HEADING: GENERAL

SUBJECT: AGENCIES WITH LAND ADJACENT TO ADOT PROJECTS

It is important to inform outside agencies which may have land ownership or jurisdiction adjacent to the project right-of-way as to what the Department is proposing for future projects and provide an opportunity for comment. (An outside agency may be proposing changes, etc. which could impact our scoping process and documents). Outside agencies include governmental or public bodies, not individual private parties or landowners.

One of the two following actions should be taken based upon the associated criteria listed below:

1. An agency representative should be invited to the Project Field Review and receive a copy of the Initial and Final Project Assessment if:
   - ADOT right-of-way for the project is an easement (Forest Service or Indian Reservation).
   - The project is within the “City Limits.”
   - ADOT owns the right-of-way and the project will reflect a major change in the roadway facility.
   - An outside agency is the requestor of the project.
   - The project is within the limits of a larger study which directly affects the outside agency.

1. An agency representative should receive only a copy of the Initial and Final Project Assessment if:
   - ADOT owns the existing right-of-way and there is no major change to the roadway facility.
   - The project is basically a maintenance type of project.
   - The project requires lane shutdowns or detours. In this instance, the Project Assessment should be transmitted to the appropriate representative for the County. This especially applies to temporary ramp closures on pavement preservation projects.

Research for ownership of public lands should be limited to the information available in Roadway Predesign (County & Forest maps etc.) and the available right-of-way plans. Requests should not be made to Right of Way Titles Section to identify adjacent public land ownership. This would create additional work for that Section which would impact an already limited staff. Requests to Right of Way Titles should be limited to projects where additional right-of-way is required or where there are special project issues/concerns.

It is the responsibility of the Project Assessment author or consultant liaison to make sure the distribution list for the project is complete and accurate.
HEADING: GENERAL

SUBJECT: DESIGN SPEED

The use of design speed needs to be clarified now that the posted speed on a highway and the design speed used to design a highway are unrelated. It is also important to differentiate between the "Design Speed" used to design a roadway and the "Design Speed" used to prepare an AASHTO Controlling Design Criteria Report.

DESIGN SPEED FOR COMPLETION OF THE AASHTO CONTROLLING DESIGN CRITERIA REPORT:

The design speed used to review existing roadway features is based upon the 1994 AASHTO Policy on Geometric Design of Highways and Streets and ADOT’s March 1996, Draft Procedural Guide for Review of the AASHTO Controlling Design Criteria on Existing ADOT Roadways. This should be referenced in the AASHTO Controlling Design Criteria Report and in SECTION B- BACKGROUND of the Project Assessment as: “The recommended AASHTO minimum design speed is _____ km/h.”

DESIGN SPEED FOR ROADWAY DESIGN:

The design speed used for designing elements of a section of highway is based upon The Arizona Department of Transportation Roadway Engineering Group 1996 Roadway Design Guidelines. The design speed is discussed and identified in Chapter 100 - Design Criteria. New roadway features should be designed according to this design speed. In the scoping document, this design speed should be referenced as: “The Roadway Design Guideline design speed used for preparation of this Project Assessment was _____ km/h.” This information should be included in SECTION D - DEVELOPMENT CONSIDERATIONS of the Project Assessment, when appropriate. This will help clarify project intent, assist project reviewers, and minimize comments and rework. The detail and amount of information to be included is left to the judgment of the scoping document author. In some cases, such as for simple pavement preservation projects with minimum proposed safety improvements, it may not be necessary to reference a design speed.
HEADING: GENERAL

SUBJECT: OPERATING PARTNERSHIP AGREEMENT

The Certification Acceptance Procedure has been replaced by the Operating Partnership Agreement.

The ADOT - FHWA Operating Partnership is an agreement between the Arizona Department of Transportation and the Arizona Division of the Federal Highway Administration regarding the administration of Federal - aid transportation projects in the State of Arizona.

Previously, all federally funded projects, except for the Interstate, were administered under Certification Acceptance Procedure. Now under the Operating Partnership Agreement there are three different categories. The attached Summary Tables (Attachment 3) shows FHWA's involvement through the project development for all three Categories.

The determination for FHWA's involvement (Category type) will be made during the annual five year transportation plan update. (Your supervisor has a copy of the marked up 1999 Tentative Five Year Plan.)

Under “Other Requirements” in the PA the new statement should be as follows:
“"The project will be administered under the Operating Partnership Agreement under Category X."

The three different categories under the Operating Partnership Agreement are as follows:
Category A - Full FHWA Administration
Category B - Partial FHWA Administration
Category P - Full ADOT Administration

(FHWA must approve all Environmental documents for all Categories.)

Category A is limited to Federal - aid projects involving new construction and reconstruction of the Interstate System with cost greater than 1 million dollars. This category does not include 3R projects (pavement preservation) and other minor operational or safety improvements. However, projects which involve changes in access control, and projects which reduce existing conditions do require FHWA review and approval of the Change of Access report and design exceptions.

Category B is limited to a few Federal - aid projects in two distinct areas:

1. Certain 3R (pavement preservation) projects on the Interstate which are generally with cost exceeding 5 million or involving new and innovative construction materials or other very unusual features.
2. New construction and major reconstruction on the non-Interstate National Highway System, generally exceeding 5 million. Examples would be new freeways on the MAG System, the reconstruction, realignment, dividing and widening of SR 87 or US 93 or widening of US 60.

Category P include all other Federal - aid projects on the Interstate System, all other Federal - aid projects on the NHS (including new and reconstruction projects not specifically selected for Category B and all Federal - aid projects not on the NHS.

Early consultation with FHWA Area and/or District Engineer concerning FHWA desires for Federal oversight should be made at the scoping stage.

Also attached is the new Project Determination sheet. The Operating Partnership category has been added and two new categories are shown. N/A for state funded projects and U for undetermined, this category will be determined later during the project development process.

Also, the environmental determination has been changed from category to class. The attached sheet form the Action Plan (sheet 21) shows the three types of Class of projects that are to be used on the Project Determination sheet.
HEADING: GENERAL

SUBJECT: OPERATING PARTNERSHIP AGREEMENT SUFFIX CHANGE

Changes in FHWA’s Fiscal Management Information System (FMIS), have made it now necessary to change the Suffix Codes we (ADOT and FHWA) have been using to denote and delineate the three levels of FHWA oversight of Federal-aid projects.

The three different categories under the Operating Partnership Agreement that were previously used are listed as follows:

- Category A - Full FHWA Administration
- Category B - Partial FHWA Administration
- Category P - Full ADOT Administration

Effective immediately the following new Suffix Codes should be used to delineate and denote the level of FHWA Oversight for Federal-aid projects:

- Category A - Limited FHWA Administration (formally P)
- Category B - Partial FHWA Administration
- Category N – Full FHWA Administration (formally A)
- Category X – Full FHWA Administration for projects not located on the National Highway System

Remember, the Operating Partnership Agreement and these changes only apply to Federal-aid projects.
HEADING: GENERAL

SUBJECT: REVISED GUIDELINES FOR SCOPING PAVEMENT PRESERVATION PROJECTS (4/99)
TRAFFIC ENGINEERING HES SECTION

Reference is made to page 2, paragraph 2 of the March 30, 1999 Guidelines For Scoping Pavement Preservation Projects - April 1999 concerning involvement with Traffic Engineering HES Section. "The Project Team, in coordination with the Traffic HES Section, will evaluate the locations identified and determine any remedial treatment to be included with the project".

The Traffic Engineering HES Section will review accident history to determine if there are specific locations within the project limits that may warrant an improvement. This needs to be completed prior to the project field review so that it may be evaluated by all team members in the field. A request for review of the accident history within the project limits should be sent to Reed Henry / Traffic Engineering HES Section / 065 R.

Note that Page 2; paragraph 3 of the "Guidelines For Scoping Pavement Preservation Projects - April 1999" states, "The guidelines for safety enhancements are not to be utilized within major sections of rural routes where design speeds or posted speed limits are 45 mph or less. Additionally, they should not be utilized on urban or suburban sections having outside curb and gutter". If your project has a section which meets the aforementioned criteria do not include it in your accident history request to Traffic Engineering HES Section. A sample request is shown below.

The limits for the accident history request will be based upon the project problem statement and consultation with Material's Section. This accident evaluation request should be sent to Reed as soon as the project is assigned and your background investigation is sufficiently complete for you to determine if there are urban areas which need to be exempted from the request. (i.e. Initial AASHTO Control Design Criteria Report has been completed or a review of the CD ROM VIDEO LOG has been completed for identification of urban areas).

