal conference participants. A suggested preconstruction conference notification letter is shown in Exhibit 108.03-1. Exhibit 108.03-2 shows a suggested preconstruction conference agenda. The Engineer should check that the current letterhead is being used.

The Resident Engineer is given much leeway on what to discuss at the preconstruction conference. There is no sense in repeating issues covered in the partnering workshop unless it is for the benefit of those who did not attend. Current contract issues important to the District or ADOT should be brought up. In addition, any new contract specifications or provisions that require procedures unfamiliar to the contractor should be discussed. As a minimum, every preconstruction conference should cover the following:

- Review of the contractor's schedule
- Emergency contacts
- Introduction of key project members
  Quality control efforts by the contractor
- Utility coordination
- Plan and specifications clarification
- Traffic control issues

- Local government and neighborhood concerns
- Contract administration issues important to ADOT
- Scheduling the weekly construction meetings

The Resident Engineer should avoid covering boilerplate issues such as requirements for filing contract claims and inspection notifications. Try to stick to items unique to the project or unfamiliar contract provisions.

ARIZONA DEPARTMENT OF TRANSPORTATION

Address Line 1
City, State ZIP

KATIE HOBBS
GOVERNOR

JENNIFER TOTH
DIRECTOR

Month Day, Year

John A. Partner
Add title
Partnering Construction Co., Inc.
1111 Partnering Ave.
Anywhere, AZ 85009

REF: Project:
Termini
Location

Subject: Preconstruction Conference and Partnering Workshop

Dear Mr./Ms./Mrs,
A Preconstruction Conference for this contract has been arranged for *Time to Time* on *Month Day, Year* at *Location Name* located at *Location Address*.

Please be prepared to present the necessary submittals in accordance with the ADOT Standard Specifications & Special Provisions for the above mentioned project.

- Project Schedule (108.03)
- *Etc…prepare a list of all submittals required by the contractor and cite the appropriate subsection in parentheses*

NOTE: This list is not meant to be a complete representation of all submittals that must be submitted at the preconstruction conference, nor is the Department's furnishing of this list required by the contract. It is meant to assist *(add contractor name)* in preparation for the start of the project. *(add contractor name)* is responsible to submit all required material detailed in the contract documents or any other binding state or federal regulations.

The remainder of the Preconstruction meeting is outlined in the enclosed agenda: *Include meeting agenda below.*

The Partnering Workshop for this project will take place *(**Choose one or the other:** prior to / following the preconstruction meeting **OR** time, date, and location)*.

The purpose of this Partnering Workshop is to:

- Begin building a good working relationship among project stakeholders.
- Identify potential issues/challenges within the project.
- Document action items.
- develop mutually agreed upon goals to help ensure the team completes a successful project.

Anyone who would like to learn more about Partnering prior to this meeting may contact their Partnering Facilitator.

You are encouraged to invite your subcontractors, major suppliers, and consultant engineers who will be stakeholders, as well. Please feel free to contact me at *555-555-0000* with any questions or concerns. We look forward to meeting with you.

Sincerely,
Sign here

Printed Name
Resident Engineer

Enclosures:

- *Include Authorized Signature form and others, as may be necessary agenda*

CC: *all those you intend to invite to the Precon Conference and the Partnering Workshop (include the Partnering Agent) by name and organization and send them a copy of this letter and the agenda.*
John Doe, District Engineer
Jane Doe, EEO/Affirmative Action Office
John Smith, Affected Utility Company
Jane Smith, City of…

ARIZONA DEPARTMENT OF TRANSPORTATION
205 S. 17th Avenue | MD 121F | Phoenix, AZ 85007 | azdot.gov
Phone: 602.712.7221

Exhibit 108.03-1 Preconstruction Notification Letter

PRECONSTRUCTION AGENDA

Time:
Location:

I. DISTRIBUTION OF AGENDA

II. INTRODUCTIONS

A. Sign-in Sheet
B. Individuals introduce themselves and identify their role on the project
C. Identify Project Supervisor for ADOT/Contractor

III. PROJECT OVERVIEW

Contracting Agency:
Funding Agency:
Contractor:
Letter of Award:
Contract Time Commences:
Number of Work Days:
Contract Completion Date:
Contract Amount:

IV. REQUIRED CONTRACTOR SUBMITTALS

A. Part I Project Schedule
B. Authorized Signature Form
C. List of major Material suppliers
D. List of subcontractors included executed contract and license numbers
E. Traffic Control Plan(s)
F. Designated Traffic Control Coordinator
G. Company Safety Plan & Designated Safety Supervisor
H. List of Emergency Telephone Numbers & Name of Contact Person
I. Company EEO policy and name of designated officer
J. DBE Subcontractors invoices, and purchase orders – Section 108.03 of Standard Specs.
K. Designated DBE program representatives – Section 108.03 of Standard Specs.
L. List of Items in Short Supply
M. Designated Quality Control Manager
N. Designated Fugitive Dust Control Plan in accordance with guidelines established in Rule 310 of Maricopa county Regulation III, Control of Air Contaminants
O. Storm Water Pollution Prevention Plan & Designated Erosion Control Coordinator

ADOT

Exhibit 108.03-2a Sample Preconstruction Agenda

P. Category I and Category II Traffic Control Device Certification
Q. List of proposed equipment with make, model and year
R. Survey Crew's certifications
S. Bulletin Board Location

V. ADOT SUBMITTALS

A. Bulletin Board Packet
B. Monthly Estimates & Deadline Dates
C. Emergency Contact Numbers & Names of Contact Person
D. Request for Time Extension Forms

VI. REVIEW OF PROJECT SCHEDULE BY CONTRACTOR

VII. DISCUSSION OF PLANS & SPECIAL PROVISIONS

VIII. UTILITY COORDINATION AND ISSUES

IX. MATERIALS

X. SAFETY

XI. TRAFFIC CONTROL

XII. LOCAL GOVERNMENT CONCERNS

XIII. ENVIRONMENTAL CONCERNS

XIV. ISSUES UNIQUE TO THE PROJECT

XV. CONTRACT ADMINISTRATION CONCERNS

A. Administration
   a. Written approval of subcontractors must be received prior to their start.
   b. Construction Survey & Layout – Contractor shall verify the project's horizontal and vertical control points. After verification of these points, the contractor shall notify the Engineer in writing the results of the verification.
B. Weekly Meetings
   a. When
   b. Where

XVI. ADJOURN

ADOT

Exhibit 108.03-2b Sample Preconstruction Agent

ADOT

Intermodal Transportation

Douglas A. Ducey, Governor
John S. Halikowski, Director
Dallas Hammit, State Engineer
Steve Boschen, Division Director

April 13, 2015

John A. Partner
Project Manager
Partnering Construction Co., Inc.
2222 E. Good Road, Suite D9
Anywhere, AZ 86018

RE: I-IR-40-301R / H243801C
I-40 Pavement Repair Preconstruction Conference

A Preconstruction Conference for this contract has been arranged for 1:00 p.m. on April 15, 2015 at the Flagstaff District Office located at 1801 S. Milton Road, Flagstaff, AZ 86001.

This contract specifies submittal of the following items at the Preconstruction Conference:

- Project Schedule (108.03)
- Etc.

(Prepare a list of all the submittals required by the Contractor and cite the appropriate subsection in parentheses.)

The remainder of the meeting is outlined in the enclosed tentative agenda. We can modify it to include any other areas that you might feel are necessary. This project meets the criteria to allow Partnering to be included in the preconstruction conference. An abbreviated Partnering workshop will be conducted during the preconstruction conference.

Please invite your suppliers and Subcontractors to attend since their expertise may be of help at the meeting. We would be glad to furnish any information that we can. Please feel free to contact me at 928-712-1111.

Sincerely,

[Delete this text before printing, and sign here.]

Build A. Road
Resident Engineer

Enclosures: Authorized Signature form and others, as may be necessary Agenda

John Doe, District Engineer
Jane Doe, EEO/Affirmative Action Office
John Smith, Affected Utility Company
Jane Smith, City of Flagstaff
(cc: all those you intend to invite to the conference by name and organization and send them a copy of this letter and the agenda.)

ARIZONA DEPARTMENT OF TRANSPORTATION
206 S. 17th Ave. | Phoenix, AZ 85007 | azdot.gov

Exhibit 108.03-3 Preconstruction/Partnering Notification Letter

PRECONSTRUCTION CONFERENCE /PARTNERING AGENDA

Time: April 15, 2015 at 1:00 p.m.

Location: ADOT Flagstaff District Office

I. DISTRIBUTION OF AGENDA

II. INTRODUCTONS

A. Sign-In-Sheet
B. Individuals introduce themselves and identify their role on the project
C. Identify Project Supervisor for ADOT/Contractor

III. PROJECT OVERVIEW

Contracting Agency:
Funding Agency:
Contractor:
Letter of Award:
Contract Time Commences:
Number of Work Days:
Contract Completion Date:
Contract Amount:

IV. PARTNERING

Partnering Champion
Partnering Evaluation Program (PEP)
Issue Resolution
Issue Escalation Ladder
Issue Escalation Binder

V. REQUIRED CONTRACTOR SUBMITALS

A. Part I Project Schedule
B. Authorized Signature Form
C. List of major Material Suppliers
D. List of subcontractors included executed contract and license numbers
E. Traffic Control Plan(s)
F. Designated Traffic Control Coordinator
G. Company Safety Plan and Designated Safety Supervisor
H. List of Emergency Telephone Numbers and Name of Contact Person
I. Company EEO policy and name of designated officer
J. DBE Subcontractors invoices and purchase orders – Section 108.03 of Standards Specs.
K. List of items in short supply
L. Designated Quality Control Manager
M. Designated Fugitive Dust Control Plan in accordance with guidelines established in Rule 310 of Maricopa County Regulation III, Control of Air Contaminants
N. Storm Water Pollution Prevention Plan and Designated Erosion Control Coordinator

Exhibit 108.03-4a Sample Preconstruction/Partnering Agenda

O. Category I and Category II Traffic Control Device Certification
P. List of proposed equipment with make, model and year
Q. Certifications of Survey Crew
R. Bulletin Board location

VI. ADOT SUBMITTALS

A. Bulletin Board Packet
B. Monthly Estimates and Deadline Dates
C. Emergency Contact Numbers and Names of Contact Persons
D. Request for Time Extension Forms

VII. REVIEW OF PROJECT SCHEDULE BY CONTRACTOR

VIII. DISCUSSION OF PLANS AND SPECIAL PROVISIONS

IX. UTILITY COORDINATION AND ISSUES

X. MATERIALS

XI. SAFETY

XII. TRAFFIC CONTROL

XIII. LOCAL GOVERNMENT CONCRENS

XIV. PROJECT ISSUES AND ACTION PLAN

XV. CONTRACT ADMINISTRATION CONCERNS

A. Administration
a) Written approval of subcontractors must be received prior to their start.
b) Construction Survey and Layout – Contractor shall verify the project's horizontal and vertical control points. After verification of these points, the contractor shall notify the Engineer in writing the results of the verification.
B. Weekly Meetings
a) When
b) Where

XVI. ADJOURN

ADOT

Exhibit 108.03-4b Sample Preconstruction/Partnering Agenda

108.04 Prosecution and Progress

Asphaltic Concrete Mix Designs

Subsection 108.04 of the Special Provisions may require the contractor to submit an AC Mix Design within 30 calendar days after the Notice of Award Letter.

Weekly Meetings

The Resident Engineer should conduct a weekly meeting with the contractor. Topics discussed at the meeting should include:

- The contractor's look-ahead schedule
- Project progress
- Safety and traffic control
- The status of contract submittals, supplemental agreements, and other project documents
- Project problems and new issues
- Contract requirements and interpretations
- Partnering issues and remedies
- Local community relations and environmental concerns
- Inspection, testing, and survey

The meeting should be held at the project site to encourage the attendance of both the contractor's and the Department's field staff. However, the meetings can be held at the ADOT Field Office or a site close to the project when the project has inadequate meeting facilities.

Minutes of the meeting must be kept. The aim is not to tape record and transcribe each meeting— this is too extreme in a partnering environment. Instead, the idea is to summarize major discussions and document important commitments. The minutes should also track:

- The status of contract submittals and other documents
- Project progress
- Unresolved project issues
- Other unfinished business

Contractor Look Ahead Schedule

The contractor's look-ahead schedule should be provided on or before the weekly meeting. It shall include the activities completed the prior week and at a minimum the next three weeks of anticipated work. If the contractor fails to provide an accurate schedule after a written notification is sent, $500 will be deducted from the progress payment per each occurrence thereafter. The look ahead schedule is vital for proper inspection staffing.

The Weekly Project Report

The minutes are usually kept in the weekly project report. An example template can be found on the forms tab The weekly project report is a document that captures and tracks all of the current project issues. The intent is that the Resident Engineer, the contractor's superintendent, and their support staff can go to one document to find key tracking information about:

- Project progress
- Recently resolved and unresolved project issues
- Processing of contract submittals and other project documents

- Project changes

When used effectively, the weekly project report should not allow any important contract issues to fall through the cracks. As project issues are raised or administrative requirements are carried out, they are documented on the report. Tracking of these items continues until some type of resolution is reached or an administrative process is completed, e.g. review of a shop drawing.

By including important weekly meeting discussions and issue resolutions, the weekly project report serves as a historical record of agreements and commitments made by both the contractor and the Department. The weekly report updates the status of project time and progress, contract submittals, contract changes, and other routine contract administration procedures.

More routine procedures, such as force account transmittals and payroll submission, are usually tracked when problems or exceptions arise.

Much latitude is given to the Resident Engineer on how to set up and organize the weekly project report as long as these minimums are met.

- A method for accurately documenting contract time
- Tracking of contract submittals and supplemental agreements
- Minutes of the weekly meeting including a list of attendees

To ensure everyone gets the most use out of the report, it should be updated immediately after each weekly meeting and distributed to the contractor, ADOT's Project Manager, and other important project stakeholders.

Since project time, contract submittals, and supplemental agreements are tracked by the project report, the report still needs to be updated and distributed weekly, even when there is no weekly meeting.

Conducting the Weekly Meeting and Other Construction Meetings

Introduction

The Resident Engineer or one of his or her assistants conducts the weekly construction meetings with the contractor. Typical attendees include:

- The Project Supervisor and Lead Inspectors
- The materials coordinator for the Field Office
- The contractor's superintendent, lead foreperson and assistants
- Any key subcontractors
- Local government and utility representatives
- ADOT's Project Manager
- A consultant or some other special guests

The meeting size can range from 5 to 25 people.

Everyone is at the meeting for a different reason. Some want to hear about the contractor's schedule, while others may have an issue they would like to raise with ADOT or the contractor. For these meetings to be effective and good use of everyone's time, there needs to be a clear idea of:

- What the meeting is trying to accomplish
- Who should be there to help in that accomplishment

Know What Type of Meeting You're Having

There are basically two types of business meetings. The first type is called an informational meeting. The purpose of this meeting is to share information with others and collect different points of view about a topic.

For example, a review of the contractor's look-ahead schedule is meant to inform everyone about what the contractor intends to do on the project. Inspectors may ask questions about construction methods and discuss with the contractor the contract requirements for the upcoming work. There is an exchange of information taking place, but most of it is one-way with the intent to inform.

Informational meetings are best run in a controlled manner so time is closely monitored and the agenda is followed rigidly. In this way, participants are not wasting their time on things they need not know about. Any number of people can attend an informational meeting. However, to get the most feedback for the information presented and to allow effective questioning and answering, the meeting size should be limited to 30 people.

The second type of business meeting is a problem-solving meeting. The purpose of this meeting is to analyze a situation, generate ideas, solve a problem, and make a decision.

For example, when the contractor raises an issue about encountering an unexpected groundwater condition and needs the Department's help in resolving the situation; this is a topic requiring a problem-solving meeting.

This type of meeting is best run in an atmosphere in which people are encouraged to participate and the leader stimulates rather than controls the discussion. More importantly, the number of attendees must be limited to no more than 12 to give ample opportunity to express their ideas.

Two other important elements of problem-solving meetings are 1) have the right people at the meeting who can make substantial contributions in resolving the problem, and 2) eliminate any perceived outsiders so people can speak freely without the fear of being misunderstood.

Meeting Effectiveness

When problem-solving and informational type meetings are mixed together the result can be a meeting that is ineffective, burdensome, and frustrating for the participants. Some of ADOT's weekly construction meetings are like this, especially when the meeting size is large and there is a lot of material to cover. To make the weekly meetings more effective, here are a few suggestions.

