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# MEMORANDUM

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Date: September 14, 2010

To: Nanette Slusser  
Assistant County Administrator for  
Public Works Policy

From: C.H. Huckelberry  
County Administrator

A handwritten signature in black ink, appearing to be "CHH", is written over the printed name "C.H. Huckelberry".

Re: **Your Report on Pima County Capital Improvement Project Soft Costs**

I appreciate your September 8, 2010 memorandum; the attached report is thorough and comprehensive. Please circulate this report to all appropriate implementing capital improvement departments for their review.

I would also ask that you, through Deputy County Administrator John Bernal, establish an appropriate task force of affected departments to develop strategies to alter our present capital delivery program process. Soft costs need to be reduced and brought within reasonable norms pursuant to the benchmarking studies in which we participated, which are generally available to all public capital improvement implementing agencies.

You may also directly provide a copy of this report to Regional Transportation Authority (RTA) staff and consultants who are working to improve methodologies for RTA project delivery.

CHH/mjk

Attachment

c: John Bernal, Deputy County Administrator for Public Works  
Reid Spaulding, Facilities Management Director  
George Widugiris, Procurement Director  
John Carter, Procurement Design and Construction Manager



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# MEMORANDUM

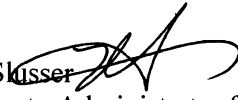
## Public Works Administration



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**DATE:** September 8, 2010

**TO:** C. H. Huckelberry  
County Administrator

**FROM:** Nanette M. Skusser   
Assistant County Administrator for Policy

**RE: Examination of Soft Costs on Pima County Capital Projects**

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In response to your May 18, 2010 memo, Examination of Soft Costs Associated with a Number of Regional Transportation Authority (RTA) Projects, including the Modern Streetcar, all active Pima County capital projects were analyzed to determine their allocation of soft costs. The attached report reviews the details of the analysis and identifies opportunities for improvement.

Although Pima County has a rigorous data collection and reporting process, there continues to be a significant gap in the quality of the information gathered. Most project managers do not identify or calculate soft costs on their projects. Therefore, this exercise was both useful and eye-opening. Historically, the data collected includes project schedules at specific milestones, and associated budgets. Budgets are itemized by phase, however, these allocations are not routinely provided by task or the specific personnel assigned to perform them. The labor charges reflect numerous personnel billing to projects without a corresponding deliverable or specific assignment. The current capital software does not have the capability to address any of these shortfalls. It is anticipated that PimaCore will. However, the current project control data that is provided by the project managers is frequently inaccurate. This data provides the basis for strategic decision-making related to bond sales, arbitrage, cash flow, and project performance.

Pima County's capital program is \$1.9 billion; approximately 1/3, or \$627 million of that is allocated to soft costs. A mere one percent reduction in soft costs can save over \$6 million. There is opportunity for much more. Consistency and reliability are fundamental to engendering public confidence in our ability to deliver on our promises. Pima County's capital program remains vital to the region's economic recovery and quality of life. We should take every opportunity to meet or exceed those goals. And just like the residents who direct our mission, we are capable of doing more with less and being better for it. Thanks you for the opportunity to assist in this endeavor.

NMS:lsm

c: John M. Bernal, Deputy County Administrator, Public Works  
Public Works Directors  
Project Management Office  
Reid Spaulding, Facilities Management Director  
George Widugiris, Procurement Director  
John Carter, Design and Construction Division Manager, Procurement Department



## **Pima County Soft Costs Analysis**

### **Soft Cost Analysis**

The goal of this effort is to establish a baseline for soft costs related to capital projects in Pima County and benchmark performance to industry standards.

### **Project data**

#### Project criteria

Pima County's capital program includes 284 active projects; projects that are expending monies in the current fiscal year. For this analysis, the following project types were removed:

- Projects that utilize operational staff for design and construction management
- Projects under \$100,000
- Projects managed by other jurisdictions
- Projects with land acquisition only
- Programs
- Information Technology projects
- Studies/Reports

From the initial complement of projects, only 80 met the criteria for this analysis.

### **Categories of Soft Costs**

Soft costs are defined as "all non-construction-related costs except for real property." Soft costs routinely include internal and external labor related to planning, design, right-of-way acquisition (not actual property costs), utility coordination (not relocation) and, in the case of Pima County, public art. Below is a brief discussion on the elements associated with each category:

#### Right-of-Way (ROW)

In Pima County, the majority of capital projects involve right-of-way services. At a minimum, most project managers confirm property ownership with Real Property Services at a project's onset. During the planning and design phases of a project, impacts to adjacent parcels are analyzed. ROW services can range from title searches and appraisals to construction easements, condemnation, acquisition, and relocation. ROW costs are greatest on horizontal projects, such as roads, sewers or flood control improvements than vertical projects; buildings. The soft costs for most of these services are fixed. Projects with multiple small acquisitions may often pay more than a project with a few large acquisitions. So, using soft costs as a comparison against land acquisition costs is not useful. In Pima County, Real Property Services provides information related to property ownership, existing easements and potential acquisition costs during the project planning phase. This information is helpful when determining a project's location or route with the goal of avoidance of costly sites (commercial property, significant utility relocations, etc.) or minimization of impact to reduce acquisition costs. Although ROW soft costs are not specifically identified as a category in most soft cost analysis, this information is useful as a benchmark from which to measure future process adjustments. In addition, since these costs are paid with capital dollars, they are included in total soft costs. Knowing all the components that make-up total soft costs is the first step in controlling them.

