

TABLE OF CONTENTS

CHAPTER 10: CONSTRUCTION

10.1 CHAPTER GOALS.....	103
10.2 ADOT/FHWA/BLM/USFS INTERACTION DURING CONSTRUCTION: PARTNERING.....	103
10.3 CHANGES AND MODIFICATIONS TO PROJECT CONTRACT DOCUMENTS.....	104
10.4 TEMPORARY ACCESS.....	104
10.5 EROSION AND POLLUTION CONTROL.....	104
SWPPP and NOI.....	104
Equipment Washing.....	105
Spill Prevention Containment and Countermeasures.....	105
Seeding.....	105
NOT Requirements.....	106
10.6 FIRE CONTROL.....	106
10.7 CLEARING LIMITS AND VEGETATION PROTECTION DURING CONSTRUCTION.....	106
Clearing and Grubbing.....	106
Merchantable Timber.....	106
10.8 WATER.....	106
Riparian Awareness.....	106
Water Source Development.....	107
10.9 ARCHAEOLOGICAL/CULTURAL AWARENESS.....	107
10.10 WILDLIFE ENCOUNTERS.....	107
10.11 TRAFFIC CONTROL DURING CONSTRUCTION.....	107
10.12 ACCEPTANCE OF WORK.....	107
Phased Acceptance of Work.....	107
Final Project Acceptance.....	107
10.13 ADDITIONAL RESOURCES.....	108

10

GUIDELINES



CHAPTER 10: CONSTRUCTION

10.1 CHAPTER GOALS

In addition to safely constructing a quality project on schedule and within budget, important goals related to building highway corridors on lands managed by USFS or BLM include:

- Compliance with mitigation measures to fulfill NEPA requirements.
- Implementation and maintenance of temporary and permanent erosion control measures (refer to ADOT's *Erosion and Pollution Control Manual*) when needed.
- Protection of riparian areas and other significant resources during construction.
- Strict delineation of construction limits in order to protect the adjacent landscape.
- Restoration and stabilization of all slopes and soils disturbed by construction.

10.2 ADOT/FHWA/BLM/ USFS INTERACTION DURING CONSTRUCTION: PARTNERING

As has been discussed throughout this text, highway corridors through lands managed by BLM and USFS are to be managed as a joint effort between ADOT and BLM or USFS. Open communication between appropriate personnel in each agency is essential, accordingly this is especially true during the construction process when issues need to be resolved quickly. In order to foster open communication, ADOT, BLM and USFS have agreed to the philosophy of "Partnering". Partnering is defined as the cooperative management of project development activities.

During construction, ADOT, as agent for FHWA, will ensure compliance with all such terms and conditions identified in the NEPA document, the Letter of Consent (LOC) and any special conditions designed to protect BLM or USFS lands and resources to which all parties have agreed (refer to Chapter 2).

During construction, BLM or USFS will typically:

- Monitor the progress of the contract.
- Assist the ADOT Resident Engineer (RE) in

addressing or clarifying the intent of provisions or measures that involve BLM/USFS land and resources.

- Provide input on construction issues during the weekly construction meetings.
- Review construction for compliance with the Stormwater Pollution Prevention Plan (SWPPP).
- Assist coordination with other involved agencies, such as the Arizona State Game and Fish Department, US Fish and Wildlife Service, etc.

In addition to inter-agency cooperation, it is important that during construction the contractor receives clear instructions and responses to queries in a timely fashion; a clear chain of command is essential. To meet that need, shortly after award of the contract and prior to the onset of construction activities, ADOT requires the contractor to host a "Partnering" meeting. BLM/USFS will be given an opportunity to provide input on construction issues during the construction partnering meeting. The goals of this meeting include establishing:

- Contacts and defining the roles of key agency representatives.
- Common project objectives and guidelines.
- NEPA requirements including compliance with National Emission Standards for Hazardous Air Pollutants (NESHAPs).
- Unique project conditions and requirements.
- An issue/problem resolution process.
- A joint evaluation process.

If BLM/USFS identifies a situation where it appears there may be non-compliance with NEPA, the LOC or the project contract documents, BLM or USFS will work directly with the ADOT Project Manager or RE and the FHWA Area Engineer to resolve the issue. BLM/USFS will not initiate direct contact with any contractor under contract to ADOT. Exceptions include BLM/USFS law enforcement authority and responsibility for fire control. In emergency situations such as incidents relating to fire, safety, or the irretrievable loss of resources, BLM/USFS has the authority to deal directly with

10

GUIDELINES

all involved parties, including the contractor.