SAMPLE REQUEST

NO URBAN AREAS (ALL RURAL)

Please perform an accident history review of this project from MP ( ) to MP ( ) to determine if any remedial spot safety improvements should be included in the scope of work for this pavement preservation project.

SOME URBAN AREAS (RURAL & URBAN)

Please perform an accident history review of this project from MP ( ) to MP ( ) to determine if any remedial spot safety improvement should be included in the scope of work for this pavement preservation project. No accident history review is required for the urban area located project from MP ( ) to MP ( ) per the "Guidelines For Scoping Pavement Preservation Projects - April 1999" since this area [ has a posted speed limit of 45 mph or less ] or [ is located within an urban section and contains a curb and gutter section ].

ALL URBAN (NO RURAL)

No accident history review needs to be completed by Traffic Engineering HES Section, therefore, no accident history review request is to be sent to Traffic Engineering HES Section.

Note: URBAN AREAS: Remember the Guide is not to be utilized on urban or suburban roadway sections having outside curb and gutter and it is also not to be utilized on rural routes where design speed or posted speed limits are 45 mph or less.
HEADING: GENERAL

SUBJECT: MATERIALS/PAVEMENT SMOOTHNESS INCENTIVE AND MATERIALS QUALITY INCENTIVE

Most projects with pavement will require Pavement Smoothness and Materials Quality Incentive costs. The Pavement Smoothness Incentive cost will be based upon the mainline lane miles of roadway within the project (ramps, cross road, shoulder etc. excluded). Not all projects with pavement will receive these additional costs, but during the scoping phase the Materials representative will determine if the project should utilize these incentives. Once determined that the project will use any or both of these incentives, the cost(s) will be added to the Pavement Preservation Items of the Itemized Estimated Cost as follows:

MATERIALS QUALITY INCENTIVE

1. Asphalt Pavement: $3.00 / Ton of AC (406 / 416 / 417)
2. PCCP: $1.50 / Square Yard

SMOOTHNESS INCENTIVE

1. Asphalt pavement over existing base material:
   $7000 / lane mile (overlay by one leveling operation only)
   $9,000 / lane mile (mill and replace, or overlay by multiple leveling operations)

2. Asphalt pavement over new base material:
   $11,000 / lane mile (new construction)

3. New friction course laid over new PCCP:
   $11,000 / lane mile

4. New PCCP overlaid by new friction course:
   $3,500 / lane mile (for PCCP only; additional to friction course)

5. New PCCP not to be overlaid by a friction course:
   $7,000 / lane mile.
A separate form for communicating cost items between Bridge Management and the Predesign Project Manager is available. It is called the “Bridge Repair Listing”. This form is to be routinely used on pavement preservation projects but can be used on any project where the cost for any structure work noted by Bridge Management Section on the Bridge Evaluation Request Form is desired. A Bridge Evaluation Request Form and a Bridge Repair Listing should be sent to Bridge Management Section for cost evaluation of structures within the project limits of the scoping document. The Bridge Evaluation Form as standard policy will be attached to the AASHTO Controlling Design Criteria Report. The Bridge Repair Listing is simply a tool for Bridge Group to identify costs of items they wish included in the project scope of work and as detailed on the Bridge Evaluation Form. The Bridge Repair Listing is not to be attached to the AASHTO Report and is also not to be attached to the scoping document. It should be kept in the project file as back up for the items and costs selected in the E2C2 Itemized Cost Estimate.

A Bridge Repair Listing spreadsheet (blank) is now available on the Predesign Web page on the Design Memos tab as a drop down box selection.

The Bridge Evaluation Form and the Bridge Repair Listing use the same format template to allow the user options when inputting the structural information. As a reminder the Arizona State Highway Bridge Inventory is online and is available.
Attached for your use are two field review checklists that can be used for all scoping projects. The short list is primarily used for pavement preservation projects, whereas the longer list can be used for all other projects. The checklists are for your use in preparation for field reviews and are not a requirement for the project. The checklists can be modified based on your needs.
FIELD REVIEW CHECK LIST

PROJECT LOCATION: ___________________________  PROJECT NUMBER: ___________________________

- Guardrail
  - OK
  - Reconstruct
  - Length of Need
  - New Locations
  - End Treatment
- Shoulder build-up
  - Required
  - Material Source
- Embankment Curb
  - Remove
  - Replace
  - New
- Inlets
  - Remove
  - New
  - Adjust
- Ramp Gores
  - Remove
  - Replace
- Typical Section
  - Rural
  - Urban
  - C&G
  - Turn Lanes
  - Passing Lanes
  - Sidewalk
  - ADA Ramps
  - Catch Basin
- Delineators
  - Replace
  - New
- Pavement Markings
  - RPM
  - Special
  - Restripe
  - Special
- Fencing
  - Replace
  - New
- Cattle Guard
  - Remove
  - Replace
  - Adjust
  - Remove curb
- Access
- Terrain
- Posted Speed
- Utilities
  - Overhead
  - Underground
  - Relocate
- R.O.W.
  - Ownership
  - New
  - TCE
  - Drainage Easement
- Drainage Problem
- Erosion Problem
- Intersection Problem
  - Sight Distance
  - Radii
- Environmental Concern
- Pavement Problem
- Vertical Alignment
- Horizontal Alignment
- Loop Detectors
  - TCS
  - Signal
  - Other
- Signals
- Lighting
- Signing
- Turnouts
  - Paved
  - Unpaved
- Involved Agencies

- Pipe Culverts/CBC
  - OK
  - Extend
  - Replace/Reline
- Headwalls
  - OK
  - Remove
  - Require
- Slopes
  - OK
  - Flatten
  - Guardrail
- Cut Ditch
  - OK
  - Improve
  - Obtain Material
- Tree Removal
  - Required
- Chain Link Cable Barrier
  - OK
  - New
- Rock Cuts
  - OK
  - Required
- Bridge Rails
  - OK
  - Unattached
  - Safety Curb
- Bridges
  - Widen
  - Scour Protection
- Rumble Strips
  - Required
- Involved Agencies
FIELD REVIEW CHECKLIST

Route:__________________ Begin MP:___________ End MP:___________ Station:___________

Location:__________________________________________________________________________

Highway Name:____________________________________________________________________

Engineering District:________________________________ City/County:__________________________

Description of Project:________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Requested By:__________________ Year to be Constructed:______________

Field Review Team:________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

1. **Corridor Characteristics:**
   A. Functional Classification:_____________________________________________________
   B. Current/Projected Traffic:____________________________________________________

2. **Existing Roadway:**
   A. Width, Speed Limit, Condition:____________________________________________

   ______________________________________________________________________________

   B. Shoulders, Ditches, Embankment:____________________________________________

   ______________________________________________________________________________

   C. Cuts, Guardrail, Safety:_____________________________________________________

   ______________________________________________________________________________
3. **Adjacent Roadway Sections:**
   A. Existing Condition/Width: ____________________________________________________

   B. Future Project In Program: __________________________________________________

   ____________________________________________________________________________

4. **Other Roads, Access Points:**
   A. Existing Crossing, Connecting: ______________________________________________

   ____________________________________________________________________________

   1. Roads - Sight Distance: _____________________________________________________

   ____________________________________________________________________________

   2. Grade of Approach - Safety: ________________________________________________

   ____________________________________________________________________________

   3. Surfacing: _________________________________________________________________

   ____________________________________________________________________________

   B. Existing Access Points-Driveways-Safety-Surfacing: ____________________________

   ____________________________________________________________________________

5. **Proposed Roadway:**
   A. Roadway Width/Design Standards: ___________________________________________

   B. Design Speed: _____________________________________________________________

   C. Intersection Modifications: ________________________________________________

6. **Alignment and Grade:**
   A. Required for Proposed Project: _______________________________________________

   ____________________________________________________________________________

   B. Impaired Access: ____________________________________________________________

   ____________________________________________________________________________
C. Safety:______________________________________________________________


7. Drainage Features:
   A. Existing - Hydraulic Adequacy Flood Plains:__________________________
   
   B. Required for Proposed Project:_______________________________________
   
   C. Outfall/Safety:_______________________________________________________

8. Structures:
   A. Structural Adequacy:_______________________________________________
   
   B. Geometrics - Width/Alignment:_______________________________________
   
   C. Sufficiency Rating:__________________________________________________
   
   D. Bridge Rail:________________________________________________________

9. Utilities:
   A. Existing Known Interferences:
      1. Irrigation - Electric Power:________________________________________
      
