Arizona Department of Transportation

Guidelines for Highways
on
Bureau of Land Management
and
U.S. Forest Service Lands
2008
Acknowledgments:

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Guidelines for Highways on Bureau of Land Management and U.S. Forest Service Lands

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1: Introduction

• Purpose and Intent
  – Provide guidance for design, construction and maintenance of ADOT projects on lands managed by BLM and USFS.
  – Describe accepted procedures, and the needs and concerns of each agency to facilitate creation of safe, environmentally sound and aesthetically pleasing highway corridors.
  – Communicate philosophy, approach and examples from which new applications and techniques can be developed.

• Memoranda of Understanding
  – The ADOT-FHWA-BLM MOU and the ADOT-FHWA-USFS MOU outline policies and procedures to establish and improve cooperative working relationships.
1: Introduction

- Agency Mission Statements
  - ADOT  BLM  FHWA  USFS

- Additional Resources
  - Links at the end of every chapter provide access to additional sources of information.
• Chapter Goals
  – Outline the ADOT Development Process and describe information typically prepared at each stage in the process.
  – Describe types of information typically included in the Environmental Review Process so the design team can anticipate and integrate these concerns into the ADOT Development Process.
  – Identify BLM and USFS policies that may affect the ADOT Process.
2: ADOT Development Process on BLM/USFS Lands

- **ADOT Project Development Process**
  
  - **Long Range Planning** begins 5 - 20+ years prior to construction.
  - **Project Scoping** begins 5 - 7 years prior to construction.
  - **NEPA Process** begins during Project Scoping, culminates in the Environmental Document.
  - **Project Development: Stages I-V** begins 1 - 3 years prior to construction.
  - **Construction**
  - **Maintenance** begins after project completion and formal acceptance by ADOT.
2: ADOT Development Process on BLM/USFS Lands

- National Environmental Policy Act
  - Requires that social, economic and environmental issues, concerns and values be considered along with technical aspects in the decision-making process.
  - All projects on BLM/USFS lands must be in compliance with NEPA.
  - End product of the NEPA process is the Environmental Document:
    - Categorical Exclusion (CE)
    - Environmental Assessment (EA)
    - Environmental Impact Statement (EIS)
• Project Reference
  – Is an electronic document that serves as compilation of decisions made during the planning and design processes that need to be implemented during design and construction.
  – Is accessed directly through the ADOT Information Data Warehouse (AIDW).
  – Is the way to do business on all ADOT highway projects.

APPENDIX K

APPENDIX K: PROJECT REFERENCE FACT SHEET

Purpose

It is imperative that the Arizona Department of Transportation (ADOT) process benefits ADOT and all project stakeholders by providing the most current project information available.

The development of the Project Reference began as a cooperative effort of the Arizona offices of the Bureau of Land Management, the Federal Highway Administration and ADOT in early 2001. ADOT management embraced the concept and encouraged the continuing development of this system. In 2005, the Project Reference Subgroup was established to refine what began in 2001 as a hardcopy “document distribution system.” As a result of the efforts of this Subgroup, ADOT now has established an electronic, paperless Project Reference. This “document availability system” can be accessed directly through the ADOT Information Data Warehouse (AIDW). The Project Reference is “the way to do business” on all ADOT highway projects.
2: ADOT Development Process on BLM/USFS Lands

- Arizona Parkways, Historic and Scenic Roads Program
  - ADOT is charged with nomination, designation and maintenance of Parkways, Historic and Scenic Roads.
- FHWA National Scenic Byways Programs,
- USFS National Forest Scenic Byways, and
- BLM Back Country Byways

are other programs that recognize, preserve and enhance selected roads in Arizona.
• USFS Processes that Affect ADOT Highway Development
  – National Forest Land and Resource Management Plan
  – Access Management Objectives and Process
  – Letter of Consent
  – Merchantable Timber

• BLM Development Process
  – Is similar to the USFS process and is described in detail in the MOU (Appendix D).

