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Letter to Record Drawing Guideline Users

The Arizona Department of Transportation (ADOT) Record Drawing Guidelines is written to ensure that all stakeholders participating in the development of Record Drawings will apply consistent methodologies and to provide ADOT personnel and Consultants with the guidelines and procedures needed to prepare Final Record Drawings (formerly known as “As-Built”).

These guidelines are intended to provide consistency in the development of Final Record Drawings, and record accurately the information of any modification(s) made during construction on projects throughout the State of Arizona. This guidance document also sets requirements to ensure the electronic files are received in a timely manner and that they are stored electronically in a format that preserves the documents for future use by stakeholders through the Repository of Online Archived Documents (ROAD).

It is the responsibility of the Project Resource Office to maintain the engineering records for all civil construction projects for decades to come.

Our goal is to provide you with a guideline that will include all of the most current documentation in one location and to bring all of the prior documentation related to preparing Final Record Drawings into one document which will help to improve consistency and accuracy in the development of the Final Record Drawings.

Please note that updates to this document will be ongoing as processes change, or new more efficient methods are established to make the development process more accommodating for our stakeholders and provide our customers with accurate records through the ROAD portal.

Please feel free to contact the Project Resource Office with any questions or modifications to these guidelines.

Sincerely,

Lisa Pounds
Project Resource Office Manager
Chapter 1

Background / Scope / Authority / Guidance / References

1.1 Background / Scope

This guideline was established as of October 1st, 2017 to update the current Record Drawing documentation, which is in some cases, is out of date and may have changed based on the new procedures for submitting Record Drawings to the department. This guideline has been developed to incorporate any of the previously distributed guidance that may still be accurate and/or in effect and also supersede any previous guidance documents that may have changed based on newly developed procedures. This guideline is intended to provide a complete and accurate explanation of the Record Drawing process, policies and procedures that are available in various locations, and combine these documents into one document.

1.2 Authority

ADOT is required by State law to keep an official record of the final plans for all construction projects which involve ADOT oversight (per Arizona Revised Statutes ARS 32-152). These Record Drawings are required on all ADOT administered projects and must record the field changes made to the original design plans during the construction of a project.

On November 8th, 2008 the State Engineers Office distributed a memorandum on the “As Built Procedure”. The information in that memorandum is covered within this guidance document. In addition, on November 10th, 2010 an Intermodal Transportation Division (ITD) policy ENG 10-1 – “As-Built Plans Archiving Policy” was established for further guidance on the “As-Built” procedure. As part of an agency wide effort to update old policies, it was requested by the State Engineers Office to change the ENG 10-1 policy to a guideline. This guideline will replace the ENG 10-1 policy most of which is covered within this guideline.

On April 7th, 2015 a memorandum was issued by the Project Resource Office that replaced the terms “as built drawing” and/or “as build drawing” with the updated term “Record Drawings”. At the time of the writing of this guidance document the Arizona Revised Statues ARS 32-152 has not been changed to reflect the term Record Drawing, however the Arizona Revised Statue that reference “As Build” and/or “As Built” is referring to the new term Record Drawings for the purposes herein.

1.3 Guidance

Our goal is to give you a guidance document that will provide quality and consistency and help the person(s) responsible for completing the documentation or recording of changes made to the as-bid documents. There may be additional items that are not covered in this guidance document which may
need to be addressed on a case by case circumstance in which the Project Resource Office can be contacted directly for additional guidance and direction.

This Record Drawing guidance document supersedes any other Record Drawing guidance documents. This Record Drawing guidance document does not supersede any current State Statues and is intended only for general guidance in the record drawing preparation and submittal process.

The Record Drawing procedures described in the following chapters shall be applied by ADOT staff and Consultants to all projects which involve ADOT oversight to assure ADOT and other stakeholders the deliverance and availability of the record drawing information.

Record Drawing plans are required on all projects including but not limited to: permit projects, procurement or as-bid projects, sub-program projects, transportation enhancement projects, local government projects and alternate delivery projects.

If a project crosses or impacts property owned or maintained by the Central Arizona Water Conservation District (CAWCD), Maricopa Water district (MWD), please refer to the Contract Special Provisions. These agencies may need a copy of the record drawings. If a copy of the record drawings is required for an outside agency, it is the responsibility of the Project Manager to deliver or inform the Project Resource Office that a copy of the record drawings needs to be provided to the agency.

Any reference to a PE in this document is a person, ADOT or Non-ADOT, who has been granted registration by the Arizona State Board of Technical Registration and is authorized to practice engineering in the State of Arizona.

1.4 References


Repository of Online Archived Documents (ROAD) Portal: https://road.azdot.gov/

Record Drawings Email: RecordDrawings@azdot.gov

Project Resource Office Contact Number: 602-712-7015
Chapter 2

Definitions

2.1 Definitions

As-Bid Plans – The as-bid plan set is the final sealed and signed plans including addenda at bid opening.

As-Built Plans – The term or words “as-built” plans has been changed to “Record Drawing” plans. This new definition was adopted by ADOT on April 7th, 2015. The terms as-built or as-build are used interchangeably but the official term on all ADOT documentation is or will be changed to Record Drawing(s).

Additional Information Sheets – Additional information sheets are drawings that contain additional information pertinent to the project. This may include hand drawn sketches or actual additional drawings provided for or included as part of the project. These additional information sheets must be sealed, signed and dated by a PE.

Addendum – Addendums or Addenda are revisions to the contract made available to bidders after bid advertisement, but prior to awarding the contract. After the contract has been awarded, changes are referred to as Supplemental Agreements. Addenda are typically shown in black on the record drawings since they occurred prior to the contract being awarded. The original sheet is not required in the record drawings as long as the addendum is reflected on the drawing that requires the addendum. If the original sheet is available, it can be included with an “X” from corner to corner of the sheet (red or black). (See Chapter 6, Section 6.1, # 4)

Agency – Agency refers to the agency being discussed, typically an outside agency.

CADD – Computer Aided Design and Drafting, typically referring to the software used to produce engineering drawings.

Change Order – Change orders are done after the project has been awarded and the project has gone to construction. Change orders are a form of supplemental agreement that occurs from an unforeseen situation during construction. Change orders are shown in the record drawings in red.

In some cases where the change order requires that a new sealed plan sheet be developed during construction activities to replace the existing as-bid sheet. The changes on the new sealed plan sheet and associated sheets need to identified as outlined in Chapter 6, Section 6.2, # 5 (Also see Appendix G for example) (Added - 2-19) and are identified in the upper right corner of the record drawing sheet as “To Accompany Change Order # XX”, where “XX” is the change order number. Change orders are also shown on the record drawings using a triangle and the change order number is shown inside of the triangle. If there are more than one change orders to a sheet, each change order is shown at the top right hand
corner of the sheet and identified within the drawing using a triangle and the change order number associated with the change. (Rev. - 12-18)

Construction Administrator – The ADOT Resident Engineer (RE) or the person who is in charge of administering the project. This person needs to be a Professional Engineer (PE) and is designated as such on the face sheet of the record drawings in the information block. The Construction Administrator must also be an ADOT employee. (See Appendix C) (Added - 12-18)

Critical Structures Notice – The Critical Structures Letter is uploaded to the ROAD portal in place of the record drawings plans on any projects (typically bridge projects) that have been identified as a critical structure. This is pursuant to measures taken through the Federal Homeland Security Act of 2002. Access to the record drawings for critical structures must be requested through the ADOT Office of Safety & Risk Management. (Added - 8-18)

Designer of Record – The Designer of Record is the PE who is responsible for the design of the as-bid plans and responsible for sealing the as-bid plan sheets. There may be more than one Designer of Record on a project.

Department – The Department refers to the Arizona Department of Transportation.

Design Project Manager (PM) – The Design Project Manager (PM) is the person in charge of or oversees the design and/or post design services of a project and initiates, coordinates and evaluates the RE request from the designing side of the project to ensure the transferred changes requested by the District RE are recorded in the record drawings.

Electronic Design Files – Electronic design files are created using Computer Aided Design Drafting (CADD) software.

Field Red-Lines – The field red-lines are the changes or modifications that occurred during construction of the project. These are typically minor modifications that are not dealt with by a supplemental agreement or a change order. These can include quantity adjustments, minor field modifications, sketches, added plan sheets, exhibits or anything that was done on a project that is outside of the original design and did not require a change order.

Final Record Drawings – Also see Preliminary Record Drawings. The Final Record Drawings is the final set of record drawings completed by the Record Drawing Designer under the supervision of the RE / Construction Administrator and submitted to the Project Resource Office for approval and conformity to the current ADOT Record Drawing Guidelines and archived into the ROAD portal.

Information Block – See Record Drawing Information Block for definition on page 2-3.

Liaison – The liaison is an employee that represents ADOT.
**No-Plans** – The term “No-plans” refers to projects that do not contain plan sheets. No-plans are typically used for procurement projects or projects done by special provisions. A No-plans document (see Appendix E) is required to be submitted to the Project Resource Office. The document is reviewed and uploaded to the ROAD portal. A blank PDF copy of the No-Plans document is available on the Record Drawings web site.

**PE** – See Registered Professional Engineer (PE) on page 2-3.

**Preliminary Record Drawings** – Also see Final Record Drawings. The Preliminary Record Drawings generally refers to the set of record drawings that are either being used in the field to document changes, or given to the Record Drawing Designer to produce the Final Record Drawings.

**Prime Contractor** – The Prime Contractor is the Contractor that the project was awarded to. There may be Sub-Contractors hired by the Prime Contractor, however the Prime Contractor is responsible for the project delivery. The Prime Contractor is identified in the Record Drawing Information Block on the Face Sheet of the Final Record Drawings. (See Appendix C)

**Project Submittal Form** – See Record Drawing Project Submittal Form on page 2-4.

**Record Drawing Information Block** – This is shown on the Face Sheet of the project plans along the right side of the sheet. This Record Drawing Information Block includes the name of the Prime Contractor / Construction Company that constructed the project and the date the project was completed. This block also contains the name of the Construction Administrator, who is the Resident Engineer (RE) and is a PE or RLA (for landscape projects) and is designated as such within the information block and the date the RE signed off on the project completion. The Construction Administrator must be an ADOT employee. This block also has the name of the Record Drawing Designer and the date the record drawings were completed. (See Appendix C) *(Added - 12-18)*

**Red-lines** – See Field Red-lines on page 2-2.

**Registered Professional Engineer (PE)** – the PE is a person, ADOT or Non-ADOT, who has been granted registration by the Arizona State Board of Technical Registration and is authorized to practice professionally in the State of Arizona. This individual is usually a member of the design team who is in charge of developing the details for a project and has current or active license when the project is required to be sealed and signed. This person can be a Civil Engineer, Landscape Architect, Architect or Land Surveyor.

**Resident Engineer (RE)** – The RE is an ADOT employee and a PE who is the designated as the Construction Administrator on the project who is in charge of administering the project and responsible for the field red-lines being recorded completely and accurately.
Record Drawing Coordinator / Project Resource Office Liaison – The Record Drawing Coordinator is an ADOT employee who oversees the record drawing procedure and verifies the content of the deliverables to the Department.

