# RFCSP Exhibit 1

# Enterprise Capital Improvements Project (CIP) Portal

*Current Business Processes & Business Requirements Document*

# RFCSP Exhibit 1

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## I. References & Attachments

| Item Description | Date | Link or Location |
|---|---|---|
| Design Guidance Manual & Forms | 07/07/10 | http://www.sanantonio.gov/cims/designmanualforms.asp |
| Web Portal - Project Management Assistance | 07/07/10 | http://www.sanantonio.gov/cims/portalmanagement.asp |
| Procurement Policy & Procedures Manual | 07/15/10 | http://cosaweb/purchasing/pdf/COSA%20Policy%20and%20Procedure%20Manual%20Final%20Draft.pdf |
| City of San Antonio Standard Specifications for Construction | 07/15/10 | http://www.sanantonio.gov/cims/pdf/COSAStandardSpecificationsforConstructionJune2008.pdf |
| Construction Project Management Handbook (Prepared for Federal Transit Administration, Office of Research, Demonstration and Innovation, U.S. Department of Transportation) | 07/15/10 | http://www.fta.dot.gov/documents/FTA-CONSTRUCTION-PRJT-MGMT-HDBK2009.pdf |

## II. Acronyms and Abbreviations

| | |
|---|---|
| BexarMet | Bexar Metropolitan Water District |
| CIMS | Capital Improvements Management Services |
| CIPs | Capital Improvement Projects |
| COSA | City of San Antonio |
| CPS | CPS Energy |
| ITSD | Information Technology Services Department |
| PM | Project Manager |
| PO | Purchase Order |
| RFI | Request For Information |
| SARA | San Antonio River Authority |
| SAWS | San Antonio Water System |

# RFCSP Exhibit 1

## 1.0 Project Information

### 1.1 Project Overview

| | |
|---|---|
| **Project Name:** | Enterprise Project Management Portal |
| **Requesting Department:** | Capital Improvements Management Services |
| **Project Description:** | To replace the existing project management "Web Portal" tools with a new single enterprise project management portal system. |

### 1.2 Project Team

| Core Team | Extended Team |
|---|---|
| *Capital Improvements Management Services* | *Capital Improvements Management Services* |

### 1.3 Stakeholders

| **Internal** | |
|---|---|
| **Stakeholder** | **Intended System Usage** |
| CIMS, Public Works, Aviation | • Management of projects |
| Development Services | • Review City plans for permitting purposes |
| Other City Departments (Library, Fire, Police, etc…) | • Project execution by CIMS |
| **External** | |
| **Stakeholder** | **Intended System Usage** |
| Utilities (SAWS, CPS, BexarMet) | • Review invoices, change orders, requests for information, and/or plans on joint contracted work |
| Other Utilities (Time Warner, AT&T, etc…) | • Review plans |
| Agencies (TxDOT, SARA, Fort Sam Houston, Brooks City-Base) | • Review invoices and/or plans |
| Vendors (Consultants, Contractors, etc.) | • Submit invoices, change orders, requests for information, submittals, plans and studies |

## 2.0 Document Information

### 2.1 Document Purpose

The purpose of this document is to outline the identified requirements that will need to be provided by a new Enterprise Capital Improvements Project (CIP) Portal system.

### 2.2 Methodology

The methods used to capture the information presented, here within, were as follows:

- Review of As-Is process flow diagrams and existing process documentation
- Facilitation and attendance to various information gathering focus group sessions/interviews with departmental subject matter expert personnel from the following departments/divisions:
    - Aviation
    - Capital Improvements Management Services
        - Contract Services Division
        - Environmental Services
        - Fiscal Services
        - Horizontal Program Management
        - Vertical Program Management
        - Public Art San Antonio
        - Technical Services
        - Reporting and Web Portal Division
    - Public Works
        - Pavement Engineering
        - Project Management
        - Street Maintenance
        - Traffic Engineering
    - Finance
        - Accounts Payable

## 3.0 Current Business Processes & System Summary

### 3.1 Background

In 2006, Public Works developed a web-based comprehensive project management tool set, commonly referred to as, the “Web Portal.” The goal of the tool was to improve project delivery, increase accountability and provide the City and Department Management the means to identify projects that need attention and management by exception. The program is hosted on City Of San Antonio (COSA) systems and went live on September 15, 2006.

In 2007, the residents of San Antonio voted to approve a historic five-year bond program. The $550 million, five-year bond program included 151 projects designed to improve, acquire, construct and enhance new and existing local streets, bridges, sidewalks, drainage facilities, parks, athletics facilities,

libraries and public health centers. The program's size and scope was enormous and significantly costlier than any previous city bond program.

To help manage these projects, the city of San Antonio formed a new department: the Capital Improvements Management Services (CIMS) Department. CIMS manages the City's Capital Improvement Program projects through all phases of design, construction and inspection. The department also coordinates the consultant selection, construction contractor procurement and project delivery for all capital improvement construction projects.

The current Web Portal is used to manage CIMS and Public Works Capital Improvement Projects and other associated contracts (such as design enhancement, real estate appraisals, material testing, and environmental studies). While a few existing projects may be executed without the use of these tools, all future CIP projects will be managed using the new Enterprise Capital Improvements Project (CIP) Portal.

The current Web Portal is managed by the CIMS's Reporting and Web Portal division. The purpose of this division is to provide the City's departments (presently, CIMS and Public Works) with centralized project data and encourage project management efficiency.

The Reporting and Web Portal division's main responsibilities include:

- Providing Project Managers with an effective and efficient tool (Web Portal) to manage and control projects;
- Providing Management accurate, timely and appropriate information on project statuses through portal metrics, cost-loaded schedules and reports; and,
- Providing Management accurate and timely reports as well as other information that meets their needs.

The Web Portal currently supports approximately 950+ user accounts (which include City staff, contractors, consultants, utilities and other city/non-city agencies), 1500 workflow routings and 250+ projects/contracts. CIMS uses it to manage all types of contracts and projects including or related to: construction, design, indefinite delivery (surveying, engineering and architect), job order contracting, real estate appraisals, environmental and material testing.