2: ADOT Development Process on BLM/USFS Lands
• Chapter Goals
  – Review means by which highways can be made more permeable to wildlife movement and to render them safer for both motorists and wildlife.
3: Habitat Connectivity

- Design Considerations

Wildlife Overpass

Wildlife Underpass

High bridges to preserve riparian ecosystems

Fencing to guide wildlife crossing

Pipe culvert for small animal use
3: Habitat Connectivity

- Environmental Mitigation
  - Restoration of degraded habitat.
  - Restoration of damaged wildlife corridor (i.e. riparian area).
  - Combination of techniques to improve connectivity among isolated habitat patches.

- Monitoring
4: Roadway Design & Construction

• Chapter Goals
  – Describe Context Sensitive Design strategies that may be used to address impacts caused by proposed highways projects.
  – Describe the planning, design and construction of highway alignments and engineered slopes that are visually integrated with the surrounding landscape.
  – Discuss slope design for successful revegetation.
  – Summarize mitigation techniques that may address NEPA requirements for grading, slope configuration and earthwork balance.
4: Roadway Design & Construction

- Design Considerations
  - Integrate highway corridor with surrounding natural landscape.
  - Consider existing topography.
  - Evaluate alternative highway alignments.
  - Identify environmental mitigation requirements.
4: Roadway Design & Construction

- Design
  - Safety
  - Slope Stability
  - Earthwork
  - Revegetation
  - Cut Slopes
  - Embankments
  - Obliteration
  - Retaining Walls
4: Roadway Design & Construction

• Construction
  – Resource Management
    • Water sources
    • SWPPP-Erosion Control Plans
    • Topsoil salvage
    • Noxious/invasive plant species control
    • Erodible slope treatment
    • Permanent drainage control devices
    • Temporary erosion control devices
Chapter Goals

- Describe opportunities and concerns for the design, construction and maintenance of bridges and box culverts to best integrate them into the existing landscape.
• Scoping and NEPA Considerations
  – Protection of Riparian Areas.
  – Visual Impacts- Bridges are usually more attractive than large slopes.
  – Geotechnical Investigations- limit disturbance and obtain necessary clearances.
  – Right of Way- easement acquisition should not be a limiting factor in the design of major structures.
5: Major Structure Design & Construction

- Design
  - Sections 404 and 401 of the Clean Water Act
  - Impact on Riparian Areas
  - Bridge Design
  - Construction and Access Requirements
  - ADOT Structure Design and Review Process
    - Project Scoping
    - Stage II
    - Stage III
5: Major Structure Design & Construction

• Construction
  – Maintain strict controls over contractor access.
  – Remove temporary access and restore disturbed areas per project plans and specifications.
6: Drainage Design & Construction

• Chapter Goals
  – Describe opportunities and concerns for the design, construction and maintenance of new drainage facilities (pipe culverts, channels, ditches) to best integrate them into the existing landscape.
  – Introduce the Arizona Pollution Discharge Elimination System (AZPDES) requirements.
6: Drainage Design & Construction

• Design
  – The ADOT Drainage Report includes information on:
    • Floodplain Jurisdictional Delineation.
    • Assessment of existing and future conditions impacting watersheds, flow patterns, and flood areas.
    • Peak run-off rates from each drainage area.
    • Stream channel flows and streambed materials.
    • Topographic and drainage features.
    • Design criteria, procedures, methods and assumptions for analysis and design.
    • Initial size and location of major drainage structures and channels that affect the roadway location.
  – Sections 404 and 401 of the Clean Water Act
    • Any proposed work in washes, rivers, streams, lakes and wetlands requires a permit from the U.S. Army Corps of Engineers.
6: Drainage Design & Construction

• Design
  – Riparian Areas
    • Inventory during the design process.
    • Minimize change to natural stream channel dynamics.
    • Consult wildlife experts regarding species negatively impacted by drainage structure design and preventative measures to consider.
    • Avoid or minimize armored bank protection.
    • Minimize sediment transport into riparian areas.
  – Drainage Structures
    • Ditches and Dikes
    • Oversize Drains
    • Culvert and Channel Inlets and Outfalls
    • Aesthetics
6: Drainage Design & Construction