10.3 CHANGES AND MODIFICATIONS TO PROJECT CONTRACT DOCUMENTS

When changes to the project contract documents are required, environmental impacts will be evaluated in addition to construction costs prior to permitting the contractor to proceed. Mitigation measures described as part of the NEPA process are not subject to Value Engineering.

10.4 TEMPORARY ACCESS

Temporary construction access needs should be identified during the planning and design process and included in the environmental clearances. Required temporary access should be described



Figure 10.1 Erosion control includes sediment basins to catch flows over disturbed soils.

in the project contract plans and specifications, and must be followed by the contractor. However, contractors may request additional or unplanned temporary access to fences, bridge sites, cut and fill slopes, staging areas, hot plant sites, crushing sites, decking (timber staging) areas or detours. Additional environmental documentation may be required in these cases. Contractors should identify areas not included in the approved Environmental Document as soon as possible in the construction process. ADOT/BLM/USFS will assist in determining the appropriate environmental analysis and time required for any proposed changes. The Partnering process offers an opportunity to request

changes and define requirements for approval.

Where crossing natural drainages, temporary construction approaches should be narrow and as perpendicular to the streambed as possible, and disturbance to the stream bank minimized. Approaches should be treated to minimize erosion into the drainage. If applicable Clean Water Act Section 404 Permit mitigations must be complied with. Refer to Chapters 5 and 6 for more information.

10.5 EROSION AND POLLUTION CONTROL

SWPPP and NOI

After award of the project and prior to the start of construction, the contractor must submit his own Stormwater Pollution Prevention Plan (SWPPP) to ADOT (refer to Chapter 8). These plans shall also be reviewed by BLM/USFS. ADOT and BLM or USFS personnel should review the contractor's SWPPP in particular regard to the following concerns:

- During construction, areas of disturbed soil that are not protected by permanent erosion control measures (seeding, impervious surfaces, etc.) should be kept to a minimum as described in the project contract documents.
- Stormwater flows must be guided through or diverted around construction sites. Flows over disturbed soils should be detained in sediment basins, *Figure 10.1*.
- Diversion structures should be made of non-erodible material, such as concrete, plastic or rock.
- Diversion structures should be in place prior to commencement of soil disturbing activities.
- All stream diversions must comply with State and Federal water quality standards as they are implemented.

All disturbed areas must be addressed by the SWPPP, and Best Management Practices (BMPs) must be applied and installations maintained in good working order (refer to ADOT's *Erosion and Pollution Control Manual* for more information).

After concurrence of the SWPPP by BLM/USFS and approval by the RE, and prior to any earth-disturbing activities, the contractor must submit an application for a Notice of Intent (NOI) to the Arizona



Figure 10.2 Seeding is a way in which soils can be stabilized after construction activities.

Department of Environmental Quality (ADEQ).

Equipment Washing

To minimize the introduction and spread of invasive and noxious plant species, all equipment that will operate on the project must be washed prior to operating within BLM or USFS lands, and washed again prior to leaving the project. Refer to ADOT's *Erosion and Pollution Control Manual* for proper washing techniques.

Spill Prevention Containment and Countermeasures

As described in greater detail in the ADOT *Erosion and Pollution Control Manual*, the contractor's SWPPP should address pollutants such as fuels, lubricants, bitumens, raw sewage, wash water from concrete or aggregate operations and other harmful materials.

Seeding

In order to meet Clean Water Act requirements, soils disturbed by construction activities must be stabilized. Stabilization is typically achieved by means of seeding, *Figure 10.2*, in order to

re-establish native vegetation. The success of revegetation on construction projects relies heavily on inspection and attention paid to complying with the project contract documents.

As discussed in greater detail in Chapters 4 and 7, seeding success is dependent upon proper soil conditions. Field personnel should review the project contract documents as they relate to slope preparation.

Contractors may request substitute seed species for those listed in the project contract documents. Readily available commercial seed and plant species that the contractor may suggest may not be appropriate for substitution for projects on BLM/USFS lands. Prior to considering substitutions proposed by the contractor, the RE should consult ADOT Roadside Division as well as BLM/USFS.

Seed, tackifier, compost, fertilizers and soil amendments must be delivered to the construction site in compliance with the project contract documents. For large projects, multiple applications may be necessary, requiring multiple contractor

mobilizations. Refer to Chapter 7 for more information.

NOT Requirements

As described in greater detail in the *ADOT Erosion and Pollution Control Manual*, ADOT and the contractor must comply with the ADEQ/EPA Statewide Construction General Permit regarding stormwater permits and provide to ADEQ or EPA a Notice of Termination (NOT) at the conclusion of construction. For most ADOT projects on BLM and USFS lands, successful revegetation is an essential component of final stabilization. The ADOT methodology for determining final stabilization may be found at the ADOT Stormwater Program website listed at the conclusion of this chapter.