Divide the meeting into two distinct phases.

1. An informational phase where:

    - The contractor's schedule is reviewed
    - Contract submittals and supplemental agreements are updated
    - Routine announcements and questions from outsiders are handled

2. A problem-solving phase during which:

    - Construction problems are discussed
    - Partnering issues are raised
    - Other project issues can be talked about and resolved

If the meeting is too big, divide it into two distinct meetings:

1. An information meeting that everyone attends

2. A smaller problem-solving meeting attended by only the Resident Engineer, Project Supervisor(s), superintendent, foreperson, and a few invited guests

If the problem-solving portion of the meeting takes too long, have a break so people not involved in the issues can leave, or end the weekly meeting and have a separate, smaller meeting just to solve the problems.

Partnering issues and other sensitive topics can be raised at weekly meetings but sometimes a smaller problem-solving meeting is best suited to resolve these kinds of issues.

The more formal the weekly meeting, the less problem solving and open discussion that takes place.

Pre-Activity Meetings

When not required, pre-activity meetings are encouraged for all new activities/phasing changes. This meeting can be in conjunction with the weekly meeting.

Pre-activity meetings must be scheduled sufficiently in advance of ordering materials to resolve all issues (a minimum of 20 days is recommended). Attendees should include the superintendent, the subcontractor(s) as applicable, the foreman installing or performing the work, the Resident Engineer, the Project Supervisor and Inspectors assigned to the work.

The Resident Engineer should assign discussion roles and times. The contractor should be requested to bring manufacturer's installation requirements, including manufacturer's drawings approved by ADOT to the meeting. If there are more recent standards approved by ADOT, the Resident Engineer should encourage the contractor to work to current approved standards (changes to Specifications require a Change Order). ADOT personnel will bring the current Quantlists to the meeting. An agenda similar to the pre-activity meeting for guardrail can be utilized (see Exhibit 905-1).

CPM Schedule Reviews

Objectives of Critical Path Method (CPM) Scheduling

All projects require the contractor to submit a CPM schedule. The schedule is submitted at the beginning of the project and updated monthly throughout the life of the project. The requirement for the contractor's CPM schedule can be found in Subsection 108.03 of the Standard Specifications or Subsection 108.12 of the Special Provisions

The intent of the CPM schedule is to get the contractor to determine which construction activities are critical to completing the project on time. These critical activities are called the controlling items for the project (see definitions in Subsection 101.2). Once the controlling items are identified, the contractor's superintendent, the Resident Engineer, and other project team members can focus their management efforts on ensuring these items stay on track and are not unduly delayed.

The CPM schedule demonstrates that the contractor has considered not only all the activities needed to complete the project in accordance with the contract, but the effect of each activity on project time and the contractor's resources.

Reviewing the CPM Schedule

There are two primary components to reviewing a construction schedule: the technical review and the constructability review.

Technical Review: The technical review of the schedule focuses on the detailed inputs into the CPM software to verify that the output list of start dates, finish dates, floats, etc. will be appropriately computed. You may use the

Schedule Review Checklist to systematically verify that all technical parts of the schedule have been completed. Some of the key questions to consider are:

- Did the contractor submit the required electronic files
- Is the data date correct
- Does the start date match the award letter
- Is the finish date correctly shown based on the contract time
- Do all activities have a predecessor except for the first activity
- Do all activities have a successor except for the last activity
- Is the Total Float for each activity shown correctly
- Is the longest path (controlling items) clearly identified
- Are there unexplained gaps in the critical path

Constructability Review

The constructability review of the schedule focuses on the plans, specifications, and bid items that correspond to the schedule activities. In addition to the detail of the contract documents, the reviewer should consider the broader question of: Does this make sense? If anything is not easily understood, ask the contractor to explain what they included and why in the narrative.

Key constructability questions to consider are:

- Are the durations of activities realistic per the ADOT Production Rate manual
- Is the Work Breakdown Structure organized appropriately by phases
- Are all of the bid items included in at least one scheduled activity
- Does the relationship logic between activities make sense
- Do curing time frames match the specifications

It is the Resident Engineer's responsibility to review and accept the schedule(s). On larger or complex projects, an independent schedule reviewer may be assigned by the District to the project in order to assist the Resident Engineer with schedule reviews. The schedule reviewer's role is to review the schedule for contract compliance and advise the Resident Engineer on schedule acceptance. The coordination process between the Resident Engineer and the schedule reviewer is shown in Exhibit 108.04-4 below.

An independent schedule reviewer primarily focuses on the technical components of the schedule deliverables and verifies that the schedule meets the contract requirements. They may advise on suggested opportunities to improve the critical path or inquire about sequence and duration of activities. However, they are generally not on-site and may not be as familiar as the Resident Engineer with the constructability of the project, means and methods proposed by the contractor, or other project constraints. The Resident Engineer should review the schedule in conjunction with the schedule reviewer's comments to ensure a more comprehensive review of the contractors schedule.

For example, the schedule reviewer notices that the bridge activities are split into 3 phases on the schedule, but the plans show 2 phases. Since the schedule activity names are not specific enough to understand which parts of the bridge are in each phase, the reviewer makes a comment for the contractor to provide unique names such that the schedule clearly shows which parts are built in each phase. The Resident Engineer, through discussions with the contractor, understands that the contractor actually intends to build the bridge in 2 phases per the plan, and the 3rd phase in the schedule is an error. The Resident Engineer should discuss this information with the schedule reviewer and the reviewer can update their comments accordingly.

The Resident Engineer should keep the schedule reviewer informed of any changes to the project that may impact the schedule. Any change orders that add, remove, or change quantities of an item will likely alter the duration or

sequence of activities. If a Request for Extension of Time has been approved, send a copy to the schedule reviewer such that they can verify that the additional time has been included correctly during the next review.

The CPM schedule serves several purposes on the project such as a:

- Planning tool - It conveys how the contractor is planning to sequence the work
- Record tool - It includes actual dates of start and finish of each activity
- Communication tool - It informs subcontractors and project team members when their work is planned
- Risk tool - It shows which activities are controlling items and most likely to impact on-time completion
- Review tool - It provides an opportunity to identify time savings or analyze impacts of a delay

As a project partner, you should be of great service to the Contractor during the planning stages of the Baseline schedule. A key part of the Resident Engineer's review is to look at the sequencing of the work to determine if the contractor has considered:

- All the contract requirements, such as shop drawing reviews, traffic restrictions, access limitations, time constraints, etc.
- Any unusual site conditions
- Any regulatory impediments from local, county, state, or federal agencies
- Interface requirements with other Contractors
- Construction method limitations specifically described in the Project Plans and Special Provisions
- Any other unusual contract constraints

The Resident Engineer should review the schedule to see that activity durations appear realistic and that the logic makes sense. Any gaps in the critical path should be questioned unless explained by the contractor. A good critique of the contractor's schedule is a major contribution the Resident Engineer can make in helping the contractor correctly plan the contract work.

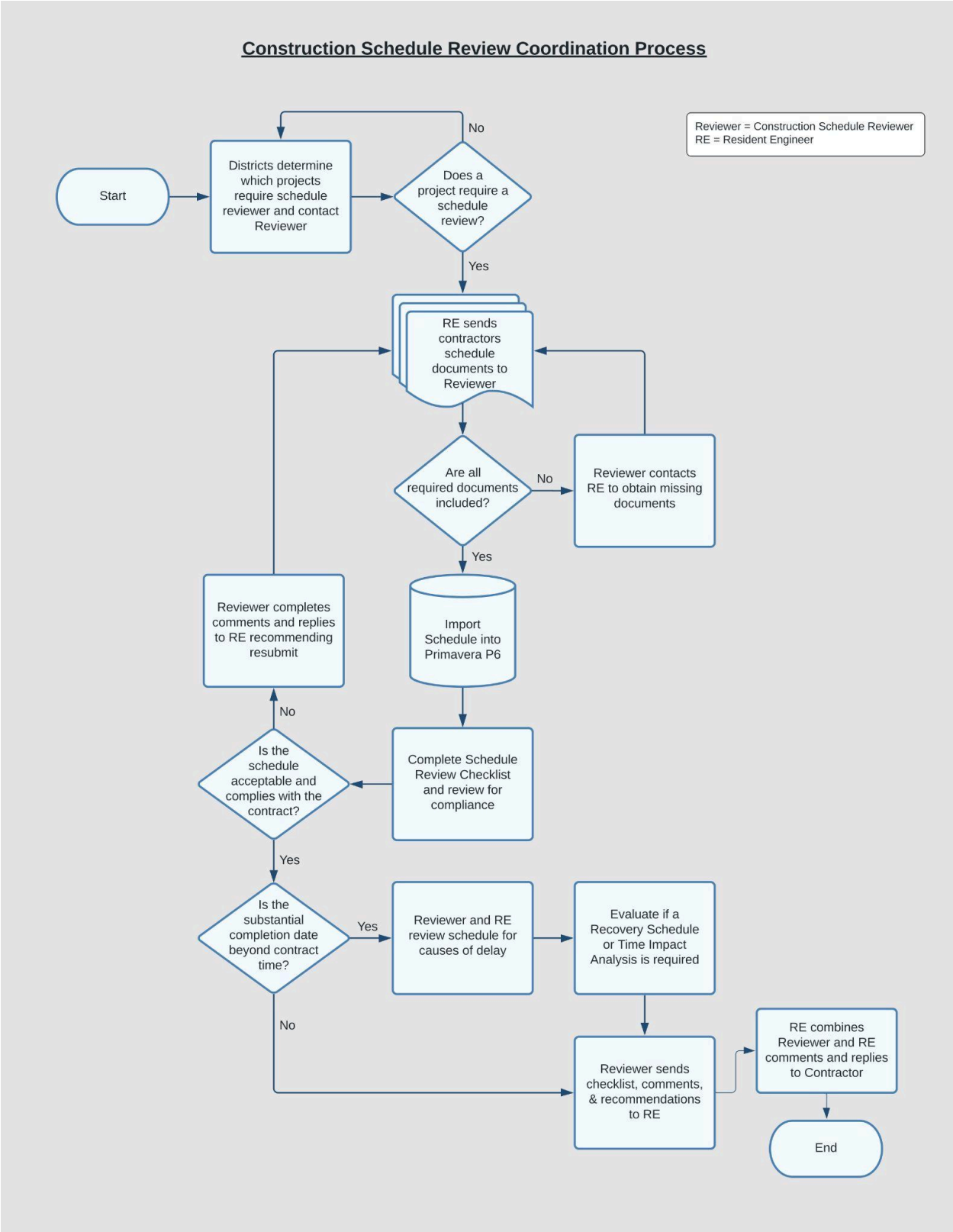


Exhibit 108.04-2 Construction Schedule Review Coordination Process

Submittal and Review Deadlines

It is important for the Resident Engineer to insist that the contractor submit the CPM schedule and the monthly updates within the time limits described. One reason is that schedules are time-sensitive documents, so information in a schedule starts becoming useless and outdated the longer the contractor waits to submit.

In addition, the CPM schedule determines the controlling items for the project ahead of time. This is very important for the Resident Engineer to know in advance so that the Department does nothing to unknowingly affect these items.

The following summarizes the submissions and review times for the contractor's CPM schedule (all time is in calendar days unless noted otherwise). All projects will have a Progress schedule per the Standard Specification or a Baseline Schedule per Special Provision 108.12 for Level 1, 2, or 3 if included in the contract.

Schedule	Specification	Due	Recommended Review Time	Revision Time
Progress	Std Spec 108.03	at the Preconstruction Conference	7 days (Baseline or complex schedules on large projects may take up to 15 days)	10 days or less is considered reasonable depending on the extent of revisions. No specific timeframe in the specifications.
Revised Progress	Std Spec 108.04	every 30 days throughout the contract		
Baseline Level 1	108.12 SCHLVL1	at the Preconstruction Conference		
Preliminary Level 2 or 3	108.12 SCHLVL2 108.12 SCHLVL3	before the Preconstruction Conference		
Baseline Level 2 or 3	108.12 SCHLVL2 108.12 SCHLVL3	30 days after Preliminary approval		
Monthly Progress	108.12 SCHLVL2 108.12 SCHLVL3	by the 15th day of every month throughout the contract		7 days
Recovery Schedule	108.12 SCHLVL2 108.12 SCHLVL3	within 10 working days of Engineer's written direction		5 days

Withholding Progress Payments

The initial schedule submission is part of the preconstruction conference documents. This submittal demonstrates that the contractor has put together a basic plan on how to execute the contract work. If the contractor fails to submit the schedule or it is incomplete, the Resident Engineer should order the conference suspended until a schedule is submitted. A lot of detail is not required for Preliminary schedules, but the overall plan should be complete and understandable.

Withholding progress payments for an incomplete Preliminary submittal is based on the principle that the contractor should clearly communicate a work plan to ADOT in advance of any work being done for which they expect payment from the Department. A lot of detail is not required, but the overall plan should be complete and understandable.

The Baseline Schedule demonstrates to the Department that the contractor has planned the work in sufficient detail to carry out its execution without risking a major interruption or re-sequencing that would expose the project to unnecessary financial risk. The Baseline Schedule requires much more detail than the Preliminary Schedule, including reports and resource/cost loading for level 3 projects.

Withholding progress payments for an incomplete Baseline submittal is based on the fact that the project is well under way, and the contractor has still not adequately planned the work to reduce or eliminate unnecessary risks to the project.

Withholding a portion of the monthly progress payment for tardy update submittals reflects the fact that CPM schedules are time-sensitive documents, and getting them late diminishes their value to the project and the Department.

The contractor may say that partnering is based on trust, so the Resident Engineer shouldn't worry about the CPM schedule requirements. They point out that if there is really trust between the two parties, then the contractor should not have to continually demonstrate that he or she has adequately planned the work. contractors may point out that the project work is not that complicated and does not require a CPM schedule as extensive as the one required in the Special Provisions.

In response to these concerns, it is important to understand that the CPM schedule requirements are not based on a lack of trust or faith in the contractor's ability to carry out the contract work, but a belief that a team effort in planning and scheduling large or specialized projects is crucial for their success. The Department needs to have a work plan in highly sufficient detail and clarity so it can better understand:

- The complexities of the work
- Its roles on the project team
- The impacts of the Department's actions (or a change condition) on the contractor's progress

Withholding of progress payments should never be a complete surprise to the Contractor. The Resident Engineer should always give the contractor adequate warning and ample time to respond before withholding payment. A face-to-face meeting, followed up by a letter, is the best way to get your point across. Escalating through partnering is highly recommended.

Project Delays

A CPM schedule gets the contractor to identify ahead of time the controlling items for the project. This is crucial information in the administration of any project since the Department needs to know how any changes or changed conditions affect the contractor's progress and work sequence.

Since delay claims can be the costliest of all contract claims, it is essential for the Department to have an updated and accurate project schedule that truly represents how the work will be prosecuted. If a contractor is planning to submit a Request for Extension of Time due to a delay, follow the procedures in Subsection 108.08.

The Resident Engineer should require the contractor to submit an updated project schedule whenever the contractor deviates significantly from the accepted project schedule. An updated schedule can be required at any point during the project. It does not need to wait until the following monthly update. This measure can prevent enormous frustration for the Department and the contractor whenever both are attempting to adjust the contract due to a perceived change.

An up-to-date schedule allows the Resident Engineer to deal with lack of progress on the project. If, in the Resident Engineer's judgment, there is a continual lag in the contractor's progress and no apparent effort is being made to improve the rate of progress, the Resident Engineer must notify the contractor in writing of the unsatisfactory progress.

In this notification the Resident Engineer should request that the contractor submit a detailed work plan for improving the rate of progress and provide evidence (usually a resource-loaded schedule) of the ability to complete the project within the time limit specified or as subsequently amended. Copies of such notification and the contractor's reply are to be sent to the District Engineer, the Project Manager and the Deputy State Engineer. Any further action on the part of the Resident Engineer should be on the advice of the District Engineer (also refer to Subsection 109.06 of this manual).

Subsection 108.04 of the Standard Specifications supports this with the following, "the work shall be diligently and continuously carried on to completion…" As such, the contractor is not allowed to have idle time and state it is part of their means and methods unless a thorough explanation in the schedule narrative is accepted.