• Construction
  – Ensure that elevations of concrete culvert forms are properly set prior to concrete installation.
  – Review and adjust proposed crown ditch alignments prior to excavation.
  – Minimize potential for erosion of disturbed soil into natural drainages with respect to contractor staging areas adjacent to drainages.
  – Remove temporary access and restore disturbed areas promptly.
7: Landscape Restoration

- Is the integration and blending of the highway facility with the surrounding natural landscape.
- Includes aesthetic considerations in earthform design of slopes, rounding and transitions between cuts and fills.

*Reclamation, revegetation and stabilization of disturbed soils for the purposes of erosion control are predicated on successful earthform design.*
Chapter Goals

- Describe the issues relating to preservation and restoration of native vegetation that are critical to the visual integration of the highway corridor with the surrounding landscape.
- Define the steps necessary to achieve successful restoration of disturbed soils.
7: Landscape Restoration

- Design
  - Slopes
  - Existing Vegetation
  - Revegetation
    - Topsoil Salvage
    - Slope Finishes
    - Native Plant Salvage
    - Container-Grown Stock
    - Noxious and Invasive Vegetation
  - Existing Boulders
    - Salvage for reuse
• Construction
  – Application of stormwater BMPs must be coordinated with slope construction and revegetation.
  – Successful restoration considerations:
    • Condition of the finished grade (compacted/loose, crusted/friable).
    • Timing of seed applications.
    • Inspection of fertilizer, compost, mulch, tackifier and seed mixes.
    • Adherence to proper seed application techniques.
Chapter Goals

- Comply with requirements for control of stormwater quality as described in the National Pollution Discharge Elimination System (NPDES) and the Arizona Pollution Discharge Elimination System (AZPDES).
- Employ Best Management Practices (BMPs).
  - Temporary
  - Permanent
8: Stormwater & Pollution Control

- Design
  - ADOT Erosion and Pollution Control Manual
  - Roadway and Drainage Plans
  - Stormwater Pollution Prevention Plans (SWPPP)
8: Stormwater & Pollution Control

- Additional Resources
8: Stormwater & Pollution Control

• Construction
  – Prior to earth-disturbing activities, the contractor prepares and delivers to ADOT the proposed SWPPP for approval.
  – Maintain temporary BMPs during the construction process.
Material Sites are locations outside the highway corridor easement from which rock and soil materials may be mined and processed for new construction or maintenance needs. They may also serve as repositories for excess materials generated by construction or maintenance activities.

- **Chapter Goals**
  - Describe development of material sources.

- **Scoping**
  - Authorization Process
    - Source Development Plan
    - Appendix I – Summary chart of BLM/USFS approval issues
  - Geotechnical Investigations are usually needed for Material Sources.
9: Material Sites

• Operation
  – ADOT operates source sites in accordance with the approved Source Development Plan.
  – Contractor or public agency use of material sources requires preparation of a Plan of Operations.
  – Joint Use Material Sources
  – Excess Material (Waste)
  – Inspections
9: Material Sites

- Restoration of Material Sources and Waste Sites
  - Final site grading.
  - Distribution of stored topsoil.
    - Erosion control, restoration and revegetation of disturbed soils.
  - Access roads should be regraded to original contour, ripped, drained, blocked to traffic and seeded.