## **Pima County Soft Costs Analysis**

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### Planning

Project planning begins at problem identification and is complete once a solution is identified. The challenge with project planning is when to stop. For most problems, there are multiple solutions. Engineering and other design disciplines encourage exploration of all alternatives. Even after a preferred alternative is selected, it is common to see the solution revisited to confirm its validity. This iterative process often continues throughout design resulting in frequent re-work and scope changes. The Pima County project development process includes preliminary planning once a problem is identified. This occurs prior to project initiation and charter approval. Some departments fund this task as an operating expense since most problems originate on the operational side. Actual project planning continues with approval of a project charter through alternatives analysis and 15 percent design. Once a charter is approved, this task can be funded with capital dollars. Planning should be complete at the onset of the design process.

### Design

Design development involves conceptual design, discipline-specific design and review, and technical drafting. Pima County outsources the majority of these functions. Most of Pima County's internal engineering and architecture resources fill the role of project manager and design reviewer. Therefore, soft costs captured under design include both internal and external resources. The design task is often the most expensive soft cost element on Pima County projects. As mentioned under planning, the frequent reassessment of design solutions in search of even better solutions has a significant impact on project schedules, and ultimately costs. The County-approved project development process requires commitment to a design solution at the 30 percent design stage. Design development between 30 percent and 100 percent should follow a typical trajectory. Lengthy interruptions during this stage of project development are often costly due to the impact to project scope and schedule.

### Construction

The construction phase is the most predictable in the project development process. Once a project is bid, the contractor's profitability is dependent on efficient execution and delivery of the work. Interruptions to this process are costly. Typical interruptions can include requests for information driven by incomplete or poor quality plans, owner requested changes (new scope), and unknown conditions. Timely resolution of these issues is the key to maintaining project schedule and controlling costs. Construction soft costs include construction administration/management, inspection, survey, and materials testing. These tasks are routinely done in-house, although each has been outsourced when internal resources are not available. Project close-out is included in this phase. Often this task is ignored or protracted allowing considerable, non-value added charges to accumulate towards the project after completion.

### Utilities

Utility relocation is most frequently a component of horizontal projects. It is rare to identify a horizontal project without some utility relocation costs. However, with the introduction of the project development process, utility impacts are identified earlier in the process, thus allowing an opportunity to minimize impact or adequate time for relocation to be done by the utility versus the County's contractor. Most utility relocation costs, with the exception of Tucson water lines, are covered by the utility. However, soft costs associated with utility coordination and design integration are not. These costs are captured in this analysis. The Department of Transportation has proposed requesting reimbursement for these costs from each utility. Since utility relocation is not always a project component, inclusion of their associated costs in this analysis provides two benefits; it identifies the impact utilities, when not avoided, can have on a project; and sets a baseline from which to introduce best practices to avoid and minimize utility impacts. As you'll note, most projects have not segregated the design costs associated with utility relocation.

## **Pima County Soft Costs Analysis**

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### Public Art

Pima County's 1 Percent for Art Policy (Board of Supervisor Policy C3.3) appropriates one percent of a project's construction budget go to public art. The subsequent Administrative Procedure 3-16 appropriates one percent of the cumulative planning, design and construction costs. The procedure requires Board exemption of a project from the public art requirement. However, in practice, projects without actual construction activity, those which do not result in visible facilities (sewers, flood control, etc.), or those with inadequate funding have been excluded from this requirement without specific Board approval. Although the majority (90 percent) of the actual art allocation goes towards paying for the art, ten percent of the one percent is paid to the Tucson-Pima Arts Council for their time in managing the artist selection process. In addition to the one percent for art, additional time is charged to the project by County staff assigned to coordinate development and processing of the artist's contract with the appropriate Board offices. Other charges related to artist coordination are incidental to the project and are often not segregated. Since these costs are specific to Pima County, they are captured to allow accurate comparison with other agencies and benchmarks.

### Labor Charges

To provide the data necessary for this analysis, labor charges were reviewed on a project by project basis. The type of personnel charging to projects varied significantly between agencies. Some of the major variances include:

- Charging senior management to projects.
- Charging secretarial and other support staff to projects.
- Charging sick and vacation time to projects.
- Utilizing operating personnel for project delivery and not charging their time to the project.

These approaches impact soft cost performance and skew actual results. Items such as the first three should be reviewed for inclusion in a department's overhead or indirect calculation. A consistent methodology for establishing an agency's overhead is essential when measuring project soft costs against a benchmark. The use of operating personnel for capital project tasks is an excellent resource management approach. Departments utilizing operational resources for capital projects recognize significantly lower overall costs; such is the case in Facilities Management and the Regional Water Reclamation Department. It is unclear if these resources are more efficient, however, since their time spent on project-related tasks is not charged to the project. To accurately measure soft costs, all costs related to project delivery must be captured.

### Internal vs. External Resources

Pima County is heavily reliant on external resources for project delivery tasks. Of the 80 projects analyzed for this study, all of them relied on external resources for at least one project delivery task. Most projects involved external resources on multiple tasks and phases.