Record Drawing Designer – The person in charge of the record drawing plans for a project and ensures that the field red-lines are transferred accurately to the Final Record Drawing Plans. Typically this person is assigned or designated by the Project Manager and/or the RE / Construction Administrator.

Record Drawing Plans – Record Drawing Plans are all of the changes to a construction document for a project based on a Professional Engineers (PE) changes to the original design. The changes are based on field observations or information obtained during construction. ADOT is required to maintain the record drawings (formerly known as “As Built Plans”) per the Arizona Revised Statues ARS 32-152. The record drawing red-lines record the changes occurring during construction and are incorporated onto the plans manually and/or electronically. The field red-lines set and other miscellaneous documents will be provided by the District’s Resident Engineer / Construction Administrator.

Record Drawing Project Submittal Form – The RE / Construction Administrator must submit a Record Drawing Project Submittal Form (See Appendix B) with the final submittal of the record drawings to the Project Resource Office. This project submittal form lets the project resource office know that the RE / Construction Administrator has reviewed the final record drawings and they include all of the field changes and the changes have been recorded accurately based on the marked up version from the field.

ROAD – ROAD is the acronym used for the Repository of Online Archived Documents. This is a cloud based portal to a database that contains all of the final record drawings for state and local governments. Record Drawings can be searched by project information or through an interactive GIS map.

ShareFile – ShareFile is available to ADOT employees as a method to transfer large files or files that are too large to send through email. The maximum message size for emails is 20 MB (includes message and any/all attachments). ShareFile has replaced the ADOT FTP site. To access ShareFile you will need to setup a ShareFile account by opening a Service Desk Ticket from Information Technology Group (ITG). This is done either through an email or calling the Help Desk.

Sketches – Sketches may be added to a set of plans however they must be clear and the quality of the sketch and information must be reproducible if the sketch is scanned or copied. If the sketch is such that it is changing the design of the project or adding significantly to the design, the sketch must be signed, sealed and dated by a PE.

Supplemental Agreement – Is a signed written agreement between ADOT and the Contractor covering changes of work not otherwise provided for in the contract such as revisions or amendments to the terms of the contract.
Chapter 3

Record Drawing Preparation (See Flowchart Stage I, Appendix A)

3.1 Transferring the field changes to the Record Drawings (RE Requirements)

1. It is recommended that the field office identify a single drawing set or electronic (CADD or PDF) file, including all addenda, to be used for red-lines prior at the start of construction. This set of drawings should be used to keep track of or record all of the field changes during construction. Modifications shall be recorded promptly to ensure that a thorough and accurate set of Final Record Drawings are compiled. This set of drawings should be kept clean, dry and apply all safeguards avoid any damage to the plan set. If a drawing within the set is damaged or impaired, immediately replace the damaged drawing with a clean copy to record any changes. If an electronic file is used it should be stored in a directory accessible to the project field staff on a server or drive that is backed up regularly.

2. During the course of construction activities, the Resident Engineer (Construction Administrator) is responsible for recording any changes in the locations, dimensions or quantities of constructed elements from those shown in the original as-bid contract documents (i.e., construction plan sheets). The Resident Engineer (Construction Administrator) shall record all changes to the original design on a copy of the As-Bid plans in red so that it is clearly identifiable as to changes that have occurred.

Any major design changes should be discussed with the original Designer of Record that prepared the As-Bid plans.

Items that should be taken into consideration during the construction phase are:

- Addenda
- Supplemental Agreements
- Change Orders
- Field Adjustments
- Request for Information Drawings
- Shop Drawings (Unique/Different from As-Bid plans)
- Found, relocated and abandoned utilities

Red-lines are a continuous process from the start of a project.

3. The Resident Engineer and design Project Manager (PM) must coordinate the preparation efforts with the ADOT Technical Section(s) or Consultant(s) preparing the final record drawings, for the proper allowance of time and funding (see Chapter 3, Section 3.1, # 4). It is recommended that the “Team” comprised of the Resident Engineer (RE), the Project Manager (PM), and the Record
Drawing Designer meet to determine the best approach to transferring the field changes to the final record drawings (several methods are described below in Section 3.2).

During the coordination meeting, the RE, PM and Record Drawing Designer should be aware of the required checklist shown on the “Record Drawings Project Submittal Form”. (Appendix B, and also Chapter 6, Section 6.1, # 12) It is also a good time for the team to check the Record Drawings web page for additional guidance or requirements on the preparation of the final record drawings.

4. The RE, PM, Designer of Record and the Record Drawing Designer shall prepare the “Record Drawing Preparation Estimate”. (see Appendix D) This estimate should take into consideration the method that will be used to produce the final record drawings as indicated in Chapter 3, Section 3.2. This form is a tool for the PM to verify the reasonableness of the Record Drawing Designers cost to prepare the final record drawings. A blank Excel copy of this form is available on the Record Drawing web page.

5. Within 45 days of the project’s final acceptance (including Consultant, internal ADOT or Local Government administered projects), the RE shall assemble the final red-line drawings and transmit them, along with the Record Drawing Preparation Estimate (see Chapter 3, Section 3.1, # 4) to the Record Drawing Designer (If required based on Method used, See Chapter 3, Section 3.2).

6. The RE shall complete the “Record Drawing Information Block” on the face sheet of the project plans. This includes the company name of the Prime Contractor and the date the construction project was finished. The name and date of the Construction Administrator / RE and date the red-lines were completed and ready to be handed off to the Record Drawing Designer. The RE shall keep a copy of the preliminary record drawings / red-lines for a record during the time the Record Drawing Designer completes the final record drawings.

7. The RE must ensure that the final record drawing set includes all Addenda, Revisions (change orders, Letter of Agreements, etc.), field changes and any additional drawings created as a result of unforeseen circumstances (see checklist in Chapter 6, Section 6.1, # 12). Any additional drawings must be stamped, sealed and signed by a PE. Depending on the method used to create the final record drawings, once the RE is sure that all of the changes are recorded or documented, the RE will then hand off a color copy of the red-lines to the Record Drawing Designer for final preparation.

8. When the RE transmits the completed red-lines to the Record Drawing Designer for final record drawing preparation, the RE shall email both the PM and the Field Reports Section advising them of the transmittal date. Field Reports will enter the date into the Field Office Automation System (FAST) to be reflected on the Contract Card.
3.2 Methods to prepare Final Record Drawings

There are several methods (Method a – d) or processes available to prepare the final record drawings.

NOTE: Regardless of the method chosen to prepare the final record drawings, the final product must be legible, clean, not faded and reproducible.

a) On smaller projects that do not require a lot of field changes, the RE can mark (using a red pen) the field red-lines on the designated Preliminary Record Drawing plans set. As long as the field red-lines are clean, neat, complete, legible and reproducible, the RE or the Record Drawing Designer can consecutively number the sheets in the lower right corner and add the date in the upper right corner in red per the attached example plan set (see Appendix G, Record Drawing Example). This complete set can be scanned into a PDF/A document and directly submitted to the Project Resource Office for review (See Chapter 6, Section 6.2, # 2). This method does not require electronically transferring the red-lines into the PDF document. The RE / Construction Administrator shall also complete the Record Drawing Project Submittal Form and submit this form with the Final Record Drawings.

For Methods b – d, if the red-lines are being transferred to a PDF document, the size of the font used on the PDF should be large enough to read when the page is at its extents. Typically for a 17”x11” sheet the PDF font height would be 10 and on a 34”x22” sheet the size would be 20. (Added - 12-18)

b) The RE / field office can make the field red-line changes electronically to a PDF copy of the as-bid plan set as changes are required (during construction activities). Changes should be made to the PDF document daily as the field changes are completed. The red-lines shown on the PDF must be done according to these guidelines (see Appendix G, Record Drawing Example). This PDF copy must be protected and saved to location that is backed up (not on the local hard drive). Once the project is complete and all of the field changes have been recorded, the RE can create a PDF/A document and submit this, along with a completed Record Drawing Project Submittal Form directly to the Project Resource Office for review.

c) A legible copy of the field red-lines that the RE / Construction Administrator has prepared are given to the Record Drawing Designer and the red-lines are transferred electronically to produce the set of final record drawings. The electronically transferred red-lines can be done using Computer Aided Design and Drafting (CADD) software or any other application such as Adobe Acrobat to produce the final PDF document. If CADD is used to record the changes, the CADD file must be capable of printing the changes in red. A special pen table may be required to print out the changes in red. Alternatively, as long as the red-lines are clean, neat, complete, legible and reproducible, the Record Drawing Designer can manually add the sheet numbers and record drawing date to each drawing. In either case, the Final Record Drawing PDF must be submitted as a PDF/A document.
d) On large projects that require many field changes, the RE and the Designer of Record can communicate any field red-line changes to the Record Drawing Designer during construction activities as changes occur. This allows the Record Drawing Designer the option of maintaining a PDF document with red-line changes as construction progresses. If there are major changes to a drawing or the need for additional drawing(s), the Record Drawing Designer may create these in CADD and print out a PDF for insertion into the Preliminary Record Drawing plans set. Any new drawings added to the original as-bid plan set must be sealed, signed and dated by a PE. As indicated in method c, there may be a need for a special pen table to allow printing the field changes from the CADD document in color (red).

If major modifications and/or a new plan sheet(s) is required, the RE, Designer of Record and the Record Drawing Designer should determine if the new plan sheet should be drawn using CADD or if an additional sheet can be sketched or hand drawn to replace the original as-bid sheet(s). In either case, the original plan sheet(s) is still required in the final record drawing plans submittal. The original plan sheet(s) will have a red “X” drawn through the sheet(s) and the new sheet(s) will be included after the crossed out sheet(s). The “X” on each sheet should go from the upper left corner to the lower right corner and the lower left corner to the upper right corner (see the examples in the record drawings included with these guidelines). The “X” should not be so thick as to obscure any information on the plan sheet. The new plan sheet must be stamped, signed and dated by a PE.

Keep in mind that final record drawings can be submitted with field red-lines done by hand. If the red-line changes to the plans are neat, clean, legible and reproducible the record drawing sheet numbers and date can be added to the plan sheets and electronically submitted as final record drawings (PDF/A). If there are drawings that contain many changes or markups, sometimes it is easier to make the changes electronically using Adobe Acrobat or CADD so that you can move things around such as text and clouding. Erasing on the record drawings is not an option.

Never remove or cover any original values or details.
Chapter 4

Record Drawing Preparation (See Flowchart Stage II, Appendix A)

4.1 Creating the Final Record Drawings (Record Drawing Designer Requirements)

1. Once the RE / Construction Administrator has finished gathering all of the record drawing data, the field red-lines (mark-ups) depicting construction changes are turned over to the Record Drawing Designer (Consultant or ADOT technical section) to prepare the record drawing plans.