Salvaging topsoil for reuse

Revegetation
10: Construction

- Chapter Goals
  - Describe ‘Partnering’
  - Discuss Erosion and Pollution Control
    - SWPPP- Stormwater Pollution Prevention Plan
    - NOI- Notice of Intent
    - Seeding
    - NOT- Notice of Termination requirements
  - Discuss resource protection
    - Vegetation
    - Archaeological and Cultural
    - Wildlife
  - Define Acceptance of Work
    - Phased Acceptance
    - Final Project Acceptance
10: Construction

- **ADOT-FHWA-BLM/USFS Interaction during Construction: Partnering**
  - Is defined as the cooperative management of project development activities.
  - Fosters open communication necessary to successfully manage highway projects on lands managed by BLM or USFS.
  - Includes a contractor hosted ‘Partnering’ meeting prior to the onset of construction activities.
10: Construction

- Erosion and Pollution Control
  - SWPPP and NOI
  - Equipment Washing
  - Spill Prevention Containment and Countermeasures
  - Seeding
  - NOT Requirements
10: Construction

- Clearing Limits and Vegetation Protection during Construction
  - Clearing and Grubbing
  - Merchantable Timber

- Water
  - Riparian Awareness
  - Water Source Development

- Archaeological/Cultural Awareness
10: Construction

- **Wildlife Encounters**
  - Awareness training
    - Worker safety
    - Wildlife safety

- **Acceptance of Work**
  - Phased Acceptance of Work
  - Final Project Acceptance
11: Maintenance

• Chapter Goals
  – Describe how ADOT maintenance activities are best integrated with BLM/USFS resource management concerns.
  – Describe the Annual Highway Maintenance Partnering Meeting.
  – Outline opportunities for ADOT maintenance personnel to provide input during the design of proposed highway corridors.
  – Outline routine ADOT maintenance activities and appropriate strategies for accomplishing those activities.
• Maintenance Participation in Planning and Design
  – Plan reviews during the project development process provide an opportunity to review and comment on proposed designs.
  • Review should include written comments from the ADOT District Maintenance Supervisor, District Environmental Coordinator, the ADOT Natural Resources Management Group Regional Manager, the local BLM office or USFS District Ranger and USFS Engineer.
• Maintenance Operations on BLM/USFS Lands
  – Annual Highway Maintenance Partnering Meeting.
  – Environmental Compliance and Documentation for Maintenance Operations.
    • Usually the funding source dictates which agency is responsible for NEPA compliance.
    • Additional NEPA documentation is not required for maintenance activities on existing alignments within BLM/USFS lands.
    • Rehabilitation and reconstruction activities on BLM/USFS lands where all activities stay within the existing ROW do require an additional NEPA decision.
11: Maintenance

• ADOT Maintenance Operation Activities include

  Vegetation Management activities
  Drainage Structure maintenance
  Winter Storm Management Program activities
  Bridge maintenance
  Noxious and Invasive Species management
11: Maintenance

- **Emergency Procedures**
  - Maintain contact lists for notification.
  - Prioritize repairs.
  - Repairs and maintenance should focus on restoring features to their pre-incident state.

- **BLM/USFS Maintenance Operation Activities**
  - Coordinate with ADOT District Highway Traffic Division and ADOT Maintenance Operations.
Appendices

- Acronyms and Abbreviations
- Glossary of Terms
- ADOT-FHWA-USFS MOU
- ADOT-FHWA-BLM MOU
- Slope Design Details
- Easement Development
- Section 106 Process on Forest Service Lands
- Typical Blasting Plan Content
- Comparison of Permit Processes for Material Sites
- Signing
- Project Reference Fact Sheet
- Native Plant Salvage and Replanting Evaluation Guidelines
- References and Photography Credits
- Additional Photos (online appendix)
- Document Revision History
Conclusion

• Use the Guidelines ..........
  – Before beginning projects on Federal Lands.
  – As a reference for the planning, design, construction and maintenance of ADOT projects on lands managed by BLM and USFS.
  – To review accepted procedures, and the needs and concerns of each agency to facilitate creation of safe, environmentally sound and aesthetically pleasing highway corridors.
  – As a touchstone throughout projects.
  – As a resource to locate additional information sources.
Document Availability

Purchase from:
ADOT Engineering Records Section
1655 W. Jackson Room 175
Mail Drop 112F
Phoenix, Arizona 85007-3217
Telephone: 602-712-8216 or 712-7498
Fax: 602-712-3235

For availability and cost:
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