The 2008 Arizona Benchmarking Study showed 29.3 percent of design work is done in house and 70.7 percent is outsourced to consultants. Construction tasks are more evenly divided between internal resources, 56.2 percent, and consultants, 43.8 percent. The 2009 California Benchmarking Study shows just the opposite. The design task is more evenly divided between in-house resources 56 percent and consultants, 44 percent. Internal resources perform 82 percent of the construction-related tasks versus external resources, 18 percent. Performance patterns related to each resource type is beyond the scope of this analysis. However, additional study is needed to determine if there are any differences in cost and performance between internal and external resources.

**Pima County Soft Costs Analysis**

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**Soft Costs Results**

<b>Department</b>	<b>Total</b>	<b>Range</b>	<b>Median</b>
Cultural Resources	48.2%	5.9%-122.2%	32.4%
Facilities Management	24.9%	13.1%-48.6%	23.8%
Natural Resources, Parks and Recreation	34.4%	16.7%-67.6%	35.9%
Project Management Office	42.6%	23.5%-116%	39.0%
Regional Flood Control District	51.8%	27.7%-72.7%	53.6%
Regional Wastewater Reclamation	26.1%	7.6%-47.9%	24.9%
Transportation	56.7%	20.6%-148.3%	59.4%
<b>Total Soft Costs Percent</b>	<b>40.7%</b>	<b>5.9%-148.3%</b>	<b>38.4%</b>
Arizona Benchmarking Study	31.3%	11%-35.4%	
California Benchmarking Study	40.0%	30%-47%	
Transportation Research Board	31.5%	11%-54%	
Arizona Department of Transportation (TE Projects)	44.0%	44%-61%	

Two departments had too few projects to establish a statistically valid sample for this analysis. Both the Cultural Resources Office and the Regional Flood Control District had only four projects that met the criteria for analysis. Their data is included for illustrative purposes. However, conclusions should not be drawn based on this data alone.

<b>Department</b>	<b>RWY</b>	<b>PLN</b>	<b>DES</b>	<b>CON</b>	<b>UTL</b>	<b>PRT</b>
Cultural Resources	0.3%	33.6%	7.7%	6.6%	0.0%	0.0%
Facilities Management	1.2%	1.5%	15.3%	6.4%	0.5%	0.1%
Natural Resources, Parks and Recreation	1.8%	1.0%	24.9%	5.4%	0.0%	1.2%
Project Management Office	1.3%	3.6%	23.9%	13.5%	0.2%	0.0%
Regional Flood Control District	7.7%	7.5%	25.6%	11.0%	0.0%	0.0%
Regional Wastewater Reclamation	0.4%	3.8%	15.9%	6.0%	0.0%	0.0%
Transportation	2.7%	5.7%	26.0%	20.5%	1.1%	0.7%
<b>Total Soft Costs By Task</b>	<b>2.2%</b>	<b>8.1%</b>	<b>19.9%</b>	<b>9.9%</b>	<b>0.5%</b>	<b>0.8%</b>

A project-by-project analysis is attached (See Attachment A). The individual project cost models are available upon request. In follow-up discussions with the various agencies and departments related to project delivery, they identified projects that followed the federal process as more costly than other types of projects. In reviewing those projects, 12 projects met the criteria; 10 in the Department of Transportation and one each in Natural Resources, Parks and Recreation Department and the Regional Flood Control District.

Natural Resources, Parks and Recreation’s overall soft costs are 34.4 percent. The soft costs on the one project that followed the federal process are 67.6 percent. If that project is removed, the department’s overall soft costs drop to 30.3 percent.

The Regional Flood Control District’s overall soft costs are 51.8 percent. The soft costs on the one project that followed the federal process are 69.5 percent. If that project is removed, the department’s overall soft costs drop to 45.9 percent. As mentioned earlier, there are an inadequate number of projects to be statistically valid.

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The disparity is less pronounced with the Department of Transportation projects. Ten transportation projects followed the federal process. The average soft cost on these projects is 60.6 percent. The department's overall soft cost average is 56.7 percent. When the federal projects are removed, the department's average drops to 54.7 percent.

Your May 18, 2010 memorandum requested a comparison with the City of Tucson's Modern Streetcar project soft costs. The City recently submitted their revised schedule and budget to the Federal Transit Authority (FTA) for approval. The review is anticipated to take 30 days. In reviewing the submittal provided to the RTA in May 2010, the soft costs for the Modern Streetcar are 32.2 percent. It is unclear if this information is inclusive of all future soft costs and is not provided at level of detail adequate to make this determination. The City advised they will not be able to provide the soft cost information until they receive approval from the FTA. It is anticipated that this information will be provided to the Regional Transportation Authority for inclusion into the region-wide review of soft costs related to their program.

### **Market Influences**

#### Soft Costs in a Declining Market

Project budgets are set early in the project development cycle. Early budgets are rarely broken out beyond design costs and construction costs. As project development progresses, project budgets are further defined by task. A typical project delivery cycle is 3-5 years. Historically, inflation has been the biggest outside influence to a project budget. Between 1998 and 2008, commodity prices increased 89 percent. In the past year, commodity prices have increased a mere 1 percent. Bids on recent projects are as much as 30 percent below engineer's estimate. Although a rare occurrence, declining bid prices on previously allocated soft costs can skew percentages. For example using a 30 percent soft cost allocation model, a \$1 million construction project would assign \$300,000 for soft costs. Approximately 50 percent of these funds would be spent prior to the project being bid. Subsequently, if the bids come in with a 30 percent savings, or a \$700,000 cost, the soft cost allocation now represents 43 percent of the total construction costs. Bids prices have come in under the engineer's estimate for the past three years. Suffice to say that soft costs in a declining market represent a larger percentage of actual construction costs.