2. Once the Record Drawing Designer receives the red-line drawings, the Record Drawing Designer should review the red-line drawings for accuracy, legibility and completeness. If there are any questions or something is not understood or clear on the field red-lines, the Record Drawing Designer must contact the RE / Construction Administrator to clear up any issues in a timely manner.

3. Once the Record Drawing Designer receives the red-line drawings, the Record Drawing Designer must complete the final record drawing plans within 60 days or less.

4. The Record Drawing Designer will complete the final record drawings in accordance with these Guidelines and information available on the ADOT – Project Resource – Record Drawing Guidelines Web Page. More information on general Record Drawing preparation guidelines is available is Chapter 6. If there are any questions during the preparation of the final record drawings, the Record Drawing Designer will contact the RE for clarification. If there are any questions on the preparation of the final record drawings regarding the final submittal, the Record Drawing Designer and/or the RE can contact the Project Resource Office.

5. The Record Drawing Designer must submit the completed Record Drawing plans to the RE / Construction Administrator for review to ensure all of the field red-lines and information is included in the Record Drawing plans. The Record Drawing plans must be converted to a PDF/A document. Information on creating a PDF/A document is available in Chapter 6, Section 6.2, # 2 and also available on the Project Resource Office Web Page.

6. The RE / Construction Administrator should complete the review within 5 working days.

7. During the RE / Construction Administrators review, the RE / Construction Administrator shall download the Record Drawing Project Submittal Form (Appendix B) and make sure the final record drawings are in conformance with the checklist on the submittal form.
The Record Drawing Project Submittal Form is located on the Project Resource Office, Record Drawings Web Page.

8. Once the RE / Construction Administrator approves the record drawings, the RE / Construction Administrator shall send an email to the Record Drawing Designer and the Project Resource Office with the Project Request Form attached. The Project Resource Office email address for Record Drawing submittals is: RecordDrawings@azdot.gov.

9. The Record Drawing Designer will then email the Final Record Drawings in PDF/A format to the Project Resource Office at: RecordDrawings@azdot.gov and copy the RE / Construction Administrator on the email notification.
Chapter 5

Record Drawing Preparation (See Flowchart Stage III and Stage IV, Appendix A)

5.1 Final Record Drawing Review (Project Resource Office Review Requirements)

1. Once the final record drawings are submitted to the Project Resource Office, the Project Resource Office will (typically within 1 – 2 working days) send out an email indicating that we have received the Record Drawings and will be reviewing them for conformity to the ADOT Record Drawing Guidelines. The Record Drawing Designer and RE / Construction Administrator will be notified once the drawings are accepted and approved by the Project Resource Office or if there are any changes that need to be made to the submitted drawings.

2. The Project Resource Office will typically complete the review of the Record Drawings within 2 working days (depending on the complexity of the project).

3. If there are changes that need to be made to the Record Drawings, the Project Resource Office will notify the RE / Construction Administrator and Record Drawing Designer of the required changes. The Record Drawing Designer will have a maximum of 14 days to make the changes to the Record Drawings from the date of notification of non-compliance.

4. The Record Drawing Designer will need to re-submit the Record Drawings to the Project Resource Office for another review. The Record Drawing Designer will copy the RE / Construction Administrator on the submittal. Reviews will continue until the Project Resource Office approves the Final Record Drawings.

5. Once the Project Resource Office accepts the Final Record Drawings, the Project Resource Office will generate an acceptance email and send the acceptance email to the RE / Construction Administrator, the Record Drawing Designer, Field Reports, MPD, Final Voucher and the Project Manager notifying them that the Final Record Drawings have been accepted.

   The Field Reports Section will send out an email indicating that the Final Record Drawings have been documented in the FAST Contract Card.

6. The Project Resource Office will load the Final Record Drawings into the Repository of Online Archived Documents (ROAD) portal and the Final Record Drawings will be available typically the next day. The ROAD portal is also mirrored or copied to AIDW.

7. The Project Resource Office will then send a copy of the Final Record Drawings to the State Archives. Submittals to the State Archives are typically done on a quarterly basis. There is no notification sent to the RE / Construction Administrator or the Record Drawing Designer that the files have been submitted to the State Archives.
Chapter 6
Record Drawing General Requirements

6.1 Record Drawing General Requirements

Below are general requirements for the preparation of the Final Record Drawings. Most of these requirements are shown in the example set of record drawings in Appendix G.

1. The base or working set of record drawings will be a copy of the As-Bid plan set including all addenda that were available at bid opening.

2. The Record Drawing Information Block on the Face Sheet must be filled in completely including:
   (Also see Appendix C)

   **Constructed By:**
   **Construction Company** – The name of the Prime Contractor on the project (shown in red).
   **Completion Date** - Date the project was completed (shown in red).

   **Red-Lines By:**
   **Construction Administrator** – The name of the RE on the project (must be a PE and designated as an Engineer) (shown in red).
   **Completion Date** – The date the RE submitted the plans to the Record Drawing Designer (shown in red).

   **Record Drawings By:**
   **Record Drawing Designer** – The name of the person reviewing the transfer of the field re-lines to the Final Record Drawings (must be a PE and must be designated as an Engineer). This person is typically the primary Designer of Record on the as-bid set. The transferring of the field red-lines from the RE to the Final Record Drawings can be done by anyone, but the review of the transferred red-lines must be performed by a PE (shown in red).
   **Completion Date** – the date the record drawings were completed (shown in red).

   All of the information that is provided in the Record Drawing Information Block needs to be shown in red. (See Appendix C)

3. Ensure that every sheet has been sealed, signed and dated by the Engineer of Record. The seals need to be clear and readable. This applies to additional sheets or sketches that have been added.
4. All Addenda need to be included in the Final Record Drawing submittal. Because an addendum typically occurs prior to bid acceptance, these sheets and the addendum information can be, or is typically shown in black.

If the original sheet (prior to the addendum release) is available, this sheet can be included but an “X” must be drawn through the sheet indicating that the sheet was replaced with the new sheet. The new addendum sheet should be placed after the original “X’d” out sheet. The original sheet is not required as long as all of the addendum information is shown on the new addendum sheet. The “X” should not be so thick as to obscure any information on the plan sheet.

The Record Drawing Designer needs to check AIDW for any addenda or consult with the Project Manager and RE / Construction Administrator to ensure all of the addenda have been provided and are included in the final record drawing submittal.

5. Change orders that require that a new sealed plan sheet be developed during construction activities are developed as indicated in one of the two examples shown below: (Rev. and added - 4-19)

To replace the existing as-bid sheet:

a. The new sheet is sealed, signed and dated.

b. All information pertinent to the sheet needs to be copied to or incorporated in the new sheet from the as-bid sheet such as addendums.

c. The original as-bid sheet that is being replaced needs to be included in the record drawings and a red “X” drawn from corner to corner.

d. The changes on the new plan sheet and associated sheets need to be clouded in black.

e. On the newly sealed change order sheet (and any additional associated sheets) that replace an existing sheet, identify each change order in the upper right corner of the sheet with “To Accompany Change Order No. XX”.

f. Add a triangle to each clouded change with the Change Order number in the triangle. Also, add a brief description of the change in the Revision Block.

(See Appendix G, Page 24 - 26 for an example)

Add a Change Order sheet to the project (not replacing an existing sheet):

a. The new sheet to be added is sealed, signed and dated.

b. The new sheet is inserted into the section of the plans based on type of work. (i.e. Roadway
detail should go in the details section, traffic pavement marking should go in the pavement marking plans section)

c. On the newly sealed change order sheet(s) (and all associated sheets) that are being added, identify each change order in the upper right corner of the sheet with “To Accompany Change Order No. XX”. This can be done in black or red.

d. Cloud the title block in the lower right corner and add a triangle to identify the change order with the change order number in the triangle. This must be done in red.

(See Appendix G, Page 15 for an example)
(Section 5 added - 2-19) (Section 5 modified – 4-19)

6. All field revisions to permanent construction shall be documented on the sheet where the change occurs and shown in red. These revisions include but are not limited to; geometric, utilities, guardrail, striping, signing and permanent erosion control.

7. Change Order (CO) and Letter of Agreement (LOA) changes need to be identified on the record drawings and shown in red. (Except as noted in Chapter 6, Section 6.2, # 5) (Added - 2-19) The words “To Accompany Change Order No. (X)” or “To Accompany LOA No. (X)” where the (X) identifies the number associated with the CO or LOA, needs to be shown in the upper right corner of the drawing.. The text height should be large enough to read (PDF font size of 20). The change also needs to be clouded in red. Any added text associated with the change needs to be large enough to read (PDF font size of 10 for a 17”x11” sheet size and 20 for a 34”x22” sheet size works well). (Rev. and Added - 12-18)

The CO or LOA should be clouded and a triangle with the CO or LOA number in the triangle shall be placed by the clouded change. If more than one CO or LOA is done on a sheet, each change shall be clouded and identified with the triangle and number associated with the change. The change, clouding and triangle with the number must be shown in red. (Rev. - 12-18)

8. Shop drawings that are unique in nature and are original Contractor submitted designs, shop drawings that change the design, Request for Information (RFI), Supplemental Agreements, etc. shall all be included in the final record drawings. All additional drawings must be sealed, signed and dated by a PE and include in the final record drawings preferably at the location where the additional information pertains or added at the end of the record drawing plan set.

9. If the project includes a SWPPP sheet, Part 2 of the sheet needs to be completed if more than 1 acre was disturbed during construction. This information is provided by the RE / District Office. If after checking with the RE / District Office, the information is not available, then a red “X” needs to be drawn through only Part 2 of the sheet indicating that the RE / District did not have the information available.
Minor Revisions:

- Minor revisions can be hand drawn on the record drawings in red. If there are no red-lines or changes during construction, the record drawing sheet numbers, record drawing date and the information block on the face sheet can be hand drawn in red. Any hand drawn information needs to be neat, clear, readable and reproducible.

- The RE / Construction Administrator can add sketches that clarify or document new findings or field modifications that need to be recorded. If the sketches are done on a separate page, the new sheet needs to be sealed, signed and dated by the PE making the change in the field. The RE / Construction Administrator should ensure that the information is drawn in red and is neat, clear, readable and reproducible without leaving any extraneous data on the plans. All changes must also be clouded in red.

Major Revisions:

- If a sheet is being replaced by a revised sheet, the new revised sheet shall be sealed, signed and dated by the PE making the revision.

- The original as-bid sheet is not discarded. A red “X” must be drawn from corner to corner of the border. The line weight of the “X” must not obscure any information on the sheet. Never remove or cover any original values or details.