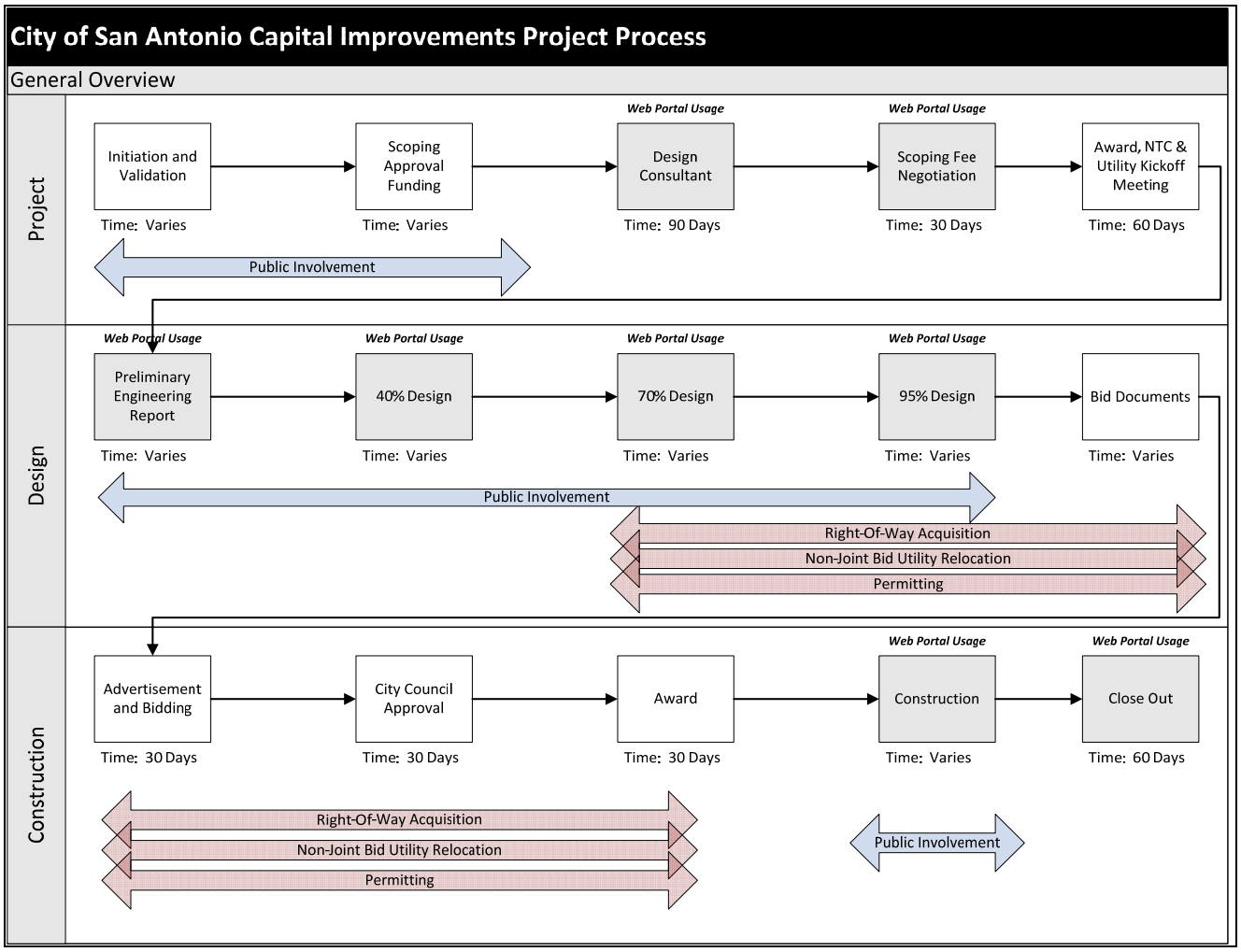
### 3.2 Current Business Processes

For the purposes of this document, the processes described here within will focus on the administrative processes associated with the management of Capital Improvement Projects (CIPs) that are currently managed on the Web Portal.

Process Overview

Several processes are performed in order to deliver a capital improvement. Some affect the design, construction and maintenance of the work, while others are administrative. Although the administrative processes do not generally have a direct influence on the design or construction of the project, they are important. They facilitate the flow of information and resources which support the project delivery

team. Should these processes fail or waver, progress on the project may be delayed or falter. In general, the administrative processes include the management of a project's correspondence, submittals, requests for information, vouchers, logs, payment requests and processing, amendments (i.e. change and task orders) and other administrative activities.




Roles & Responsibilities

***City's Project Manager***

The City's Project Manager (PM) (customarily, a Professional Engineer (PE), Architect or Landscape Architect) manages the project from project approval to closeout and is responsible for building the project to scope, within budget and on schedule. The PM is often a primary participant in project identification, initial scoping and cost estimating. The PM acts as the City's representative with the consultants and contractors overseeing design and construction work. He/she oversees that work the consultants and contractors perform is consistent with the scope and contract documents, inspects the work as acceptable and recommends payment of contract invoices. The PM also receives, reviews, routes (as appropriate) and approves submittals, RFIs, field memos, plans, change orders, amendments and task orders.

***Other City Staff***
Several other City Departments and Divisions support the Project Manager (PM) in designing and constructing the project. Examples of these other COSA Departments/Divisions are as follows:

*Owning Department*
- Operates and maintains the new/modified facility and provides input throughout the project on suitability of the proposed project.

*CIMS Environmental Division*
- Provides environmental support (i.e. permits, studies, remediation identification and assistance and environmental compliance assistance).

*CIMS Technical Services*
- Provides inspections, plan reviews and assistance.

*CIMS Real Estate Division*
- Acquires easements and property.

*Public Works Traffic Engineering, Storm Water Engineering, and Traffic Signal Engineering*
- Reviews plans and provides technical assistance.

