Roadside Development: in the Roadway Engineering Group within the Intermodal Transportation Division of ADOT.
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Tim Wilson
### Roadside Development

#### Personnel

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<th>Areas of Responsibility</th>
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<th>Phone</th>
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<tbody>
<tr>
<td>Arizona Parkways, Historic &amp; Scenic Roads Advisory Committee</td>
<td>LeRoy Brady</td>
<td>602.712.7357</td>
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<tr>
<td>Erosion/Sediment Control Design, Pollution Prevention, and Water Quality Protection</td>
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<td>Tao Fong</td>
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<td>Landscape Architectural Environmental Design and Planning</td>
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<td>Han Meng</td>
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<td>Revegetation and Native Seed Mix Design, Environmental Mitigation and Landscape Ecological Design, Native Plant Salvage and Replanting</td>
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Mission Statement

Roadside Development provides landscape architectural and environmental technical design direction and expertise for Arizona Department of Transportation projects statewide.

Technical direction and expertise include development of plans and specifications and review of consultant plans involving:

• aesthetic enhancements and design
• environmental mitigation and landscape ecological restoration
• stormwater quality and erosion/sediment control
• seeding and revegetation
• native plant salvage and replanting
• landscape and irrigation design
• as well as statewide rest area program and design
A. The Landscape Architect shall be responsible for performance of professional services such as investigation, reconnaissance, research, planning, design or responsible supervision in connection with the development of land and incidental water areas where the dominant purpose of such services is the preservation, landscape ecological restoration, enhancement of proper land uses, natural land features ground cover and planting, naturalistic and aesthetic values, the settings and approaches to building, structures, facilities or other improvements, natural drainage and the consideration and the determination of inherent problems of the land relating to erosion wear and tear, light or other hazards.
Landscape Architecture Practice and Design

450 Landscape Architectural Practice and Design
Continued

B. Landscape Architecture services to accomplish the above mentioned may result in the preparation of the following work products:

- Reports for Site Analysis and Planning
- Visual Analysis
- Resource Planning Inventory and Evaluation
- Research Information and Documentation
- Design and Construction Documents
- Specifications
- Constructability Reviews
- Post Design and Responsible Construction Supervision
C. Investigation, Reconnaissance Research, Planning, Design and Responsible Supervision Work may include but not be limited to:

- Aesthetic evaluations and Visual Quality & Impact Analysis
- Design of Structure and Wall Aesthetic Treatments
- Landscape & Irrigation Systems, when possible Sustainable Design
- Landform Grading & Graphics
- Water Conservation Measures, Audits; Water Harvesting
- Landscape Ecological Planning - Resource Conservation & Protection
- Habitat Mitigation and Restoration
- Reclamation and Revegetation
- Native Plant Inventory, Salvage, Replanting & Establishment
- Noxious Weed and Invasive Non-native Plant Control
- BMPs for Erosion/Sediment Control, Water Quality Protection
- Design Construction Plans, Documents, Specifications & Estimates
Aesthetic Enhancements and Design
Aesthetic Enhancements and Design

Aesthetic Enhancement Design/Construction Guidelines

Corridor themes are defined for the ADOT regional freeway systems. Local communities desiring aesthetic enhancements to these established themes shall comply with the following aesthetic design guidelines for consideration of development and incorporation of local community aesthetic enhancements along with the ADOT corridor architectural design patterns.

Guideline topics include:

- Funding
- Design Concepts and Design
- Review Process
- Color Palettes
- Maintenance Responsibility
- Approval Sequence
- Bid Items
- Artist Copyright
- Rendering and Mockups
- Cost Estimating
Aesthetic Enhancements and Design
Environmental Mitigation

- Restoration of degraded habitat.
- Restoration of damaged wildlife corridors (i.e. riparian areas).
- Combination of techniques to improve connectivity among isolated habitat patches.
Environmental Mitigation & Landscape Ecological Restoration
Environmental Mitigation & Landscape Ecological Restoration
Stormwater Quality & Erosion/Sediment Control
Stormwater Quality & Erosion/Sediment Control
Stormwater Quality & Erosion/Sediment Control

Mini-Benching BMP Detail
Stormwater Quality & Erosion/Sediment Control

Unbenched Slopes VS Benched Slopes
Stormwater Quality & Erosion/Sediment Control

Limitations of Erosion Control Blankets
Comply with requirements for control of storm water quality as described in the National Pollution Discharge Elimination System (NPDES) and the Arizona Pollution Discharge Elimination System (AZPDES).

Employ Best Management Practices (BMPs).

- Construction (Temporary)
- Post-Construction (Permanent)
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.
Landscape Restoration

Design Considerations

• Slopes
• Existing Vegetation
• Revegetation
  – Topsoil Salvage
  – Slope Finishes
  – Native Plant Salvage
  – Container-Grown Stock
  – Noxious and Invasive Vegetation
• Existing Boulders
  – Salvage for reuse
Landscape Restoration

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
Specification:

Item 8050003- SEEDING (CLASS II)

ITEM 8050003 - SEEDING (CLASS II):

1.0 Description:
The work under this item shall consist of furnishing all materials, preparing the soil, applying Class II seed, and establishing the seeded areas.

Areas to be seeded are those disturbed or unvegetated areas listed herein, shown on the plans, called for in the contractor’s erosion control plan, or designated by the Engineer.