  - The new sheet shall be numbered with the same sheet number as the original sheet and include a revision line with the Revision Number, Description, Date and Initials of the person doing the change. (Rev. - 12-18)

- If a single sheet is being revised several times with major changes, a new sheet may be required. If so, a red “X” must be drawn on the original sheet and all subsequent sheets until the last revised sheet is shown. The line weight of the “X” must not obscure any information on the sheet. All pertinent revisions must be transferred to the last revised sheet and all revisions shall be shown in red. (Except as noted in Chapter 6, Section 6.2, #5) (Added - 2-19)
  Place sheets in order behind the original / subsequent sheets. In chronological order numbering them with the original sheet number and a triangle referring to the revision must be placed near the clouded areas that were changed. In addition the new revision number, description, date and initials should be added to the revision block on the left side of the sheet (or added on the sheet in a clear area / location on the drawing). An upper case alpha letter(s) (i.e. 18A, 18B, 18C, etc.) should be added to the project sheet number in the upper right corner of the sheet. (Rev. - 12-18)

Alternatively, if there are multiple changes or revisions for a single sheet, all revisions should be transferred to the last sheet. The revisions can be added to the new sheet and identified using the triangle, revision number and revision description as indicated above. The original
sheet must still be included with the red “X”, however a new sheet is not required for each additional revision.

Never erase, remove or cover any original values or details.

- If there are resources available and depending on the method used to prepare the record drawings (See Chapter 3, Section 3.2 for Methods), the changes can be made using CADD or within the PDF document itself. Either way, the final PDF sheet must show the revisions in red. If CADD is used, this may require a special pen table to allow printing in color. All original features of the sheet should remain in black and only the revisions shall be shown in red.

- If there are not enough resources to prepare an electronic detail, and depending on which method was used to prepare the record drawings (See Chapter 3, Section 3.2 for Methods) the RE / Construction Administrator can create hand drawn sketches sealed, signed and dated by the PE.

- All revisions to the original as-bid plans shall be shown in red, clouded in red and if necessary numbered using triangles with a legend / description of changes (also shown in red). Record drawing sheet numbers in the lower right corner and the record drawing date shall be shown in red. The text needs to be large enough to read (PDF font size of 10 for a 17”x11” sheet size and 20 for a 34”x22” sheet size works well). *(Added - 12-18)*

10. Added plan sheets shall be inserted within the appropriate section. Label the sheet with the sheet number and the next letter in the alpha designation sequence using upper case alpha letters (i.e. 18A, 18B, 18C, etc.). These should be shown in the upper right corner of the sheet.

11. The Technical Group or Consultant that was the lead for the design of the project, is also the lead for distributing the revisions received from the Project Manager and/or the RE / Construction Administrator. This should be coordinated before construction begins and a method of record drawing preparation should be decided on as outlined in Chapter 3, Section 3.2 (Methods). If the red-lines need to be distributed to the groups or Consultants that completed the work on the original design, the lead for the design of the project shall contact the appropriate groups or persons to perform the work.

The lead for the design shall collect all of the PDF documents from each discipline and combine them into one PDF document. This document shall then be converted to a PDF/A prior to submittal to the Project Resource Office. The Project Resource Office does not coordinate the collection of the record drawing submittals from each discipline and does not accept partial submittals of record drawings.

12. This section has a general guidance checklist for items that are commonly overlooked during the record drawing plans creation and submittal process. This is also part of the Record Drawing
Record Drawing Guidelines

Project Submittal Form. (See Appendix B)

☐ Are all As-Bid sheets included?
☐ Are the Record Drawings being submitted as PDF/A?
☐ Were there any Addendums on this project? (See pages 37 – 39 of the Record Drawing Guidelines for an example, Appendix G)
  ☐ No.
  ☐ Yes, the addendum numbers ____________________________ are included in the Record Drawings.

☐ Are all of the field red-lines shown on the plans, clouded and shown in red?
☐ Were there any Change Orders or Supplemental Agreements on this project that changed the plans?
  ☐ No.
  ☐ Yes, please list the Change Order(s) and sheet number (i.e. CO-4, sht. 25 of 185): ____

☐ Are the Change Orders identified and the Change Order number shown at the top right of the drawing in red, and the Change Order identified on the drawing by clouding and a triangle number? (See page 55 of the Record Drawing Guidelines for an example, Appendix G) (Rev. - 12-18)

☐ Is all utility work (gas, water, CAP, electric, communications, irrigation, railroad, etc.) moved, added, or abandoned as part of the project included?
☐ Has all of the information that the Contractor is required to provide been shown in red on the record drawings? (i.e. record drawing information for electrical items, pull box locations, etc.)
☐ Is the information in the “record drawing block” on the face sheet completed and show in red?
  ☐ Are the Construction Administrator’s name and date and the Record Drawing Designer’s name and date shown in red?
  ☐ Are the Construction Administrator and Record Drawing Designer designated as a PE?
☐ Do all of the drawings have the PE stamp and signature?
☐ Are the Record Drawing page numbers and dates shown on each sheet in red?
☐ Is the file size of each PDF/A file below < 100 MB?
☐ Is the PDF/A file unlocked and not password protected?
☐ Are the file names correct? (i.e. H123401C_vol1(pgs1to184of184)RecDwgs-2016.pdf) (Rev. - 8-18)

13. If there is more than one volume in a project set of plans, the Face Sheet and Standard Drawing Sheet (1A, 1B, 1C, 1D, 1E) needs to be included in the record drawings for each volume if they were provided as part of the original as-bid plans. This would also be where Record Drawing File
Name would change to designate the next volume (See Chapter 6, Section 6.3, Record Drawing File Naming Convention). The sheets would be included in the total number of record drawing plans sheet numbers in successive order of the original as-bid plan set.

14. Projects that are done by special provisions only, have no plan sheets or are material only procurement projects must be submitted to the Project Resource Office using the “No-Plans” document. The No-Plans document is available on the Record Drawing Web Site. The No-Plans submittals go through the same process as a regular set of record drawings with regards review by the Project Resource Office and uploading the final No-Plans document to the ROAD portal. Notification is also sent to Field Reports to update the FAST Contract Card. Note that the No-Plans form needs to be submitted as a PDF/A document. This document is also sent to the State Archives.

15. Record Drawings for projects that are identified or involve work related to Critical Structures are still completed and submitted as outlined in these guidelines, however the final record drawings are not uploaded to the ROAD portal by the Project Resource Office. Instead, a Critical Structures Notice is uploaded to the ROAD portal identifying the project as a critical structure project and access to the record drawings is required to go through the ADOT Safety and Risk Management Section. (See Appendix F) (Added - 8-18)

6.2 Record Drawing Deliverables

1. The Record Drawings shall be submitted electronically in PDF format with the following settings:

   • The size of the drawings within the PDF document shall all be either 17” x 11” (also known as half size) or 34” x 22” (also known as full size). All drawings in the PDF document must be the same size.

   • Any added text using Adobe needs to be large enough to read (PDF font size of 10 for a 17”x11” sheet size and 20 for a 34”x22” sheet size works well). (Added - 12-18)

   • The PDF document shall have no security on it. The PDF file needs to be unlocked and not password protected.

   • The PDF document needs to be submitted as a PDF/A.

2. All Record Drawing submittals must be submitted electronically in PDF/A format.

PDF/A is a “standard being established to set guidelines for archiving and preserving digital documents in Portable Document Format (PDF) and will ensure the preservation of their contents over an extended period of time and will ensure that those documents can be retrieved and rendered with a consistent and predictable result in the future.”
PDF/A frequently asked questions, an important notice regarding creating a PDF/A and instruction on how to create a PDF/A document are available on the Record Drawings Web Page.

3. The completed Record Drawing Project Submittal Form must be submitted along with the record drawing submittal. This form must be filled out completely and signed by the RE / Construction Administrator. The Record Drawing Project Submittal Form is available on the Record Drawing Web Page (example shown in Appendix B).

4. The Record Drawings must follow the correct file naming convention outlined in Chapter 6, Section 6.3 Record Drawing File Naming Convention.

5. The Record Drawing PDF file size should be limited to 100 MB (which is 100,000 KB). Larger projects will need to be broken up into smaller file sizes. File naming conventions should be followed (See Chapter 6, Section 6.3). This makes downloading the Final Record Drawings quicker and easier to upload and retrieve from the ROAD portal.

PDF file size can be dramatically reduced by optimizing or reducing the file size from within Adobe Acrobat. If the file is optimized or reduced, please make sure none of the data such as red-lines are removed as part of the optimization process. PDF optimization and file reduction needs to occur prior to creating the final PDF/A document.

6. Record Drawings can be submitted to the Project Resource Office several different ways.

NOTE: Record Drawings must be submitted as a complete set of Record Drawings. We do not accept partial record drawing submittals. Please contact the Project Manager or the RE / Construction Administrator for any questions related to combining files into one final record drawing submission.

All Record Drawings must be submitted electronically to: RecordDrawings@azdot.gov

- If you are a Consultant, you can either email the pdf of the record drawings directly to ADOT, or send a link to the record drawings from either your company FTP site or through a file sharing application such as ShareFile. The files must be available for download for a minimum of 14 days from notification to ADOT that the files are ready to be downloaded.

- If you are an ADOT employee and you are either receiving files on behalf of a Consultant or if you are submitting files from a project you are working on, you can email the record drawing files or submit the files using the ADOT ShareFile.

ShareFile is available to ADOT employees as a method to transfer large files or files that are too large to send through email. The maximum message size for emails is 20 MB
(includes message and any/all attachments). ShareFile has replaced the ADOT FTP site. To access ShareFile you will need to setup a ShareFile account by opening a Service Desk Ticket from Information Technology Group (ITG). This is done either through an email or calling the Help Desk.

For more information, please contact the Project Resource Office at: 602-712-7015.

7. The Project Resource Office will send a standard email response indicating that we have received the Record Drawings and will be reviewing them for conformity to the ADOT Record Drawing Guidelines. You will be notified once the drawings are accepted and approved by the Project Resource Office or if there are any changes that need to be made to the submitted drawings.

Depending on the complexity of the project (i.e. number of sheets) Record Drawings are typically reviewed by the Project Resource Office within 1 – 2 business days.

8. If there are any changes to the Record Drawing plans, the Project Resource Office will email the Record Drawing Designer and the RE / Construction Administrator indicating what changes are required. The Record Drawing Designer will coordinate any changes with the RE / Construction Administrator and re-submit the Record Drawings for a 2nd review. Depending on the complexity or number of changes required, the Record Drawing Designer should return the revised plans within 5 business days.

9. Upon approval of the Final Record Drawing plans, the Project Resource Office will send an email to the RE / Construction Administrator, the Record Drawing Designer, Field Reports, MPD, Final Voucher and the Project Manager indicating that the Final Record Drawings have been accepted.

10. Field Reports sends out an email indicating the project has its Final Record Drawings documented in the FAST Contract Card.

6.3 Record Drawing File Naming Convention

1. File Naming Convention: TRACS Number, Volume Number, Page Range, Record Drawings, - year construction was completed, File Extension. (Note, no spaces allowed in file names, use underscore or dash)

Example (Regular Plans, file size below 100 MB):
H542301C_vol1(01to40of40)RecDwgs-2016.pdf

Example (Regular plans, file size above 100 MB, broken up into separate files <100 MB):
H835401C_vol1(01to75of150)RecDwgs-2017.pdf
H835401C_vol1(075to150of150)RecDwgs-2017.pdf *(Try to break by discipline)*

Note: Try to make the break between files occur where the project files change from one group to another (i.e. break between Roadway and Traffic Group sheets).
Some larger projects are broken up by volumes (volume 1, volume 2, etc.). The volume number should be designated in the file name if required (See Chapter 6, Section 6.1 # 13).