*Development Services*
- Reviews plans, conducts inspections and provides permits.

*Administrative Support Divisions*
- Provides contracting, fiscal, compliance and web portal support to the project.

***Design Consultant***
Design consultant(s) (also referred to as the designer(s) on record) are employed to develop the project design and produce the contract drawings and specifications. Design services provided during the construction process include:
- Receipt and response to construction contractor Requests for Information (RFI), communicated from the contractor to the designer through the PM. *Note: An RFI is a request by the contractor for clarification of the design intent of the drawing and specifications.*
- Review and recommend acceptance of contract submittals called for in the drawings and specifications with respect to the construction deliverables.
- Review change requests and estimate costs for change orders.
- Make periodic visits to the site to ensure design compliance.

***Contractor***
The role of the construction contractor is to:
- Perform construction work as defined by the contract drawings and specifications.
- Obtain the permits related to the work for which the contractor is responsible for.
- Develop and implement a quality control (QC) plan for inspection and testing of work.
- Develop and implement a safety plan to ensure work site safety.

- Deliver submittals as defined by the contract drawings and specifications such as:
    - Shop/Manufacturer's drawings, calculations and data, and any other associating information.
    - Updated (monthly) contract schedules noting progress and forecasting upcoming work.
    - Submitting requests for payment supported by the appropriate documents as detailed in the contract.
    - Record drawings of the redlined as-built work.
- Submit Request for Information (RFIs) to obtain clarification of the design intent.
- Submit Request for Changes (i.e. change / task orders) as appropriate.

***Utilities***
The Utility organizations are required to adjust their facilities that are in conflict with the project prior to the start of construction unless they are part of the (joint bidding) project. They often use the construction project as an opportunity to upgrade their facilities at the same time. Sometimes the utility organizations will design and move their facilities using their forces or contracts. Other times the utility organizations will joint design or joint bid their work using the City's contracts. In these cases, the utility organizations are actively involved in the review, inspection and approval of their portion of the work. In all instances the utility organizations review the City's plans to determine what impact the project will have on their facilities.

***Other Consultants/Vendors***
The City uses other consultants/vendors to provide specialized services such as:

*Environmental Consultants*
- Prepares studies, obtains permits, provides environmental monitoring, and manages contaminated soil and support of other functions during design and construction.

*Material Testing Consultants*
- Performs the material testing during construction based on guidance provided by inspections.

*Artists*
- Provides the design enhancement portion of a project.

### 3.2.1 Cost Management

Cost management is the effective financial control of the project achieved by the evaluating, estimating, budgeting, monitoring, analyzing and reporting of project cost information. The main objective of cost management is to control costs and ensure project completion within budget by:

- Managing and tracking project finances from account (i.e. contract and purchase order) creation through invoicing and payments to ultimately project close-out.

- Tracking and monitoring payments/receipts against budgeted line items to ensure it complies with contract requirements (i.e. ensures expenses are eligible based on the approved budget) and measured progress or deliverables received.

- Verifying and ensuring invoice requests and associating support documentation are adequate.
- Ensuring expenses are billed correctly and paid.
- Taking corrective action as necessary to keep costs within acceptable bounds.