      2. Telephone - Gas - Fuel:___________________________________________
      

3. Water - Sewer - Sanitary:______________________________________________

________________________________________________________________________

4. Storm Manholes - Valve Covers:________________________________________

________________________________________________________________________

5. Railroad Facilities:_____________________________________________________

________________________________________________________________________

B. Required for Proposed Project:_____________________________________________

____________________________________________________________________________

10. Right-of-Way:
A. Existing:_________________________________________________________________

____________________________________________________________________________

B. Required for Proposed Project:_____________________________________________

____________________________________________________________________________

C. Access Controls, Present:_________________________________________________

____________________________________________________________________________

   1. Required:_____________________________________________________________

____________________________________________________________________________

D. Land Use, Present:_______________________________________________________

____________________________________________________________________________

   1. Anticipated:___________________________________________________________

____________________________________________________________________________

E. Fencing, Present - Required:_______________________________________________

____________________________________________________________________________
11. Environmental Resources:
   A. National Forest - Indian Reservation: ______________________________________
   ________________________________________________________________
   B. Historical - Archaeological: ______________________________________
   ________________________________________________________________
   C. Water - Noise - Vegetation: ______________________________________
   ________________________________________________________________
   D. Land Reserves - Parks, Scenic, Cemetery: __________________________
   ________________________________________________________________

12. Traffic Engineering:
   A. Signals: ________________________________________________________
   B. Lighting: ______________________________________________________
   C. Signing: _______________________________________________________
   D. Striping: ______________________________________________________

13. Erosion Control:
   A. Existing Evidence of Erosion
      1. Side Slopes - Channels: _________________________________________
      2. Structures - Natural Conditions: _________________________________
   B. Required for Proposed Project: _________________________________

14. Aesthetic Features:
   A. Existing View of Surrounding Land: _______________________________
   ________________________________________________________________
   B. Required for Proposed Project: _________________________________
   ________________________________________________________________
15. **Constructability:**
   A. Phasing Requirements: ______________________________________________________

   ____________________________________________________________________________

   B. Alternate Routes - Detours: _________________________________________________

   ____________________________________________________________________________

   1. Traffic Control: ___________________________________________________________

   2. Timing for Project: _______________________________________________________

16. **Materials Sources:**
   A. Existing Pits - Water Sources: ______________________________________________

   ____________________________________________________________________________

   B. Required for Proposed Project: _____________________________________________

   ____________________________________________________________________________

17. **Maintenance:**
   A. Existing Problems: _________________________________________________________

   ____________________________________________________________________________

   ____________________________________________________________________________

18. **Fundability:**
   A. Federal-State-Local-Other: _________________________________________________

19. **Alternatives:**
   A. Additional Work Required: _________________________________________________

   ____________________________________________________________________________

   B. Alternative Solution: _______________________________________________________

   ____________________________________________________________________________
20. Recommendations:

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

Project Drawing
HEADING: FIELD REVIEW

SUBJECT: CUT DITCHES

According to the “Guideline for Scoping on Pavement Preservation Projects,” cut ditches are one of the items which can be addressed utilizing pavement preservation funds. We must take a pro-active role concerning this item and inquire at the field review if there are any specific problems with the cut ditches.
GENERAL:
Typically traffic counter loops are disturbed when milling existing asphaltic pavements.

The question is sometimes raised: “When a pavement preservation project is proposed to overlay an existing asphalt pavement where there are existing traffic counter loop detectors, how thick of an overlay can be placed before the loop detectors will not function?” The loops are normally placed two to three inches below the pavement surface. The magnetic field created by the loops will function adequately until the pavement above the loops exceeds eight inches. When considering a new overlay, it is essential to determine how much pavement has been added to the original pavement when the loop detectors were originally installed.

When preparing a Project Assessment the location of loop detectors and the traffic data (Average Daily Traffic, and K, D, &T factors) are obtained by sending a written request or e-mail to Joe Flaherty / TPD Data Section / 070 R. This request should be sent to Joe as soon as the project is assigned to provide as much lead time as possible. The request should include a request for the location / status of any TCS, ATR or WIM sites. This information will be sent back while also identifying any special types of loop detectors, sensors or proposed new loop detector systems.

The different types of loops detectors encountered on a typical project include:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCS</td>
<td>Traffic Counter Loops</td>
</tr>
<tr>
<td>WIM</td>
<td>Weigh in Motion Systems</td>
</tr>
<tr>
<td>ATR</td>
<td>Automatic Traffic Recorder</td>
</tr>
<tr>
<td></td>
<td>Speed Counter Loops (No longer in use)</td>
</tr>
</tbody>
</table>

TRAFFIC COUNTER LOOPS:
These are typically used to obtain short duration traffic counts such as 48 hour counts, etc. Two types of signs are used to identify Traffic Counter Stations (TCS). A black on white TCS sign indicates the location of functional traffic counter loops. A white on green TCS sign indicates the location of an existing Traffic Counting Station (no loops are located within the roadway pavement) or the location of loops in the roadway pavement which are not functional. This sign may also indicate locations where future loops should be placed in the pavement.

The Traffic Planning Division, Data Section will identify new loop placements when responding to the traffic data request.

<table>
<thead>
<tr>
<th>Two lane roadway</th>
<th>Interstate Highway (Typical Section of two lanes in each direction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 loop per lane</td>
<td>1 loop per lane, 1 pull box per direction</td>
</tr>
<tr>
<td>Total 2 loops, one pull box</td>
<td>Total 4 loops, 2 pull boxes</td>
</tr>
<tr>
<td>Estimated cost $1500</td>
<td>Estimated cost $3000</td>
</tr>
</tbody>
</table>

When loops need to be replaced, Roadway Design takes care of the design by placing quantities and notes in the construction plans. There are no single sheets in the construction plans with Electrical Design's stamp. Therefore, the P.A. Involvement Sheet would show no Electrical Design involvement.
WEIGH IN MOTION SYSTEMS:
These are typically located at existing port of entry (POE) sites or can be used in the roadway in lieu of a permanent POE (ramps, parking area, buildings, etc).

If there is involvement with these types of loops, Joseph Otto with the TPD Data Section will make a special note identifying their impact when sending back the list of involved loops from his office. These are special in the way they are built and operated. Coordination of the project impact and how they will be treated must be coordinated with the TPD Data Section during scoping. Electrical Design should be shown as having significant involvement on the P.A. Involvement Sheet.

AUTOMATIC TRAFFIC RECORDERS (ATR)
These are typically continuous traffic recorder stations, which monitor traffic 24 hours per day and have active computer polling with telemetry. These locations are identified by white on blue signs. In addition to loops and a pull box a traffic signal cabinet with associated equipment will be located along side the roadway. A new ATR site can cost $50,000. They can function as a WIM system when piezo strips are utilized. Coordination of the project impact must be coordinated with the TPD Data Section during scoping.

SPEED COUNTER LOOPS:
These are no longer in service. Their function is now part of a typical ATR site.

SIGNAL LOOP DETECTORS:
Electrical Design typically has significant involvement on projects when there are traffic signal loop detectors, which are impacted by a proposed project. Coordinate the number of loops and associated costs with your representative from the Traffic Design Section.

INVOLEMENT SHEET
The Involvement Sheet should have a row for the Transportation Planning Division Data Section in order to identify if they have any anticipated involvement with the scope of the project.
Reference to the ADOT Five-Year Highway Construction Program should be made in Section A - INTRODUCTION of the Project Assessment as follows:

IF THE FIVE-YEAR PROGRAM HAS BEEN PUBLISHED AND:

THE PROJECT IS IN THE PROGRAM:

This project is listed in the (year) ADOT Five-Year Highway Construction Program for Fiscal Year (year) as Item Number (number). The programmed amount is $(amount) and will utilize (Federal/State) funds.

THE PROJECT IS NOT IN THE PROGRAM:

This project is not programmed.

IF THE TENTATIVE FIVE-YEAR PROGRAM HAS BEEN PUBLISHED AND:

THE PROJECT IS LISTED IN THE CURRENT PROGRAM AND IS ALSO LISTED IN THE TENTATIVE PROGRAM:

This project is listed in the (year) ADOT Five-Year Highway Construction Program for Fiscal Year (year) as Item Number (number). The programmed amount is $(amount) and will utilize (Federal/State) funds. The project is also listed in the Tentative (year) ADOT Five-Year Highway Construction Program for Fiscal Year (year). The tentative program amount is $(amount).

THE PROJECT IS NOT LISTED IN THE CURRENT PROGRAM BUT IS LISTED IN THE TENTATIVE PROGRAM:

This project is not programmed; however, the project is listed in the Tentative (year) ADOT Five-Year Highway Construction Program for Fiscal Year (year). The tentative programmed amount is $(amount).

THE PROJECT IS LISTED IN THE CURRENT PROGRAM BUT IS NOT LISTED IN THE TENTATIVE PROGRAM:

This project is listed in the (year) ADOT Five-Year Highway Construction Program for Fiscal Year (year) as Item Number (number). The programmed amount is $(amount) and will utilize (Federal/State) funds. This project is not listed in the Tentative (year) ADOT Highway Construction Program.