Seeding may be included as part of a landscape project as specified in Section 807, or used for erosion control as part of a Storm Water Pollution Prevention Plan (SWPPP) as specified in Subsection 104.06 of the specifications, or both.

In either case, seeding shall be accomplished in two stages. The first stage shall consist of tilling, furnishing and applying chemical fertilizer, furnishing and planting the contract-specified seed mix, and furnishing, applying and aforesaid mix. The second stage, beginning after the first stage has been accepted by the Engineer, shall be a 45 calendar-day period during which time the contractor shall be responsible for maintaining and stabilizing the seeded and mulched areas, and restoring damaged or eroded areas.

Seeding used as part of a SWPPP shall be completed, including the 45 calendar-day maintenance period, before the end of the contract time, or sooner as specified in the SWPPP. Seeding used as part of a landscape project shall be completed, including the 45 calendar-day maintenance period, before the end of the Construction Phase. When seeding is part of a landscape project, the maintenance activities described herein shall be in addition to the work specified in Section 807 for landscape establishment. No time extension will be granted for seeding not completed as specified herein, including the 45 calendar-day maintenance period, before the end of the contract time or Construction Phase as applicable.

2.0 Materials:

2.0.1 General:

Appropriate documentation, as specified below, shall be submitted to the Engineer a minimum of 30 calendar days before the start of a scheduled seeding activity. No materials shall be delivered to the site until the documentation has been approved by the Engineer.
Seeding & Revegetation

Methodology for Determining Final Stabilization

Arizona Department of Transportation
Methodology for Determining Final Stabilization

Last updated in January 2005

"Final Stabilization" is a stipulation that must be met in order for an operator of a construction site to submit a Notice of Termination (NOT) to the Arizona Department of Environmental Quality (ADEQ) under the Arizona Pollutant Discharge Elimination System (APDES) Permit Program (Permit No. AZ00000825) or to the U.S. Environmental Protection Agency under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP). APDES is applicable to projects that disturb greater than one (1) acre on non-Tribal lands. NPDES is applicable to projects on Tribal lands. A NOT is submitted by the operator to terminate coverage for discharges from construction activities to W年人 of the United States.

According to APDES, "Final Stabilization" means that:

1. All soil disturbing activities at the site have been completed and either of the two following criteria are met:
   a. A uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unplanted areas and areas not covered by permanent structures, or
   b. Equivalent permanent stabilization measures (such as the use of grass, gabions, or geotextiles) have been employed.

2. When background native vegetation will cover less than 100 percent of the ground (e.g., grid areas, wetland), the 70 percent coverage criteria is adjusted as follows: If the native vegetation covers 50 percent of the ground, 70 percent of 50 percent (70 x .50 = .35) would require 35% total cover for final stabilization. On a beach with no natural vegetation, no stabilization is required.

According to NPDES, "Final Stabilization" means that:

1. All soil disturbing activities at the site have been completed and either of the two following criteria are met:
   a. A uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unplanted areas and areas not covered by permanent structures, or
   b. Equivalent permanent stabilization measures (such as the use of grass, gabions, or geotextiles) have been employed.
Seeding & Revegetation
Seeding & Revegetation
Native Plant Salvage & Replanting Evaluation Guidelines

Non Discretionary Evaluation Requirements:
1. Conformance to requirements of Arizona Native Plant Laws.
2. NEPA Decision Document requirement.
3. Highway safety would not be compromised.
4. Mitigation for 404 permit requirement.
5. Plants must be species that would be self-sustaining after planting and establishment.

Discretionary Evaluation Requirements:
1. Replanting of salvaged or planting of nursery plant materials would maintain or restore wildlife habitat value for cover and movement connectivity between habitat areas crossing the highway.
Native Plant Salvage & Replanting
Landscape & Irrigation Design
Landscape & Irrigation Design
Statewide Rest Area Program & Design
Arizona Parkways, Historic & Scenic Roads Program

ADOT is charged with nomination, designation and maintenance of Parkways, Historic and Scenic Roads. **Roadside Development** administers this program.
Arizona Parkways, Historic & Scenic Roads Program
Publications
Looking to the Future

What’s Ahead........

- Increased emphasis on Context Sensitive Design and Functional Landscape Ecological Design of new highway projects and surrounding environments
- Improved handling of stormwater quality features such as infiltration beds, water harvesting for sustainable landscapes
- Implementation of the next phase of EPA Stormwater Regulations, anticipated to be more stringent in protection of stormwater quality
- Combination of Rest Area and Public/Private Partnership “Oasis Rest Areas”
- Improved Noxious and Invasive Non-native Plant Species Control measures during construction
- Better revegetation results with improved Specification enforcement
- Emphasis on Low Impact Development (LID) for stormwater quality control and Sustainable Projects
- Design/Construction features and construction methods to enhance sustainability and reduce maintenance
Look to Roadside Development for Guidance in........

- Aesthetic enhancement and design
- Environmental mitigation and landscape ecological restoration
- Stormwater quality and erosion/sediment control
- Seeding and revegetation
- Native plant salvage and replanting
- Landscape and irrigation design
- Statewide rest area design and management
- Designation of Parkways, Historic and Scenic Roads in Arizona
- Noxious and Invasive Non-native Plant Species management