Pacing delays are not allowed without a valid explanation in the schedule narrative to state why it is necessary. A pacing delay is when an activity is intentionally slowed down or deferred due to a separate delay to the controlling items on the critical path. It is not uncommon for the contractor to claim, "Why do I need to hurry up and wait?". Avoiding a pacing delay is not requiring any activity to "hurry up." It is the expectation that the contractor works continuously per their original schedule on all other activities that are not directly impacted by the delay. The problem with a pacing delay is that it:

- Unnecessarily consumes float
- May increase the number of controlling items, which adds risk to complete the work on time
- Defers the potential discovery of an additional delay that would have been known earlier
- May appear in the schedule as slow progress of the contractor's work

If a delay to the project is caused by the Department, a pacing delay by the contractor may look like a concurrent delay and could change an extension of time from compensable to non-compensable. It is in both the contractor's and Department's best interest to have pacing delays avoided or explained with the schedule so there is less confusion when determining entitlement from a delay. If no documentation is made available to justify a pacing delay, then consistent with the AACE International (AACEI) recommended practice, concurrent delays by the contractor should not be regarded as pacing delays, and instead are delays for which the contractor is responsible.

Let's look at an example of a project with construction of two interchanges. Interchange 1 encounters an unknown utility which delays the project by 6 months. Interchange 2 is dependent upon excavation from interchange 1 to be used as an embankment, which is not accessible until the utility has been relocated. In this case, there is a valid reason why interchange 2 is deferred. When the contractor explains the extent of the delays in the schedule, the Resident Engineer can then determine if a change to the contract is beneficial to the project. The Resident Engineer could choose to add Borrow to the project in order to keep interchange 2 on schedule.

Project Staffing

After the contractor's project schedule has been submitted, the Resident Engineer should determine the staffing needs for the project.

108.05 Limitation of Operations

This subsection reinforces much of the public safety and convenience issues raised in Subsection 107.08 and 104.04.

Often contractors will work weekends, holidays, and evenings to stay on schedule or to optimize resource usage. The contractors are required to give 24 hours' notice of weekend work. It has been the Department's policy to deny weekend work only when the work cannot be adequately inspected or it will cause undue hardship to the motorist.

When work is performed at night, adequate lighting needs to be provided by the contractor so that:

- Work can be performed safely
- The work can be adequately inspected
- Traffic can move safely around the work

OSHA Standard 1926.56 has minimum lighting standards for workers safety. However, the Resident Engineer has the right to ask for additional lighting above the minimum so Inspectors can adequately inspect the work. For example, equipping the Inspectors with flashlights is not good enough when large areas or large surfaces, such as concrete paving, need to be inspected.

If the work can be inspected and tested the following day without rushing the Inspectors, then work may be allowed to continue into the night as long as the OSHA standards are met.

108.07 Methods and Equipment

Whenever the contractor desires to change a construction method or piece of equipment required by the Standard Specifications or Special Provisions, the contractor should submit a proposal as described in Section 104.02 of this manual. If the Resident Engineer perceives a significant cost savings by allowing the change, then the contractor should be asked to submit a value engineering proposal in accordance with Subsection 104.13.

Before approving the change, the Resident Engineer can ask the contractor to perform a test section using the proposed methods or equipment to demonstrate satisfactory results.

108.08 Determination and Extension of Contract Time

Measuring Time

Time allowed for completion of the contract work will be specified in Subsection 108.08 of the Special Provision. One of the following methods will be specified for measuring time:

- Number of calendar days
- Number of working days
- Fixed completion date

Time allowed for projects with a construction phase and a landscape establishment phase will be specified separately.

Some projects may use innovative contracting methods such as A+B Bidding. A+B Bidding requires the contractor to bid both Cost-Plus-Time. The low bidder is selected based on a combination of the contract bid items (A) and the time (B) needed to complete the project. Contract bid items A and B are assigned a monetary value. Incentive/disincentive (I/D) provisions are used to encourage early completion and discourage unbalanced bidding. The Resident Engineer, or at least the District, should be involved during the development of an A+B contract with special attention to contract time. Specifications and procedures for A+B and other innovative contracting methods change often.

Some projects may have a milestone date for certain activities being completed by a fixed date or within a prescribed amount of days. These are separate from contract time and these often come with incentive/disincentive provisions.

The A+B, Design-Build, or other contracting methods do not change the time requirements for Department reviews, approvals, or inspections unless specified in the Special Provisions. There is not an implied duty on the Department to change the contract or expedite an action simply to help the contractor complete the work within contract time.

In the unique situation where contract time is reduced after a project has been awarded, a supplemental agreement must be completed to document the reduction in time. In addition, the Field Reports group should be notified and a Service Desk Ticket must be submitted by the Field Office to update the contract card and time reports.

The Resident Engineer should contact the Construction Group for guidance when negotiating a Supplemental Agreement containing extended overhead and or negotiating compensatory time extensions. In order to maintain statewide consistency, approval from the State Construction Engineer or the Assistant State Construction Engineer is required prior to the Resident Engineer agreeing to any: delay compensation, extended overhead compensation, or compensatory time extensions with the contractor.

Extended Project Delays Outside of the Contractor's Control

During the course of the project, there may be delays incurred by the project that are out of the Department's and contractor's control. These may be caused by any one of the following situations:

- Extended winter shutdowns
- A recognized differing site condition meeting the requirements of Standard Specifications 104.02(B)
- Acts of nature occurrence meeting the requirements of Standard Specifications 104.11(A)
- Labor strikes and public protests of the project as described in the FHWA Contract Administration Core Curriculum Manual (Time Extensions).
- A recognized nationwide shortage (force majeure) meeting requirements of Standard Specifications 108
- Government interventions
- Unexpected utility conflicts
- Archaeological or Native American finds as described in Standard Specifications 107.05
- Unexpected hazardous materials as described in Standard Specifications 107.07

In the unlikely situation where a project is required to be halted or suspended for any reason, the Resident Engineer should reach out to the State Construction Engineer or the Assistant State Construction Engineer for guidance as it relates to charging time and contractor compensation.

Contract Time and Controlling Items

The Department extends contract time based only on effects to the controlling items for the project (see Subsection 101.02 for a definition of controlling item). For example, suppose the controlling item for a project is the curing of a concrete box culvert, and let's say it rains on the project for the next three days. Even though the project may be shut down, no extension of contract time is needed because the controlling item is unaffected by the rain.

The contractors may make time extension requests when non-controlling items are affected by changed conditions, directed changes, or other changes beyond the contractor's control, and subsequently become controlling items.

For example, let's say in the previous box culvert example, a non-controlling item such as preparing subgrade was delayed five days due to the rain. If the item had seven days of total float time before the rain began, then after

the five-day delay, the item would still have two days of float. It is still a non-controlling item so no time extension is needed.

Sometimes a non-controlling item becomes a controlling item. In this case, the contractor may ask for a time extension due to uncontrollable past delays that consumed some of the float time.

In the previous example, a few days later, a key piece of equipment breaks down while the contractor is preparing the subgrade. The equipment will take at least a week to fix. The prepared subgrade item now becomes a controlling item because the remaining float time is gone. The project is now being delayed. The contractor will then contend that if it hadn't rained, the float would still be available for fixing the equipment.

In this case, the contractor is attempting to benefit exclusively from the use of float time. This is not fair to the Department since contract time does have a value, and neither party should have a monopoly over it. If the situation were reversed (the equipment breakdown occurred just before the rain) it would be just as unfair for the Department to contend that the rain would not have delayed the project had the contractor properly maintained the equipment.

A contractor that starts a project late may be considered as sequestering float, since they are benefitting from it exclusively. While a late start may be accepted by the Resident Engineer, the risk associated with consuming float is the responsibility of the contractor. If a delay occurs that is not the fault of the contractor after a late start and causes the project to finish late, it is not fair to the Department because float would have been available had the project started on time. As such, the project delay may be considered as non-excusable.

Delay Submittal Documentation

It is the contractor's responsibility to provide all documentation necessary to analyze a delay, identify the controlling items, demonstrate the impacts, and provide justification for an extension of time. At a minimum, the contractor shall submit a revised schedule and a detailed explanation, illustrating the impacts to the project.

Projects that include Special Provision 108.12 require the contractor to submit a Time Impact Analysis (TIA), if the contractor requires an extension of contract time due to an event, situation, or change that affects the critical path. A TIA is a specific type of analysis method. It is a forward-looking, prospective schedule analysis developed to demonstrate the impact of a change to the current schedule on its longest path. More information on the details of a TIA can be found in AACEI 52R-06 Prospective Time Impact Analysis. Contact Construction Group for a copy of this document.

Other types of delay analysis methods may be appropriate under certain circumstances. AACEI 29R-03 Forensic Schedule Analysis Recommended Practice is a good resource to understand how other methods may be applicable. It is beneficial to discuss the type of analysis with the contractor prior to preparing the delay documentation.

ADOT **ARIZONA DEPARTMENT OF TRANSPORTATION**
REQUEST FOR EXTENSION OF TIME

Project No. STP188-A-(001)B **TRACS No.** H615501C **Request No.** 1
Project Name Claypool Jakes Corner Hwy (US60) **Contractor** FNF Construction, Inc.

Working Days ☑
Calendar Days ☐
Total Days Requested 5 **Fixed Date** ☐ **Requested Amended Fixed Date** ☐

The work has been impacted for the following **attached** reasons. Include a schedule (CPM if applicable) detailing the impact to the contract. **ALL ATTACHED JUSTIFICATION DOCUMENTS MUST SHOW TRACS NUMBER, REQUEST NUMBER AND CONTRACTOR.**

Compensatory Days Requested ☐ Non-Compensatory Days Requested 5

Contractor Signature | Title | Date of Signature
Contractor Printed Name

The days claimed and reasons thereof have been studied. If fewer days are recommended than claimed, attach explanation.

Compensatory Days Recommended ☐ Non-Compensatory Days Recommended 5

NOTE: If compensatory days are requested, attach the consultation e-mail FROM the Assistant State Engineer for Construction.

Senior RE Signature — Sr./Resident Engineer
Date of Signature — Date

NOTE: This recommendation must be sent to the District Engineer for approval.

Compensatory Days Approved # ☐ $ Daily Rate ☐ $ Total Approved ☐ Non-Compensatory Days Approved 5

District Engineer Signature — District Engineer
Date of Signature — Date

NOTE: If approved date differs from Contractor's request, return for concurrence.

Contractor Concurrence Signature | Title | Date
Contractor Concurrence Printed Name

IF THE CONTRACTOR DOES NOT AGREE THE ESCALATION PROCESS MUST BE FOLLOWED.

After a review of the facts,
an additional _____ Compensatory Days and _____ Non-Compensatory Days are approved.

Federal Highway Administration | Date

After Signatures, a Change Order must be executed in accordance with Standard Specification 108.08.
The Request for Extension of Time and all documentation must be attached to completed Change Order. 05/2013

Exhibit 108.08-1 Time Extension Request

ADOT

ALTERNATIVE DELIVERY

CONTRACT MODIFICATION REQUEST

CM@R ☐
Design-Build ☐

Page ____ of ____

Contractor:	Project No.:	TRACS No.:	Date:
Project Manager:	Design Firm:	Initiator:	

Requested Change (What):

Reason/Justification (Why):

General Supplemental Agreement Types *Choose from dropdown* *If Other, please explain:*	List Technical Managers:

ADOT Recommendation:

Concept Recommended ☐ ☐ Yes No _____ *ADOT Sr./Resident Engineer* **Date:** ___/___/___

Concept Recommended ☐ ☐ Yes No _____ *ADOT Asst. District Engineer/District Engineer* **Date:** ___/___/___

Concept Recommended ☐ ☐ Yes No _____ *Assistant State Engineer, Construction* **Date:** ___/___/___

Concept Recommended ☐ ☐ Yes No

Eligible for Federal Reimbursement ☐ ☐ Yes No

_____ *FHWA*

Date: ___/___/___

Any decision to approve the change to contract terms will be within the sole discretion of ADOT and is dependent on the documentation that is submitted and entered into the Supplemental Agreement Tracking System (SATS).

Exhibit 108.08-2 Contract Modification Request Form

108.09 Failure to Complete the Work on Time

Liquidated Damages

Liquidated damages are assessed against the contractor when the project work is not substantially complete (Subsection 105.19) within the allotted contract time. Liquidated damages for failure to complete work with contract time are not a penalty, but a method for recovering some of the Department's costs and damages due to the additional time needed to complete the project.

The Department uses liquidated damages as a last resort. These damages should be the final result of a process during which the Resident Engineer has been communicating to the contractor the ramifications of not finishing within the contract time available.

Liquidated damages should be no surprise to the contractor. The contractor should receive plenty of warning about what could happen if the project is allowed to fall behind schedule. There should be letters written and escalation meetings held long before project time runs out.

It is important for contractors to receive a clear message from the Resident Engineer and the District Engineer about where the Department stands on assessing liquidated damages for each project. This message should not be received at the last minute when contractors have lost the opportunity to adjust their operations to make up for lost time.

When liquidated damages are assessed, the District Engineer should write a letter notifying the contractor of the assessment. The letter should come as soon as it is realized that the contractor will not achieve substantial completion within contract time. If retention is withheld on a project, the Resident Engineer needs to notify Field Reports in writing of any assessed liquidated damages before any retention is released. The Resident Engineer should attach a copy of the District Engineer's letter.

Constructive Acceleration

Resident Engineers should be very careful about how they communicate to the contractor the requirements for getting the project work back on schedule. Resident Engineers should not tell the contractor that the work has to be completed by a certain time or within a certain time period.

Some contractors may misinterpret this as a request to accelerate the work and then bill the Department for the acceleration costs. Instead, the Resident Engineer should warn the contractor about the consequences of not finishing on time, then let the contractor decide what to do. contractors do have a right to finish late and incur liquidated damages as a result.

109 MEASUREMENT AND PAYMENT

109.01 Measurement of Quantities

Method of Measurement

Highway construction work is divided into separate pay items. Each pay item represents a unique construction element of the project, e.g. guardrail, culvert pipe, roadway excavation, etc.

Each pay item has a method of measurement. A method of measurement is a procedure used to determine the quantity of work eligible for payment under each pay item. Usually the method of measurement measures the quantity of a key material for each pay item, e.g. cubic yards of structural concrete, or measures the completed work as a unit, i.e. each catch basin vs a lump sum structure.

Each pay item has a method of measurement clause or subsection, which can be found in either the Standard Specifications or the Special Provisions. The clause will describe exactly how the item is to be measured for payment. Subsection 109.01 more fully describes the method of measurement for pay items that have an undefined or incomplete description of how to measure the work for payment.

A method of measurement may or may not represent the actual quantities of materials used. For example, structure backfill is measured based on Standard Drawing B-19.40, which shows vertical fill limits adjacent to the structure. In reality, excavations are sloped next to structures so that the volume of structure backfill placed will always exceed the amount measured for payment.

Carefully review “Method of Measurement” and “Basis of Payment” sections in the Standard Specifications / Special Provisions to know exactly what is included in a pay item.

Measuring and Documenting Pay Quantities

The accurate measurement of pay quantities is a very important task for the Inspector. Field measurements for pay items are converted directly into dollars for the contractor. Because there is a direct relationship between what the Inspector measures and what the Department pays out, inaccuracies in measurements lead to underpayments or overpayments to the contractor.

ADOT has a training course to help inspectors in this area. The course is titled *Pay Item/Daily Diary Documentation (TCH3001)*. This is an excellent guide for all Inspectors on how to accurately measure and document pay quantities on ADOT projects.

Scales

Scale Operator

For many pay items involving bulk materials, e.g., aggregate base, asphalt, and mineral admixture, payment to the contractor is based on the weight of the material. Unlike other methods of measurement, measuring by weight can be a concern for the Department.

When paying for material by weight, ADOT has very little direct control or involvement in the weighing process. The material is weighed for payment on scales either owned or leased by the contractor or Material Supplier. The material is entirely handled by the contractor or Material Supplier before it is placed at the project site. Only when the material arrives at the project site does the Department exercise some control over it. As a result, the Department must rely on the accuracy of the contractor’s scales and the honesty of the contractor’s scale operators and trucking staff when this method of measurement is used.

To help ensure the integrity of this process, the Department requires a scale operator to monitor the weighing of materials for payment. When manually operated platform scales are used, a scale operator shall be assigned full-time to monitor weighing. When automatic scales are used (weights are automatically displayed and printed), the monitoring can be done part-time.

Regardless of whether scale monitoring is done on a part- or full-time basis, the scale operator has several important duties related to the weighing of materials.

- Ensuring the scales are properly certified.
- Ensuring the scales are being operated correctly and within their prescribed limits.
- Verifying the vehicle tare weights are correct if there is doubt about their accuracy (this could include weighing empty trucks on another scale).
- Verifying that the weight being measured is the same as the weight being recorded (more of an issue on manually operated scales).
- Tracking the accumulated amount of material used on a daily basis.
- Ensuring the contractor's weigh tickets are completed correctly.