THE PROJECT IS NOT LISTED IN THE CURRENT PROGRAM NOR IN THE TENTATIVE PROGRAM:

This project is not programmed nor listed in the Tentative (year) ADOT Five-Year Highway Construction Program. The estimated cost is $(amount).
Traffic data for the “current” year and a projected year is typically presented in Section B - BACKGROUND DATA of the Project Assessment as shown in the following example:

The assigned average daily traffic (ADT) for 1998 is 3,700 vehicles per day (vpd). The projected ADT for 2008 is 4,800 vpd. Traffic factors are: K=8%, D=54%, T=5%.

To determine the “current” and projected years, use the following guide which is adapted from Section 102 of the Roadside Design Guidelines:

**PAVEMENT PRESERVATION PROJECTS**

**Programmed Projects (Tentative, Final, or Supplemental Program)**
- Use the programmed year as the “current” year.
- Use the “current” year plus ten years as the projected year.

**Unprogrammed Projects**
- Use the year shown in the problem statement as the “current” year.
- If no year is shown in the problem statement, use the third year of the next ADOT 5 Year Program as the “current” year. (Example: Development of the P.A. is during FY 95-96. Then, the “current” year will be 1996 + 3 years = 1999.)
- Use the “current” year plus ten years as the projected year.

**NEW CONSTRUCTION / RECONSTRUCTION (INCLUDING “MINOR” PROJECTS AND “SAFETY” PROJECTS)**

**Programmed Projects (Tentative, Final, or Supplemental Program)**
- Use the programmed year as the “current” year.
- Use the “current” year plus twenty years as the projected year.

**Unprogrammed Projects**
- Use the year shown in the problem statement as the “current” year.
- If no year is shown in the problem statement, use the year in which the Project Assessment is written as the “current” year.
- Use the “current” year plus twenty years as the projected year.
Included in the Background Data Section of a Project Assessment is a standard statement about major and minor structures on the project.

The question has been raised on projects where no minor structures are required to be extended, replaced or modified, “What is the added value of spending hours going through as-built plans to count the number of minor structures, etc. just to satisfy the required statement in the P.A.?”

This is a valid concern and we are now revising the former standard language as shown on the revised attached P.A. example guide. Note the bullet in footnote four.
B. BACKGROUND DATA

The ADOT Bridge Record shows 48 major structures\(^1\) within the project limits. The bridge\(^2\) locations are listed below:

<table>
<thead>
<tr>
<th>STR NO</th>
<th>MP</th>
<th>STRUCTURE NAME</th>
<th>SIZE</th>
<th>VERTICAL CLEARANCE(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1413</td>
<td>59.15</td>
<td>CAP Canal BR EB</td>
<td>42'x107'</td>
<td>-</td>
</tr>
<tr>
<td>#1414</td>
<td>59.16</td>
<td>CAP Canal BR WB</td>
<td>42'x107'</td>
<td>-</td>
</tr>
<tr>
<td>#1282</td>
<td>59.47</td>
<td>Sore Finger Rd UP GS</td>
<td>26'x330'</td>
<td>EB 17'-5&quot; WB 16'-10&quot;</td>
</tr>
<tr>
<td>#1283</td>
<td>69.66</td>
<td>Ave 75 E TI UP</td>
<td>26'x331'</td>
<td>EB16'-7&quot; WB 16'-4&quot;</td>
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<tr>
<td>#1285</td>
<td>70.11</td>
<td>Broken Wash RBC</td>
<td>3-10'x10'x45'-6&quot;</td>
<td>-</td>
</tr>
</tbody>
</table>

There are 64 minor drainage structures (spans less than 20 feet) within the project limits. These include 11 CBC’s and 53 CMP’s.\(^4\)

\(^1\) FYI – For a structure to be defined as a major structure, it must have a span of 20 feet or greater. The span length is measured parallel to the center of the road. Remember the 20-foot span can be the summation of multiple spans (ex: 2-10'x10' CBC, 4-5'x10' CBC, 4-60" CMP and 2-8'x6' CBC on a 45° skew are all examples of major structures). A major structure is listed in the Bridge Record and has a structure number.

\(^2\) FYI – Bridges listed here have spans twenty feet or greater and must meet at least one of the following criteria:
- The structure deck must directly carry traffic;
- There must be some type of bridge barrier (concrete barrier, bridge rail, guardrail, etc.).

CBC’s covered by the roadway embankment are not part of this list.

\(^3\) FYI – Always compare the date on the bridge maintenance record to the date on the as-built plans to be sure the roadway was not overlaid after the most recent bridge inspection. The vertical clearance listed here is the latest recorded minimum vertical clearance (note-not the posted vertical clearance).

\(^4\) FYI – This paragraph may be omitted if no minor structures are required to be extended, replaced or modified. However, don’t forget the following:

- The disposition of minor structures should be discussed during the Field Review with District Maintenance & District Construction. District Maintenance should identify any minor structures (pipes, etc.) that are a maintenance problem or which need to be replaced because of corrosion. The Project Team should also discuss if any pipes need to be extended to provide the recommended clear zone for safety considerations. If District Maintenance or District Construction do not attend the Field Review, contact should be made immediately after the field review. The intent is to document the minor structures in the Field Review meeting minutes which are distributed to the Project Team.
HEADING: PROJECT ASSESSMENT - TEXT

SUBJECT: ACCIDENT COUNTS AND EVALUATIONS

ALL PROJECTS EXCEPT SAFETY (STP/HES) PROJECTS:

For all projects except Safety Projects, traffic accident counts and evaluations will be included in the Initial and Final Project Assessments as follows:

INITIAL PROJECT ASSESSMENT

During development of the Initial Project Assessment, a request is transmitted to Traffic Records Section (Jim Williams) for a five-year traffic accident count covering the milepost limits of the proposed project.

The request and subsequent reply from Traffic Records Section should be completed prior to the field review so that any identified high-accident locations can be evaluated in the field during the project field review.

The accident summary is included in Section B - BACKGROUND DATA of the Initial Project Assessment. Any accident type which equals zero is not included in the accident summary.

FINAL PROJECT ASSESSMENT

The accident summary that was included in the Initial Project Assessment is also included in Section B - BACKGROUND DATA of the Final Project Assessment, along with the narrative evaluation of the accidents provided by Traffic Studies Section.

SAFETY (STP/HES) PROJECTS

Safety Projects are typically based on a Candidate Location For Operations And Safety Evaluation (CLOSE) Report. Reference to the CLOSE Report should be included in Section A - INTRODUCTION of the Project Assessment. No discussion of accidents is required in Section B - BACKGROUND DATA of the Project Assessment. Since the CLOSE Report addresses the accident history in detail, a summary of the accident history does not need to be included in the text of the Project Assessment.
Craig Seppelfrick of Environmental Planning Section has requested that the following statement be included in the Project Assessment (Section D - Development Considerations) unless otherwise directed by Environmental Planning Section:

“Environmental Planning Section will determine if there are any special environmental or archaeological concerns and prepare the required documentation.”
This Bulletin applies only to projects going to construction prior to March 10, 2003. See Project Assessment Procedure Bulletin # 02-002 for projects going to construction on or after March 10, 2003. When referring to the National Pollutant Discharge Elimination System (NPDES) Permit and/or the Storm Water Pollution Prevention Plan (SWPPP) the following language should be included in the Project Assessment (Section D - DEVELOPMENT CONSIDERATIONS) as appropriate:

STATE FUNDED PROJECTS:

LESS THAN FIVE ACRES OF LAND IS DISTURBED:

Because less than five acres of land will be disturbed, a NPDES (National Pollutant Discharge Elimination System) Permit will not be required; however, this project will be reviewed, during design, by the Roadside Development Section to determine if a Storm Water Pollution Prevention Plan (SWPPP) is required.

GREATER THAN OR EQUAL TO FIVE ACRES OF LAND IS DISTURBED:

Because more than five acres of land will be disturbed, a NPDES (National Pollutant Discharge Elimination System) Permit will be required and a Storm Water Pollution Prevention Plan (SWPPP) will be required.

FEDERALLY FUNDED PROJECTS:

LESS THAN FIVE ACRES OF LAND IS DISTURBED:

Because less than five acres of land will be disturbed, a NPDES (National Pollutant Discharge Elimination System) Permit will not be required; however, in accordance with Federal Regulation 23 CFR Part 650, Subpart B, construction projects that are federally funded shall provide design features to reduce erosion and minimize sedimentation during and after construction when applicable. This project will be reviewed during design by the Roadside Development Section to determine if a Storm Water Erosion/Sedimentation Plan will be required as part of the project plans.