#### Small Projects vs. Large Projects

The contention among most departments is that there are fixed costs associated with all projects; therefore the soft costs on smaller projects would represent a greater percentage than on larger projects. The data does not support this argument.

For purposes of this study, only projects in excess of \$100,000 were included. Of the 80 projects analyzed, 26 projects are under \$1 million. The average soft costs on projects under \$1 million are 27.9 percent. The average for projects over \$1 million is 38.7 percent.

It does make sense to combine project delivery elements on small projects of a similar nature, to maximize efficiencies and minimize costs. Such is the case with recent projects such as the playground replacement project, pavement resurfacing, and lighting. Projects that have minimal design requirements that can be procured efficiently using Job Order Contracts are best combined into programs.

### **Opportunities for Improved Efficiency**

Over the past several months many Pima County departments have begun to analyze their existing practices to identify opportunities for improved efficiency. Processes that no longer provide value or are unnecessary due to other changes are being re-evaluated and, wherever possible, eliminated. The Department of



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Transportation has identified several key areas for potential cost savings. These areas include the Environmental Assessment and Mitigation Report (EAMR), Plan Reviews and Survey Practices. Although the latter two are applicable County-wide, only transportation projects are subject to the EAMR.

1. EAMR – Pima County established the EAMR in 1969 specifically for transportation projects. Since that time it has been applied to dozens of roadway projects. No other Pima County projects are subject to this level of analysis and mitigation, nor do any other jurisdictions have a corresponding requirement on their capital projects. In addition, Pima County has established a level of design requirements for roadways in areas of higher environmental or cultural resource value. The Environmentally Sensitive Roadway Design Guidelines are applied, in addition, to mitigation measures required by the EAMR. Pima County's Native Plant Preservation Ordinance (NPPO) mandates specific mitigation standards for removal of native plants. And finally, the U.S. Army Corps of Engineers (ACOE) requires 404 permits under circumstances where transportation improvement projects nexus with Waters of the U.S. This final compliance issue overlaps with the Regional Flood Control Districts' Riparian Protection & Mitigation Requirements. The desire to satisfy 404 mitigation requirements through compliance with the District's Riparian Protection & Mitigation Requirements is a long-standing point of concern that has not been resolved. It is also a common theme in implementation of the pending Multi-Species Conservation Plan (MSCP) in that any mitigation for a threatened or endangered species required by the ACOE 404 permit could be satisfied by compliance with the County's MSCP. This too has not been resolved. As noted from the mounting environmental requirements related to transportation projects, it is in the County's interest to reduce or eliminate any and all overlapping mitigation requirements.

One of the key tenets of the EAMR is the requirement for public participation. Although this is a crucial element to any project, no data is available to determine if public participation improves project outcomes, and at what cost. The California Benchmarking Study identified the cost of Streets projects as "relatively high" due to the increasing costs of ROW acquisition, community outreach, and environmental mitigation. The EAMR requires establishing a Community Advisory Committee (CAC) for each project. Their input is required in the early planning stages of a project. It appears that the process of gaining consensus on proposed mitigation measures has a significant impact on the time, and ultimately the cost of the project's planning phase. In addition, many of the mitigation measures negotiated through this process are now mandated by other federal standards, such as the use of noise walls. In addition, the community has been cognizant of the level of mitigation given to other project areas and has become expectant of the highest level of improvement. One option for efficiently balancing public input with mitigation requirements might include creating a regional CAC established within each Integrated Infrastructure Planning Area. The regional CAC might include an appointee from its associated supervisory district, local business owners, and neighborhood representatives. The CAC would review all mitigation plans on roadway projects in their planning area and provide input to the Board of Supervisors in the same fashion as the current CAC. The difference being that the Department of Transportation saves time by not having to solicit participants for each project. The members are well-versed in the process, having done it for multiple projects, and are familiar with mitigation standards. An alternative may be to use the existing RTA Citizen's Accountability for Regional Transportation (CART) Committee.

2. Plan Reviews – Most departments assign staff to review design plans at specific intervals during the process; usually 30, 60, 90 and 100%. Each department manages the review process differently. Approaches vary from distributing plan sets to various "in-house experts" to holding review meetings where all "in-house experts" or interested agencies review the plan sets simultaneously and discuss their findings and recommendations to "over-the-shoulder" reviews. The last are usually done on location where the design is being developed. This approach allows the reviewers and others

## Pima County Soft Costs Analysis

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to check the design continuously throughout its development and offer recommendations as needed. The main purpose for design review is twofold:

- a. To ascertain that the design meets the intended scope, and
- b. To confirm that the plans can be built on budget.