The Resident Engineer or Project Supervisor may assign other duties to the scale operator to keep the person busy full-time. However, it is important that the scale operator has sufficient time to fully carry out the duties listed above so they can competently oversee the weighing process.

Scale Accuracy and Calibration

Like a tape measure, a scale needs to measure accurately and consistently according to accepted standards. A scale's accuracy directly reflects how accurately ADOT pays the contractor for work measured by weight.

To measure weight accurately, two things must occur.

- The scale must be calibrated correctly.
- The tare weight of the container holding the material must be accurately known.

Even when the scale weighs accurately and the correct tare weights are used, weights still need to be accurately recorded so payment can be made.

Policy on Scales:

- Truck scales must be licensed by the Weights & Measures Services Division (WMSD) within a period of 12 months preceding the date of weighing.
- The original setup of scales and all moves of scales should be licensed and certified by WMSD or a Registered Service Agency (RSA) before the scales are to be used.
- In the event ADOT personnel cannot satisfy themselves as to the proper accuracy of the scales, at any time prior to or during the weighing operations, weighing operations should cease and the WMSD or RSA should be called by the contractor to inspect the scales.
- ADOT personnel should not repair scales. An adjustment of the balance bar to maintain zero balance of the beam is the only adjustment that should be made by ADOT personnel. All other adjustments or repairs must be performed by an RSA.
- Scale certifications are good for 12 months. No grace period for recertification should be allowed. Commercial scales are required to be recertified by WMSD or an RSA within 45 days prior to expiration of the 12-month period.
- Responsibility for scale set-up, operation, maintenance, adjustment, and repair lies with the contractor.
- The WMSD maintains a list of current Registered Service Agencies. It is also important to ensure the RSA certification is current. An RSA certification search is available on the WMSD section of the AZ Dept. of Agriculture website.

Weighing Requirements:

- An acceptable load invoice or ticket should include truck number, time, source, date, type of material, and net pounds or tons. Each invoice should be signed by the ADOT scale operator and collected by the Inspector calculating the spread, who in turn should make a notation of station limits of the spread on the front of the invoice and initial. At the completion of the shift, the spread person should deliver the invoices to the project office for checking and totaling.
- In the event loads or portions of loads are rejected, notes explaining the reason should be made on the respective invoice, initialed, and dated by state and contractor representatives.
- Each day's totals and accumulated totals should be recorded on ADOT Pen Form - Truck Weight Record. Documentation, such as moisture deductions, should be shown on this form. Each weigh record will be signed daily by the scale operator or their deputy.
- The daily weigh record should be attached to the daily invoices and tapes. The invoices, checked tapes, and weigh sheet should be retained at the project office and kept with the project files.
- Spot checks of weighing operations and tare weights should be made. The frequency of these checks is dependent on the quantity of material being weighed daily, so the frequency of checking should be at the Resident Engineer's discretion.

109.02 Scope of Payment

Even though the Department pays for completed work on a monthly basis as the job progresses, this does not mean the work has been accepted. The Department has the right, until final acceptance (see Subsection 105.20), to require defective work to be corrected by the contractor, even after the Department has paid for that work.

109.03 Compensation for Altered Quantities

The quantities shown in the bidding schedule are just estimates of the amount of work required to complete the contract. In reality, the actual quantities are going to be different than the estimated ones. The contractors often ask for unit price adjustments when quantities run under the estimated amounts, items are deleted, or when work is added. Regardless of the reason, Resident Engineers should stay within the guidelines of 104.02 when making unit price adjustments.

As a Department, consistency is needed when allowing unit price adjustments. This ensures fairness to all our contractors, subcontractors and materials suppliers. Consult with the District Engineer when you feel a unit price adjustment is warranted outside the scope of 109.03, 104.02, or related subsections (see Subsection 104.02 of this manual).

109.04 Adjustments in the Contract Price

General

Supplemental agreements are used to make changes to ADOT construction contracts. They change work in the contract and adjust the contract cost accordingly. They CREATE new pay items or INCREASE, or DECREASE existing pay items or quantities. Supplemental agreements, specifically Change Orders, may also be used to change or waive specifications or add days to contract time, even when there is no effect on contract costs. Bid Items are never deleted; quantities must be adjusted to zero.

When signed by the contractor and the Resident Engineer, supplemental agreements are binding legal documents that supplement the original contract.

Three different types of supplemental agreements may be used to amend ADOT construction contracts:

1. Letter of Agreements are used if the cost of the extra work is less than $10,000. This is the simplest Supplemental Agreement. It describes the change and creates a lump sum Item No. 9240101, Miscellaneous Work (Resident Engineer Use Only), for payment. The Letter of Agreement is signed/authorized by the Resident Engineer and signed by the contractor. A Letter of Agreement is not to be used to change, add or delete plans or a specification or to add contract time extensions.
2. Change Orders uses existing items and unit prices in the bidding schedule or establishes new items and unit prices to pay for extra work. A Supplemental Agreement form is sent to the contractor describing the change and listing the pay items and unit prices affected by the change. Much supporting documentation such as a detailed cost analysis, revised design details, and plan sheets are contained in a Change Order package. A Change Order is also used to extend contract time, adding additional days to complete a project.
3. Force Accounts compensate the contractor for extra work based on the actual hours worked, equipment and materials used (time and materials). It is the most cumbersome and administratively complex Supplemental Agreement. It contains all the supporting documents found in a Change Order, plus additional record keeping requirements once the Force Account work begins.

The type of Supplemental Agreement used depends on the cost and complexity of the contract change. Simpler changes can be done by Letter of Agreement, while the more complex changes, for which costs are difficult to quantify, may need to be done by Force Account. The order of increasing complexity is:

1. Letter of Agreement, 109.04(A)
2. Quantity adjustments by Change Order using existing pay items, 109.04(B)
3. Detailed estimate (cost analysis) by Change Order, 109.04(C)
4. Force Account, 109.04(D)

The Letter of Agreement (LOA)

The Letter of Agreement is best suited when the changes are simple, can be easily identified and estimated, and cost $10,000 or less. A Letter of Agreement is the easiest for the Department to administer and does not require an extensive approval process. The Letter of Agreement can also be used to credit the Department for cost savings that result when the RE relaxes minor specification requirements. The intent shouldn't be to nickel-and-dime the contractor, but to recover legitimate cost savings when the contractor is clearly realizing a quantifiable economic benefit as the result of a change. A LOA can also be used to recover costs such as Partnering Workshop expenses.

The Change Order (CO)

A more formal documentation and approval process is needed for this type of Supplemental Agreement. If the change cannot be handled by adjusting the quantities of existing contract items—109.04(B), then a detailed cost analysis of the extra work must be performed—109.04(C). The Change Order is best suited when the work can be quantified ahead of time. Since Change Order prices are generally agreed on before the extra work begins, contractors may include many contingencies in their cost estimates to offset any perceived risks.

A Change Order is also used to add time to a contract. The contractor initiates this using the "Request for Extension of Time" form which categorizes the total time requested as compensatory and/or non-compensatory (see Construction Manual 108.08). The Resident Engineer reviews the contractor's request and recommends, to the District Engineer, the number of additional days to be added. In the recommendation, the Resident Engineer includes whether or not any time is compensatory. All Change Orders to extend contract time with compensation requires an analysis of the 'per day' rate of compensation. This analysis is prepared with the assistance of the State Construction Engineer, who reviews all compensatory time requests for guidance in price negotiations. Contract line item 1080800 Contract Time Extended Overhead with an Each-Day unit price is created. The District Engineer grants final approval for time extensions.

The authorization levels for time extension compensation remain unchanged. After the contractor signs the form, agreeing with the District Engineer's decision, the Resident Engineer prepares a Change Order. If the contractor

does not agree with the District Engineer's decision, the Resident Engineer prepares an Escalation to the State Engineer.

Time Extensions add days to Working Day & Calendar Day contracts. Changes to FIXED DATE Contracts require that the contract's completion date be deleted and a new Fixed Date established for completion.

All Change Orders adjusting contract time shall be signed by the District Engineer or Assistant District Engineer.

Change Orders adjusting contract time can be combined with other contract changes as long as you do not lump different types of contract changes within one change order.

A Procedural Change Order is used when the cost of the change is zero – generally for additions or deletions to plans or specifications, or to extend contract time without compensation.

The Force Account (FA)

The Force Account should be the Supplemental Agreement of last resort because it is the most expensive and administratively tedious. The Force Account is used for contract changes in which the amount of work is difficult to quantify, emergency situation and work must start immediately or the financial risks of performing the work are too high for the contractor. The RE estimates ahead of time what they believe the extra work will cost and gets the necessary approvals to establish the force account. Once the work begins, daily records are kept of the labor, materials, and equipment used to accomplish the extra work. The contractor takes these daily records and invoices the Department for the work, based upon section 109.04(D) of the applicable Standard Specifications using the prime contractor Force Account Weekly Detail. The field office reviews and approves these details by comparing the contractor's documentation to the Inspectors documentation before paying the contractor.

To sum up, the Force Account is best used when:

- Defining the work clearly and accurately enough for a change order is too difficult
- The extra work needs to begin right away
- The RE and the contractor cannot agree on costs

Line item force accounts are not to be replaced by a supplemental agreement. In order to maintain Statewide consistency, if the Resident Engineer feels that a supplemental agreement is a more suitable administration tool for the element of work represented by the line item force account, concurrence from the State Construction Engineer or Assistant State Construction Engineer is required prior to generating a supplemental agreement.

Investigation and Preparation

Subsection 104.02, Revisions to the Contract, in the Construction Manual, describes the different types of contract changes and the process for analyzing any contract change. In 104.02 we said that the Resident Engineer must basically answer these four questions when analyzing a contract change:

- Was there a contract change (What was the change)
- Who caused the change
- What are the impacts of the change
- What are the costs

Subsection 104.02 should be referred to when investigating and analyzing any contract change.

The results of analyzing a contract change are documented in the supplemental agreement. See section on "Documentation" that follows.

Cost Analysis

An independent RE's cost analysis is required for all Supplemental Agreements including Force Accounts, Letters of Agreement and Change Orders (including Time Extensions). Cost analysis for time extension Change Orders with Compensatory time require consultation with the State Construction Engineer. Cost analyses for extra work are best done by carefully examining the impacts of the change first, then looking at costs last.

Here is a rudimentary procedure that can be used on any cost analysis that will keep you focused on analyzing the impacts first before you are ready to examine costs:

Quantify the Extra Work

This means calculating the amount of work that has to be performed: such as cubic yards of dirt to move, linear feet of guardrail to install, or pounds of rebar to eliminate. The trick here is not only calculating the quantity correctly, but also selecting the correct unit of measurement. Your selection should be based on industry practice and what unit of measurement best represents how the work will be performed. For example, excavation work is usually done on a cubic yard basis because excavation work involves moving volumes of material. On the other hand, structural concrete is usually estimated on a square yard basis and not by the cubic yard basis ADOT uses to measure it for payment; however, most of the expense in structural concrete is in the formwork and not in the amount of concrete used. Selecting the correct unit of measurement is an important element in producing an accurate analysis.

Analyze the Construction of the Work

Construct the work in your mind. Write down all the different steps that have to be followed (continuously ask yourself who will do what, where, when, and how?). This is where your analytical thinking as a technician or engineer is of prime importance. One reason project supervisors' estimates are usually less than the contractor's on extra work is that Project Supervisors fail to take into account all the little hidden extras that add to the cost of the work (e.g., additional crane time may be needed to lift extra rebar from a delivery truck to a bridge deck).

Select the Crew Size, Equipment and Materials Needed to Complete the Work

Once you have decided how you're going to build the work and have broken it down into smaller, definable units, then it is simply a matter of selecting the appropriate resources for the work. This selection is based on judgment as well as availability of the needed resources.

Estimate Production Rates

Here a lot of judgment is involved and often historical data can be used. Some of the more experienced inspectors may be able to help estimate how long the work will take. Sometimes you just have to assume a rate. Two things to remember are that no one works a 60-minute hour or less than half a shift.

Calculate Direct Costs

Up to this point, we haven't even mentioned costs and yet a lot of analysis has already been done. Good cost estimates are often the result of understanding how to build the work (steps 1 through 4) more than having accurate numbers on costs. On the other hand, don't be afraid to call material suppliers and to use the contractor's payrolls to improve your accuracy.

Another source of historical cost information is RS Means Heavy Construction Cost Data. This cost guide is published yearly and contains unit cost information as well as information on production rates and crew sizes.

Direct costs usually include project overhead, but not home office overhead. Don't forget incidental costs for things like haul roads, water, and waste disposal.

Add up all costs:

- Labor which includes burden and fringes. The use of Certified Payrolls for actual employees' pay data and fringe amount is preferred. The labor plus burden is calculated on Wages x 1.35. Labor burden is the total of all indirect labor costs necessary for an employee to perform the work that they are hired to do. It includes Social Security and Medicare Tax, Worker's Comp (Insurance the employer must purchase), State and Federal Unemployment Insurance, training, paid holidays, use of vehicles, computers, PPE, office, office furniture, equipment, supplies, etc. Fringes are the non-take home portion of wages which include Pension/401K, paid vacation and sick leave, contributions to health insurance, etc. ADOT verifies Fringe benefit rates from certified payrolls.
- Equipment costs: Here the Rental Rate Blue Book (Equipment Watch) is invaluable
- Materials: The delivered cost of AB, pipe, concrete, etc.

Add Markups and Arrive at a Grand Total or Unit Price

Profit and overhead is calculated as 15% of the total of all Labor, Equipment and Material costs for work done by the prime contractor. Work done by subcontractors is calculated as 20% of the total (assume a proposal from subcontractor already includes his 15% P & OH mark up, whether stated or not. The prime contractor receives an additional 5% to make the total 20% only on the portion of the work done by the subcontractor.

This is cost estimating in its most general form. Think of it as a central theme with many variations since the type of work and the needs of the estimator often have a great influence on the way in which the estimate is carried out. Applying these basic steps in order, for even the most complex analysis, will improve your accuracy by keeping you focused on the cost analysis process rather than on the bottom-line result.

Negotiating

Subsection 104.03 and the partnering process should be viewed as a valuable tool to negotiate the contract change amount, if any. If the extra work is not covered by an existing item, the Resident Engineer and the contractor may be able to negotiate a new unit price for the work and establish a new item or items in the supplemental agreement. If the contractor proposes a new item or unit price, a detailed cost analysis must be provided as directed in Subsection 109.04(C). The cost analysis should include a breakdown of the estimated time for labor (including labor classifications) and the estimated costs of materials and equipment. The total cost of the extra work is divided by the units of work to arrive at a unit price for the work.

The contractor's cost proposal must be analyzed by a thorough review by the RE. The contractor's analysis should be compared with the RE's analysis. The RE should be completely satisfied that the contractor's cost analysis is equitable and fair before accepting it as part of the supplemental agreement. Both the contractor's and the RE's cost analysis must accompany the supplemental agreement package.

Some REs think that contractors try to take advantage of the Department when a change order arises. This is usually not the case. The contractor is no longer in a competitive bid situation after they're awarded the project, so there is no reason for them to assume unnecessary risk. This lack of risk taking is typically reflected in contractors' change order prices.

Authorization

Authorization Levels:

1. Resident Engineers: REs are authorized to approve changes to the contract that do not exceed $200,000. This authorization will include changes in contract specifications, design and unit price

adjustments. Contact and consensus with both the Project Manager and project designer will be required on design changes that are greater than $25,000. Project Managers should also be kept informed of all other significant changes. If the RE cannot reach a consensus with the Project Manager and designer on a change, then the issue should be immediately escalated.

2. District Engineer: The District Engineer will have authority to approve changes to the contract that equal or exceed $200,000 but are less than or equal to $1,000,000. This authorization will include changes in specifications, design, and unit price adjustments. Concurrence from the Project Manager and the designer will be needed on all design related changes. The approval of the State Construction Engineer is required for all Specification changes. In addition, the District Engineer may delegate this authority to the Assistant District Engineer. In the absence of the District Engineer, the State Construction Engineer will assume and may also delegate this authority.

3. Deputy State Engineer: The Deputy State Engineer will have authority to approve all supplemental agreements that exceed $1,000,000 but are less than $2,000,000. This authorization will include changes in specifications, design, and unit price adjustments. Concurrence from the Project Manager and designer will be needed on all design related changes.