Example (Volumes):  H725101C_vol1(pgs1to175of980)RecDwgs-2015.pdf
H725101C_vol1(pgs176to395of980)RecDwgs-2015.pdf
H725101C_vol2(pgs396to752of980)RecDwgs-2015.pdf (Volume Number Changes here)
H725101C_vol2(pgs753to980of980)RecDwgs-2015.pdf

Example (Shop Dwgs):  H835401C_vol1(pgs1to50of50)ShopDwgs-2017.pdf

Example (Large Set):  H922501C_vol1(pgs1to974of2980)RecDwgs-2016.pdf (Roadway sheets)
H922501C_vol1(pgs975to1026of2980)RecDwgs-2016.pdf (Roadway sheets)
H922501C_vol2(pgs1027to1089of2980)RecDwgs-2016.pdf (Volume Number Changes)
H922501C_vol2(pgs1090to1100of2980)RecDwgs-2016.pdf (Traffic sheets)
H922501C_vol2(pgs1101to1275of2980)RecDwgs-2016.pdf (Landscape sheets)
H922501C_vol3(pgs1276to1395of2980)RecDwgs-2016.pdf (Irrigation sheets)
H922501C_vol3(pgs1396to2752of2980)RecDwgs-2016.pdf (Volume Number Changes)
H922501C_vol3(pgs2753to2980of2980)RecDwgs-2016.pdf (Bridge sheets)

Note in the “Large Set” the disciplines were broken out in addition to the volumes. When submitting a large project and you have the disciplines separated out, please identify each discipline and this will be added to the description in the ROAD portal.
Appendix A: Flowchart

Red-Lines /Record Drawing Plans Flowchart

Stage I
Maximum of 45 Days from
Project Final Acceptance

Stage II
Maximum of 60 Days
from Receipt of Red-Lines

Stage III

Stage IV

NOTES:
1. The RE must coordinate the submittal format (see Method B) with the Record Drawing Designer and Project Manager. The RE, Record Drawing Designer, and Project Manager must understand the requirements of the Record Drawing Guidelines and the Project Submittal Request Form checklist to ensure compliance to the Record Drawing Guidelines.

2. The "Information Block" on Form Sheet must be completed and submitted with Red-Lines and the Record Drawing Preparation Estimate to the Project Resource Office. The Record Drawing Preparation Estimate can be used as a tool to determine readiness of the designer's draft to proceed and submit Final Record Drawings.

3. The Project Resource Office will notify the Record Drawing Designer and RE if the Record Drawing Plans are not in accordance with the Record Drawing Guidelines. The RE/Record Drawing Designer has 2 weeks to rework the Record Drawing Plans and re-submit the team to the Project Resource Office for a 2nd review.

4. The RE or Record Drawing Designer can contact the Project Resource Office if additional time is required on the submission of Record Drawings at any step of the project.

ROAD - Repository of Online Archived Documents,
RE - Resident Engineer/Construction Administrator,
PM - Project Manager for the project,
ADOW - ADOT Information Data Warehouse.

Typically Within 2 Working Days
(Depending on complexity of project)

Typically Within 1 - 2 Working Days
(Depending on complexity of project)
Appendix B: Project Submittal Form

RECORD DRAWING PROJECT SUBMITTAL FORM
ARIZONA DEPARTMENT OF TRANSPORTATION
Project Resource Office

This Record Drawing Project Submittal Form must be completed and submitted with all projects as part of the record drawings submittal process to ADOT.

Record Drawings shall be submitted electronically to: RecordDrawings@azdor.gov

SUBMITTAL DATE:______________________________

PROJECT NUMBER:______________ TRACS NUMBER:_____________________

ROUTE: ___________________ COUNTY:_____________ MILEPOST:__________

PROJECT DESCRIPTION:_____________________________________________________

BELOW IS A CHECKLIST OF ITEMS THAT NEED TO BE ADDRESSED AS PART OF THE RECORD DRAWING SUBMITTAL PROCESS

☐ All As-Bid sheets are included.

☐ Record Drawings are being submitted as a PDF/A.

☐ Part 2 of the SWPPP sheet has been filled in or “X”d out (if Part 2 was not used) if there is one as part of this project.

☐ Were there any Addendums on this project? (See Appendix G in the Record Drawing Guidelines – PDF page 49)

☐ No.

☐ Yes, the addendum numbers ______________________________ are included in the Record Drawings.

☐ All of the field red-lines shown on the plans are clouded and shown in red.

☐ Were there any Change Orders or Supplemental Agreements on this project that changed the plans?

☐ No.

☐ Yes, please list the Change Order(s) number (i.e. CO-4, LOA-1):

☐ All utility work (gas, water, CAP, electric, communications, irrigation, railroad, etc.) that was moved, added, or abandoned as part of the project are shown on the record drawings.

☐ All of the information that the Contractor is required to provide has been shown in red on the record drawings. (i.e. record drawing information for electrical items, pull box locations, etc.)

☐ All of the information in the “record drawing block” on the face sheet is completed and shown in red.

☐ The Construction Administrator’s name and date, and the Record Drawing Designer’s name and date are shown in red.

☐ The Construction Administrator and Record Drawing Designer are designated as a PE.

☐ All of the drawings have the PE stamp and signature.

☐ All of the Record Drawing sheet numbers and dates are shown on each sheet in red.

☐ The file size of each PDF/A file below < 100 MB.

☐ The PDF/A file is unlocked and not password protected.

☐ The file names are correct (i.e. H123401C_vol1(pgs1to184of184)RecDwgs-2016.pdf)

RECORD DRAWING CERTIFICATION

I HEREBY CERTIFY THAT THESE RECORD DRAWINGS WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

______________________________  ______________________________  ______________________________
Construction Administrator (RE)  Registration Number  Expiration Date
(Signature Required)
Registered Professional Engineer

Rev. 12/2018
Appendix C: Face Sheet Information Block

**Constructed by:**

Finest Contractor LLC  
Construction Company

5/10/2015  
Completion Date

**Red-Lines by:**

John Cambora, PE - ADOT  
Construction Administrator Name & Company

7/4/2015  
Completion Date

**Record Drawings by:**

Mike Davis, PE - Greatest Consulting LLC  
Record Drawings Designer Name & Company

8/12/2015  
Completion Date
# Appendix D: Record Drawing Preparation Estimate

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Number</th>
<th>Estimated</th>
<th>Total estimated</th>
<th>Total Estimated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sheets in plan set</td>
<td>sheets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of sheets with no revisions (no redlines) but include checking of</td>
<td>sheets</td>
<td>1.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>seal and signature (1 min/sheet)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(*) Number of sheets with limited revisions (minor edit redline changes)</td>
<td>sheets</td>
<td>15.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(15 min/sheet)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(*) Number of sheets with extensive revisions (some drawings need to be</td>
<td>sheets</td>
<td>40.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>either relocated or added) (40 min/sheet)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of extra sheets to confirm that all pages are signed (1 min/sheet)</td>
<td>sheets</td>
<td>1.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Administration (contract estimate, QC etc)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Project Hours = 1

Equivalent to (min/sheet) = #DIV/0!

(*) Note: Some major changes may need more time to redraw some details.
If that is the situation in your project then add 5 to 10% total hours or consult with the As-Built Statewide Project Management Specialist.
Appendix E: “No-Plans” Document

RECORD DRAWING – “NO-PLANS”
CONSTRUCTION UNIT INFORMATION

**PROJECT NUMBER: ____________________ ** TRACS NUMBER: ____________________
* ROUTE: ___________________________ * COUNTY: ___________________________
* BEGIN MILEPOST: __________ * END MILEPOST: __________
** CONTRACTOR: ________________________________________________________
* BEGIN DATE: ____________________________
* COMPLETION DATE: ____________________________
* BID AMOUNT: $ ____________________________
* FINAL AMOUNT: $ ____________________________
** ANY ADDITIONAL CHANGE ORDERS? □ Y / □ N
** BRIEF DESCRIPTION OF CHANGE ORDERS: __________________________________________

** NAME OF OFFICE CONTACT: __________________________
** PHONE NUMBER: __________________________
** RESIDENT ENGINEER’S NAME (Printed): __________________________
** RESIDENT ENGINEER’S SIGNATURE: __________________________
** DATE: __________________________
* UNIT COMMENTS:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

* PROJECT RESOURCE OFFICE COMMENTS:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

** PROJECT RESOURCE APPROVAL DATE: __________ ** APPROVED BY INITIALS: ______

Please submit completed form to: RecordDrawings@azdot.gov

Contact Phone: 602-712-7015

* USEFUL Information on Field Redline Submittals.
** REQUIRED Information on “ALL” Field Redlines Submittals.

Rev. 07/2017
Appendix F: Critical Structures Notice

NOTICE

Pursuant to measures taken through the Federal Homeland Security Act of 2002, this project has been identified as a “Critical Structure” and access must be requested through the ADOT Office of Safety & Risk Management Section.

The Public Records Requests Form is available at: https://www.azdot.gov/media

Thank you.
Appendix G: Record Drawing Example

STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
PROJECT PLANS
STATE HIGHWAY
HOLBROOK–LUPTON HIGHWAY
INTERSTATE 40

Note: This is an example of how Record Drawings need to be completed. The blue text, blue circles and blue lines are for informational purposes only and should not be included on the Record Drawings.

ALLENTOWN RD–STATE LINE
PROJECT NO. 040 AP 353 H8781 01 C
FEDERAL AID NO. NH–040–E(218)T

The Record Drawing page numbers shall be shown in red. All sheets are numbered consecutively beginning at 1 and ending at the total number of record drawing pages for the project.

Note: the total number of record drawings may be different than the total number of drawings in the as-bid package.

Record Drawing date shall be shown in red.

