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 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 key 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.

ADOT
Infrastructure Delivery and Operations

One ADOT in service to all
Katie Hobbs, Governor
Jennifer Toth, Director
Gregory Byres, Deputy Director for Transportation
Steve Boschen, Division 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.

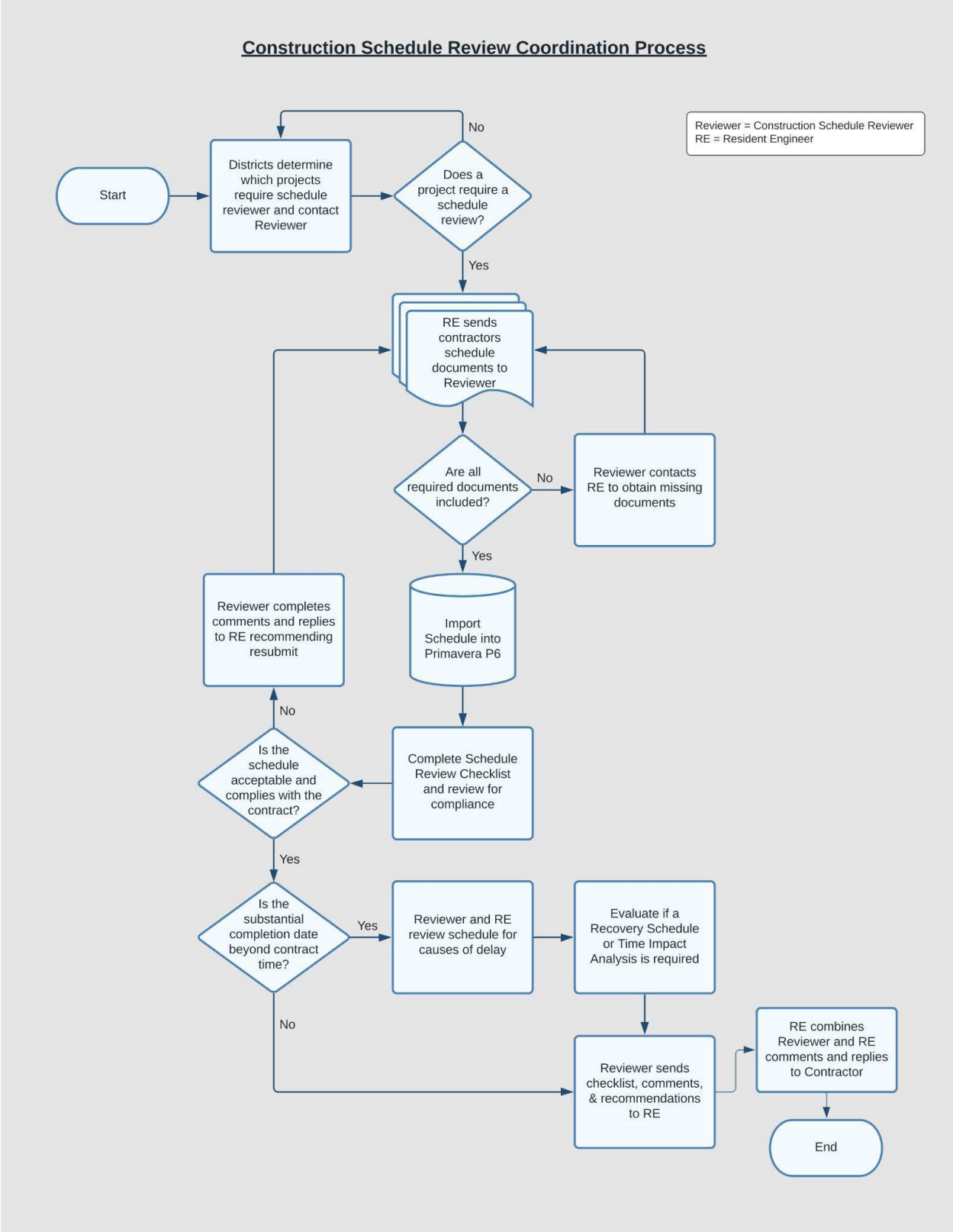


Exhibit 108.04-2 Construction Schedule Review Coordination Process

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. 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