10.6 FIRE CONTROL

The BLM/USFS typically provide required wildland fire information in the project contract documents. During the construction project BLM/USFS should continue to monitor and provide updated Fire Control Plan information.

10.7 CLEARING LIMITS AND VEGETATION PROTECTION DURING CONSTRUCTION

Clearing and Grubbing

Staking of clearing limits, including top of cut, toe of fill, warping, laying back cut slopes, rounding, access areas, staging areas and all other limits of construction, *Figure 10.3*, is required prior to clearing. As described in the project contract documents, clearing limit stakes should be checked



Figure 10.3 Staking of clearing limits is required prior to clearing.

by both ADOT and BLM or USFS prior to beginning clearing.

If work is needed beyond the clearing limits, separate environmental documentation and authorization may be required.

For projects with large rights-of-way, areas to be left undisturbed should be described in the project contract documents and clearly identified in the field. Barrier marking materials, *Figure 10.4*, may be required to protect areas.

Early installation of easement fences may be desirable to protect the site from off-road vehicles or animals, and to delineate contractor operations.

Merchantable Timber

As described in Chapter 2, USFS must appraise and sell timber to ADOT where warranted by the project location. ADOT typically enters into a separate contract for the removal of the timber. Up to six months may be required in order to inventory the timber and complete the transfer to ADOT.

If during construction, design changes require the removal of additional trees, these trees must not be cut until they are measured, marked and sold to ADOT. Failure to observe this procedure could result in penalties.

10.8 WATER

Riparian Awareness

As described in the project contract documents, construction personnel should be properly trained in the identification, importance and protection of



Figure 10.4 Barrier marking materials may be required for areas to be left undisturbed.



Figure 10.5 Types of archaeological resources include sites such as Wupatki Pueblo, Arizona.

riparian areas and values.

Water Source Development

Water source development is sometimes needed to supply water for road construction and dust control. Separate BLM/USFS or other agency approval may be required to pump water from an existing stream or pond, depending on water rights and use. If required, this approval should be secured during the planning and design process as discussed in Chapter 2. If the contractor chooses to pursue an independent source of water, he should be reminded that doing so may require addressing NEPA obligations (refer to Chapter 2).

Where cofferdams or water holes are constructed in natural streams, they should be constructed from sandbags filled with clean sand or from other inert materials. They should not be constructed of soil, which can erode into the stream. Weirs should be constructed to address overflows, which should be directed back into the stream following removal of suspended sediment. At no time should downstream water flow be reduced to a level that may be detrimental to aquatic resources, fish passage, or other established uses.

10.9 ARCHAEOLOGICAL/CULTURAL AWARENESS

If any archaeological, *Figure 10.5*, or cultural resources are discovered during construction, the RE should stop work in that area immediately and report findings to the ADOT archaeologist for evaluation. The BLM/USFS must also be notified immediately of such findings.

10.10 WILDLIFE ENCOUNTERS

Wildlife encounters and awareness training should be provided as a part of the required orientation training for any highway project construction in wildlife areas. The training should emphasize safety for workers, safety for wildlife, and minimization of work disruption.

10.11 TRAFFIC CONTROL DURING CONSTRUCTION

Projects on BLM/USFS land will generally require weekend and holiday shutdowns, which will require strict enforcement by the RE. These issues should be clearly identified in contract documents.

10.12 ACCEPTANCE OF WORK

Phased Acceptance of Work

The RE may request the BLM/USFS to review work in progress for input on interim work (phased acceptance) prior to payments. Phased acceptance by ADOT may be considered to be final acceptance **only** for that portion of the work completed.

Final Project Acceptance

ADOT, BLM/USFS and the contractor should conduct a final project walk-through and project inspection prior to final acceptance of the project. This will afford all project owners/stakeholders an opportunity to review the project and ensure compliance with the intent of the project contract documents. A final punch list should be developed at this time in order to reach agreement and resolve any remaining construction issues.



Figure 10.6 A bobcat could be a potential wildlife encounter.

10

GUIDELINES

10.13 ADDITIONAL RESOURCES

ADOT Construction Manual:

[azdot.gov/business/engineering-and-construction/construction-and-materials/manuals/ConstructionManual/construction-manual](https://www.azdot.gov/business/engineering-and-construction/construction-and-materials/manuals/ConstructionManual/construction-manual)

ADOT Stormwater Program:

[azdot.gov/business/environmental-services-and-planning/water-quality](https://www.azdot.gov/business/environmental-services-and-planning/water-quality)