The latter is dependent on plan quality. Most departments believe that without these reviews designs would; exceed project scope, not meet design standards, or the quality would be insufficient to draw reasonable construction bids or would require significant field changes during construction. The first two are well-defined in the County contract with the design consultant. The last two are less clear, but should be controlled by industry standards. Quality remains relatively subjective. Although industry standards measure quality by the number of addenda submitted during procurement and the number of change orders and requests for information during construction. Pima County does not collect or publish this information. Pima County Procurement does require performance reviews on all consultants at design completion. That is being extended to construction completion to allow the inclusion of performance data based on change orders and requests for information. Past performance based on these reviews is available when ranking consultants for future work. The major challenge to the effective application of this tool is collecting the reviews from the project managers in a timely manner. Use of the consultant evaluation form is mandated by Board of Supervisor's Policy D29.1E. In discussions with many design consultants, they believe their design fees would be significantly reduced if design reviews were condensed or eliminated. Besides contract compliance, the County has two methods to enforce plan quality; the consultants "errors and omissions" insurance, and the use of third party value engineering and/or constructability reviews.

3. Survey Practices – Pima County provides survey services county-wide through the Department of Transportation. Most departments utilize these services on their projects, although external resources are used occasionally. Standard practice on typical projects includes requiring at least one crew on-site to confirm survey controls during construction. During extended summer work shifts, most survey crews work overtime. Construction survey costs on transportation projects can exceed 7.5 percent. In discussions with other jurisdictions, survey services are almost always outsourced. Recently, the Department of Transportation changed this practice to allow construction survey to be included in the bid package. Contractors now have the option to provide their own survey. This approach improves competition and opens up more work for private survey providers.

### Project Control Systems

Project control is that element of a project that keeps it on-track; on-time and within budget. Project control begins early in the project with planning and ends late in the project with post-implementation review. Project Control, the tracking and reporting of project-related data, is done through several independent applications; CIPAce, FMS, and Synergen and the use of the gate process and project tools, such as the Project Charter and Project Cost Model. Until recently, only the Project Management Office routinely used the Project Cost Model for tracking project costs.

A good Project Control System includes:

- A strategy to align project development with the organization's broader objectives
- Standards for new projects
- Project management policies for timing and budgeting
- Procedures describing the process
- Evaluation of quality

## **Pima County Soft Costs Analysis**

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The data drawn from CIPAce for this analysis contained significant abnormalities and inaccuracies. CIPAce includes project expenditure data downloaded from Synergen and schedule and budget information provided by project managers. Most of the inconsistencies have been rectified through one-on-one meetings with the departments and a review of labor charges on individual projects. Accurate data is essential for good decision-making. Process improvements are ineffective when applied based on bad data.

PimaCore, once online, will be structured to provide effective project control tools. However, key elements of data will still be entered by the project managers. If the data is not reflective of the actual project's performance, it will be useless. Therefore, good data management is essential to program performance. A project manager's compliance with best practices as it relates to reporting and tracking project performance is essential. Supervision must focus on this key input and project managers must be held accountable for data accuracy and completeness.

### **Contract Management**

All projects involve multiple contracts; designers, sub-consultants, construction contractors, intergovernmental agreements, etc. Contract management is the main job of a project manager. Understanding and applying the terms of each contract effectively is a daunting challenge requiring knowledge of contract law, labor law, numerous local, state, and federal codes and standards, risk assessment and management, financial practices, and audit requirements. Most Pima County project managers have little to no formal training in any of these specialties. Expertise is available from the internal service departments, such as the County Attorney's Office, Procurement, Human Resources, and Finance. However, it is rarely sought until opportunities for favorable resolution are lost. In a limited review of recent contracts and intergovernmental agreements, specific terms such as scope, budget, and repayment of sales taxes were ignored or overlooked costing Pima County millions of dollars in lost revenue or wasted dollars. At a minimum, project managers should show competence in each of the following areas: contract law, risk assessment, financial management and audit requirements. Those that cannot show competency should not be allowed to function as project managers.

### **Recommendations**

1. **Project Cost Model** – The Project Cost Model will become a standard tool with the implementation of PimaCore. In the interim, project managers should be required to upload all project data into the model and maintain the model through the life of the project. The model should be submitted at project closeout for audit and reporting.
2. **Labor Charges** – All individuals charging to projects should be broken out by the task they are performing. This will allow project managers the ability to identify individuals charging to a project and the value they have provided for their time.
3. **Quality** – To adequately measure project quality, the Procurement Department should capture all change orders by category; unknown condition, owners change, design error/omission and any associated costs. In addition, requests for information and addenda should be tracked on each project and reported with project close-out data.
4. **Indirect charge methodology** – Establish a consistent indirect charge methodology across all County departments. Without this, it is impossible to assess project soft costs and determine the most efficient and effective practices for project delivery.
5. **Earned Value** – It is anticipated that the RTA will require each agency to perform earned value calculations on projects to accompany reimbursement requests. Pima County should do the

## **Pima County Soft Costs Analysis**

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same. This approach more accurately reflects a project's completeness versus using actual expenditures. In many cases, invoices get delayed for rework or due to a contractor's internal processes. Basing percent complete on invoices submitted or paid may not accurately reflect the work in the field. Elements of earned value can be subjective. However, with strict guidelines for completing these calculations can minimize individual biases.