Page numbers in lower left corner are for reference only and should not be shown on record drawings.
<table>
<thead>
<tr>
<th>REVISION</th>
<th>STANDARD</th>
<th>SIGNING &amp; MARKING DETAILS</th>
<th>REVISION</th>
<th>STANDARD</th>
<th>SIGNING &amp; MARKING DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/14</td>
<td>M=-1</td>
<td>CURB MARKINGS FOR METERED MEDIAN AND ISLANDS</td>
<td>6/14</td>
<td>M=20 SHT 1</td>
<td>CHIP SEAL MARKER USAGE FOR TEMPORARY MARKERS</td>
</tr>
<tr>
<td>6/14</td>
<td>M=2 SHT 1</td>
<td>INTERSECTION STRIPING</td>
<td>6/14</td>
<td>M=20 SHT 2</td>
<td>CHIP SEAL MARKER USAGE FOR TEMPORARY MARKERS</td>
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<tr>
<td>5/15</td>
<td>M=2 SHT 2</td>
<td>INTERSECTION STRIPING (TWO-LANE RURAL)</td>
<td>6/14</td>
<td>M=21</td>
<td>TRANSVERSE RUMBLE STRIP DETAILS</td>
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<td>6/14</td>
<td>M=3 SHT 3</td>
<td>CENTERLINE &amp; MINIMUM CURVE DETAILS</td>
<td>6/14</td>
<td>M=22 SHT 1</td>
<td>LONGITUDINAL RUMBLE STRIP GROOVE, PATTERN - AND LOCATION DETAILS</td>
</tr>
<tr>
<td>6/14</td>
<td>M=4 SHT 2</td>
<td>STRIPING AND DELINEATION FOR FREEWAY TERMINALS</td>
<td>6/14</td>
<td>M=22 SHT 2</td>
<td>LONGITUDINAL RUMBLE STRIP EXCEPTION DETAILS</td>
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<td>6/14</td>
<td>M=5 SHT 3</td>
<td>PASSING LANE STRIPING DETAILS</td>
<td>6/14</td>
<td>M=22 SHT 3</td>
<td>CENTERLINE RUMBLE STRIP GROOVE, PATTERN - AND LOCATION DETAILS</td>
</tr>
<tr>
<td>6/14</td>
<td>M=6 SHT 4</td>
<td>RAILROAD PAVEMENT MARKINGS</td>
<td>6/14</td>
<td>M=23</td>
<td>OBJECT MARKER DETAILS</td>
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<tr>
<td>6/14</td>
<td>M=7 SHT 5</td>
<td>WORD MARKINGS</td>
<td>6/14</td>
<td>M=24</td>
<td>OBJECT MARKER PLACEMENT DETAILS</td>
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<tr>
<td>6/14</td>
<td>M=8 SHT 6</td>
<td>PAYMENT LETTERS</td>
<td>6/14</td>
<td>M=26 SHT 1</td>
<td>DELIMITER PLACEMENT AND SPACING</td>
</tr>
<tr>
<td>6/14</td>
<td>M=9 SHT 7</td>
<td>PAYMENT LETTERS</td>
<td>6/14</td>
<td>M=26 SHT 2</td>
<td>DELIMITER PLACEMENT AND SPACING</td>
</tr>
<tr>
<td>6/14</td>
<td>M=10 SHT 8</td>
<td>PAYMENT NUMBERS</td>
<td>6/14</td>
<td>M=26 SHT 3</td>
<td>FLEXIBLE DELIMITER ASSEMBLIES</td>
</tr>
<tr>
<td>6/14</td>
<td>M=11 SHT 9</td>
<td>PAYMENT MARKING SYMBOLS</td>
<td>6/14</td>
<td>M=26 SHT 4</td>
<td>SQUARE STEEL POST DELIMITER</td>
</tr>
<tr>
<td>6/14</td>
<td>M=12 SHT 10</td>
<td>PAYMENT MARKING SYMBOLS</td>
<td>6/14</td>
<td>M=26 SHT 5</td>
<td>DELIMITER FOUNDATION DETAILS</td>
</tr>
<tr>
<td>6/14</td>
<td>M=13 SHT 11</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=27</td>
<td>DELIMITER DETAILS FOR MEDIAN CROSSOVERS</td>
</tr>
<tr>
<td>6/14</td>
<td>M=14 SHT 12</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=28</td>
<td>OFF-MARKER REFERENCE MARKER LOCATION DETAIL</td>
</tr>
<tr>
<td>6/14</td>
<td>M=15 SHT 13</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=29</td>
<td>OFF-MARKER REFERENCE MARKER DETAILS</td>
</tr>
<tr>
<td>6/14</td>
<td>M=16 SHT 14</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=30</td>
<td>BRIDGE AND BARRIER MARKER DETAILS</td>
</tr>
<tr>
<td>6/14</td>
<td>M=17 SHT 15</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=31</td>
<td>BRIDGE AND BARRIER MARKER PLACEMENT AND INSTALLATION DETAILS</td>
</tr>
<tr>
<td>5/15</td>
<td>M=18 SHT 16</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=32</td>
<td>GUARDRAIL END TERMINAL DELINEATION DETAILS</td>
</tr>
<tr>
<td>6/14</td>
<td>M=19 SHT 17</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=33</td>
<td>OBJECT MARKER FOR SAND BARREL CRASH CUSHION</td>
</tr>
<tr>
<td>6/14</td>
<td>M=20 SHT 18</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=34</td>
<td></td>
</tr>
<tr>
<td>6/14</td>
<td>M=21 SHT 19</td>
<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
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<td></td>
</tr>
<tr>
<td>6/14</td>
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<td>TURN LANE PAYMENT MARKINGS</td>
<td>6/14</td>
<td>M=36</td>
<td></td>
</tr>
</tbody>
</table>

Note: The next several sheets will be omitted in this example to reduce file size and redundancy of information.
**TYPICAL SECTION**

**WESTBOUND**

Sta 2569+44.00 to 2723+18.20 BK  
Sta 2723+58.10 AHD to 2803+11.28 BK  
Sta 2803+22.63 AHD to 2805+24.15

**EASTBOUND**

Sta 2560+44.00 to 2723+78.22 BK  
Sta 2723+58.10 AHD to 2803+53.99 BK  
Sta 2803+22.63 AHD to 2805+24.15

**TYPICAL SECTION**

**WESTBOUND**

Sta 2805+24.15 to 2850+56.84 BK  
Sta 2850+37.17 AHD to 2871+13.04 BK  
Sta 2871+25.03 AHD to 2896+60.38

**EASTBOUND**

Sta 2805+24.15 to 2850+18.70 BK  
Sta 2850+37.17 AHD to 2871+45.02 BK  
Sta 2871+29.03 AHD to 2894+69.23

---

**I-40 BRIDGE DECKS**

<table>
<thead>
<tr>
<th>No</th>
<th>Location</th>
<th>Deck Sta</th>
<th>End Sta</th>
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</thead>
<tbody>
<tr>
<td>1A</td>
<td>Hawthorne T.I.</td>
<td>2610+05</td>
<td>2610+10</td>
</tr>
<tr>
<td></td>
<td>Window Rock T.I.</td>
<td>2764+33</td>
<td>2764+37</td>
</tr>
<tr>
<td></td>
<td>Grant/Lupton T.I.</td>
<td>2852+06</td>
<td>2852+10</td>
</tr>
<tr>
<td>1B</td>
<td>Hawthorne T.I.</td>
<td>2510+05</td>
<td>2510+10</td>
</tr>
<tr>
<td></td>
<td>Window Rock T.I.</td>
<td>2764+33</td>
<td>2764+37</td>
</tr>
<tr>
<td></td>
<td>Grant/Lupton T.I.</td>
<td>2852+18</td>
<td>2852+22</td>
</tr>
</tbody>
</table>

All bridge decks to receive Pont Str Set No. 1.

---

This page seems to be part of an engineering manual or report, likely related to bridge designs and specifications. The diagrams and text describe the typical sections and deck configurations for the I-40 bridge, with specific measurements and locations provided for different sections.
TREATMENT AT BEGIN OF PROJECT
I-40 Travel & Passing Lane, Shoulders

TREATMENT AT END OF PROJECT
I-40 Travel & Passing Lane, Shoulders

PAVEMENT TRANSITION AT CROSS ROADS AND RAMPS

Note: The next several sheets will be omitted in this example to reduce file size and redundancy of information.
Note: The end treatment used in the project needs to be circled and the Detail sheet needs for the end treatment that was not used on the project needs to be "X"ed out (see the next page). If both end treatments were used, then this is not required.

Note: The next several sheets will be omitted in this example to reduce file size and redundancy of information.
GENERAL NOTES

1. This detail is for roadway layout only.
2. The X-LITE shall be installed in accordance with the manufacturer’s specifications and current approved drawings including all details, hardware, hardware quantities, and other information.
3. The current manufacturer’s approved drawing is number XLTSUS-50, 10/2014. Visit the Roadway Design web site to view and print the drawing.
5. ‘Layouts’ shall be provided in the AC pavement around guardrail posts 1 through 8. ‘Layouts’ shall be filled flush to top of pavement with 3’—6’ max of CRS grout having a 28 day compressive strength between 40 and 120 psi.
6. Posts 4 - 8 shall be steel line posts. Posts 1 - 3 are proprietary.
7. Post 9 shall be a CRT post for curb with wood line posts.

Note: This end treatment was not used on the project. The Contractor was given the option of Detail A or Detail B for an end treatment. Detail A was not used. The barrier summary sheet (the previous sheet to this sheet) was circled with the end treatment that was used. Detail B was used. This sheet is "X'd" out from corner to corner as shown.

Sheet number and date is still required even though the sheet was "X'd" out.

Note: PE stamp is not required on this sheet. This is a Standard Drawing.

FOR ELEVATIONS ABOVE 4,000', USE THE VALUES IN PARENTHESES
Note: This end treatment was not used on the project. The Contractor was given the option of Detail A or Detail B for an end treatment. Detail A was not used. The barrier summary sheet (sheet 16 of 75) was circled with the end treatment that was used. Detail B was used. This sheet is "X'd" out from corner to corner as shown.
1. This detail is for roadway layout only.

2. The SKT-350 shall be installed in accordance with the manufacturer’s specifications and current approved drawings including all details, hardware, hardware quantities, and other information.

3. The current manufacturer’s approved drawing is number SKT-W-2Ws-AZ, 06/04/11. Visit the roadway Design Subcommittee website to view and print the drawing.


5. "Leaves" in asphalitic concrete shall be provided in the AC pavement around the guardrail posts at the locations and dimensions specified on the manufacturer approved drawings. "Leaves" material shall consist of a 1-inch granular mix or other non-cohesive material as approved by the engineer.

This is the end treatment that was used on the project. This is noted in the summary sheet on page 16 of 75.

Note: PE stamp is not required on this sheet. This is a Standard Drawing.
SECTION A-A

▲ Screen AC Millings to pass 1 - \( \frac{1}{4} \)" screen prior to placement. See Special Provisions.

SECTION B-B

CROSSOVER SCHEDULE

<table>
<thead>
<tr>
<th>Station</th>
<th>L</th>
<th>W</th>
<th>Area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2560+00</td>
<td>76</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>2700+85</td>
<td>76</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>2795+17</td>
<td>76</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>2814+69</td>
<td>76</td>
<td>20</td>
</tr>
</tbody>
</table>

NOTES:
1. Contractor shall match existing elevations at the edge of I-40 shoulder.
2. Locations and dimensions above are approximate. Contractor shall verify measurements in the field.

DETAIL C

MEDIAN CROSSOVERS
This sheet is a change order sheet that was added and did not replace another sheet in the plans.

Cloud the title block and add the triangle with the addendum number. This must be done in red.

Add "To Accompany Change Order No. X" to the upper right corner. This can be done in red or black.