GREATER THAN OR EQUAL TO FIVE ACRES OF LAND IS DISTURBED:

Because more than five acres of land will be disturbed, a NPDES (National Pollutant Discharge Elimination System) Permit will be required and a Storm Water Pollution Prevention Plan (SWPPP) will be required.
HEADING: PROJECT ASSESSMENT - TEXT

SUBJECT: PAVEMENT PRESERVATION PROJECTS IN THE THIRD YEAR OF THE ADOT FIVE-YEAR HIGHWAY CONSTRUCTION PROGRAM

Note that this Bulletin pertains to only FY 02 pavement preservation projects in the 2000 ADOT Five-Year Highway Construction Program. A future Bulletin will be developed to address how FY 03 pavement preservation projects will be treated in the 2001 ADOT Five-Year Highway Construction Program.

Pavement preservation projects for FY 2002 are listed toward the back of the Five-Year Highway Construction Program (There is no page number but you can find the list just before Section II, MAG Life Cycle Program). Although those pavement preservation projects are listed in the program, they are not yet programmed. Note there is no programmed amount shown, however, if you look at page 50, Items 72502, 72602 and 72702; you will see the lump sum funding that will be used to fund these projects. Transportation Planning Section uses the estimated cost shown in the Final Project Assessment to fund these projects. This amount will then be shown as the programmed amount when the 2001 ADOT Five-Year Highway Construction Program is published.

As expected, some of the text in Sections A, E, G and the Involvement Sheet will need to be modified to accommodate this new procedure. Listed below are the suggested modifications:

SECTION A. INTRODUCTION

Reference to pavement preservation projects in the third year of the ADOT Five-Year Highway Construction Program should be made in Section A - INTRODUCTION of the Project Assessment as follows:

IF THE FIVE-YEAR PROGRAM HAS BEEN PUBLISHED AND:

THE PROJECT IS LISTED IN THE PROGRAM:
This project is not yet programmed, however, it is listed in the (year) ADOT Five-Year Highway Construction under the Pavement Preservation Section for Fiscal Year (year). Upon completion of the Final Project Assessment Report it is anticipated that this project will be programmed using funds from Item #(Number). The estimated Construction Cost is $(Amount) (assume Federal Funds).

THE PROJECT IS NOT LISTED IN THE PROGRAM:
This project is not programmed.

SECTION E. OTHER REQUIREMENTS

It is assumed this project will be built with Federal Funds and will be administered under the ADOT/FHWA Operating Partnership Agreement under Category P.

SECTION G. REQUIRED ACTION BY PRIORITY PLANNING COMMITTEE (PPC)/ PROJECT REVIEW BOARD (PRB)

It is assumed this project will be submitted as part of the 2001 ADOT Five-Year Highway Construction Program. Upon approval of the 2001 ADOT Five-Year Highway Construction Program by the State Transportation Board, this project will be programmed and funded. Therefore, no action will be required by the Priority Planning Committee (PPC) and/or Project Review Board (PRB).
IN INVOLVEMENT SHEET

FHWA: Minimum involvement. Under Comment: Assumed Federal Funding and ADOT/FHWA Operating Partnership Agreement.
If milled AC is being used for shoulder build-up, then to avoid controversy about how it is placed, etc. the following statement shall be placed in Section D. Development Considerations of the Project Assessment:

Shoulder build-up will be placed in accordance with the 1996 Roadway Design Guidelines; Appendices; March 14, 1996 Shoulder Build-Up Design Guidelines.
Project bid advertisement date, construction start date and estimated time for completion of construction is to be included in Section E, Other Requirements. This is now part of the standard PA format.

Suggested sentence structure for a programmed project is as follows:

This project’s CPSID is “XXXX”. Desired construction start date is (Month, Year) and (-------) District estimates project completion (---) calendar days after construction start.

If the project is not programmed, then the suggested format is as follows:

This project’s CPSID is “XXXX”. This project has not been programmed nor has a construction start date been determined. However, (------) District prefers a (Month) construction start date and estimates (---) calendar days for construction completion after construction start.

Let District give you the estimated completion time because they are in a better position at estimating (guesstimating?) this than you. Also, this format should cover most projects but may have to be modified from time to time to fit situations that are unique to a specific project.

Any A + B Incentives and Design Build issues should be discussed with District and mentioned in Section E, Other Requirements and if these issues affect the estimate, they also have to be mentioned in Section F, Estimated Cost.
The following information should be included on the Involvement Sheet for projects going to construction prior to March 10, 2003:

LESS THAN FIVE ACRES OF LAND IS DISTURBED:

FEDERALLY FUNDED PROJECTS:

Organization: ROADSIDE DEVELOPMENT
Comments: STORM WATER EROSION / SEDIMENTATION PREVENTION PLAN (IF REQUIRED)

GREATER THAN OR EQUAL TO FIVE ACRES OF LAND IS DISTURBED:

STATE FUNDED OR FEDERALLY FUNDED PROJECTS:

Organization: ROADSIDE DEVELOPMENT
Comments: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

The following information should be included on the Involvement Sheet for projects going to construction on or after March 10, 2003:

LESS THAN ONE ACRE OF LAND IS DISTURBED:

FEDERALLY FUNDED PROJECTS:

Organization: ROADSIDE DEVELOPMENT
Comments: STORM WATER EROSION / SEDIMENTATION PREVENTION PLAN (IF REQUIRED)

GREATER THAN OR EQUAL TO ONE ACRE OF LAND IS DISTURBED:

STATE FUNDED OR FEDERALLY FUNDED PROJECTS:

Organization: ROADSIDE DEVELOPMENT
Comments: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
HEADING: PROJECT ASSESSMENT - INVOLVEMENT SHEET

SUBJECT: AGENCIES WITH LAND ADJACENT TO ADOT PROJECTS

When government agencies have jurisdiction over land adjacent to ADOT projects and the agencies are being involved only for informational purposes, the agency participation should be identified on the Project Assessment Involvement Sheet as follows:

Organization: (NAME OF AGENCY)
Involvement: MINIMUM
Comments: COORDINATION

Refer to Bulletin 96-013 for additional information regarding agencies with land adjacent to ADOT projects.
HEADING:  PROJECT ASSESSMENT - INVOLVEMENT SHEET

SUBJECT:  Statewide Project Management Preconstruction Engineering "PC" Model

All projects known to be minor projects, consultant design and administered by Statewide Project Management Section use the "PC" Model. Therefore, if a District Minor Project is anticipated to be designed by a SPMS on-call consultant, Section E. Other Requirements of the Project Assessment should indicate the Preconstruction Engineering "PC" Model will be used.

The Involvement Sheet should reflect that all work is to be completed by the SPMS on-call consultant, except Right of Way clearances which will continue to be developed in-house. ADOT reviews the Utility Clearance Letter, the Environmental Clearance Letter and the Material's memo. An example Involvement Sheet for a "PC" model is attached. Please note, even if the project is consultant design, ADOT Sections can be involved in doing certain phases of the work. Contact the SPMS Project Manager for involvement details.

Please note, A minor project may be completed by ADOT in-house if they request to do so. The Project Manager needs to be contacted for concurrence. If completed in-house the Project Manager will identify the appropriate Preconstruction Engineering model.
<table>
<thead>
<tr>
<th>CONTACTED</th>
<th>ATTENDED FIELD REVIEW</th>
<th>ORGANIZATION</th>
<th>INVOLVEMENT</th>
<th>COMMENTS</th>
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<td>CONTRACTS &amp; SPECIFICATIONS</td>
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</table>

**COMMENTS**

- Roadway Plans by SPMS’s On-Call Consultant
- Project Manager: ________________
- Construction Engineering & Administration
- Right-Of-Way Clearance Letter
- Review SPMS - On Call Consultant’s Plans
- Review SPMS - On Call Consultant’s Materials Design Report
- Review SPMS - On Call Consultant’s Geotech Report (pavement cores)
- Review SPMS - On Call Consultant’s Environmental Documentation
- Review Roadway Design Plans
- Review SPMS - On Call Consultant’s Utility Clearance Letter
- Review SPMS - On Call Consultant’s Roadside Development Plans
- Seeding & NPDES Storm Water Pollution Prevention Plan (if required)
- Review SPMS - On Call Consultant’s Plans, Specifications and Estimate Package
On the cost estimate for pavement preservation projects, please rename the "SAFETY" items sheet to "SAFETY AND MISCELLANEOUS" items.