6. Project Control – Centralize project control to improve data accuracy and program decision-making.

### **Driving Regional Improvements**

By the very size and nature of Pima County's capital program, we have a wealth of experience in project delivery. Lessons learned from our successes and mistakes have driven the development and application of the Project Development Process (Administrative Procedure 3-28, see attached) and numerous other tools that assist in effective project delivery. Those tools remain relevant and useful. They are sought out by our benchmarking partners; the Cities of Tucson, Mesa and Phoenix, Maricopa County and Maricopa Community College and the Regional Transportation Authority is considering them as best practices for use on the region's \$2 billion transportation program. The tools being considered are:

- Variance Procedure
- Gate Process including the Project Charter
- Project Cost Model

The above document can be found on the County's Capital Improvement Program website at <http://www.pima.gov/cip/pmprocess/pmprocess.html>. As Charles Caleb Colton once said, "Imitation is the sincerest form of flattery." It is nice to be noticed in a positive fashion; however, we cannot rest on our laurels. The delta between mediocre and good is immense. And good enough never is.

Respectfully submitted,



Nanette M. Slusser  
Assistant County Administrator for Policy  
Public Works



## Attachment - A

### Cultural Resources and Historic Preservation Office Capital Projects Soft Cost Analysis

Projects	RWY	PLN	DES	CON	UTL	PRT	Soft Cost Total %
Historic Fort Lowell (FTLOWL)	0.6%	103.4%	13.7%	4.5%	0.0%	0.0%	122.2%
Historic Ajo Depot (AJODEP)	0.4%	20.7%	14.1%	11.7%	0.0%	0.0%	46.8%
Canoa Ranch Buildings 106-109 (CRRCOON)	0.0%	0.0%	0.0%	5.9%	0.0%	0.0%	5.9%
Dunbar School Rehabilitation (DUNBAR)	0.0%	10.4%	3.1%	4.4%	0.0%	0.0%	17.9%
<b>Averages by Task</b>	<b>0.3%</b>	<b>33.6%</b>	<b>7.7%</b>	<b>6.6%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>48.2%</b>

Facilities Management Capital Projects  
Soft Cost Analysis

Projects	RWY	PLN	DES	CON	UTL	PRT	Soft Cost Total %
Main Jail Roof and HVAC (BJROOF)	0.0%	0.0%	8.4%	4.7%	0.0%	0.0%	13.1%
TB Clinic Remodel and Move (BTLIEEC)	6.2%	0.0%	26.7%	0.0%	0.0%	0.0%	32.9%
UPH Abrams Clinics (BUPHAC)	0.0%	0.0%	10.5%	3.0%	0.0%	0.0%	13.5%
Joint Court Complex (BJUSCT) <sup>1</sup>	5.1%	6.6%	11.5%	23.8%	1.3%	0.3%	48.6%
New Psychiatric Hospital (BPSYCH)	0.1%	0.4%	22.3%	9.6%	0.0%	0.6%	32.6%
Psychiatric Urgent Care (BPSYUC)	0.0%	0.4%	21.1%	10.0%	0.0%	0.0%	31.5%
Helistop at UPH Kino (BHSTOP)	0.0%	0.0%	25.3%	4.1%	0.0%	0.0%	29.4%
GV Library Roof & HVAC Replacement (X6GVLR)	0.0%	0.0%	13.9%	0.0%	0.0%	0.0%	13.9%
Roy Place (BRPCBD)	0.6%	5.4%	5.6%	6.3%	0.0%	0.0%	17.9%
Wilnot Library (BWLIB)	0.0%	2.1%	7.5%	2.0%	3.8%	0.2%	15.6%
<b>Averages by Task</b>	<b>1.2%</b>	<b>1.5%</b>	<b>15.3%</b>	<b>6.4%</b>	<b>0.5%</b>	<b>0.1%</b>	<b>24.9%</b>

<sup>1</sup>Total soft cost includes archaeology and reburial related costs. Excluding these two costs, construction soft cost is 6.6%;total soft cost is 31.4%

Natural Resources, Parks and Recreation Capital Projects  
Soft Cost Analysis

Projects	RWY	PLN	DES	CON	UTL	PRT	Total
Tortolita Trail System	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	33.3%
Thomas Jay Improvements	0.0%	0.3%	20.0%	3.0%	0.0%	1.4%	24.7%
Northside Community Park	3.0%	8.4%	21.0%	3.0%	15.0%	1.0%	51.4%
Divided Urban Pathway, Mountain-First Avenue (PRP322)	0.3%	0.0%	54.5%	11.1%	0.0%	1.7%	67.6%
Rillito River Park: Mountain to Campbell	2.4%	0.0%	26.3%	8.3%	0.0%	1.5%	38.5%
Carmelín Castro Iton Usim (Yaqui) Park (PRP111)	0.0%	0.0%	8.1%	7.9%	0.0%	1.9%	17.9%
Arivaca Community Project - Schoolhouse Park (NR 4033)	0.0%	0.0%	18.0%	5.1%	0.0%	0.0%	23.1%
Southeast Community Park (PSCOMP)	10.4%	0.0%	19.2%	10.7%	0.0%	4.0%	44.3%
<b>Averages by Task</b>	<b>2.0%</b>	<b>1.1%</b>	<b>25.1%</b>	<b>6.1%</b>	<b>1.9%</b>	<b>1.4%</b>	<b>37.6%</b>

Highlighted projects represent projects that followed federal guidelines during development.