4. State Engineer: The State Engineer will have the authority to approve all supplemental agreements that exceed $2,000,000 but do not exceed $25,000,000.. This authorization will include changes in specifications, design, and unit price adjustments.

5. ADOT Director: The ADOT Director will have the authority to approve all supplemental agreements that exceed $25,000,000.

When cumulative changes to the contract exceed 2% of the contract amount, a Resident Engineer or District Engineer must have concurrence from the State Construction Engineer. The easiest way to do this is to have the SCE initial the CRN. Nothing is triggered in the FAST system for this concurrence. The RE is responsible for monitoring the cumulative value of all changes to the original contract amount. The RE must verify the project budget can accommodate all supplemental agreement amounts by referencing the Finance Card found in the Contract Card of your FAST Desktop. If not, a Budget Increase Request must be submitted and approved by the State Construction Engineer.

Additionally, the FHWA should be notified If:

- A change order exceeds $1M
- There is an increase above 20%
- The addition of work is out of character or outside of the NEPA document

Signatures

The person approving for the State of Arizona (below the line) coincides with the dollar amount authorized. RE's sign <u>below the line</u> when the CO does not exceed $200,000 or include a time extension, because they are approving for the State of Arizona.

RE's sign above the line when the CO is over $200,000 and/or includes a time extension because the DE, Assistant DE, Deputy State Engineer, or the State Engineer sign below the line (according to their authority level), approving for the State of Arizona.

<u>NOTE:</u> The RE only needs to sign the CO once. They do not need to sign both above and below the line.

FHWA APPROVAL is required for all FHWA Full Oversight projects, aka PoDI (Projects of Divisional Interest). FHWA approval is also required on major change orders and claims (over $1 million, 20% of total project costs, work outside project limits, or major changes of scope). FHWA Full Oversight projects can be identified by the last letter

in the Project Number. N or S (National Highway System – NHS). X or F (non NHS). Project numbers that end in an A, T, or D are in the Certification Acceptance program. See the FHWA and ADOT Stewardship and Oversight Agreement for Arizona signed in effect April 2015.

Contacts For Supplemental Agreements

The authorization levels discussed previously apply to the financial approval of a supplemental agreement. Changes that require alterations to the specifications, ADOT design policy or design details have to be agreed upon by the appropriate ADOT technical section. Major design changes must receive technical authorization before the cost of the change can be approved. Any official letters, plan revisions or relevant documentation provided by the technical section should be included in the final supplemental agreement. Additionally, the technical contact must be documented in the Supplemental Agreement Tracking System (SATS) Contract Revision Notification (CRN) screen.

The ADOT technical managers include Project Management, Construction Group, Materials, Roadway, Environmental, Traffic Engineering, Engineering Technical Group, Right of Way and Bridge.

If any technical manager does not agree with the proposed Supplemental Agreement, the agreement must be escalated to the applicable Deputy State Engineer(s) for resolution and approval.

For all federally funded projects, the Federal Highways Administration needs to be advised that the supplemental agreement is being processed.

The District Engineer has authority to approve supplemental agreements for federal-aid projects in the certification acceptance program. Although FHWA does not need to approve these supplemental agreements, they do need to be advised that the supplemental agreement is being processed. FHWA contacts are required on all federal-aid projects not in the certification acceptance program. Any local government or agency participating on a project must also be contacted.

For any federally funded alternative delivery projects, the Federal Highways Administration must be advised that a supplemental agreement is being processed even if they are not participating in the associated cost of the supplemental agreement. This notification process requires a Contract Modification Request (CMR) be submitted by the RE, and be approved by FHWA prior to the contractor starting any work related to the supplemental agreement.

Additionally, local government or private agencies affected by changes made within a supplemental agreement must also be notified.

If applicable, the responsible Local Public Agency (LPA) should sign all supplemental agreements for contract changes they have agreed to participate in or pay for.

Escalation of Supplemental Agreements

Should there be an internal lack of consensus on any proposed supplemental agreement, the DE, RE, Project Manager, and the project management team should make every effort to reach a satisfactory solution. If necessary, the issue may be escalated to the State Construction Engineer or the Deputy State Engineer, who will then attempt to resolve the issue to the satisfaction of all concerned.

Documentation

Alternative Delivery Projects

For all Supplemental Agreements written on CMAR or Design-Build projects the approval process begins with the Resident Engineer initiating an Alternative Delivery Contract Modification Request form.

Contract Revision Notification Requirements for Supplemental Agreements

See Exhibit 109.04-1 Contract Revision Notification

The purpose of Contract Revision Notification Documents is to provide documentation that details ADOT approvals and contractor acceptance of contract changes. No payment can be generated until all required approval dates have been entered into the Contract Revision Notification Approvals SATS screen (and saved). The Initiation date is when the Resident Engineer reaches an agreement with the contractor to begin work, or directs the work to be done by Force Account. (See block "C" on the Timeline for Contract Modification diagram). The Contract Revision Notification is important because it documents that authorized approvals for contract changes have been obtained so that work and payment can proceed before a detailed Supplemental Agreement is signed as the official contract document. There are unique cases where emergency work necessary to provide for the safety and passage of public traffic, and such other emergency work necessary to mitigate damages to the facilities, is required. In these instances work may begin prior to having a cost agreed upon. For isolated instances when Supplemental Agreement work is discovered during times like night and weekend closures, and the work must be completed in the same shift, the contractor and the Resident Engineer shall document the work as if it were a force account.

The use of force account documentation is not intended to replace the Contractor's Cost Analysis or the Engineer's Independent Cost Analysis. The intent of the Specifications is not to track the work as a force account, and then convert it to a traditional Supplemental Agreement after the work is completed. Utilizing force account documentation for supplemental agreements puts the financial risk on the Department and not on the contractor as intended. Utilizing force account documentation for Force Account Supplemental Agreements should only be used in extenuating circumstances where work must start immediately due to public safety or the detriment of the project.

A force account (supplemental agreement) cannot be converted to a change order after the supplemental agreement has been created in SATS and/or payment has been made. A completed formal detailed Supplemental Agreement with exact cost shall be completed within 60 calendar days following the Initiation date on the Contract Revision Notification.

The Resident Engineer or their designee shall use the SATS program in the FAST Data Base to prepare the Contract Revision Notification Document. The following contacts will be made:

- The person authorizing the change (see "Authorization Levels" above)
- The State Construction Engineer and the Project Manager, if the Supplemental Agreement cost warrants (see "Authorization Levels" above)
- If the design was modified, the name of the registrant that was contacted as specified under "Sealing Change Orders" below
- The person contacted within the appropriate ADOT technical section if ADOT Standard Specifications, Special Provisions, or Standard Drawings were altered (see "Contacts for Supplemental Agreements" above)
- Federal Highway Administration:
    - Under current requirements with the ADOT/FHWA Agreement, FHWA personnel shall be kept informed of all changes to projects over $1 million on the interstate highway system.
    - For FHWA funded projects, a Contract Modification Request (CMR) may also need to be submitted and approved prior to submitting the CMR.

- Local government contacts

The original will be filed in the project files, with additional copies distributed to:

- Field Reports
- Local Government and/or FHWA as applicable
- All other contacts specified in the Contract Revision Notification

Office Procedure For Contract Revision Notification (CRN)

1. Start the coordination for the Contract Revision Notification as soon as you know that a contract change will occur. A guide to assist in creating CRN's & SA's can be found in the SATS User Guide.
2. As soon as you feel the document is complete, advise the RE for a final review to make any needed edits.
3. Place an electronic copy of the unsigned completed CRN in the project file.
4. Send the document to be initialed by the Resident Engineer and their upline manager via DocuSign.
5. The Supplemental Agreement Checklist found at Field Reports reference site and shall be attached as the front cover page of this package.
6. When the supplemental agreement document has been completed, attach a copy of the Contract Revision Notification document behind the Supplemental Agreement Checklist cover page.
    - NOTE: To avoid issues during project closeout, the current FAST Program requires the Contract Revision Notification (CRN) and the Supplemental Agreement (SA) dollars to match. If the final negotiated cost of the supplemental agreement has changed from the original estimated cost included in the original CRN, the estimated CRN dollar amount shown in FAST must be changed to reflect the final negotiated cost on the SA. The revised CRN should then be reprinted and resubmitted for signatures prior to attaching the CRN to the SA document.

Supplemental Agreement Forms

Immediately following distribution of the Contract Revision Notification Documents, the RE or his designee should proceed with the preparation of the formal supplemental agreement. The completed formal supplemental agreement will be completed 60 calendar days following the Initiation date on the Contract Revision Notification.

The text of a change order (see Exhibit 109.04-2 Change Order Agreement for Non-Compensatory Time) consists of:

- The Request (a list of the work items Increased, Decreased, or Created)
- The Reason for the work
- Specifications/Stipulations added, modified, or deleted to the contract. They can either be attached or referenced
- Pay item adjustments (Increased, Decreased, or Created item list with unit of measure and cost effects of the work

The text of a Change Order for an extension of contract time (see Exhibit 109.04-3 Procedural Change Order [Non-Compensatory] consists of:

- The Request – an extension of contract time
- The Reason for the additional time
- Specifications/Stipulations added, modified, or deleted to the contract. They can be either attached or referenced
- Pay item adjustment for a compensatory time extension only (establish Pay Item 1080800 Contract Time Extended Overhead at EACH/DAY cost established in agreement)

- The signed "Request for Extension of Time" form must be attached. If compensatory time is granted, then an analysis of the overhead per day cost, prepared in consultation with the State Construction Engineer must be included

Similarly, the text of a force account work request (see Exhibit 109.04-5 Force Account Agreement) consists of:

- The Request; a description of the extra work
- The Reason for the work
- The cost breakdown of the estimated labor, materials, and equipment required to perform the extra work

The RE should also consider using drawings, photographs, and quotations from the specifications or developing unique provisions to make supplemental agreements clearer and more authoritative.

An explanation of rate establishment may also be required on a force account work request if the hourly rate for a particular type of equipment is not covered in the Rental Rate Blue Book for Construction Equipment.

A Supplemental Agreement is usually signed first by the contractor, then sent to the RE for signature. The supplemental agreement is then sent to the District office for approval and signature (if needed), and to FHWA if a PODI. The supplemental agreement and all attachments are then forwarded to Field Reports for processing. All of this can be done through the SA template on Docusign.

Use the Supplemental Agreement exactly as it is printed from SATS. Do not modify it by clipping, cutting & pasting, or montaging. All printed pages must be signed (executed) by all parties to the Supplemental Agreement.

Each letter agreement of authorization will include the following information (see Exhibit 109.04-6 Letter Agreement):

- The TRACS number, project number and date of authorization
- A description of the work
- Reason for the work authorized
- The Lump Sum cost of the alteration

The Resident Engineer must make a thorough analysis of the contractor's cost proposal and be completely satisfied that it is equitable before negotiating the cost of the Supplemental Agreement.

The Resident Engineer's review will be in the form of a completely independent cost analysis, which will be attached to the Letter of Agreement package and forwarded to Field Reports with a copy retained in the project office.

The person signing for the contractor for all Supplemental Agreements must be listed on the Authorized Signature Form.

Arizona Department of Transportation

Infrastructure Delivery and Operations Division

Contract Revision Notification

04/15/2022

Approval Date: 5/5/2021 (RE)

To: Brenden Foley
Asst District Engineer

From: Brent Allman
Resident Engineer

Tracs #	Project #	Project Name
F024301C	160-A-(209)T	WARRIOR DRIVE - MP 324.5

Contractor	Contract Amt	Contingency %	Contingency Adjustment %	Contingency Amt
Mountain High Excavating, LLC	$707,699.00	5 %	0 %	$35,384.95

Estimated SA Amt	Estimated Percentage of Contract	SA Amt to Date	SA % of Contract to Date
$29,822.73	4.21 %	$14,696.00	2.08 %

Agreement Type	Document Num	SATS Doc Num	Initiation Date
Change Order		2	05/03/2021

Reason Code Plans, Revisions, and Oversights

Brief Description
Seeding and Wattles

SA Description
During construction it was discovered that seeding and wattles would be required for final stabilization due to the actual area of disturbance. This CO would compensate the contractor for the additional work. A time extension of seven calendar days has been been determined as the critical path is effected due to the additional work.

Prime Designer
ADOT Traffic Design

Contacts

Name	Title	Date Contacted	Comments
Ammon Heier	Federal	04/26/2021	via email
David Casselbury	Statewide Landscape Architect	04/26/2021	via email
Robert Stevens	District Env. Coord.	04/26/2021	via email
William P. Fay	State Construction Engineer	04/13/2021	concured

Exhibit 109.04-1 Contract Revision Notification

Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
04/15/2022

Change Order No. 2

Approval Date: 5/6/2021 (RE)

Tracs No: F024301C Project No: 160-A-(209)T Org: 4352 NorthCent

Project Name: WARRIOR DRIVE - MP 324.5 Contractor: Mountain High Excavating, LLC

X Federal Aid
__Non-Federal Aid

Request:
To create ITEMs: 8050003 Seeding (Class II), 8101021 Erosion Control (Wattles) (9"), 9010002 Mobilization

Reason:
During construction it was discovered that seeding and wattles would be required for final stabilization due to the actual area of disturbance. This CO will compensate the contractor for the additional work. A time extension of seven calendar days is warranted and agreed to, as the critical path is affected due to the additional work.

Specifications/Stipulations:
This Supplemental Agreement shall comply with Sec 8050003 or as directed by the engineer. This Supplemental Agreement constitutes full and final compensation for any and all costs, direct or indirect, related to this project, including but not limited to time, labor, services, overhead, profit, and damages. By executing this Supplemental Agreement the contractor expressly agrees to hold ADOT harmless and expressly waives the right to pursue any further claims or requests for compensation related to this contract modification. All other outstanding terms and conditions of the original contract and specifications are still valid towards this supplemental agreement.

Pay Item Adjustments

Sec	Item Nbr	Description	Unit	Unit Price	Quantity	Amount
1	8050003	SEEDING (CLASS II)	ACRE	6,010.92	4.000	$24,043.68
1	8101021	EROSION CONTROL (WATTLES) (9")	L.FT.	10.60	400.000	$4,240.00
1	9010002	MOBILIZATION	EACH	1,539.05	1.000	$1,539.05
					Total	**$29,822.73**

Date: _____ Date: _____ Date: _____ Date: _____

_____ _____ _____ _____
Resident Engineer City/County Engineer Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____ Date: _____ Date: _____

Approved for:
Mountain High Excavating, LLC
Contractor

Approved for State of Arizona

___Approved without Federal participation
___Approved with Federal participation

By:_____ By:_____ By:_____

Page 1 of 2

Exhibit 109.04-2a Change Order Agreement (Non-Compensatory Time)

Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
04/15/2022

Change Order No. 2

Approval Date: 5/6/2021 (RE)

Tracs No: F024301C **Project No:** 160-A-(209)T **Org:** 4352 NorthCent

Project Name: WARRIOR DRIVE - MP 324.5 **Contractor:** Mountain High Excavating, LLC

	Plus	Minus
Total Difference:	**$29,822.73**	

An Extension of Contract Time is Authorized for 7 days as a result of this Supplemental Agreement.

Date: _____ Date: _____ Date: _____ Date: _____

Resident Engineer | City/County Engineer | Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____ Date: _____ Date: _____

Approved for:
Mountain High Excavating, LLC
Contractor

By:_____

Approved for State of Arizona

By:_____

___Approved without Federal participation
___Approved with Federal participation

By:_____

Page 2 of 2

Exhibit 109.04-2b Change Order Agreement (Non-Compensatory Time)

DocuSign Envelope ID: 12FCA4AA-4562-443F-B85C-CF4B0547A30B

AH JB BA

ADOT

ARIZONA DEPARTMENT OF TRANSPORTATION

REQUEST FOR EXTENSION OF TIME

Project No. 160-A(209)T **TRACS No.** F024301C **Request No.** 001

Project Name Tuba City Four Corners Highway (US 160) **Contractor** Mountain High Excavating, LLC

Working Days ☐
Calendar Days ☑
Fixed Date ☐

Total Days Requested 7 **Requested Amended Fixed Date** 7/25/2021

The work has been impacted for the following **attached** reasons. Include a schedule (CPM if applicable) detailing the impact to the contract. **ALL ATTACHED JUSTIFICATION DOCUMENTS MUST SHOW TRACS NUMBER, REQUEST NUMBER AND CONTRACTOR.**

Compensatory Days Requested N/A Non-Compensatory Days Requested 7

Contractor Signature Project Manager 4/1/2021
Title Date

Joseph B. Dutson
Contractor Printed Name

The days claimed and reasons thereof have been studied. If fewer days are recommended than claimed, attach explanation.