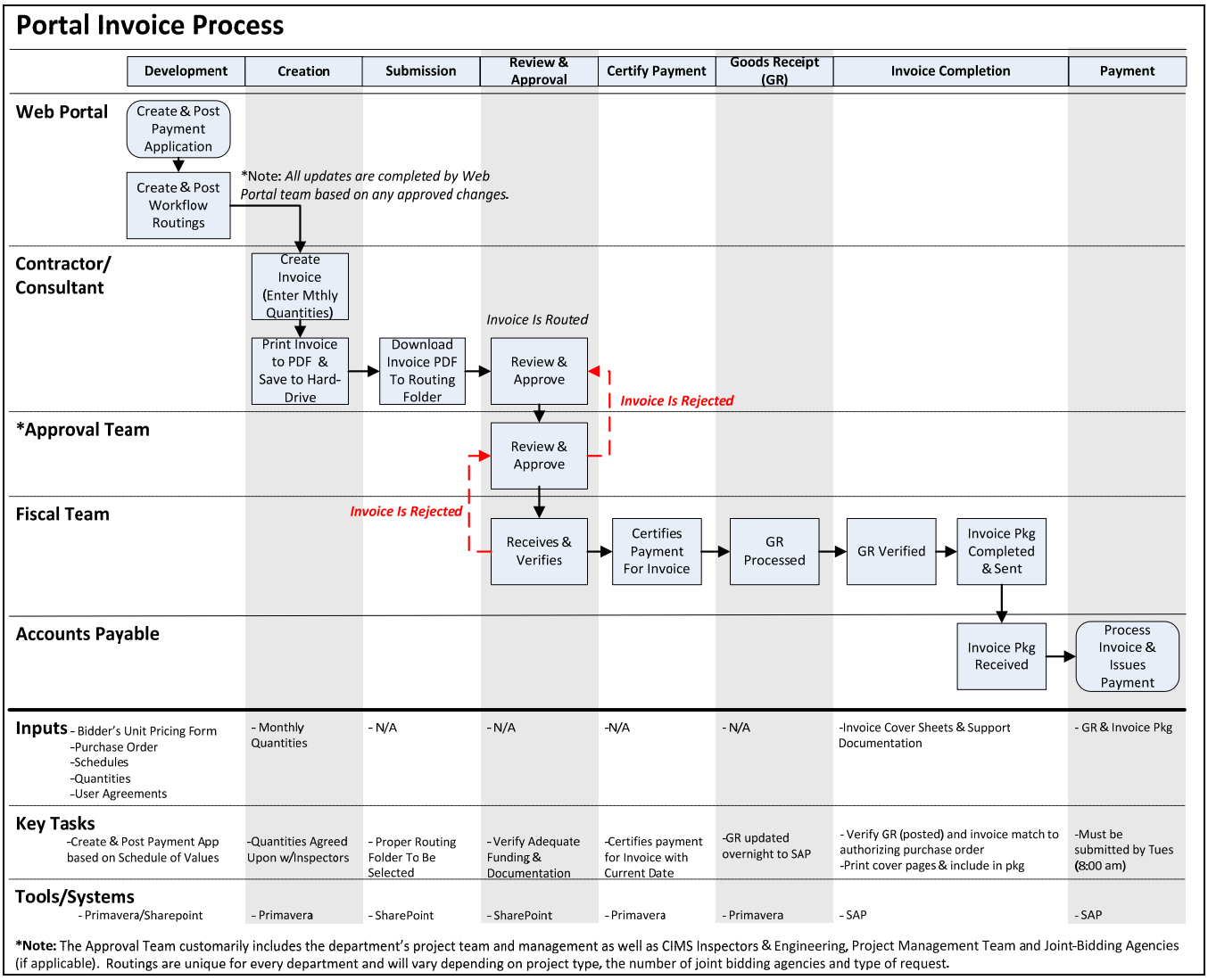
<table>
<tr><th colspan="2">Portal Invoice Process</th></tr>
<tr><td>Process Description</td><td>An invoice is an itemized statement of money owed for goods shipped or services rendered. For capital projects, all invoices are submitted through the Web Portal. For ease of reference and to enhance invoice efficiency the same form is used for both Design Consultants and Contractors to use.
<table>
<tr><th>Form</th><th>Used By</th><th>Purpose</th></tr>
<tr><td>Estimate Certification</td><td>All</td><td>Request payment for completed services and work.</td></tr>
<tr><td>Certificate for Payment</td><td>Design Consultant</td><td>To make recommendations on a Construction Contractor’s Application for Payment. Note: This form is presently used and attached as backup documentation.</td></tr>
</table>
Note: It is understood that on a joint design/bid project with the utility provider(s), the utility provider(s) are ultimately responsible for the cost of the work related to their facilities. Accordingly, the City will seek reimbursement from the utility provider(s). The design consultant/contractor will invoice all work on one invoice, but the utilities portion is identified separately on the invoice and the invoice is routed through the utility when utility related work is billed on the invoice for the current period.</td></tr>
<tr><td>Controls</td><td>• Schedule of values (pay items) are approved by the PM and provided to the Web Portal Team.<br>• The Web Portal Team uploads the schedule of values into the Portal contract and payment application. The pay application is coded to correspond to the appropriate purchase order line(s) in SAP. Vendors are only able to enter this period’s quantities. They can not modify the payment application’s line items, quantities or unit prices.<br>• Changes to the line items can only be made by the Web Portal Team. Increases or decreases in the total dollar amount of the payment application can only be done if a change order/amendment/task order is approved within the system. The system will not allow fiscal personnel to certify payments if the total authorized amount on the payment application does not match the original contract amount plus any changes.<br>• The program tracks previous payments and performs all of the calculations. The contractor only enters this pay period’s quantities. All other calculations are performed by the program.<br>• All requests are reviewed and approved by the appropriate persons/entities to</td></tr>
</table>

| | |
|---|---|
| | ensure requests comply with contracted requirements, quantities agreed upon and progress claimed.<br>• Invoices in routing can not be changed. If they are edited the routings are automatically restarted. If a number must be corrected, the invoice must be changed in Primavera first and then resubmitted. All pages are date and time stamped.<br>• The Portal only sends SAP payment data for those payment applications certified by Fiscal personnel with a certification date of the current day. Any payment application with a previous date will not be processed.<br>• SAP only accepts invoice lines from the Web Portal where the PO number, PO line number and material code match and the amount of dollars being billed does not exceed the authorized amount for the PO line in SAP. SAP will not process any lines that fail the above test.<br><br>***Note:*** *Refer to Appendix C for additional information regarding SAP Data Exchange Grouping Requirements.* |
| **Key Information** | • Period To (Date)<br>• Application Number<br>• Quantities (Item Number, Description of Work, % Complete G/C, This Period) (includes material stored on site).<br>• Purchase Order number and line.<br>• Material Code (not shown on invoice)<br>• Certified Amount/Date<br>• Current Payment Due<br>• Certified<br>• Latest<br>• Contract Summary Information (Original Contract / PO Sum, Approved Changes, Revised Contract Sum, Actual to Date and Balance Dollars) |
| **Inputs** | • Bidder's Unit Pricing Form (***Note:*** *Form 025 is the form that is used for the Schedule of Values on low bid unit price contracts.*)<br>• Purchase Order (PO) Number, PO Line Number(s) and Material Code<br>• Schedule of Values<br>• Quantities (Agreed Upon)<br>• User Agreements (For External Users to obtain a City User ID) |
| **Outputs** | • Appropriate Financial Updates<br>• Financial Reports |
| **Tools/Systems** | • Primavera Contract Management (Payment Application)<br>• Nintex Smart Library Routing Tool within SharePoint |
| **Risks/Issues** | • If an invoice is rejected, any existing later invoices must be deleted because the previous quantities will be wrong and the system will not let you modify previous quantities. |