Project Management Office Capital Projects  
Soft Costs Analysis

Projects	RWY	PLN	DES	CON	UTL	PRT	Soft Cost Total %
Mission View Wash	0.0%	0.0%	11.6%	15.2%	0.0%	0.0%	26.8%
Pantano River Park: Michael Perry Park to Sellarole	2.1%	5.5%	15.5%	13.4%	0.0%	0.0%	36.5%
Tanque Verde Interceptor	5.7%	0.0%	16.3%	0.0%	0.0%	0.0%	22.0%
SERP Shooting Range	0.2%	10.4%	21.6%	5.1%	0.8%	0.0%	38.0%
Tanque Verde Road, Catalina Highway to Houghton Rd	2.1%	8.4%	43.3%	38.8%	0.7%	0.2%	93.5%
Mehl Park (PMEHPK)	0.0%	4.9%	25.1%	11.6%	0.0%	0.0%	41.6%
Pantano River Park: Kenyon to MPP	0.0%	0.0%	28.1%	14.3%	0.0%	0.0%	42.3%
Amado Food Bank - HVAC (XAMAD2)	0.0%	0.0%	30.0%	10.1%	0.0%	0.0%	40.0%
<b>Averages by Task</b>	<b>1.3%</b>	<b>3.6%</b>	<b>23.9%</b>	<b>13.5%</b>	<b>0.2%</b>	<b>0.0%</b>	<b>42.6%</b>

Regional Flood Control District Capital Projects  
Soft Cost Analysis

Projects	RWY	PLN	DES	CON	UTL	PRT	Soft Cost Total %
CDO River Park: Magee to Thornrydale (5CDDOPK)*	14.1%		42.2%	16.4%	0.0%	0.0%	72.7%
CDO River Park/Omni (5FGOLF)	6.4%	3.6%	16.5%	10.9%	0.0%	0.0%	37.4%
Pantano Wash Bank Protection Phase I (5PWSTV,5PKOLB, 5PMULL,5PTOWN)	9.2%	19.6%	23.9%	16.8%	0.0%	0.0%	69.5%
Santa Cruz River Park Wstside Grant to CDO (5SSRGF)	1.2%	6.7%	19.8%	0.0%	0.0%	0.0%	27.7%
<b>Averages by Task</b>	<b>7.7%</b>	<b>7.5%</b>	<b>25.6%</b>	<b>11.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>51.8%</b>

\*CMAR Project - PLN/DES were listed as one in data.

Regional Wastewater Reclamation Capital Projects  
Soft Cost Analysis

Projects <sup>1,2</sup>	RWY	PLN	DES	CON	UTL	PRT	Soft Cost Total %
Avra Valley Security (3AVS01)	0.0%	0.0%	30.5%	2.1%	0.0%	0.0%	32.5%
Ina Aeration Optimization (31AO01)	0.0%	0.0%	11.0%	0.3%	0.0%	0.0%	11.3%
Ina SCADA (3IRS09)	0.0%	0.0%	26.8%	0.2%	0.0%	0.0%	27.0%
Marana Expansion (3MAR10)	0.2%	0.0%	7.1%	9.8%	0.0%	0.0%	17.1%
Prince and I-10 (3PT03)	0.0%	0.0%	7.6%	0.0%	0.0%	0.0%	7.6%
Ina ROMP (3RIR03, 04,05,06, 3IGC01,3IRG11)	0.0%	2.6%	15.2%	6.9%	0.2%	0.0%	24.9%
ROMP Plant Interconnect (3RP109)	0.5%	3.5%	21.3%	1.1%	0.0%	0.0%	26.4%
ROMP SCADA (3RSC15)	0.0%	16.4%	5.4%	2.3%	0.0%	0.0%	24.1%
32 MDG WRC (3RWC11)	0.0%	3.3%	8.8%	0.3%	0.0%	0.0%	12.4%
Roger Rd WWTP Demolition (3RWC12)	0.0%	2.8%	12.0%	9.8%	0.0%	0.0%	24.6%
ROMP Central Lab Complex FMD (3RWC13)	0.0%	3.9%	22.8%	17.7%	0.0%	0.0%	44.3%
ROMP Central Lab Complex Site Civil (3RWC14)	0.4%	4.6%	25.7%	15.4%	0.0%	0.0%	46.2%
Santa Cruz Interceptor Phase III (3SCP04)	0.1%	0.0%	4.7%	6.3%	0.0%	0.0%	11.1%
Sabino Creek Pump Station (3SCP06)	3.3%	19.6%	16.7%	8.3%	0.0%	0.0%	47.9%
Arivaca Junction (313118)	2.0%	0.0%	23.1%	9.6%	0.0%	0.0%	34.8%
<b>Averages by Task</b>	<b>0.4%</b>	<b>3.8%</b>	<b>15.9%</b>	<b>6.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>26.1%</b>