Compensatory Days Recommended N/A Non-Compensatory Days Recommended 7

NOTE: If compensatory days are requested, attach the consultation e-mail FROM the Assistant State Engineer for Construction.

SM DocuSigned by: Brent Allman 4/26/2021
Sr./Resident Engineer 0E15B742EA9420 Date

NOTE: This recommendation must be sent to the District Engineer for approval.

Compensatory Days Approved #N/A $ N/A Daily Rate $ N/A Total Approved Non-Compensatory Days Approved 7

DocuSigned by: Audra Merrick 4/26/2021
District Engineer Date

BA 4/26/2021

NOTE: If approved date differs from Contractor's request, return for concurrence.

Contractor Concurrence Signature Title Date

Contractor Concurrence Printed Name

IF THE CONTRACTOR DOES NOT AGREE THE ESCALATION PROCESS MUST BE FOLLOWED.

After a review of the facts,
an additional _______ Compensatory Days and ______ Non-Compensatory Days are approved.

Federal Highway Administration Date

After Signatures, a Change Order must be executed in accordance with Standard Specification 108.08.
The Request for Extension of Time and all documentation must be attached to completed Change Order. 05/2013

Exhibit 109.04-2c Change Order Agreement (Non-Compensatory Time)

Arizona Department of Transportation
Intermodal Transportation Division
Supplemental Agreement
03/27/2015

Procedural Change Order No. 13

Approval Date: 1/16/2015 (em)

Tracs No: H615501C **Project No:** STP 188-A(001)B **Org:** 1111
Globe

Project Name: WHEATFIELDS - US 60 **Contractor:** FNF CONSTRUCTION, INC.

_X_ **Federal Aid**
__ **Non-Federal Aid**

Request:
To extend contract time by Thirty (30) Non-Compensable Working Days

Reason:
Avery Big Construction Company requested Thirty (30) Non-Compensatory Working Days be added to the contract time because of (put a short synopsis of reason here: e.g.: flooding in bridge foundation work area) as detailed in the attached Request for Extension of Time form and attached documents. The Department agrees with Avery Big Construction Company and will allow Thirty (30) Non-Compensatory Working Days be added to contract time.

Specifications/Stipulations:
Attachment A - Request for Extension of Time form signed by the District Engineer and Contractor.

This Change Order constitutes full and final compensation related to this extension of contract time as agreed to in the attached Request for Extension of Time form as described herein. By executing this Change Order, Contractor expressly waives the right to pursue any further claims or requests for compensation related to this contract modification, including, but not limited to, materials, labor, services, overhead, profit and damages.

Date: _____ Date: _____ Date: _____ Date: _____

Resident Engineer City/County Engineer Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____ Date: _____ Date: _____

Approved for:
FNF CONSTRUCTION, INC.
Contractor

By: _____

Approved for State of Arizona

By: _____
District Engineer

__Approved without Federal participation
__Approved with Federal participation

By: _____

Exhibit 109.04-2d Procedural Change Order (Non-Compensatory Time)

Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
06/07/2023

Force Account No. 8

Approval Date: 11/19/2021 (RE)

Tracs No: F012101C Project No: 101-B-(213)S Org: 4678 Central

Project Name: I-17 - PIMA RD Contractor: COFFMAN AMES JOINT VENTURE

__Federal Aid
X Non-Federal Aid

Request:
To create FA #08 – Repair Damaged Conduit at WB SR101 and Hayden:

Reason:
At approximate Sta. 1900+00 LT Sturgeon discovered a separated conduit coupler between conduit run #6 & #7. The damage to the conduit, the conductors and possibly the fiber contained within, was caused by poor craftsmanship and the improper use of a conduit coupler not designed for this type of application. This work was not performed by this project's electrical contractor, nor was the damage a direct result of any work performed by the contractor on the SR101 Design Build Project.

This repair work will consist of repairs to the 3" conduit connection with a project approved slip repair coupling, replacement of approximately 9,600 LF of Loop Detector Lead-in-cable and if necessary, the replacement of approximately 600 LF of 12 Strand Fiber.

Specifications/Stipulations:

All work shall comply with the SR101 I-17 - Pima/Princess contract documents including but not limited to:

- DR 309 - Traffic: Signals and Lighting
- DR 313 - ITS Improvements
- DR 2000 - Intelligent Transportation System (ITS)

Request for Information:
- RFI-226

Plan Sheets:
- T-22.114

Date: _____ Date: _____ Date: _____ Date: _____

_____ _____ _____ _____
Resident Engineer City/County Engineer Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____ Date: _____ Date: _____

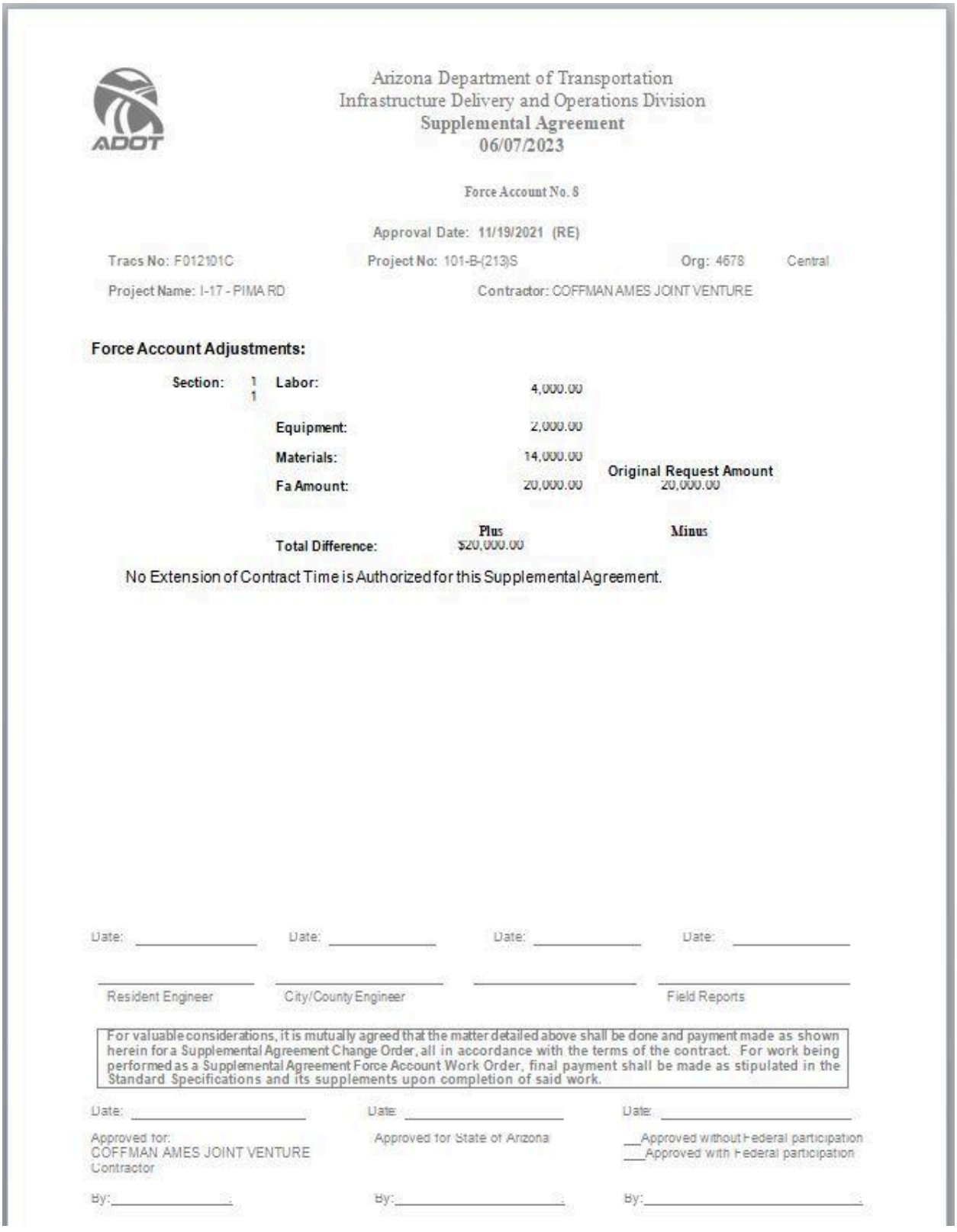
Approved for:
COFFMAN AMES JOINT VENTURE
Contractor

Approved for State of Arizona

__Approved without Federal participation
___Approved with Federal participation

By:_____ By:_____ By:_____

Exhibit 109.04-2e Procedural Change Order (Non-Compensatory Time)



Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
06/07/2023

Force Account No. 8

Approval Date: 11/19/2021 (RE)

Tracs No: F012101C Project No: 101-B-(213)S Org: 4678 Central

Project Name: I-17 - PIMA RD Contractor: COFFMAN AMES JOINT VENTURE

Force Account Adjustments:

Section:	1 1	**Labor:**	4,000.00	
		Equipment:	2,000.00	
		Materials:	14,000.00	**Original Request Amount**
		Fa Amount:	20,000.00	20,000.00
			Plus	**Minus**
		Total Difference:	$20,000.00	

No Extension of Contract Time is Authorized for this Supplemental Agreement.

Date: _____ Date: _____ Date: _____ Date: _____

_____ _____ _____ _____

Resident Engineer City/County Engineer Field Reports

For valuable considerations, it is mutually agreed that the matter detailed above shall be done and payment made as shown herein for a Supplemental Agreement Change Order, all in accordance with the terms of the contract. For work being performed as a Supplemental Agreement Force Account Work Order, final payment shall be made as stipulated in the Standard Specifications and its supplements upon completion of said work.

Date: _____ Date: _____ Date: _____

Approved for:
COFFMAN AMES JOINT VENTURE
Contractor

Approved for State of Arizona

___Approved without Federal participation
___Approved with Federal participation

By: _____ By: _____ By: _____

Exhibit 109.04-5 Force Account Agreement

Arizona Department of Transportation

Infrastructure Delivery and Operations Division

Contract Revision Notification

07/14/2023

Approval Date: 11/9/2022 (RE)

To: Kirk Kiser
Asst District Engineer

From: Sara Howard
Senior Resident Engineer

Tracs #	Project #	Project Name
F042401C	303-A-NFA	51st Ave and 43rd Ave Interch

Contractor	Contract Amt	Contingency %	Contingency Adjustment %	Contingency Amt
FISHER SAND & GRAVEL CO.	$70,057,597.22	5 %	0 %	$3,502,879.86

Estimated SA Amt	Estimated Percentage of Contract	SA Amt to Date	SA % of Contract to Date
$1,173.77	0 %	$.00	0 %

Agreement Type	Document Num	SATS Doc Num	Initiation Date
Letter of Agreement		1	11/08/2022

Reason Code Other

Brief Description
Partnering Workshop Cost

SA Description

The Partnering Workshop for the project was held on August 31, 2022. The cost of the catering was $2,347.54. The Department and the Contractor will equally share the catering cost per paragraph 104.01 (B) of the Standard Specifications. This letter of Agreement will compensate the Contractor for the amount of $1,173.77.

Prime Designer
Jacobs Engineering Group Inc.

Exhibit 109.04-6a Letter Agreement

Arizona Department of Transportation
Infrastructure Delivery and Operations Division
Supplemental Agreement
07/14/2023

Letter of Agreement No. 1

Approval Date: 11/9/2022 (RE)

Tracs No: F042401C Project No: 303-A-NFA Org: 4676 Central

Project Name: 51st Ave and 43rd Ave Interch Contractor: FISHER SAND & GRAVEL CO.

__Federal Aid
_X_Non-Federal Aid

Request:
To create:
Item 9240101 Miscellaneous Work (Resident Engineer Use Only)

Reason:

The Partnering Workshop for the project was held on August 31, 2022. The cost of the catering was $2,347.54. The Department and the Contractor will equally share the catering cost per paragraph 104.01 (B) of the Standard Specifications. This letter of Agreement will compensate the Contractor for the amount of $1,173.77.

Specifications/Stipulations:
This supplemental agreement is to compensate the contactor half of the partnering costs in accordance with 104.01 (B)

Pay Item Adjustments

Sec	Item Nbr	Description	Unit	Unit Price	Quantity	Amount
1	9240101	MISCELLANEOUS WORK (RESIDENT ENGINEER USE ONLY)	L.SUM	1.00	.000	$.00
		Subitem: 1 - Partnering Costs		1.00	1,173.770	$1,173.77
					Total	**$1,173.77**

	Plus	Minus
Total Difference:	**$1,173.77**	

No Extension of Contract Time is Authorized for this Supplemental Agreement.

Approved for ADOT

_____ _____
Sara Howard Date

Approved for: FISHER SAND & GRAVEL CO.

_____ _____
Contractor Signature Date

Cc: Field Reports

Page 1 of 1

Exhibit 109.04-6b Letter Agreement

ARIZONA DEPARTMENT OF TRANSPORTATION

OFFICE MEMO

08/23/2023

TO:	ELISE MAZA Finance Administrator		
		R.E. Name Resident Engineer	Date:
FROM:	BILL FAY State Construction Engineer Construction Group, MD 172A		
		ADE or DE Name Assistant District Engineer	Date:
THRU:	MATT MOUL Deputy State Engineer Statewide Operations, 102A		
RE:	Project #, TRACS # Project Name Project Location		
UNIT:	Unit No.		
Funding Source:	Be Specific - could be "Contingency" or "City of XX" or??		

Original Contract Amount "Construction":	1,131,980.00	
Five Percent Contingency:	56,599.00	
Public Relations:	5,000.00	
CE:	192,381.00	17%
Incentives:	-	
Other:	4,691.00	
Post Design:	9,056.00	
ICAP	138,571.00	
Original Construction Budget:	**1,538,278.00**	
Previous Requested Budget Increase(s)	227,562.72	
Revised Construction Budget:	**1,765,840.72**	
Actual Contractor Pay:	1,254,796.24	
Actual Other Construction:	387.82	
Actual Public Relations:	10,679.96	
Actual Total CE:	321,382.05	28.39%
Actual Post Design:	9,029.47	
Actual ICAP Charges	148,123.82	
Total Charges:	**1,744,399.36**	
Contract Work Remaining / Overruns:	25,000.00	
Additional Public Relations:	-	
Additional CE Costs:	15,000.00	1.33%
Additional Post Design:	5,000.00	
Additional Suppl. Agree:	-	
Additional Costs:	-	
Proposed New Construction	**1,641,275.54**	

Budget:

Requested Construction Amount:	**14,005.82**	**ICAP Request 10.7%**	**1,498.62**
Total Requested	**15,504.44**	**$ 15,504.44**	**$ -**
		FA Request	NFA Request

Reason for Increase:

Be specific, do not use abbreviations. If Local Government Project, submit any written documentation from LPA agreeing to cover increase.

I recommend that the budget for this project be increased to accommodate this additional work.

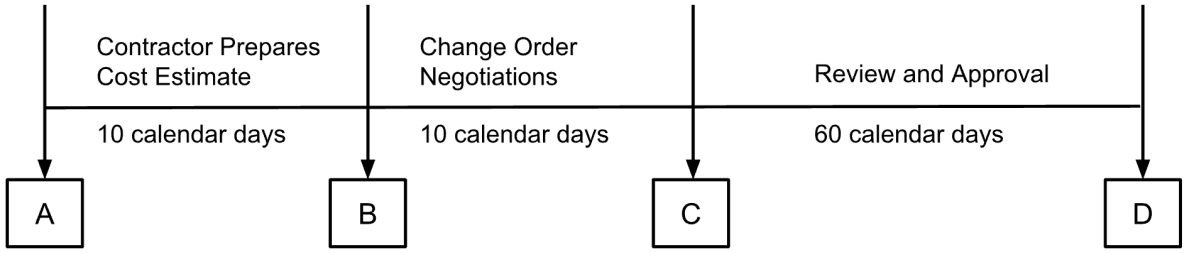
Bill Fay
State Construction Engineer — Date:

Matt Moul
Deputy State Engineer — Date:

Elise Maza
Resource Administration — Date:

Exhibit 109.04-7 Request for Budget Increase

Timeline for Contract Modification



A. The contractor or ADOT identifies additional work that is not included in the contract:

1. The contractor is asked to prepare a detailed cost estimate or unit prices for the work, Std Spec 109.04C specifies 10 calendar days for the contractor to prepare a cost estimate
2. ADOT will prepare an independent cost analysis
3. If work is required to start prior to "C", ADOT starts documenting the work as if it were Force Account

B. Cost Estimate is received from the contractor:

1. Start Change Order negotiations [see 109.04(C)]
2. If the cost estimate is not received from the contractor on time or if a contract price adjustment cannot be agreed upon, the work is processed as a Force Account and the Resident Engineer will prepare the Force Account request. [see 109.04(D)]

C. Initiation Date:

1. ADOT and contractor agree to proceed as either a Change Order or Force Account.
2. Contract Revision Notification Document completed for a Force Account or a Change Order.