| | | |
|---|---|---|
| | • Lack of systematic line item subtotal verification allows susceptibility to errors such as incomplete or incorrect Goods Receipt (GR) and out of balances. The person completing and submitting requests must verify on SAP and know funding availability to ensure requests submitted comply.<br>• Duplicate data entry (Fiscal enters the payment application manually into SAP, does not certify the payment in the Portal with a previous date, and later thinking that the invoice has not been processed, Fiscal reprocesses it either manually or by certifying the payment application in the portal with the current date.) These typically should be caught when Fiscal verifies the Portal SAP transaction the next day. | |
| **Assignee** | **Process Activity** | **Process Steps** |
| Portal Team | Invoice Development | • Create and Post Payment Application in the system from the schedule of values<br>• Create and Post Workflow Routings<br>• Update payment application based on any approved changes. |
| Contractor/Consultant | Invoice Creation | ***Note:*** *Prior to invoice submissions the Contractor reviews and agrees upon with Inspections to monthly quantities.*<br><br>• Create Invoice (i.e. enter current month's quantities (in Primavera))<br>• Print Invoice to PDF and Save to Hard-Drive |
| | Invoice Submission | • Upload Invoice (PDF) into appropriate Workflow Routing Folder (in SharePoint)<br>• Approve Invoice electronically in system |
| Approval Team: CIMS Inspectors & Engineering, Project Management Team & Agencies (if applicable) | Invoice Review/Approval | ***Note:*** *Workflow routings are unique for every department and will vary depending on project type, the number of joint bidding agencies and type of request. The flow provided below reflects a list of approvers of a typical request for payment by a contractor. Approvers have the option of approving or rejecting the invoice and adding comments in the routing.*<br><br>• CIMS Inspectors (Determine if quantities match the quantities from their daily logs)<br>• Design Consultant (Made aware that the contractor has been approved for payment by CIMS inspectors)<br>• (If applicable) CPS/SAWS Admin<br>• (If applicable) CPS/SAWS Construction |

| | | |
|---|---|---|
| | | • Departmental Project Management Team<br>• Project Manager (Reviews invoice to determine that the quantities and prices are accurate) |
| Fiscal Team | Invoice Certified | • Receives and Verifies Invoice (i.e. determines if there is adequate amount of funds to cover the invoice in each line item)<br>  o If correct, proceed with certification of payment.<br>  o If not correct, remedies any discrepancies with Project Manager and either rejects the Invoice (if not correctable) or corrects it.<br>• Certifies Payment for Invoice (in Primavera) with the Current Date |
| | Goods Receipt | • Good Receipts (GR) Processed (i.e. Primavera sends GR overnight to be updated into SAP) |
| | Invoice Completion | • Verifies Goods Receipt Processed (Verified in SAP the GR and invoice are matched to authorizing purchase order)<br>• Prints cover pages and merges with invoice<br>• Sends invoice and supporting documentation to Accounts Payable |
| Accounts Payable | Payment Issued | • Processes the Invoice and Issues Payment<br><br>***Note:*** *Accounts Payable currently only runs direct deposit on Fridays. If an invoice is received by Tuesday (8:00 a.m.) payment will be issued by the next Friday otherwise it will be the following Friday (i.e. an additional 7 days).* |

For additional process details and activities regarding payment process please refer to:
http://www.sanantonio.gov/cims/designguidance/FINAL%20_DGM_062308.pdf
http://www.sanantonio.gov/cims/pdf/COSAStandardSpecificationsforConstructionJune2008.pdf




### 3.2.2 Change Management

Change management refers to the control and managing of all changes to contracts that occur during a project by:

- Tracking and expediting (as appropriate) the change management process beginning with providing appropriate change forms and tracking the change form progress through the review/approval process.
- Ensuring contracted original awarded amounts and approved changes are within the approved construction budget.
- Ensuring all incoming change requests (i.e. amendments, change orders and/or task orders) and all associating documents are transmitted (i.e. routed) through the appropriate personnel, organizations and/or agencies.

- Routing and tracking the responsible party for the next action in the resolution process (i.e. who is responsible for additional information needed to be prepared and/or analyzed).

- Updating project documents to reflect changes (i.e. contract change, including amendments to contracts, drawings and specifications, schedules and budgets and design documents).

- Estimating the impact of all proposed changes by ensuring all change order documentation not only identifies the cost impact of the change but also any schedule, quality and safety considerations.

Figure 1, below describes some of the typical causes and effects of changes that could occur during a construction project.

**Figure 1. Examples of Typical Change Causes and Effects**

| Causes | |
|---|---|
| **Type of Cause** | **Description** |
| External | • Financial issues<br>• Public Involvement<br>• Environmental issues<br>• Technological issues<br>• Regulatory issues<br>• Equipment issues<br>• Unknowns – until the study is done you don't know what is required or impact. |
| Internal | • Decision-making<br>• Design improvements<br>• Design errors<br>• Inadequate knowledge of the site<br>• Project ambiguity (e.g. scope and resources) |
| Effects | |
| **Type of Effect** | **Description** |
| Direct | • Addition of work/Design Services<br>• Demolition of work<br>• Work to be redone<br>• Specification changes<br>• Loss of time<br>• Revisions to project reports and associating documents<br>• Revisions and reorganization of project schedules and work resources |
| Indirect | • Disputes<br>• Productivity Lost<br>• Costs changes<br>• Increase risk of errors<br>• Project delay |

| Portal Change Orders, Task Orders and Amendment Process | |
|---|---|
| **Process Description** | Change Orders and Amendments are changes (i.e. written modifications) to the contract that increase/decrease the quantity of work/services to be performed, or increase/decrease materials, equipment, or supplies to be furnished.<br><br>Change Orders apply only to contracts for the purchase of goods and non-professional services, including, but not limited to, construction contracts and purchases of high technology items, such as software, where the contract expenditure will exceed $50,000.<br><br>Amendments apply to professional services contracts, including, but not limited to, construction contracts and purchases of high technology items, such as software, where the contract expenditure will exceed $50,000.<br><br>In general, a Change Order/Amendment is prepared by the Project Manager with assistance by the Design Consultant for construction and approved by the City, the Contractor (for construction only) and Design Consultant and will require an adjustment in the Contract Sum, Scope of Work, and/or the Contract Time on or after the Effective Date of the Agreement.<br><br>Task Orders are work (i.e. task) requests that do not involve a modification/adjustment in the Contract Sum and/or the Contract Times since requests are within the general scope of the Contract. They are often used to authorize work on indefinite delivery contracts and the use of contingencies/allowances that are already contained in the contract.<br><br>Task Orders apply to all contracts.<br><br>In general, a task order is prepared by the Project Manager with the assistance of the Design Consultant (for construction only). They typically follow the same approval workflow as change orders and amendments with some exceptions. They do not need Council approval since they do not change the contract. |
| **Controls** | • Any change order/amendment that will exceed ±$25,000 require City Council approval.<br>• City Council has delegated power to approve change orders/amendments that are in the amount of $25,000 or less to the following persons: City Manager, the Assistant City Manager, the Directors of Aviation, Parks & Recreation, Purchasing, Public Works and CIMS [see Ordinance No. 82743 and 2007-10-18-1110].<br>• The total dollar value of all change orders/amendments issued for a construction contract cannot exceed the original contract price by more than twenty-five percent (25%).<br>• City Council has no authority to exceed 25% cap. The City must re-bid for anything beyond the 25% limit. |