<sup>1</sup> Soft Costs exclude Contingency-Construction Phase Costs

<sup>2</sup> Soft Costs exclude Land Purchase Costs

Department of Transportation Capital Projects  
Soft Costs Analysis

Projects	RWY	PLN	DES	CON	UTL	PRT	Soft Cost Total %
I-19 Frontage Rd: Continental to Canoa	2.2%	0.9%	33.1%	25.6%	4.0%	1.1%	66.9%
Agua Caliente Safe Routes to School	0.0%	2.8%	33.5%	41.0%	0.0%	0.0%	77.3%
Alvernon Way/Los Reales Signal	0.0%	0.0%	18.9%	9.8%	0.0%	0.0%	28.7%
Alvernon Way/Valencia Intersection Improvements	0.0%	0.0%	11.4%	26.1%	0.0%	0.0%	37.5%
Aviation Parkway: Richey to Technical Drive	0.0%	4.2%	16.7%	25.0%	0.0%	0.0%	45.9%
Bear Canyon Bike Lanes	0.0%	0.0%	17.5%	16.4%	0.0%	0.0%	33.9%
Camino de Oeste: Los Reales to Valencia	3.3%	3.9%	26.6%	0.0%	5.5%	1.2%	40.5%
Flowing Wells Sidewalks	0.0%	0.0%	17.5%	8.0%	0.0%	0.0%	25.5%
Homer Davis Elementary School	9.0%	25.4%	14.2%	3.2%	0.5%	1.2%	53.5%
Ina Rd at Oracle Intersection	5.2%	0.0%	43.1%	39.6%	0.0%	0.0%	87.9%
Irvington Rd at Mission Rd	0.0%	0.6%	61.5%	86.2%	0.0%	0.0%	148.3%
Kolb and Valencia Intersection	8.0%	0.0%	18.0%	8.5%	0.0%	0.0%	34.5%
La Cañada: Ina to Calle Concordia	5.8%	0.4%	20.4%	27.3%	3.7%	1.0%	58.6%
La Cholla: Magee to Overton	1.5%	13.0%	15.5%	16.2%	0.7%	1.1%	48.0%
La Cholla: Ruthrauff to River Rd	2.4%	0.9%	36.1%	28.8%	1.9%	1.0%	71.1%
Laguna Elementary School	17.3%	0.0%	85.2%	3.6%	0.0%	0.0%	106.1%
Magee Rd/Cortaro Farms: Mona Lisa to La Cañada	1.2%	0.4%	7.0%	24.1%	2.3%	1.3%	36.3%
Magee Rd/Cortaro Farms: Corridor Study	1.7%	17.6%	12.8%	16.7%	2.9%	1.5%	53.2%
Magee: La Cañada to Oracle	5.0%	4.7%	16.7%	22.4%	4.7%	1.9%	55.4%
La Cañada: River to Ina	2.1%	12.9%	15.9%	18.3%	0.4%	1.6%	51.2%
Orange Grove Bike Lanes	0.0%	0.0%	13.6%	7.0%	0.0%	0.0%	20.6%
Picture Rocks Desert Winds Safe Routes to School	0.0%	1.2%	45.9%	13.9%	0.0%	1.7%	62.7%
Sabino Canyon Rd Bridge Deck Rehabilitation	0.2%	4.2%	10.9%	12.1%	0.0%	0.0%	27.4%
Sabino Canyon Continental Elementary School	1.6%	22.6%	38.7%	2.0%	1.3%	0.0%	66.2%
Sunrise: Craycroft to Kolb	2.0%	0.3%	29.7%	28.0%	1.7%	1.6%	63.3%
Tanque Verde Bike Lanes	0.0%	0.0%	29.8%	11.7%	0.0%	0.0%	41.5%
Tanque Verde Rd: Catalina Hwy to Houghton	6.5%	8.4%	36.6%	32.8%	0.6%	0.2%	85.1%
Valencia Rd: Alvernon to Wilmot	2.4%	7.9%	13.6%	17.3%	2.3%	1.3%	44.8%
Valencia Rd: Mark Rd to Wade Rd	4.7%	39.1%	22.9%	24.0%	1.2%	1.8%	93.7%
Valencia Bike Lanes	0.0%	0.0%	17.7%	17.9%	0.0%	0.0%	35.6%
<b>Averages by Task</b>	<b>2.7%</b>	<b>5.7%</b>	<b>26.0%</b>	<b>20.5%</b>	<b>1.1%</b>	<b>0.7%</b>	<b>56.7%</b>

Highlighted projects represent projects that followed federal guidelines during development.



## Attachment B

### ADMINISTRATIVE PROCEDURES



Procedure Number: 3-28

Effective Date: 7/1/2009

*C. R. Schubert*  
County Administrator

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**SUBJECT: IMPLEMENTATION OF THE PROJECT MANAGEMENT MANUAL AND EXIT GATE PROCESS**

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**DEPARTMENT RESPONSIBLE: The Office of the County Administrator**

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#### **I. STATEMENT**

The Pima County Capital Improvement Program (CIP) is inclusive of all bond projects and any projects \$100,000 or greater that will create or increase the life of Pima County's capital asset. An important part of a successful CIP is to establish a standard process that enables County projects to be developed and completed on time and within specification and budget.

County departments are required to successfully manage the delivery of their bond and non-bond projects. The Project Management Manual contains comprehensive instructions designed to assist in the departments' project management efforts by establishing a countywide, uniformed approach to a successful CIP using a specific process: Exit Gate.

The Exit Gate Process is a six-phased approach to successful project delivery. It is an effective way to assure that all stakeholder departments participate in the project development process at a time when their input is needed. This approach to effective project management also assures that all criteria are met before moving forward to the next phase of a project and avoids costly downstream project changes.

#### **II. PROCEDURE**

All County departments will deliver Pima County capital improvement projects using Pima County's Project Management Manual and Exit Gate Process. A complete copy of this manual, which provides step-by-step instructions and necessary documents to complete the process, can be found on the Capital Improvement Program's intranet website at <http://intranet.pima.gov/cip/pmprocess/pmprocess.html>.

#### **III. RESPONSIBILITIES**

All County departments are responsible for following the established procedures to successfully manage, develop, and deliver Pima County's CIP projects.