D. Change Order is completed and signed as the official contract document.

Sealing Change Orders

Resident Engineers are responsible for sealing Change Orders only when they have been in responsible supervisory charge of a design issue. Design issues include changes to or the creation of drawings or technical specifications covering the quality or performance of the finished construction work. For example, seals are not required for contract administrative issues such as quantity, cost, and time adjustments.

When the change is to a plan sheet/drawing sealed by a Professional Engineer or Landscape Architect, the RE shall coordinate with the registrant. When consulting designers develop changes, they shall send sealed drawings or specifications to the RE for inclusion with the Change Order. When a value engineering proposal requiring new drawings is submitted, it shall be sealed by the contractor's registered engineer prior to final approval of the proposal. When an issue has been escalated beyond the Resident Engineer, it shall be sealed by the responsible registrant making the final decision. Drawings and specifications must be sealed in accordance with Article R4-30-304(A)(3) of the Code & Rules of the Arizona State Board of Technical Registration.

All Change Order forms must originate from and be tracked by the RE in the same manner as all other Change Orders. Any new or revised sealed drawings or specifications shall be attached to the Supplemental Agreement forms or referenced on the first page of the form.

Force Account Work

Procedures

On a Force Account the Department has a right to direct the work. In other words, Inspectors, Project Supervisors, and the Resident Engineer can control how the work is performed and what labor, materials and equipment the contractor uses. They can also decide what to include and exclude on a Force Account. The contractor's foreperson should still retain day-to-day supervisory control over the labor and equipment to ensure their efficient and economical use.

Inspectors must track daily the contractor's labor and equipment hours as well as the materials used for Force Account work. The Force Account Daily Report form is used to track Force Account work. The Force Account Daily Report is found in PEN on the Daily Diary screen or in the Forms section of this manual.

A copy of the ADOT Inspectors Force Account Daily Report is given to the contractor. The contractor prepares the contractors Force Account Weekly Detail which is located on the contractors Website under Forms. Once completed the detail is submitted to the field office along with certified payrolls, Equipment Watch RRBB for each piece of equipment used, equipment rental invoices, and material invoices. The field office reviews the detail and back-up documentation attached. If there are charges on the detail that are not accompanied by the proper documentation or if information is incorrect on the detail, note the discrepancies and notify the contractor. Do not make the payment until the detail is accurate and complete.

The contractor shall use the 'Prime Contractor Force Account Weekly Detail Summary Sheet' when submitting any payment requests associated with Force Account Supplemental Agreements. This form is to be filled out and submitted by the prime contractor; not the ADOT Field Office. The ADOT Field Office will make no Force Account payments to contractors unless they submit a complete recap and provide all supporting documentation of associated costs utilizing the prime contractor Force Account Weekly Detail Summary Sheet. The prime contractor shall submit the Prime Contractor Force Account Weekly Detail Summary Sheets to the ADOT Engineer within 30 days following the end of each week of force account work, If the Detail Sheets have not been submitted within 90 days of the work week, an approval by the State Construction Engineer must be obtained prior to any payment being made by the field office to the contractor.

Partial payments for material on hand are not allowed on force accounts.

Force Account details are to be submitted to field reports no later than 5 days after the payment is made.

Force Account Markups

Hourly payroll labor rates (including the hourly fringe benefit amount) are multiplied by 1.5 to arrive at a gross regular pay rate for labor used on a Force Account. This 50 percent markup on labor is intended to cover the contractor's expenses for:

- Payroll taxes
- FICA
- Social security
- Medicare
- Workers compensation
- Liability insurance
- Project overhead and profit (including the administrative overhead for the Force Account)

No additional markups are allowed for the contractor's labor costs, even if the contractor can prove that actual costs for the expenses listed above are greater than the 50 percent markup.

Subsistence and travel allowances paid to the worker are not allowed this 50 percent markup.

The subcontractor work and the costs of materials supplied to a force account are also marked up to offset the contractor's administrative and handling costs. See Subsections 109.04(D)(7).

Outside rented equipment is eligible for reimbursement at the invoiced rate plus a 10 percent markup, plus the hourly operating cost (HOC). [(Rental Invoice X 1.10) + HOC]. No stand-by time is reimbursed to the contractor for outside rented equipment.

Should the Force Account have an owner-operator, the owner of a truck or water truck can be treated as an owner-operator only when the person who owns the truck is the one driving it. For example, if the contractor hires Steven Red of Big Red's Trucking to haul material, then Steven Red has to be the driver of the truck. The truck must be registered to Steven Red and a subcontract will be required. Steven Red cannot hire Joe Smith to drive Steven Red's truck and be considered an owner-operator.

Administering Force Accounts

Refer to ADOT's Force Accounting (TCH 3042) course for information on documenting and processing Force Account work. Registration for the course can be done through the ADOT Learning and Development intranet website on the ADOTNet.

The Rental Rate Blue Book is available on the ADOTNet located on the Construction Group intranet. Each user will need to obtain login credentials, provided by Equipment Watch, to view and lookup blue book rental rates. There is a link in the Construction Group intranet to "Request Access to RRBB".

109.05 Eliminated Items

Both 109.05 and 102.06 allow the Department to eliminate contract items (items not used – quantities reduced to zero). If items are not used by the Department, the contractor may request an equitable adjustment in the contract amount in accordance with Subsection 108.11.

It is very important for the Resident Engineer to notify the contractor in writing as soon as possible about an eliminated item. This ensures the contractor will stop any further work on the item. It is important for the contractor to immediately notify any subcontractors or materials suppliers affected by the elimination so they can stop any related work.

Under 108.11, the Department allows the contractor, subcontractors, and affected Material Suppliers to recover any direct expenses related to an eliminated item up to the notification date. Such expenses may include:

- Materials already fabricated that cannot be returned or used elsewhere, e.g. custom cut and bent rebar
- Restocking fees for materials already delivered to the contractor
- Labor time used in producing shop drawings, cut sheets, and other preparation costs directly related to the eliminated item
- Charges for delivering or picking up materials
- Plant setup or mobilization efforts for the eliminated item
- Reasonable profit and direct overhead for expenses incurred to date

Lost profit, lost home office overhead, and any other money lost due to the eliminated item cannot be recovered. Even if the contractor claims the eliminated item contains a disproportionate amount of overhead, profit, or uncut subcontract work, the item should be eliminated at its contract unit price (see Subsection 109.03). Only actual expenses directly related to the eliminated work should be added back into the contract.

109.06 Partial Payments and Retention

All contractor pay estimates are generated as a PDF and Docusign is used for all signatures required.

Monthly Progress Payments

Payment Procedures

Construction progress estimates are prepared monthly, compensating the contractor for work performed and completed and for materials furnished during the preceding month. The monthly cutoff date is 10 business days (excluding state holidays) prior to the third Wednesday of the month. The progress estimates are due at Field Reports Section by noon on the 5th working day after the monthly cutoff date. The contractors are paid on the third Wednesday of the month. The Monthly Estimate and Contractor Pay dates are shown on the ADOT calendar.

The Department does have the right to withhold part or all of the monthly progress payments if the project work or project progress is unsatisfactory or required certifications have not been received. If the Resident Engineer is suspicious of the contractor's ability to complete the project, a meeting with the contractor and the District Engineer should be held to discuss the issue before any payments are withheld (also refer to Subsection 108.04 of this manual on project delays).

There are unique situations where cash flow payments may be made to the contractor in order to advance certain aspects or elements of work. A Supplemental Agreement is required to be generated in these situations. In order to maintain statewide consistency, approval is needed from the State Construction Engineer or the Assistant State Construction Engineer prior to the generation of the Supplemental Agreement for a cash flow payment.

Work performed under a supplemental agreement cannot be paid for until a pay item is established in CPE. Force account documentation shall be submitted to Field Reports in the same month payment is made. Please ensure that all documents are submitted to Field Reports in a timely manner. Payment may be made if emergency approval has been obtained in accordance with Subsection 109.04 of this manual.

If a supplemental agreement is considered "not eligible" for federal assistance, then the items included in the agreement must be shown in the non-FA portion of the monthly estimate.

Prescribed penalties for work items failing to meet specification requirements (e.g. PCCP smoothness or compaction on end-product AC) do not require a supplemental agreement. The field office creates a separate pay item found on the Spec. Pay Item List located in Chapter 12 and may notify the contractor in writing of the penalty adjustments. The same procedure applies to contract bonuses.

Agreed upon penalties not prescribed in a specification require a Procedural Change Order. The field office creates Spec. Pay Item 1090035 to apply the penalty.

Lump sum items in the original contract may be paid for on the monthly estimates if the amount of work, in the opinion of the Resident Engineer, is of sufficient magnitude to warrant partial payment. For lump sum structures, the contractor should submit an estimate of the quantities desired for partial payment at least two days prior to the cut-off date (see Subsection 109.10).

When the monthly progress payment is zero (negative and positive payment offsets) or negative, an estimate still needs to be saved and transmitted to Field Reports. For a negative estimate, the prime contractor needs to let the Department know how they would like that processed, whether writing a check or having it taken out of another current estimate.

Documenting Payment

Quantities developed for the monthly progress estimate should be based on sound engineering procedures rather than on arbitrary selection of quantities that help expedite payment. See Subsection 109.01 of this manual and the Pay Item Documentation for Inspectors cited in the references at the end of this chapter for further information on documenting pay quantities.

The monthly pay estimates are prepared on a computer program titled, Construction Progress Estimate. Pay item quantities taken from the Inspectors' diaries are entered into the program, which prepares a pay estimate for the Department.

As the pay estimate is prepared, the importance of entering only quantities documented in a daily diary cannot be overemphasized. Pay quantity entries and other entries should not just appear on the progress estimate. Sufficient backup documentation, e.g. diaries, supplemental agreements, invoices, and others, needs to support each entry.

If corrections need to be made for previously paid quantities that are incorrect, the corrections need to be documented (typically in a diary). All payment documentation must be kept as part of the project records and may be subject to periodic audit.

When preparing the monthly progress estimate, the Resident Engineer and the contractor's superintendent should review all quantities of work completed. Should there be pay item quantities on which the two parties disagree, the disagreement needs to be resolved (through escalation if needed) prior to transmittal of the next month's estimate. Before transmitting the estimate to Field Reports, the RE must assure there are enough funds to process. A supplemental monthly payment estimate may be transmitted if resolution occurs early within the next monthly payment period and considerable payment is involved. The subcontractors and Material Suppliers should be supplied with copies of the monthly progress estimate and/or MPT Traffic Control Sheets upon request.

Supplemental Estimates

Contact Field Reports for further instruction if there is a need to produce a supplemental estimate.

Payment Reporting and Sanctions

The contractor shall report on a monthly basis indicating the amounts that have been paid to all Reportable Contracts. Reportable Contracts is defined as any subcontractor, of any tier, DBE or non-DBE, whose work is performed on behalf of the prime contractor. The prime contractor is to report all payments made to the Department's web-based DBE & OJT Online Reporting System (DOORS) website. The reporting for payments made on all Reportable Contracts shall be recorded by the 15th day of the current month for all payments made from the previous month's monthly estimate.

If a zero or negative estimate is saved, the Field Office or the contractor needs to reach out to BECO to have an audit opened for the reporting month.

Example: Work performed in July is paid on the July Monthly Estimate. The July Monthly Estimate payments will be recorded on the August Audit in DOORS. The deadline for all reportable contracts to be entered into DOORS for the August Audit is September 15th.

For each month that a contractor fails to submit timely payment information in DOORS:

$5000.00 will be retained as sanctions from the monies due to the contractor regardless of how many reportable contracts were not made for that month

After 90 consecutive days of non-reporting, the sanctions will increase to $10,000.00 for each subsequent month that payment was not reported.

Sanctions are to be applied in the same month that non-reporting takes place, regardless if the sanction is being escalated by the contractor.

Only the State Engineer for Construction has the authority to waive payment reporting sanctions.

Prompt Payment

For any prompt payment questions or sanctions the Field Office is to contact BECO.

109.07 Partial Payment for Material on Hand

Subsection 109.07 provides a list of contract items that are eligible for a partial payment when the materials needed to construct those items are stockpiled by the contractor or a materials supplier. The partial payment factor is applied to the unit price of the item.

To qualify for a partial payment on stockpiled materials, the following conditions must be met.

- The Resident Engineer must be satisfied with the progress of the project
- When applicable, the stockpiled material should have been tested and the material must have passed the test(s)
- When applicable, acceptable certificates of compliance for the material have been received by the Department
- The material is stockpiled on the project, or if stockpiled off the project (including commercial material sources), the material is located in a separate area away from the main inventory

The purpose of this partial payment is to promptly compensate the Material Suppliers for materials produced for the project. The intent is not to finance their inventory. Once a partial payment is made, the Material Supplier should not be allowed to sell the material to other customers.

Resident Engineers have the authority to deny partial payment for material stockpiled at commercial sources if the material cannot reasonably be separated from the main inventory, or if the Resident Engineer suspects the Material Supplier is in financial trouble. In either case, the material should be delivered to the project site or the contractor’s yard before a partial payment is made.

When material is being produced or stockpiled on private property, the contractor must submit a letter to the Resident Engineer from the private property owner granting permission to produce or stockpile the material (refer to Subsection 107.11 of this manual).

Partial payments for materials not listed in the table can be made without the need for a supplemental agreement. The previous conditions for partial payment eligibility must be met, and both the Resident Engineer and contractor must agree on a partial payment factor. Partial payment for lump sum items or items measured individually (each) are to be based on Material Supplier's invoices or actual cost records.

If an item receives a material on hand payment and the quantity underruns in the field the inventory must be depleted in the FAST system. For example: the bid schedule shows 1,000 LF of fence and the contractor asks for the material payment for 1,000 LF of fence. After the item is complete only 900 LF of fence is needed, the material paid previously needs to be taken back since it wasn’t installed.

109.09 Acceptance and Final Payment

Once a final acceptance letter has been written for the project (see Subsection 105.20 of this manual), the Field Office can begin to close out the project.

Closing out a project involves verifying that all paperwork is complete for the project and preparing the final estimate.

Semi-Final Estimate

As the Field Office closes out a project and finalizes the documentation, additional payments may need to be made to the contractor as quantities are checked and documents received. Any monetary estimate that is submitted after project acceptance is called a "semi-final estimate." Prior to transmitting a semi-final, notify Field Reports. Semi-finals should be generated with an SF after the estimate number. The Field Office may submit as many semi-final estimates as needed to pay for remaining quantities.

Final Estimate and Support Documentation

The final estimate shows the total as-built quantities of all contract items. For an estimate to be considered final, it must entail no more than zero dollars in payments to the Contractor. All quantities shall be reviewed and approved by the Resident Engineer. The Field Office does not save the final estimate in FAST. The Resident Engineer and contractor sign it, certifying that the quantities reported are final and correct. For guidance, see the Project Final Checklist in Chapter 1207 of the manual. To expedite final processing and payment to the contractor, final estimates must be delivered to Field Reports no later than 45 calendar days after the date of acceptance of the project. If delays are anticipated, the Resident Engineer must notify Field Reports explaining the reason for the delay and providing an expected delivery date. Quantity calculations and other project records (payrolls, certifications, Force Account details, etc.) should be kept up-to-date throughout the life of the project so the final estimate can be submitted promptly.

109.10 Lump Sum Payment for Structures

(A) General

Measuring quantities for a large structure can become a very tedious and time-consuming undertaking. The intent of paying for structures on a lump sum basis is to minimize measurement and record keeping requirements. When significant quantity variations (± 5% or more) do occur in structural concrete, structural steel, rebar, structural excavation, and structure backfill, the Department does allow measurement for payment. However, the burden of proof is on the contractor, who must substantiate the variation.

In allowing compensation for significant quantity variations, the Department is purposely trying to discourage contingencies in contractors' bids. This protects the contractor from unexpected quantity variations because the Department is willing to take that risk.