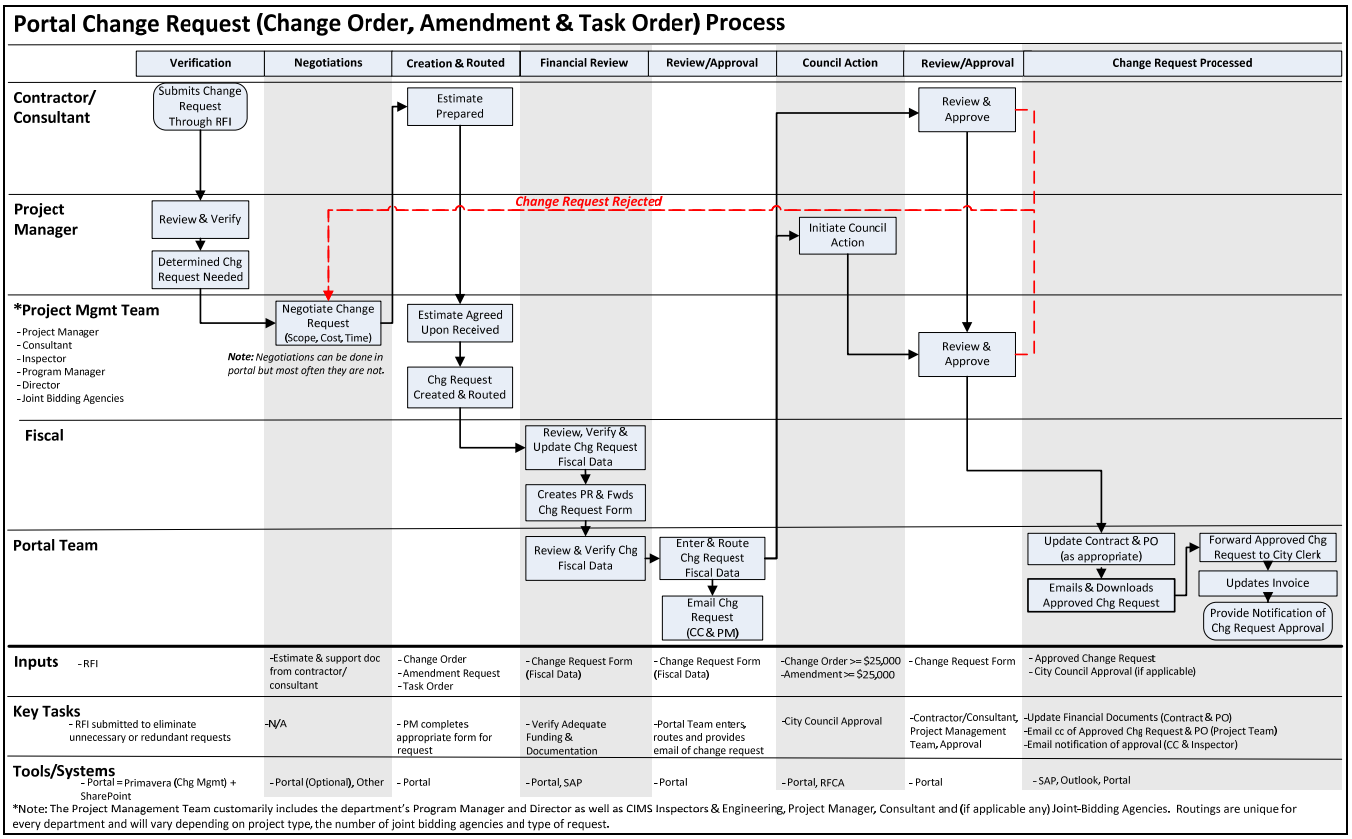
| | |
|---|---|
| | • The original contract price can't be decreased more than 25% without the Contractor's consent.<br>• Funds must be appropriated by City Council for all increases in costs, even those under $25,000. Note: City Council currently is appropriating all CIMS project funds at the beginning of the project.<br>• (As applicable) All subsequent change/task requests are based off the previous approved requests. |
| **Key Information** | ***Note:*** *An "*****" implies information must be completed (i.e. required).*<br><br>• *****Date Prepared<br>• *****Change Order Title<br>• *****Project Number<br>• *****Project Name<br>• *****Description of Change/Task (i.e. work to be added or deleted including SAP Material No. & as applicable attached revised plan sheet affected or drawings)<br>• Justification for Proposed Alteration(s)<br>• *****Change to Contract Cost ( Total $)<br>• *****(*Change & Task Only*) Change to Contract Days (Working/Calendar Days & No. of Days)<br>• *****Requested By (President/Owner and Date)<br>• *****Approved By (COSA Representative and Date) (Electronically approved)<br>• *****Ordinance Required (Yes, No, Change Order $25,000 ±)<br>• *****Additional Funds Required (Total $)<br>• **(Change & Amendment Only)* WBS Element<br>• ******(Change & Amendment Only)* Contingency WBS Element<br>• *(Change & Amendment Only)* Project Contingency Original Balance (Total $)<br>• *(Change & Amendment Only)* Original Contract/Agreement Amount ($)<br>• *(Change & Amendment Only)* Previous Approved ($)<br>• *(Change & Amendment Only)* This Order/Request ($)<br>• *(Change & Amendment Only)* Total ($)<br>• *(Change & Amendment Only)* Percent of Original Contract (calculated)<br>• *(Change & Amendment Only)* Balance ($)<br>• ******(Task Only)* PO Line Item (#)<br>• ******(Task Only)* Original PO/Line Item Amount ($)<br>• ******(Task Only)* Previous PO/Line Task Orders ($)<br>• ******(Task Only)* This Task Order ($)<br>• *(Task Only)* Available PO/Line Amount ($)<br>• *(Task Only)* Total Contract Capacity ($)<br>• *****Fund Number<br>• *****Ordinance Number<br>• *****Ordinance Date<br>• *****Purchase Requisition Number<br>• *****Contract Number |