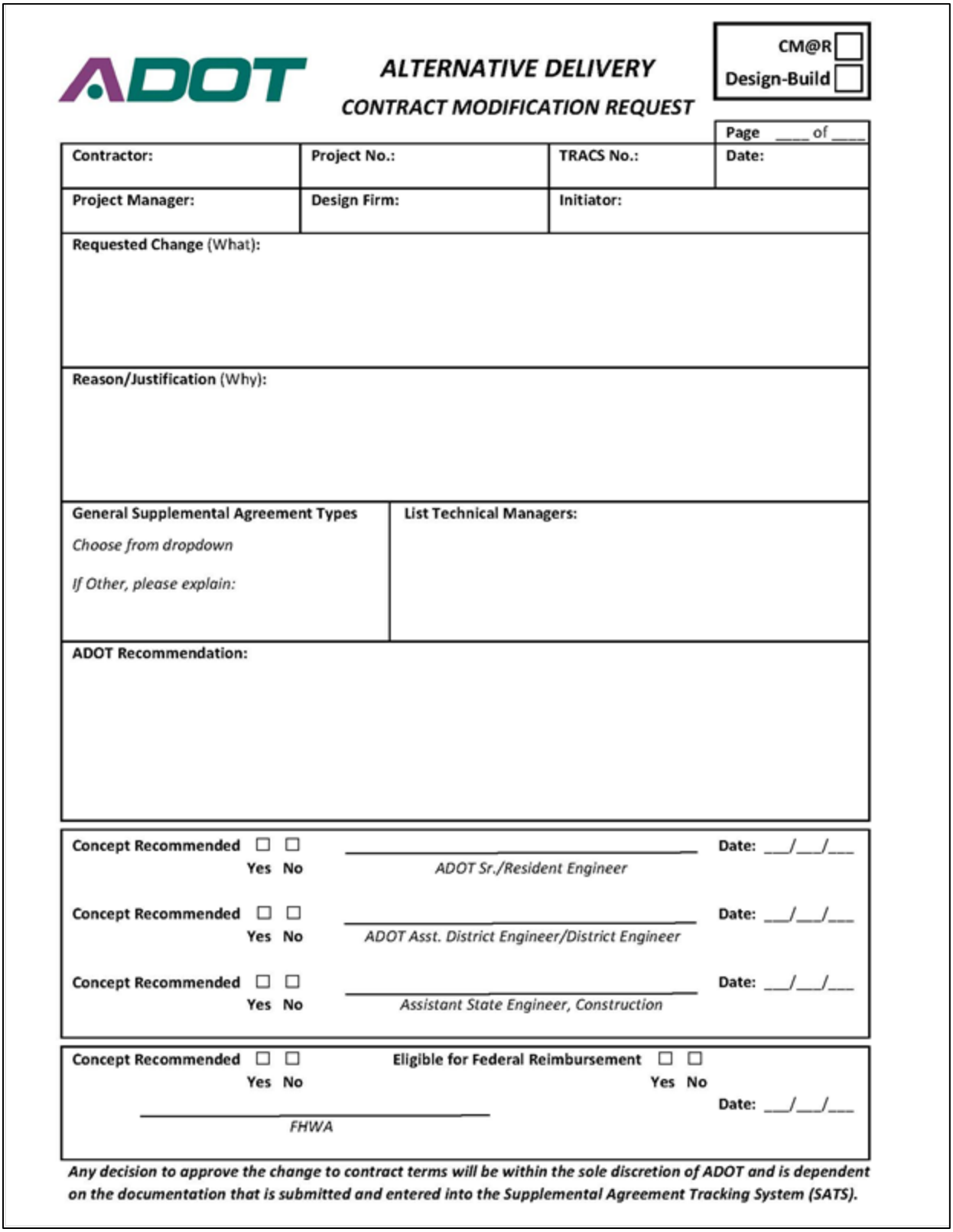
IF THE CONTRACTOR DOES NOT AGREE THE ESCALATION PROCESS MUST BE FOLLOWED.

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.