Any item that is not related to strictly pavement will go under this designation.
HEADING: PROJECT ASSESSMENT - ESTIMATE

SUBJECT: EROSION CONTROL

Roadside Development has advised the 0.5% which has been typically utilized for Erosion Control in a Project Assessment Cost Estimate is not adequate and they have requested to increase this percentage to 1.0%

Therefore, all projects should utilize 1% for Erosion Control in the Itemized Cost Estimate of a Project Assessment.
If a question arises concerning the percentages used for Construction Engineering and Contingencies in the itemized estimate, this sample response may be referenced.

Comment:

1. (In the Itemized Estimate, concerning the 20% Construction Engineering & Contingencies for Pavement Preservation Items and the 30% Construction Engineering & Contingencies for Safety Items) Recently, Districts and the State Engineer have informed Contracts & Specifications to increase the 15% Engineering & Contingencies for Bid Estimates to 20%, citing increased average cost for Project Administration. Your estimate should likewise reflect this change or it will directly affect our budget during design.

Action:
Per discussion with David Allocco, Contracts and Specifications Services currently adds 15% for construction engineering and contingencies to final construction cost estimates. Additionally, Roadway Predesign Section discussed this concern with Pavement Design Section and there is no indication that the methods used to prepare Predesign cost estimates for pavement preservation projects are inaccurate. At this time, the percentages used in the Project Assessment for Construction Engineering & Contingencies appear adequate. The percentages will continue to be reevaluated, on a yearly basis, by Materials Group.
HEADING: AASHTO

SUBJECT: DISTRIBUTION OF INITIAL AND FINAL AASHTO REPORT

When developing a scoping document, if an AASHTO Report is required, the following distribution / procedure should be followed:

FEDERAL-AID, – (ALL CATEGORIES)

*FHWA desires only to see an AASHTO Report prior to requesting a Traffic Accident Evaluation and Analysis from Traffic Design when an existing AASHTO Controlling Design Criteria is diminished as a result of the proposed construction project. Primary concern is where existing lane widths or shoulder widths are proposed to be reduced.*

- Send an AASHTO Report 1) by memorandum to the FHWA Area Engineer after the field review and prior to completing the Initial Project Assessment and 2) by memorandum to Traffic Design, requesting a Traffic Accident Evaluation and Analysis if design exceptions are required.

- A response, in some form, should be received from FHWA if an AASHTO Report was sent to the FHWA, prior to making the formal design exception request. If FHWA has not provided any comments on the AASHTO Report, or a letter advising to proceed with the development of the AASHTO Report, contact the FHWA Area Engineer by E-mail or phone to confirm they have no comments. This will help eliminate any disagreement concerning design exception requests.

- Once the Project Summary of Comments has been distributed and there are no project limit changes, the request for design exceptions is prepared and sent by memorandum to the Assistant State Engineer Roadway Engineering Group for concurrence. After obtaining concurrence from the Assistant State Engineer Roadway Engineering Group, the design exception request is sent by letter to the FHWA (Area Engineer) from the Roadway Predesign Manager.

- The design exception request should be submitted as soon as possible after the Summary of Comments but can be made after the Final Project Assessment is distributed for approval.

- If no design exceptions are required, a statement to this fact is included in the Final Project Assessment and a copy of the AASHTO Report is forwarded to the FHWA for their records.

ALL OTHER PROJECTS

- The AASHTO Report is prepared after the field review and prior to completing the Initial Project Assessment.

- The AASHTO Report is then distributed to Traffic Design by memorandum, requesting a Traffic Accident Evaluation and Analysis if design exceptions are required.
Once the Project Summary of Comments has been distributed and there are no project limit changes, the formal memorandum request for design exceptions can be made to the Assistant State Engineer, Roadway Engineering Group.

The design exception request should be submitted as soon as possible after the Summary of Comments but can be made after the Final Project Assessment is distributed for approval.

If no design exceptions are required, a statement to this fact is included in the Final P.A. and the AASHTO Report is placed in the project file. (Note: The AASHTO Report does not need to be sent to the Assistant State Engineer, Roadway Engineering Group if no design exceptions are required).

MISCELLANEOUS

When preparing the design exception request, the accident analysis and the bridge evaluation sheets are considered part of the AASHTO Report and should be included and referenced in the table of contents.

It is the responsibility of the Project Assessment author to assure that proper distribution of the AASHTO Report is made. Please refer to the Draft Guide "Procedural Guide of the AASHTO Controlling Design Criteria on Existing ADOT Roadways".

See PA Bulletin 96-002 for additional distribution information.
HEADING: AASHTO

SUBJECT: EXAMPLE DESIGN EXCEPTION REQUEST MEMORANDUM RELATED TO HORIZONTAL CURVE SUPERELEVATION

The attached is an example of a Design Exception Request Memorandum where there are requested design exceptions for horizontal curve superelevation. Also attached is the EXISTING HORIZONTAL CURVE SUPERELEVATION NOT MEETING AASHTO METHOD 5 DESIGN EXCEPTION SCREENING PROCESS flow chart.

A design exception for superelevation is requested when the exiting superelevation (or improved superelevation after construction) of a horizontal curve does not meet AASHTO recommended minimum requirements based upon AASHTO Method 5 for distributing e and f. If a design exception for superelevation is required, then the superelevation of the existing horizontal curve is compared to the AASHTO recommended minimum based upon AASHTO Method 2 for distributing e and f.

If there appears to be 1) no correlation between the superelevation of the existing curve and the Crash History and 2) the Method 2 speed is greater than or equal to the posted speed, then a Design Exception based upon AASHTO Method 5 is requested. Mitigation strategies are not required. This is noted by curves 1, 2, 4 and 7 in the attached example.

If the superelevation of the existing horizontal curve does not meet AASHTO recommended minimum requirements based upon AASHTO Method 5 and Method 2 for distributing e and f, then a mitigation strategy needs to be evaluated. This is noted by curves 3, 5 and 6 in the attached example. Please refer to the U S Department of Transportation Federal Highway Administration publication "Mitigation Strategies for Design Exceptions - July 2007". http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/ Mitigation measures could include such items as rumble strips, wide pavement markings, shoulder widening or special pavement treatments. Differential milling and overlay will need to be evaluated in coordination with the Design Project Manager to determine what is practical and the availability of additional funding sources. The Predesign Project Manager and Supervisor should discuss engineering aspects of the curves and other data provided by Traffic to determine recommendations of mitigation measures to be included in the project scope of work and the Design Exception Request Memorandum.

The Design Exception Request Memorandum is typically attached to the Design Exception Request Letter which is signed by the Assistant State Engineer with Roadway Engineering Group. The following cc list should be added to the bottom of the Design Exception Request Letter only:

cc: Design Project Manager MD XXXX (w attachments)
Barry Crockett, Contracts and Specifications MD 121F (w/o attachments)
Paul O’ Brien, Predesign Section Manager MD 605E (w attachments)
Marta Raiford, Predesign Records Retention MD 605E (w attachments)
**EXISTING HORIZONTAL CURVE SUPERELEVATION NOT MEETING AASHTO METHOD 5 DESIGN EXCEPTION SCREENING PROCESS**

<table>
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<tr>
<th>Field Review Is Scheduled. Traffic Engineering HES Section Reviews The Crash History To Determine If There Are Specific Locations Within The Project Limits That May Warrant Any Horizontal Curve Improvements / Mitigation Measures</th>
<th>Prepare AASHTO Report For The Project Based Upon The Posted Speed As The Design Speed And AASHTO Method 5. Determine Any Horizontal Curves Which Require A Design Exception</th>
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</thead>
<tbody>
<tr>
<td>The AASHTO Report Is Sent To Traffic Design For The Crash Analysis</td>
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</table>

Review Information Provided By Traffic Engineering HES Section And List Horizontal Curves Which May Require A Design Exception For Horizontal Curve Superelevation Not Meeting AASHTO Method 5

For Each Horizontal Curve Calculate The Curve Speed and e Minimum Based Upon AASHTO Method 2

If The Method 2 Speed ≥ Posted Speed And The Horizontal Curve Does Not Have Any Issues Related To Crash History, Then A Design Exception Based Upon AASHTO Method 5 Is Requested. Mitigation Strategies Are Not Required

If The Existing e < Method 2 e Minimum And / Or The Horizontal Curve May Have An Issue Related To Crash History, Then A Design Exception Is Requested And Mitigation Strategies Need To Be Evaluated

<table>
<thead>
<tr>
<th>Superelevation Mitigation Measure</th>
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<tbody>
<tr>
<td>Low Cost</td>
</tr>
<tr>
<td>Proposed e &lt; Method 2 e</td>
</tr>
<tr>
<td>Incremental Superelevation Improvement Which Can Be Constructed Under Traffic</td>
</tr>
</tbody>
</table>

Project Manager and Supervisor should discuss engineering aspects of the curves and other data provided by Traffic to determine recommendations of mitigation measures to be included in project scope of work and the Design Exception Request.