This sheet requires a new seal, signature and date.
NOTES:

1. Locations of Detail D work shall be staked and verified by the Engineer prior to the start of work in the area.

2. Removal of sidewalk, ramps and slabs is to be paid for under ITEM 20032025 - REMOVAL OF CONCRETE SIDEWALKS, DRIVEWAYS AND SLABS.
PAINTED CLIFFS REST AREA

Accessible Parking Approximate Quantities

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Item No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning, Master or Regulatory Sign Panel</td>
<td>SQ FT</td>
<td>1.00</td>
<td>60800005</td>
</tr>
<tr>
<td>Sign post perforated</td>
<td>LFT</td>
<td>10.00</td>
<td>60700040</td>
</tr>
<tr>
<td>Foundation for Sign Post (Concrete)</td>
<td>EACH</td>
<td>1.00</td>
<td>60700030</td>
</tr>
<tr>
<td>Miscellaneous Work (Wheelstop)</td>
<td>EACH</td>
<td>1.00</td>
<td>70900019</td>
</tr>
<tr>
<td>Dual Component Epoxy 4” White Equivalent Pavement Marking</td>
<td>LFT</td>
<td>390</td>
<td>70900001</td>
</tr>
<tr>
<td>Dual Component Epoxy 4” Yellow Equivalent Pavement Marking</td>
<td>LFT</td>
<td>420</td>
<td>70900002</td>
</tr>
<tr>
<td>Permanent Pavement Marking 4” White Equivalent Pavement Marking</td>
<td>LFT</td>
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<td>70800001</td>
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<tr>
<td>Permanent Pavement Marking 4” Yellow Equivalent Pavement Marking</td>
<td>LFT</td>
<td>175</td>
<td>70800011</td>
</tr>
</tbody>
</table>

Wheel Stop Detail

- Seal 1/2" Deep Hole W/Mortar
- 1 1/4" x 2"-6" Long
- 3/4" x 9 Hole
- Paint Wheel stop with Yellow Reflective Paint

Note: The next several sheets will be omitted in this example to reduce file size and redundancy of information.

Symbol Legend

- New RT-BAZ 12” x 18”
- Install raw sign on square 25 type post.
- Install wheel stop in advance of the sign.

Wheel stop

Page 17
TRAFFIC CONTROL GENERAL NOTES:

10. Dangers shall be placed on top of all construction signs except the "END ROAD WORK THANK YOU" signs. Type "A" flashing warning lights shall be required on all construction signs except the "END ROAD WORK THANK YOU" sign.

13. Construction signs shall not be displayed to traffic no more than 24 hours prior to the actual start of construction. Signs may be installed sooner but they must be covered or removed away from traffic. The cost for covering or removing them shall be considered part of the sign installation cost. No further compensation will be made. These signs shall be removed within 24 hours after completion of the construction activities.

14. When traffic control devices are not in use, they shall be moved at least 30 feet from the roadway and covered or turned away from traffic.

15. Drums, Type 2 barricades and vertical panels shall be placed 40 ft. on center in tapers and 80 feet on center in tangents, except as otherwise noted on the plans.

16. The contractor shall substitute Type 1 barricades for Type 2 barricades as long as the reflective area on the top panel of the Type 1 barricade is equivalent or greater than the reflective area of a Type 2 barricade.

17. For right work, a Type C steady-burning yellow light shall be mounted on every drum, Type 2 barricades, and vertical panels when used for channelization only.

18. During nighttime, the contractor shall utilize cones for channelization devices unless otherwise directed by the Engineer.

19. The contractor shall utilize flashing arrow panel in the sequential channeling mode for each closure of a through lane. The contractor shall not utilize a flashing arrow panel in connection with any shifting taper.

20. For temporary concrete barrier details, see Standard Drawing C-3.  BM-1 (white) or BM-2 (yellow) barrier markers listed on the ADOT Approved Products List and conforming to Standard Drawings M-19 and M-33 shall be installed at 25 feet spacing. The installed price for the marker shall be considered a part of the barriercost.

21. For sand barrel crash cushion details, see Standard Drawings C-1 and C-2.

22. All existing pavement markings in conflict with the traffic control striping plan shall be removed by methods approved by the Engineer. Painting over striping does not constitute strike obliteration. For a daytime shift in traffic, the striping may be obliterated through channelizing devices with the existing pavement markings remaining in place.

23. No pavement marking obliteration work will be allowed on existing yellow pavement markings. The existing yellow left edge stripes shall be removed with the passing lane and ramp milling process activities 20 and 21.

24. When no longer required, temporary pavement markings shall be removed.

25. Existing pavement markings shall be removed when present along existing strike obliteration at no cost to the Department.

26. The contractor shall clean the roadway surface to the satisfaction of the Engineer by sweeping and air-jet blowing, immediately prior to the placement of all temporary pavement markings. The roadway surface shall be dry.

27. At the completion of the new pavement surface each day, center lines, lane lines, and stop bars shall be striped with the application of standard reflectorized traffic paint at the location of the permanent striping, or as directed by the Engineer.

28. All drawings are schematic only and not to scale. All dimensions are in feet, unless otherwise noted.

29. The contractor shall ensure the earthwork material or aggregate base under the temporary sand barrel crash cushions, under the temporary concrete barrier and between the barrier and the roadway is 10"s or flatter in each direction for smooth and even and no rough spots or gravelly terrain.

30. The Contractor shall provide flaggers and uniformed police officers (In) as directed by the Engineer during the installation, relocation or removal of Temporary Concrete Barriers.

31. For temporary concrete barrier markers, see ADOT Standard Drawing M-32 barrier markers. Markers shall be installed at 20 feet spacing. The installed price for the markers shall be considered part of the barrier cost.

This sheet is "X" out because it was replaced as part of an addendum. The next sheet shows the addendum # 1 in the upper right corner.

Note: If this sheet is available, please provide it with the "X" through the sheet as shown. The "X" does not need to be in red. Red or Black "X" on this sheet is acceptable. If the sheet is not available it is not necessary to include it in the record drawings. The addendum sheet (see next sheet) must be present.
TRAFFIC CONTROL GENERAL NOTES:

1. The traffic control plans represent a suggested method for traffic control during construction. The contractor may propose an alternate traffic control plan in accordance with Section 101 of the Specifications or as directed by the Engineer or as directed by the Department.

2. Adjustments to the details of these traffic control plans and requirements may be necessary due to construction conditions, as directed by the Engineer or as directed by the Department.

3. The contractor shall maintain traffic as I-40 on weekends and holidays as specified in the Maintenance of Traffic signs as directed by the Engineer.

4. The contractor shall maintain traffic on a service road at all times.

5. All existing signs in conflict with the construction signs shall be removed, relocated or covered in place, as directed by the Engineer. The contractor shall store and retain items which have been removed or relocated in a manner approved by the Engineer at no additional cost to the Department.

6. Speed limit signs to preliminary and its subject to review and change by the Engineer as directed by field conditions.

7. *WATCH FOR TRUCKS* signs shall be installed wherever truck traffic is expected.

8. Use double yellow lines on shoulders adjacent to the shoulder of the roadway.

9. The retroreflective Type II reflectors of the ADOT Traffic Control Products System (TP-8) or equivalent shall be installed in the minimum criteria established by the Engineer.

10. All construction signs shall have a white background, except as otherwise noted.

11. Warning signs installed on spray and rigid stands, sign mounting height shall be according to the sign manufacturer recommendation.

12. 2. Flashing warning lights shall be installed in all right and center traffic lanes, except as otherwise noted on the plans.

13. Construction signs shall be displayed to traffic no more than 24 hours prior to the actual start of construction. These signs may be installed sooner but they must be removed or turned away from traffic. The cost for covering or turning them shall be considered part of the sign installation cost. No further cooperation will be needed. These signs shall be removed within 24 hours after completion of the construction activities.

14. When traffic control devices are not in use, they shall be moved at least 30 feet from the roadway and covered or turned away from traffic.

15. Signs, Type II barreled and vertical panels shall be placed 40 feet on center in lanes and 80 feet on center in tangents, except as otherwise noted on the plans.

16. The contractor shall substitute Type I barreled for Type 2 barreled as long as the reflective area on the top of the Type I barreled is equal to or greater than the reflective area of a Type II barreled.

17. For right work, a Type C steady-burning yellow light shall be mounted on every drum, Type II barreled.

18. During nighttime the contractor shall utilize cones for channelization devices unless otherwise directed by the Engineer.

19. The contractor shall utilize a flashing arrow panel in the sequential chevron mode for each closure of a through lane. The contractor shall not utilize a flashing arrow panel in connection with any shifting lane.

The addendum information is typically shown clouded with a triangle number. Because this was done before construction, this does not need to be shown in red.

This sheet is the addendum sheet. This sheet replaces the original sheet. Addendum sheets must be included with the record drawings. If the original sheet is available, that sheet can be included with an "X" from corner to corner. If the original sheet is not available, it may be omitted. If there are more than one addendum's on a sheet, as long as the final addendum shows all of the information from the previous addendum's, the previous addendum's do not need to be included. If the final addendum sheet does not show the information from previous addendum's those additional addendum's must be included.
## MAINTENANCE OF TRAFFIC

<table>
<thead>
<tr>
<th>ACTIVITY NO</th>
<th>CONSTRUCTION ACTIVITY</th>
<th>TRAFFIC CONTROL</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Advance signs</td>
<td>Provide auxiliary signs, &quot;ROAD WORK (DATE) TO (DATE)&quot; and &quot;ROAD WORK NEXT 7 DAYS&quot; as advancement of work zone. Provide &quot;ROAD WORK BEGINS&quot; sign on all ramps.</td>
<td>Signs are to remain in place for the duration of the project. The &quot;ROAD WORK (DATE) TO (DATE)&quot; sign should be installed at least 1 week before work begins.</td>
</tr>
<tr>
<td>2A</td>
<td>Mill and replace ramps</td>
<td>Temporary Figure 3 on Sheet. Traffic per Sheets 35, 36, and Design Guidelines (TCCG). Use detour to close ramps.</td>
<td>Right-of-way work only at Grant Rd/Laputan T1. Day time work only at other T1s. Maintain traffic on weekends and holidays. Payment replacement must be completed to all areas of the same day before opening to traffic. See Note I below. Setup is to be taken down whenever work is not under way.</td>
</tr>
<tr>
<td>2B</td>
<td>Mill and replace travel lane and outside shoulder</td>
<td>Maintain SA-GVR of the Traffic Control Design Guidelines. Traffic per Sheets 35, 36, and Design Guidelines. Use detour to close ramps.</td>
<td>Maintain 2-way traffic on weekends and holidays. Payment replacement must be completed to all areas of the same day before opening to traffic. Use Note I below. Setup is to be taken down whenever work is not under way.</td>
</tr>
<tr>
<td>2C</td>
<td>Mill and replace travel lane (1/2 pavement) and outside shoulder</td>
<td>Maintain 1-lane traffic per Figure 346 of the ADOT TCCG. Reduce speed to 45 mph.</td>
<td>One lane to each direction will be perpendicular over the weekends (not holidays) as approved by the Engineer.</td>
</tr>
<tr>
<td>2D</td>
<td>Mill and replace passing lane and outside shoulder</td>
<td>Maintain 1-lane traffic per Figure 346 of the ADOT TCCG. Reduce speed to 45 mph.</td>
<td>One lane to each direction will be perpendicular over the weekends (not holidays) as approved by the Engineer.</td>
</tr>
<tr>
<td>2E</td>
<td>Mill and replace passing lane (1/2 pavement) and traffic shoulder</td>
<td>Maintain 1-lane traffic per Figure 346 of the ADOT TCCG. Reduce speed to 45 mph.</td>
<td>One lane to each direction will be perpendicular over the weekends (not holidays) as approved by the Engineer.</td>
</tr>
<tr>
<td>2F</td>
<td>Mill and replace cross roads</td>
<td>Work shall be limited to one side of the roadway at a time. Maintain two-way traffic with a flagging operation. Traffic control shall be per MUTCD TA-10.</td>
<td>Day time work only. Maintain traffic on weekends and holidays. Payment replacement must be completed to all areas of the same day before opening to traffic. Use Note I below. Setup is to be taken down whenever work is not under way.</td>
</tr>
<tr>
<td>2G</td>
<td>Mill and replace Plant Area Approach Road</td>
<td>Work shall be limited to one side of the roadway at a time. Maintain two-way traffic with a flagging operation. Traffic control shall be per MUTCD TA-10.</td>
<td>Day time work only. Maintain traffic on weekends and holidays. Payment replacement must be completed to all areas of the same day before opening to traffic. Use Note I below. Setup is to be taken down whenever work is not under way.</td>
</tr>
<tr>
<td>2H</td>
<td>Mill and replace rest area</td>
<td>Maintain the traffic circulation inside the rest area. Work shall be performed such that there is access to parking spaces at all times.</td>
<td>Right-of-way work only. Maintain traffic on weekends and holidays. Payment replacement must be completed to all areas of the same day before opening to traffic. Use Note I below. Setup is to be taken down whenever work is not under way.</td>
</tr>
</tbody>
</table>