| | |
|---|---|
| | • *Purchase Order<br>• *Fiscal Remarks |
| **Inputs** | • COSA Contract Change Order Form<br>• COSA Contract Amendment Request Form<br>• COSA Contract Task Order Form |
| **Outputs** | • (If applicable) Contract Modification Updates<br>• (If applicable) Project Schedule Updates<br>• Project Documentation Updates<br>• Payment Application update |
| **Tools/Systems** | • Primavera Contract Management (Change Management/Change Order)<br>• Nintex Smart Library Routing Tool within SharePoint |
| **Risks/Issues** | • Duplication of Information Process Entry (by Fiscal & Portal Team)<br>• An Incorrect Line Item Entry |

| Assignee | Process Activity | Process Steps |
|---|---|---|
| Contractor/Consultant | Change Request Verification | • Submits request for change through Request For Information (RFI) or other means (i.e. email, phone conference, etc…). ***Note:*** *Customarily done prior to initiating a change request in portal to eliminate unnecessary or redundant requests.* |
| Project Manager | | • Reviews and Verifies If Change Request Required (i.e. Change Order (CO), Amendment (AM) or Task Order (TO))<br>  o If no changes are required, RFI is submitted (i.e. routed to appropriate persons) for response<br>  o If a change is needed, proceed with negotiations |
| Project Management Team/Joint Bidder | Change Request Negotiations | • Negotiate Change Request (CO, AM or TO) - scope, cost, and time. ***Note:*** *Negotiations can be done in the portal but usually they are not.* |

| | | |
|---|---|---|
| Project Management Team | Change Request Creation & Submission | • Estimate is prepared and received from Contractor/Consultant (i.e. description of change along with support documentation specifically regarding cost and time)<br>• Change Request is created and PDF file developed using the appropriate change request form in Primavera.<br>• Change Request is Routed (i.e. change request (CO, AM or TO) form is uploaded and routed to Fiscal Team for review) |
| Fiscal | Change Request Financial Review | • Reviews & Verifies Change Request Financials<br>  o Reviews the estimate for completion and project's current financials to ensure that there is adequate funding available.<br>  o If funding available, proceed with fiscal data update and purchase requisition creation.<br>  o If funding not available, remedy discrepancies/issues with Project Manager.<br>• Updates Change Request Fiscal Data<br>• Creates Purchase Requisition<br>• Change Request form Forwarded to Portal Team |
| Portal Team | Initiate Change Request Review | • Reviews Change Request Fiscal Data (remedying any discrepancies with Fiscal and Project Manager)<br>• Enters Change Request Fiscal Data into Portal<br>• Emails Change Request to Vendor and Project Manager |
| Contractor/Consultant | Change Request Review/Approve | • Change Request (CO, AM or TO) Reviewed & Printed<br>• If Approved:<br>  o Change Request is Signed, Scanned & Uploaded into Routing<br>  o Scanned Copy Approved in Portal to Complete Approval Process<br>• If Rejected:<br>  o Contacts Project Manager and |

| | | |
|---|---|---|
| | | renegotiates |
| Project Manager, Consultant, Inspector, Utilities, Program Manager, Director | Change Request Review/Approve | • Review change request in Portal and approve or reject |
| Project Manager | Council Action Required | ***Note:*** *Council Approval is required for all change orders and amendments greater than or equal to $25,000. With this, these requests will remain pending for the Portal Team's approval or rejection until City Council Action has been determined.*<br><br>If Change Request (CO / AM) requires Council Approval:<br>• Council Action is Initiated by PM using City's RFCA system for City Council's Review and Approval.<br>  o If approved, Change Request is processed (i.e. approved for processing) by Portal Team on the Portal.<br>  o If rejected, Change Request is rejected by Portal Team on the Portal. |
| Portal Team | Change Request Processed | • Updates Contract and PO (as appropriate)<br>• Emails Signed Change Request to Portal Team, Fiscal & PM with PO Information<br>• Uploads Copy of Approved Change Request (into Portal)<br>• Sends Approved Change Request to City Clerk<br>• Updates Invoice<br>• Provides Notification of Approval to Contractor, Consultant, Inspector & (if applicable) Joint Bidder |




### 3.2.3 Document Management

Document management refers to the control and managing of documents generated during a project, specifically:

- Used to coordinate and obtain comments on design plans throughout the design phases. Plans are uploaded into the system and utilities, staff and other agencies download the portions that they are interested in. They upload their review comments into the system.

- Helps control and ensure that project design and baseline documentation, including contract drawings, specifications, budget, and schedule, are securely maintained and revised throughout the design, procurement, construction, and closeout phases of the project.

- Provides convenient secure access to documentation to authorized personnel as and when required.

- Ensures that all incoming and outgoing correspondence and all associating project documents are transmitted (i.e. routed) through the appropriate personnel, organizations and/or agencies.

- Routes and tracks the review/approval of all changes and submittals.

- Routes, tracks and expedites (as appropriate) the receipt and associating responses of all Requests For Information (RFIs).

- Retains the project's active and historical documents and files in order to provide efficient access and complete audit trails of the current status and record of revisions to the project design and baseline documentation and associated correspondence.

- Complies project documentation with the administrative, legal and historical requirements and provides an audit trail and documentation of all associating project activities (i.e. inspections, material testing, change approvals, etc…).

Figure 2, below describes some of the typical documents managed during a construction project.