Other Mitigation Measures Which Can Be Implemented To Reduce The Potential Impact Of The Existing Feature To Remain These measures could include: additional signing, rumble strips, chevrons, shoulder widening, pavement treatment to increase the friction and using wide pavement markings. See USDOT FHWA Mitigation Strategies for Design Exceptions - July 2007.

http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/
To: Mary Viparina, 611E  
Assistant State Engineer  
Roadway Engineering Group

From: Paul O'Brien, 605E  
Manager  
Roadway Predesign Section

Date: July 07, 2009

Subject: Design Exception Request  
Project 017 YV 285 H XXXX XXC  
XX XX TI – XX XX TI (SB)  
Phoenix – Flagstaff Highway  
I-17

This project is not programmed nor listed in the 2010 ADOT Five-Year Transportation Facilities Construction Program. It is anticipated that the pavement rehabilitation part of the project will use federal (IM) funds. The intent of this project is to extend the usable life of the roadway pavement and to address safety issues, which can be accomplished within the scope of a Pavement Preservation Project.

Design Exceptions are hereby requested for maximum allowable grade exceeded at one location and for minimum superelevation rate not met at seven locations as per the attached AASHTO Controlling Design Criteria Report. An Accident Analysis Report has been prepared for this project and is also attached.

The reasons for requesting the Design Exceptions are as follows:

**Maximum Allowable Grade**

1. I-17 within the project limits is classified as a rural interstate with rolling terrain. The natural terrain dictates the profile of the Interstate. Traveling in the southbound direction the profile grade between the McGuireville TI and the Verde River Bridge is almost continuous downhill. The Verde River Bridge (MP 287.93, Elev. 3,108') is the low point from where the profile grade changes to one long ascending grade that continually increases before reaching the top of Copper Canyon (MP 281.0±, Elev. 4,700'). The terrain classification for I-17 through Copper Canyon would be considered mountainous. This section of I-17 between MP 286.00 and MP 286.65 (3,432') for which the design exception is being requested is in the transitional area between rolling to mountainous terrain. The posted speed limit in this section changes to 65 mph, which is indicative of a mountainous terrain classification. The natural ascending terrain as well as the General Crook Trail TI OP (located 2,600± south of the begin project limit) dictates the profile grade of the Interstate.

2. To achieve the 4.0% grade would require lowering of the existing roadway profile grade. This would require reconstruction of the southbound roadway (and most likely the northbound roadway), which would have to continue through the Copper Canyon Section, which is outside of project limits. In all probability the entire Copper Canyon Section of I-17 would either have to be reconstructed or relocated to new alignment. Also the General Crook Trail TI OP would have to be reconstructed / relocated.

3. Reconstructing/relocating 5.65± miles of interstate highway as well as reconstructing the General Crook Trail TI OP would be classified as major reconstruction, require a Design Concept Report with an extensive evaluation of alternate routes, public involvement and would be far beyond the scope, intent and funding limits of a Pavement Preservation Project.

**Minimum Horizontal Curve Superelevation Rate**

Seven horizontal curves within the project limits require a design exception for superelevation since they do not meet the recommended AASHTO minimum (based upon Method 5 for distributing superelevation and side friction factor). Utilizing the
ADOT methodology for reviewing superelevation, based upon Method 2, three of these seven horizontal curves (those curves beginning at MP 289.31, MP 292.26 and MP 292.71) were further analyzed to determine if mitigation strategies would be appropriate.

Curves 1 through 7

1. MP 286.78 to MP 287.33 – the existing superelevation is 0.015 ft/ft (0.039 ft/ft greater than the Method 2 minimum & 0.027 ft/ft less than the Method 5 minimum). The Method 2 speed (85 mph) is greater than the posted speed (75 mph).

2. MP 289.02 to MP 289.20 – the existing superelevation is 0.015 ft/ft (0.072 ft/ft greater than the Method 2 minimum & 0.006 ft/ft less than the Method 5 minimum). The Method 2 speed (99 mph) is greater than the posted speed (75 mph).

3. MP 289.31 to MP 289.92 – the existing superelevation is 0.016 ft/ft (0.009 ft/ft less than the Method 2 minimum & 0.054 ft/ft less than the Method 5 minimum). The Method 2 speed (73 mph) is less than the posted speed (75 mph). This curve was analyzed for a spot safety improvement. The 5-Year Crash Analysis stated that eight of the nine crashes on this curve occurred during wet conditions and recommended the superelevation be increased. A superelevation of 0.025 ft/ft was calculated as the improvement needed to bring the speed of the curve up to the posted speed. This level of superelevation will also facilitate roadway drainage. This work has been included in the scope of work of this project.

4. MP 290.48 to MP 290.98 – the existing superelevation is 0.016 ft/ft (0.008 ft/ft greater than the Method 2 minimum & 0.045 ft/ft less than the Method 5 minimum). The Method 2 speed (77 mph) is greater than the posted speed (75 mph).

5. MP 292.26 to MP 292.70 – the existing superelevation is 0.029 ft/ft (0.045 ft/ft less than the Method 2 minimum & 0.066 ft/ft less than the Method 5 minimum). The Method 2 speed (68 mph) is less than the posted speed (75 mph). This curve was evaluated for a mitigation strategy. The 5-Year Crash Analysis stated that four of the six crashes on this curve included 2 over-turn and 2 sideswipe same direction. The project team concurred that a mitigation strategy should be implemented and recommended improving the existing horizontal curve superelevation by adding an additional 0.01 ft/ft to provide an improved superelevation rate of 0.039 ft/ft. This work has been included in the scope of work of this project.

6. MP 292.71 to MP 292.97 – the existing superelevation is 0.015 ft/ft (0.026 ft/ft less than the Method 2 minimum & 0.046 ft/ft less than the Method 5 minimum). The Method 2 speed (70 mph) is less than the posted speed (75 mph). This curve was evaluated for a mitigation strategy. Since there was no discernable accident pattern, the 5-Year Crash Analysis recommended post mount delineators should be placed on this curve as a minor mitigation measure. This work has been included in the scope of work of this project.

7. MP 293.01 to MP 293.28 – the existing superelevation is 0.015 ft/ft (0.007 ft/ft greater than the Method 2 minimum & 0.064 ft/ft less than the Method 5 minimum). The Method 2 speed (77 mph) is greater than the posted speed (75 mph).
Recommended Remedial Action:

Mitigation measures for horizontal curves where the existing superelevation is less than the AASHTO Method 5 and AASHTO Method 2 for recommended minimum superelevation:

The existing superelevation of curve 3 beginning at MP 289.31 and curve 5 beginning at MP 292.26 do not meet the AASHTO Method 5 recommended minimum superelevation. Superelevation improvements have been included for these curves in the scope of work for this project.

The placement of post mount delineators along horizontal curve 6 beginning at MP 292.71 have been included in the scope of work for this project.

No mitigation measures are recommended for horizontal curves where the existing superelevation is less than the AASHTO Method 5 but greater than the AASHTO Method 2 for recommended minimum superelevation:

The Method 2 speed for curves 1, 2, 4 and 7 is greater than the posted speed.

Design Exceptions are required for all seven curves since the curves will not meet AASHTO Method 5 for recommended minimum superelevation after construction of this project is complete.

Concur: ____________________________

Mary Viparina                      Date
HEADING: AASHTO

SUBJECT: DESIGN EXCEPTION APPROVAL AND DISTRIBUTION

Design Exceptions are required as outlined in the ADOT Design Exception/Design Variance Process Guide and are prepared as outlined in the ADOT Guide for Review of the AASHTO Controlling Design Criteria on Existing ADOT Roadways. The approval and distribution of AASHTO Design Exceptions will be as outlined below:

APPROVAL OF DESIGN EXCEPTIONS:

Projects on the National Highway System (NHS)

1. Concurrence of Exception Memorandum by Roadway Group Manager
2. Approval by FHWA

Projects not on the NHS that require Design Exceptions*

1. Without Bridge Design Exceptions - Approval by Roadway Group Manager
2. With Bridge Design Exceptions - Concurrence by Bridge Group Manager and Approval by Roadway Group Manager

*Note – projects not on the NHS will only require ADOT RDG Design Exceptions per the Design Exception/Design Variance Process Guide.

DISTRIBUTION OF APPROVED DESIGN EXCEPTIONS:

Projects on the NHS

After receiving a copy of the approval letter from FHWA the entire Design Exception package (FHWA Approval Letter, Request to FHWA Letter, ADOT Design Exception Memorandum, Crash Analysis Report and AASHTO Report) is scanned and distributed by email to:

Scoping Project Manager
Design Project Manager
Bridge Design, Group Manager (If bridge design exceptions are involved)
Contracts & Specifications, Section Manager
Predesign Records Retention

All originals will be placed in the project file.