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**NOTES:**

1. Areas of resurfaced pavement shall be replaced the same day with required depth of AC pavement per the applicable pavement structural sections in the entire areas resurfaced. There shall be no more than 14 times at the end of a day.

2. The order of construction activities shall constitute a sequence of construction. The contractor shall perform the work in the most efficient manner consistent with the plans and special provisions approved by the Engineer. Any modifications to these plans shall require review and approval by the Engineer.

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**ADDENDUM NO. 1**

**PARDON BRINCKERHOF**

**TRAFFIC CONTROL PLAN MAINTENANCE OF TRAFFIC**

**TRAC No. 1589001**

**NH-040-0221/87**

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**Page 21**
## Maintenance of Traffic

<table>
<thead>
<tr>
<th>Activity No.</th>
<th>Construction Activity</th>
<th>Traffic Control</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Bridge rail work</td>
<td>Close adjacent lane per Sheets 33, 34 of these plans. Protect work zone with TC-2. Reduce speed to 45 mph. Day time work only. Maintain traffic on weekends and holidays. All bridge rail work shall be constructed on one side of freeway at a time.</td>
<td></td>
</tr>
<tr>
<td>4A</td>
<td>AR-ACFC Ramps</td>
<td>Temporarily close ramp and detour traffic per Sheet 56 of these plans and Figure 5A-40 of ADOT TCDD. Use detour on Sheet 5G for Lupton Rd TI Ramp Closure. Night time work only at Grant Rd/Lupton TI. Day time work only at other TI's. Maintain traffic on weekends and holidays. Setup is to be taken down whenever work is not under way.</td>
<td></td>
</tr>
<tr>
<td>4B</td>
<td>AR-ACFC overlay travel lane</td>
<td>Maintain 2-lane traffic per Figure 5A-59R of the Traffic Control Design Guidelines. Reduce speed to 45 mph. When working next to gore areas, temporarily close ramp and detour traffic per Sheet 35, 36 of these plans. Maintain 2-lane traffic on weekends and holidays. Setup is to be taken down whenever work is not under way.</td>
<td></td>
</tr>
<tr>
<td>4C</td>
<td>AR-ACFC overlay passing lane</td>
<td>Maintain 2-lane traffic per Figure 5A-51L of the ADOT TCDD. Reduce speed to 45 mph. Maintain 2-lane traffic on weekends and holidays. Setup is to be taken down whenever work is not under way.</td>
<td></td>
</tr>
<tr>
<td>4D</td>
<td>Apply Fogcoat on the cross roads</td>
<td>Work shall be limited to one side of the roadway at a time. Maintain two-way traffic with a flagging operation. Traffic control shall be per MUTCD TA-10. Maintain 2-lane traffic on weekends and holidays. Setup is to be taken down whenever work is not under way.</td>
<td></td>
</tr>
<tr>
<td>4E</td>
<td>Fogcoat Rest Area Approach Road</td>
<td>Work shall be limited to one side of the roadway at a time. Maintain two-way traffic with a flagging operation. Traffic control shall be per MUTCD TA-10. Day time work only. Maintain traffic on weekends and holidays. Setup is to be taken down whenever work is not under way.</td>
<td></td>
</tr>
<tr>
<td>4F</td>
<td>Fogcoat Rest Area</td>
<td>Maintain the traffic circulation in the rest area. Work shall be phased such that there is access to parking spaces at all times. Night time work only. Maintain traffic on weekends and holidays. Setup is to be taken down whenever work is not under way.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Permanent Striping</td>
<td>Mobile operation per Figure 5A-18 of ADOT TCDD.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Rumble strips and miscellaneous work</td>
<td>Provide traffic control per MUTCD TA-4.</td>
<td></td>
</tr>
</tbody>
</table>

Note: The next several sheets will be omitted in this example to reduce file size and redundancy of information.
This sheet is marked up due to a change order. The change order number and triangle are not required because this is the original sheet, it hasn't been re-issued.

Note: The next several sheets will be omitted in this example to reduce file size and redundancy of information.
This sheet was the original as-bid sheet. There was a Change Order that required major changes so a new sheet was developed with a new seal, signature and date as shown on the next sheet Page 25.
This sheet is the new sheet that was developed because of a Change Order. The original as-bid sheet is shown on Page 24 (previous sheet).

This sheet replaces the previous sheet and has a new seal, signature and date for the Change Order.

The title block needs to be clouded in red.
Changes after the new sealed sheet has been released (See Page 25) are shown and clouded in red. The previous sheet (Page 25) will require a red "X" through the sheet.
GENERAL PAVEMENT MARKING NOTES:

1. All striping shall be in compliance with the current ADOT Signing and Marking Standard Drawings and the Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition as amended by the January 2012 ADOT Supplement.

2. The pavement marking details are schematic only and not to scale. The contractor shall follow all dimensions, details, and standards when installing pavement markings and markers.

3. See the following ADOT standard drawings for striping details M-15, M-16, M-18, and M-19.

4. All dimensions are in feet unless otherwise noted in the plans or the detailed drawings.

5. All striping dimensions are to the face of curb or edge of pavement, unless otherwise noted.

6. The dimensions shown to pavement striping are to the center of the striping or in the case of double striping to the center of the double striping.

7. The permanent pavement marking layout may be modified as directed by the Engineer.

8. It is the contractor’s responsibility to develop an “as-built” plan of the existing striping and to have the plans approved by the Engineer before any construction activities.

9. At completion of the final pavement surface, each edge line, center line, lane line, and stop bar covered by the new pavement shall be striped with one application of 4” wide standard reflectorized traffic paint at the location of the permanent striping. The paint shall have a minimum thickness of 15 mils wet (10 mils dry).

10. It is the contractor’s responsibility to ensure that the final surface course is placed so that the striping is offset one foot clear of the construction joint, unless otherwise directed by the Engineer.

11. The contractor shall be responsible for the layout and installation of permanent pavement markings on the final surface course following control points that have been set not more than 50 feet apart along the lines to be striped.

12. The contractor shall keep the roadway surface to the satisfaction of the Engineer, by sweeping and air-jet blowing, immediately prior to the final application of pavement markings. The roadway surface shall be dry. The air and pavement temperatures shall not be less than 40°F and the air temperature wind chill factor shall not be less than 35°F for the placement of epoxy pavement marking.

13. The final striping shall be two-part epoxy pavement marking placed at a minimum of 30 calendar days after completion of initial striping, as directed by the Engineer. All other markings shall be applied at the same time. The two-part epoxy material shall conform to the specifications.

14. Freeway arrow shall be installed in accordance with Std Dwg M-12.

15. All final stop bars, pavement arrows, and transverse lines shall be two-part epoxy pavement markings.

16. All pavement markers shall have an abrasion-resistant coating on the face of the prismatic reflector and shall conform to the details of Standard Drawing Number M-19. They shall be installed with a bituminous adhesive which is on the ADOT Approved Products List.

17. Where pavement markers are placed along solid striping, the nearest edge of each marker shall be offset from the nearest edge of the striping. Recessed pavement markers placed between double yellow striping shall be centered in the 6 inch gap between the lines.

18. All pavement markers shall be installed so that the reflective face of each marker is facing the direction of traffic and is perpendicular to the direction of traffic flow. Type B pavement markers shall be installed so that the clear reflective face of each marker is facing approaching traffic, and perpendicular to the direction of traffic flow. Type B pavement markers shall be installed so that the yellow reflective face of each marker is facing approaching traffic and perpendicular to the direction of traffic flow.

19. The Contractor shall install ground-in rumble strips wherever the existing rumble strip is obliterated by milling or overlay work, except on concrete surfaces or on bridges with less than a 10 inch load of AR-ACFC. The ground-in rumble strips shall conform to the details shown on Std Dwg M-22.

APPENDIX PAVEMENT MARKING QUANTITIES

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>4&quot; Equivalent</th>
<th>Item No.</th>
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<tbody>
<tr>
<td>Pavement marking (painted)</td>
<td>L.F.T.</td>
<td>1, 920,035</td>
<td>63,437</td>
<td>7000000</td>
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<td>Pavement marking</td>
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<td>7000000</td>
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<tr>
<td>Parking symbol</td>
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<tr>
<td>Dual component EPOXY pavement marking</td>
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<td>Pavement Marker Type C, recessed</td>
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<td>Ground-In Rumble Strips</td>
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<tr>
<td>Object Marker (N-23) (Type 2)</td>
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<tr>
<td>Preformed durable tape</td>
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<td>23,730</td>
<td>7000002</td>
</tr>
<tr>
<td>Preformed durable tape</td>
<td>L.F.T.</td>
<td>15,620</td>
<td>23,730</td>
<td>7000002</td>
</tr>
</tbody>
</table>

TYPICAL STRIPING DETAIL

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Location</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type C</td>
<td>Rumble Strip</td>
<td>SOUTHEAST</td>
<td>40</td>
</tr>
<tr>
<td>Type C</td>
<td>Pavement Markers</td>
<td>20'' spacing</td>
<td></td>
</tr>
<tr>
<td>Type C</td>
<td>Pavement Markers</td>
<td>40'' spacing</td>
<td></td>
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</table>