(B) Adjustments Due To Quantity Variations

The Inspector should be aware that there are differences between the documented quantities of steel and concrete versus the actual quantities used. These differences are caused by:

- The yield effect of batched concrete
- Imperfections and deflections of formwork
- Concrete spillage and waste
- Rebar and steel that may be shown on cut sheets but are not needed in the structure or used as placement aids

- Approximations made by the Designers in calculating quantities

With this in mind, it is a good idea for the Inspectors to track the amount of concrete and steel that go into a structure not only for partial payment purposes, but in case significant quantity variations do occur. Inspectors should collect copies of all steel cut sheets and concrete tickets for future reference.

The contractor may use steel cut sheets and concrete batch tickets to substantiate quantity variations. When this occurs, the Resident Engineer should involve the Designer of the structure, who should verify the original quantity calculations and make any adjustment due to as-built conditions. If the Designers cannot find more than a 5 percent variation, then it is up to the contractor to produce detailed calculations showing the variations. Cut sheets and concrete tickets cannot be used alone in determining quantity variations. Instead, the contractor should use as-built dimensions and the plan sheets to calculate any quantity changes.

The Department's review of the contractor's calculations should be to ensure that sound engineering and mathematical procedures are used. The intent is not to do the calculations for the contractor, but to verify the accuracy of the calculations.

Variations in structural excavation and structure backfill quantities should be limited to changes in pay limits shown in Standard Details B-19.30, .40 and .50. A change in pay limits would occur only if the original ground line is different than the one used by the Designers, or if the Designers had made some type of calculation error or incorrect assumption when computing the pay quantities. Differences due to the contractor exceeding the pay limits for constructability reasons (e.g. sloping the excavation) do not qualify for quantity adjustments.

(C) Adjustments Due to Revisions Ordered By The Engineer

When Designers make changes to a structure, any bid item affected by the change is treated as a major item. As a result, the item should be increased or decreased up to 25 percent before an adjustment in the unit price is required, see Subsection 104.02(D)(4)(b). However, since the structure is paid for on a lump sum basis, a change order will be needed to adjust both the quantity of the affected item(s) and the lump sum structure price. Typically, any quantity adjustments are shown as a separate line item on a change order. The original lump sum structure item is deleted, and a new lump sum structure item is added.

(D) Payment

Partial payments for lump sum structures are usually made by collecting delivery tickets for materials incorporated into the structure. This includes concrete tickets, steel cut-sheets, weigh tickets for structure backfill, and invoices for girders and bearing devices. As mentioned in Subsection 109.10(B) of this manual, delivery tickets do not represent the actual amount of material used in a structure. However, for partial payment purposes, delivery tickets and invoices are a close approximation. The contractor is required to turn in a list of quantities for each structure before the monthly cutoff date. The Inspector or Project Supervisor should review this list with the structures foreperson and get an agreement on quantities before the Field Office processes the monthly pay estimate.

Final payment for a lump sum structure is based on the lump sum amount. The total of the extended amounts for all the quantities must equal the lump sum amount. The total cannot be higher or lower, regardless of their summation. If the Resident Engineer or the contractor believes there is an error in the bid quantities, then adjustments are handled under Subsection 109.10(B) or (C).

109.12 Fuel Cost Adjustments

General

When the Fuel Cost Adjustment is part of the contract, the Department will adjust the monthly progress payments up or down as appropriate for cost fluctuations in diesel fuel as determined in accordance with (109FUEL, 02/10/12).

If the 109.12 Fuel Cost Adjustment specification is not in the contract, Field Reports will check the "Excl Diesel" marker on the contract card when setting up the project. This will keep the Diesel Fuel Price Adjustments report from automatically generating.

The Diesel Fuel Price Adjustments Report is automatically generated per project, in FAST, Price Adjustment Program, after each monthly progress estimate is saved. The report will continue generating the adjusted fuel cost until substantial completion has been given.

The adjusted fuel cost is the monthly payment amount due to the contractor for the month prior.

After you have saved the first monthly progress estimate, you will go into the FAST, Price Adjustment program. Under the subtitle Tax Rates, choose Tax Rate Entry and enter the tax rate for your project. When entering the tax rate you will also be required to enter an "As of Date"; this will be the Date Bids Opened. If the tax rate for your project changes during the course of the project, you will go in and add the new tax rate. The "As of Date" will be the effective date of the new tax rate. If your project is on Tribal Land your contractor may be required to pay Tribal Tax. If applicable, you will enter the Tribal Tax as Other.

Go to the Office Managers web page, Price Adjustment Instructions for assistance.

For each month following the monthly progress estimate, go into the Price Adjustment Program and generate a Diesel Fuel Price Adjustments Report. If the total Adjusted Fuel Cost for that Monthly Estimate exceeds zero dollars plus or minus, this is the dollar amount of diesel fuel adjustment for the month.

To pay for these adjustments, the field office needs to create Pay Item 1090001, Diesel Fuel Price Adjustment. This Item should be created for a Unit Price of $1.00 and a Quantity of 0. This should be a lump sum open account where the price adjustments can be made. The field office shall also build Subitems for each pay estimate in which a price adjustment.

109.14 Increased Federal Share - Technology and Innovation Deployment Program (TIDP)

For projects that include innovative technologies and have been approved for Increased Federal Share, the project team should closely adhere to specifications established for use or inclusion of the innovative technology in the project. Once the application is approved by the FHWA, if any changes in project scope or procedural change orders are being considered, which directly or indirectly affect the deployment of the innovative technology, this must be discussed with the Project Manager and FHWA Area Engineer to confirm the project remains eligible to receive the Increased Federal Share.

At the conclusion of the project, a "lessons learned" meeting or workshop is held to review the implementation of the innovative technology and determine a course of action for subsequent use, adoption into standard practice, and/or refinement of the technology. Therefore, a collective effort to capture and document the effectiveness of the technology, challenges associated with its use, and strategies to more effectively use or deploy the technology should occur throughout the project. This effort should be led by a member of the associated technical group as

well as a member of the construction unit who will be directly involved in monitoring activities or inspecting items which include the technology.

The project should discuss the innovative technology during the Partnering Workshop and Pre-Construction Meeting, as well as during any weekly or pre-activity meetings, as appropriate.

109.15 Draw Schedule

Projects that are programmed for over $18 million or have a contract time longer than 18 months will have this specification in their project Special Provisions. This needs to be provided at the Preconstruction meeting.

A sample draw schedule is as follows:

Draw No.	Month	Amount	% of Total	% Complete
1	March 2021	$369,686.13	1.08%	1.08%
2	April 2021	$533,038.86	1.55%	2.63%
3	May 2021	$802,432.05	2.33%	4.96%
4	June 2021	$1,238,865.36	3.60%	8.56%
5	July 2021	$2,690,461.82	7.83%	16.39%
6	August 2021	$3,692,664.18	10.74%	27.14%
7	September 2021	$2,787,485.87	8.11%	35.24%
8	October 2021	$3,657,234.84	10.64%	45.88%
9	November 2021	$3,844,081.98	11.18%	57.07%
10	December 2021	$2,091,211.53	6.08%	63.15%
11	January 2022	$1,403,978.95	4.08%	67.24%
12	February 2022	$1,381,300.93	4.02%	71.25%
13	March 2022	$892,959.33	2.60%	73.85%
14	April 2022	$341,820.38	0.99%	74.85%
15	May 2022	$1,653,591.34	4.81%	79.66%
16	June 2022	$2,353,877.50	6.85%	86.51%
17	July 2022	$2,156,895.20	6.27%	92.78%
18	August 2022	$2,279,593.55	6.63%	99.41%
19	September 2022	$158,161.63	0.46%	99.87%
20	October 2022	$43,652.57	0.13%	100.00%
	Total:	$34,372,994.00		

This form is to be provided to the FMS group upon receipt.

109.16 Bituminous Material Price Adjustment

Bituminous Material Price Adjustments Due to Market Price Changes

The price of crude oil and its byproducts change daily. Price fluctuations in crude oil can be volatile and influenced by world events. To eliminate the risk contractors take in bidding work that uses large amounts of bituminous materials, the Department allows monthly price adjustments to asphalt cement, liquid asphalt, and emulsified asphalt used on the project. The price adjustments are based on the selling prices of asphalt cement listed in the Asphalt Weekly Monitor. ADOT's Contracts and Specifications Section publishes a monthly Bituminous Material Price Adjustment bulletin which indicates the average price for asphalt cement that month.

The price adjustment is the difference between the asphalt cement price when the asphalt was used on the project and when the project was bid, times a factor for the type of bituminous material. For example, if the price of asphalt cement was $120 per ton when the project was bid and the price changed to $100 when the asphalt cement was purchased and delivered to the project, then a $20 deduction would be made for each ton of asphalt cement used. The adjustment for emulsified asphalt would be $20 x 60% = $12 per ton used, and the adjustment for asphalt-rubber material would be $20 x 80% = $16 per ton used. The method for calculating price adjustment is revised periodically, so always see the Special Provision for the latest method.

To pay for these adjustments, the field office needs to create pay item 4040000, Bituminous Material Price Adjustment. This should be a lump sum, open account where a price adjustment for different bituminous materials used on the project can be paid.

Exhibit 109-16-1 is an example of the recap the field office produces. This recap should be sent to Field Reports when submitting the final estimate for the project.

Note that a pay adjustment factor of 0.6 is shown in Exhibit 109-16-1 for emulsified asphalts. As mentioned previously under Tack Coats, emulsified asphalts contain only 60% asphalt cement. The pay factor adjustment accounts for the water in the emulsion. For the special type of emulsion, a pay factor adjustment of 0.3 is used since only 30% of the diluted emulsion contains asphalt cement.

The final recap, (Exhibit 109-16-1) should contain the following:

- Price of asphalt cement at bid time
- The pay times affected
- The month the material was used
- The price at the time of use
- Difference between current and bid prices
- Total tons for the month
- Pay factor (when applicable)
- Total net adjustment (should equal the lump sum amount for pay item 4040000)

Documentation Requirements for Bituminous Materials

Office documentation requirements needed for final payment include:

- Invoices
- Recap sheet(s) (Exhibit 109-16-1) of bituminous treatments used on the project containing:
    - Date material used
    - Pay tons
    - Weigh backs (when partial loads are used)
    - Cumulative totals

The office documentation should be submitted to Field Reports for review with the final estimate.

BITUMINOUS MATERIAL PRICE ADJUSTMENTS

ADJUSTMENT REPORT BY PROJECT

PROJECT	H668901C
	EHRENBERG - PHOENIX HWY
	CM-010-B(200)A
CONTRACTOR	COFFMAN SPECIALTIES, INC.
BID DATE	10/27/2006
SUBSTANTIAL COMPLETION DATE	08/08/2007
INITIAL COST	383.00

4040111 BITUMINOUS TACK COAT (SS-1)
Section 1

Lot	Date	Price	Diff	Tons	Factor	50:50	Pretax Adj	Sales Tax	Other Tax	Adjustment
01	04/29/2007	321.00	-62.00	0.73	0.3	Y	-13.58	-0.71	0.00	-14.29
02	07/02/2007	327.00	-56.00	1.54	0.3	Y	-25.87	-1.36	0.00	-27.23
02a	07/10/2007	327.00	-56.00	2.69	0.3	Y	-45.19	-2.38	0.00	-47.57
				4.96			**-84.64**	**-4.45**	**0.00**	**-89.09**

4040282 ASPHALT BINDER (PG 76-16) (PG 76-XX)
Section 1

Lot	Date	Price	Diff	Tons	Factor	50:50	Pretax Adj	Sales Tax	Other Tax	Adjustment
01	04/29/2007	321.00	-62.00	42.02	1.0	N	-2,605.24	-137.17	0.00	-2,742.41
02	07/02/2007	327.00	-56.00	39.63	1.0	N	-2,219.28	-116.85	0.00	-2,336.13
				81.65			**-4,824.52**	**-254.02**	**0.00**	**-5,078.54**
			TOTALS	**86.61**			**-4,909.16**	**-258.47**	**0.00**	**-5,167.63**

Exhibit 109-16-1. Bituminous Material Price Adjustment Example

REFERENCES AND ADDITIONAL INFORMATION

Chapter 01 - Section 100

- ADOT Project Development Process Handbook, Arizona Department of Transportation, Phoenix, AZ
- ADOT Project Management Training Manual, The Advisory Group, Phoenix, AZ

Chapter 01 - Section 104

- PARTNERING: Changing Attitudes in Construction, Associated General Contractors of America, Washington, DC
- PARTNERING: A Concept for Success, Associated General Contractors of America, Washington, DC
- Partnering for Success, Thomas R. Warne, ASCE Press, New York, NY
- Arizona Pollutant Discharge Elimination System General Permit De Minimis General Permit (DGP) No. AZG2004-001. Arizona Department of Environmental Quality, Phoenix, AZ
- Arizona Pollutant Discharge Elimination System General Permit for Discharge from Construction Activities to Waters of the United States. ADEQ. Arizona Department of Environmental Quality, Phoenix, AZ
- Statewide Stormwater Management Plan. Arizona Department of Transportation, Phoenix, AZ
- Stormwater Monitoring Guidance Manual for Construction Activities. Arizona Department of Transportation, Phoenix, AZ
- Erosion and Pollution Control Manual. Arizona Department of Transportation, Phoenix, AZ
- National Pollution Discharge Elimination System General Permit for Stormwater. Discharges From Construction Activities. Environmental Protection Agency, Washington, DC
- National Pollution Discharge Elimination System Permit for Stormwater Discharges from the Municipal Separate Storm Sewer System (MS4) Operated by Arizona Department of Transportation (ADOT) NPDES Permit No. AZS00018, U.S. Environmental Protection Agency. Environmental Protection Agency, Washington, DC

Chapter 01 - Section 105

- Blue Stake “811 Booklet”, Arizona Blue Stake Inc., Phoenix, AZ
- Construction Delay Claims (Construction Law Library), Barry B. Bramble, Esq. and Michael T. Callahan, Esq., John Wiley & Sons Inc., New York, NY
- Construction Change Order Claims (Construction Law Library), Robert F. Cushman, Esq. and Stephen D. Butler, Esq., John Wiley & Sons Inc., New York, NY
- Differing Site Condition Claims (Construction Law Library), Robert F. Cushman, Esq. and David R. Tortorello, John Wiley & Sons Inc., New York, NY
- Construction Industry Arbitration Rules and Mediation Procedures (July 1st 2015), American Arbitration Association, New York, NY

Chapter 01 - Section 107

- OSHA Safety and Health Standards for the Construction Industry (29 CFR Part 1926), Industrial Commission of Arizona, Arizona Division of Occupational Safety and Health, Phoenix, AZ

  Note: This publication is updated every year or two so contact ADOSH for the latest publication date.

- Occupational Safety and Health Standards for General Industry (29 CFR Part 1910), Industrial Commission of Arizona, Arizona Division of Occupational Safety and Health, Phoenix, AZ

  Note: This publication is updated every year or two so contact ADOSH for the latest publication date.

- Construction Contracting, 6th Edition, Richard H. Clough and Glenn A. Sears, John Wiley & Sons Inc., New York, NY

Chapter 01 - Section 108

- Scheduling Construction Projects, Edward M. Willis, John Wiley & Sons Inc., New York, NY
- CPM Scheduling For Construction, Best Practices and Guidelines, Carson, Oakander, Relyea, Project Management Institute

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- Construction Costs, published yearly, Arizona Department of Transportation, Contracts and Specifications Section, Phoenix, AZ
- Means Heavy Construction Cost Data, published yearly, R. S. Means Company, Kingston, MA
- Public Works Costbook, published yearly, BNi Building News, Los Angeles, CA
- Pay Item Documentation for Inspectors, Arizona Department of Transportation, Phoenix, AZ

ASSOCIATED FORMS

Note - *Unless otherwise noted, the below forms are found within "Forms - ADOT Construction Manual" links within Construction and Materials Group (ADOTNet), Engineering and Construction, and the Construction (public web pages).*

- ADOT JOBSITE DUST CONTROL PLAN
- CONSTRUCTION ISSUE RESOLUTION ROUTING FORM - *Found on the "Partnering Forms and Links" web page*
- ELECTRONIC DATA TEMPORARY USE AGREEMENT
- FORCE ACCOUNT DAILY REPORT
- PARTNERING EVALUATION PROGRAM (PEP) - *(No longer a form, Partnering Group will supply a tailored version for each project)*
- PRIME CONTRACTOR FORCE ACCOUNT WEEKLY DETAIL SUMMARY SHEET - *(Found within the Forms and Documents Contractor Information public web page)*
- PROJECT FINAL CHECKLIST - *(See Form Exhibits in Chapter 1208 of this manual)*