Projects not on the NHS that require Design Exceptions

After receiving the approved Design Exception Memorandum the entire Design Exception package (Exception Memorandum, Crash Analysis Report and AASHTO Report, if prepared) is scanned and distributed by email to those listed above under Projects on the NHS.

The attached formats may be used to obtain Design Exception Approval. These documents will be prepared by the Predesign Project Manager or Predesign Consultant Project Manager and routed through the Predesign Records Technician for distribution.

For projects which do not require Design Exceptions Scoping Project Manager shall place the AASHTO Report on the Predesign Portal and note in the Portal that no Design Exceptions are required.
Robert E. Hollis  
Division Administrator  
Federal Highway Administration  
ATTN: (FHWA Area Engineer)  
4000 North Central Avenue, Suite 1500  
Phoenix, Az. 85012 -1906

RE: Design Exceptions  
Project (FA Project Number / Project Number)  
(Project Name)  
(Highway)  
(Route Number)

Dear Mr./Ms. (FHWA Area Engineer):

[This project is listed in the ADOT Five-Year Highway Construction Program for Fiscal Year as item # and is scheduled for a (Month) (Year) bid advertisement date. (If the project is in the Tentative Five-Year Highway Construction Program mention it here also).

or

This ______ project is not programmed.]

Design exceptions are requested per the attached AASHTO Controlling Design Criteria Report which has received concurrence of the Assistant State Engineer with Roadway Engineering Group [and Bridge Group if appropriate]. A Crash Analysis Report has been prepared for the project and is also attached.

[Mitigation measures and safety features should be included. The cover letter should also note any features that are being improved with the project and thereby eliminate the need for any design exceptions.]

Please advise if further action is required on the above matter.

Sincerely,

Mary Viparina, P.E.  
Assistant State Engineer  
Roadway Engineering Group

Attachment: 1. Design Exception Request Memorandum with concurrence of the Assistant State Engineer, Roadway Engineering Group, [ Date ]  
2. Five Year Crash Analysis Report, [ Date ]  
3. AASHTO Controlling Design Concept Report, [ Date ]

Cc: See distribution listing on page 1 of 1
[This project is listed in the ADOT Five-Year Transportation Facilities Construction Program for Fiscal Year as Item # and is scheduled for a (Month) (Year) bid advertisement date. (If the project is in the Tentative Five-Year Highway Construction Program mention it here also).]

or

This _____ project is not programmed.]

Design Exceptions are requested for (List items(Optional) ) as per attached AASHTO Controlling Design Criteria Report. A Crash Analysis Report (dated ___) has been prepared for the project and is also attached.

The reasons for granting these design exceptions are as follows:

(Provide list) This list should be categorized by order of the thirteen AASHTO Criteria and which apply specifically to the project:

1. Design Speed
2. Lane Width
3. Shoulder Width
4. Bridge Width
5. Horizontal Alignment
6. Superelevation
7. Vertical Alignment
8. Grade
9. Stopping Sight Distance
10. Cross Slope
11. Vertical Clearance
12. Horizontal Clearance
13. Structural Capacity/Bridge Barrier

A detailed disposition of each design exception being requested should be described including any mitigation measures. See PA Bulletins 09-002 and 10-001 for additional information on design exception justifications.

Concur: ___________________________ Concur:[See Note#1]: ___________________________
Note #1

Use **Concur** if the Design Exception Request is to be approved FHWA

Use **Approved** if the Design Exception Request does not need to be approved by FHWA
A design exception request must provide a rationale for the exceptions and describe what measures would be required to bring the features up to AASHTO criteria.

The attached is an example of a Design Exception Request Memorandum where there are design exceptions for grade and structural capacity. Other features requiring design exceptions could also be addressed in a similar manner.

Any remedial actions or mitigation strategies implemented shall be noted in the Memorandum. Refer to the U.S. Department of Transportation Federal Highway Administration publication “Mitigation Strategies for Design Exceptions - July 2007”. http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/. The Predesign Project Manager and Supervisor should discuss engineering aspects of the features that do not meet AASHTO criteria to determine recommendations of mitigation measures to be included in the project scope of work and the Design Exception Request Memorandum.

The cover letter to FHWA should note any features that are being improved with the project and thereby eliminate the need for any design exceptions.

The Design Exception Request Memorandum is attached to the Design Exception Request Letter which is signed by the Assistant State Engineer with Roadway Engineering Group for approval by FHWA. The approval and distribution of AASHTO Design Exceptions will be as outlined in Project Assessment Bulletin 96-002. An example design exception request for horizontal curve superelevation is provided in Project Assessment Bulletin 09-002.
This project is not programmed nor listed in the 20xx ADOT Five-Year Transportation Facilities Construction Program. It is anticipated that the pavement rehabilitation part of the project will use federal (IM) funds. The intent of this project is to extend the usable life of the roadway pavement and to address safety issues, which can be accomplished within the scope of a Pavement Preservation Project.

Design Exceptions are requested for maximum allowable grade exceeded at one location, for vertical curve stopping sight distance not met at two locations and for minimum structural capacity not met at one location as per the attached AASHTO Controlling Design Criteria Report. A Crash Analysis Report has been prepared for this project and is also attached.

The reasons for requesting the Design Exceptions are as follows:

**Grade**

I-17 within the project limits is classified as a rural interstate with rolling terrain. The natural terrain dictates the profile of the Interstate. Traveling in the southbound direction the profile grade between the McGuireville TI and the Verde River Bridge is almost continuous downhill. The Verde River Bridge (MP 287.93, Elev. 3,108') is the low point from where the profile grade changes to one long ascending grade that continually increases before reaching the top of Copper Canyon (MP 281.0±, Elev. 4,700'). The terrain classification for I-17 through Copper Canyon would be considered mountainous. This section of I-17 between MP 286.00 and MP 286.65 (3,432') for which the design exception is being requested is in the transitional area between rolling to mountainous terrain. The posted speed limit in this section changes to 65 mph, which is indicative of a mountainous terrain classification. The natural ascending terrain as well as the General Crook Trail TI OP (located 2,600± south of the begin project limit) dictates the profile grade of the Interstate.

To achieve the 4.0% grade would require lowering of the existing roadway profile grade. This would require reconstruction of the southbound roadway (and most likely the northbound roadway), which would have to continue through the Copper Canyon Section, which is outside of project limits. In all probability the entire Copper Canyon Section of I-17 would either have to be reconstructed or relocated to new alignment. Also the General Crook Trail TI OP would have to be reconstructed / relocated.

Reconstructing/relocating 5.65± miles of interstate highway as well as reconstructing the General Crook Trail TI OP would be classified as major reconstruction, require a Design Concept Report with an extensive evaluation of alternate routes, public involvement and would be far beyond the scope, intent and funding limits of a Pavement Preservation Project.
Vertical Curve Stopping Sight Distance

The calculated speeds on the set of vertical curves over Yucca RR OP WB (Begin MP 26.73 end MP 26.98) are only 7 mph and 6 mph below the posted speed limit of 75 mph. The Crash Analysis states there is no indication that the existing roadway geometry contributed to reported crashes on this segment of I-40.

Attaining full standards for this design exception would require reconstruction of Yucca RR OP WB #381 at a program level estimate of $5,000,000. This expense does not seem justifiable as part of a pavement preservation project.

Structural Capacity

The Greenes Wash Bridge EB, Structure No. 1138 (MP 166.90) and Greenes Wash Bridge WB, Structure No. 1139 (MP 166.90) both have a structural rating of HS 16.11 which does not meet the structural requirements of the recommended HS 20. The bridges are carrying normal traffic without showing any signs of distress.

These bridges are not listed in the ADOT 2010 to 2014 Five Year Transportation Facilities Construction Program for rehabilitation and the Bridge Group is not recommending any modifications. It is estimated that approximately $3.2 million would be required to replace each bridge. Since the structures are not deemed deficient or functionally obsolete, spending $3.2 million to replace each bridge at this time does not appear to be justified.

Recommended Remedial Action:

(Mitigation measures for the project are noted here)

Summary:

The intent of this project is to extend the usable life of the roadway pavement and address safety issues which can be accomplished within the scope of a pavement preservation project. In conclusion granting these design exceptions is justified because upgrading the existing features to meet current standards would require major reconstruction or replacement of the bridges which is far beyond the original scope, intent and funding for this project.

Concur: ____________________________

Concur: ____________________________ Bridge Group Manager   Roadway Group Manager

_________________________   __________________________

Date                  Date