**Figure 2. Examples of Typical Documents**

| Document Type | Document | Primary Function |
|---|---|---|
| Contractual | • Contract General Conditions<br>• Contract Drawings<br>• Contract Specifications<br>• Contract Terms and Conditions<br>• Invoices / Payment Applications<br>• Retainage Release Requests<br>• Amendments<br>• Change/Task Orders | *Contract Management* |
| Project | • Potential Capital Improvement Project Documentation<br>• Project Work Plan<br>• Project Schedule<br>• Project Budget<br>• Generalized Scope of Services<br>• Design Summary Report | *Management & Control* |
| | • Requests for Information & Responses<br>• Meeting Minutes | *Communications* |
| | • Project Status Reporting<br>• Program Status Reporting<br>• Utilization Reporting<br>• Periodic Construction Observation Report<br>• Inspections/Tests<br>• Journals/Logs<br>• Punch Lists<br>• Safety Issues<br>• Project Photos | *Reporting* |
| | • Quality Assurance/Quality Control Certification Form | *Quality* |
| Design | • Preliminary Engineering Report Checklist<br>• 40% Design Checklist<br>• 70% Design Checklist<br>• 95% Design Checklist<br>• Schematic Designs & Documents<br>• Design Development Documents<br>• Construction Documents (50%, 95% & 100% Complete) | *Management & Control* |

| | | |
|---|---|---|
| | • Drawings<br>• Specifications | |
| | • Design Phase Public Involvement Checklist<br>• Review Comment & Resolution Report | *Communications* |

For process details and activities regarding the documents listed above please refer to: http://www.sanantonio.gov/cims/designguidance/FINAL%20_DGM_062308.pdf.

### 3.2.4 Field Administration

Field administration refers to the administration of and responsibility for activities at the job site (i.e. "field level"). These activities include (but are not limited to): observation, inspection, testing and surveying during the construction process. Also included are progress meetings, quality checks, safety compliance and maintenance of logs.

***Note:*** *Field observation is performed to observe tests and inspections or other designated tasks as required by the contract. Inspection differs from field observation in that inspection is a detailed examination of the work completed.*

For process details and activities related to the various field administrative tasks (i.e. Inspection, Testing, Surveying, etc…) listed above please refer to: http://www.sanantonio.gov/cims/Contracts/Docs/085%20General%20Conditions%20(HeavyHwy)%20Updated%203-16-10.pdf

### 3.2.5 Report Management

Report management refers to the ability to generate, store, retrieve, distribute, print and display reports used for budgeting, estimating and monitoring project progress.

Figure 3, below describes some of the typical reports managed during a construction project.

**Figure 3. Example of Typical Reports**

| Report Type | Description |
|---|---|
| Project Reports | *Project status documents that include issue listings, meeting minutes, current project work status, project schedule, performance reports, RFI status reports, etc…* |
| Financial Reports | *Financial documents that include dollars spent by budgeted, anticipated and actual cost reports, proposed and approved changes report, payment reports, etc…* |
| Observation Reports | *Observation site documents that include a daily log of site activities, photographs, occurrences, weather, equipment, personnel and communications.* |
| Inspection Reports | *Inspection document (including special inspections conducted) of the contractor's work and practices observed by the designated construction inspectors covering construction work performed, instructions given or received, unsatisfactory conditions, delays* |

| | |
|---|---|
| | *encountered, manpower and equipment or other discrepancies.* |
| Safety and Accident Reports | *Safety documents that include routinely conducted safety site visits, agency approved safety inspections and record of any accident reports reported.* |
| Quality Assurance/Quality Control (QA/QC) Reports | *QA/QC documents that include the field inspection and testing results analysis, audit trail of all change requests and notes on any violations/notices etc…* |

For process details and activities regarding the documents listed above please refer to: http://www.sanantonio.gov/cims/designguidance/FINAL%20_DGM_062308.pdf.

### 3.2.6 Schedule Management

Schedule Management refers to the creating, reviewing, updating and managing of project and construction schedules by:

- Creating, monitoring and updating individual project schedules that identify the tasks, durations, responsible person/agencies, and relationships to other tasks necessary to execute the project from initiation to close out. Projects are cost loaded to allow for the development of Schedule Performance Index (SPI) data. Schedules are created and maintained by scheduling personnel based on input from the project manager and other project team members. Schedules include all facets of the project to included design, construction, environmental requirements, permits, public art, real estate acquisition, contracts, council action, and joint and non-joint bid utilities.

- Providing schedule templates to and receiving, coordinating, reviewing, accepting and importing into the City's enterprise system schedules and updates prepared by construction contractors

- Maintaining baseline and current schedules.

- Analyzing schedules and providing reports/schedules to project teams and management showing project and program performance, issues and status. Determining from schedules the cause, responsible agency and impact of previous and proposed actions and delays.

| **Portal Schedule Management Process** | |
|---|---|
| **Process Description** | There two types of schedules:<br>• Project Schedules are created by the scheduler based on input from the project team and represent the project from initiation to close out. They are cost loaded and represent all facets of the project.<br>• Construction Schedules are developed and maintained by the contractor. The construction schedules are received, reviewed, accepted and uploaded into the City's enterprise schedule system.<br>• Baseline schedules are maintained by the schedulers for both project and construction schedules.<br>• Both project and construction schedules are updated, reviewed and analyzed monthly. |

| | |
|---|---|
| **Controls** | • Baseline schedules are maintained by City Schedulers.<br>• Only City Schedulers can make changes to the City's version of the schedules. Project Teams review published schedules and reports.<br>• Initial construction schedules and updates are reviewed by the scheduler, Project Manager and inspector.<br>• Notice to proceed on construction is typically not provided until the Contractor's Baseline Schedule is accepted. |
| **Key Information** | • Baseline Schedule<br>• Current Schedule<br>• Previous current schedules |
| **Inputs** | • Project/Construction Schedule templates<br>• Tasks that need to be completed<br>• Time allowed (contract or other restricting documents) |
| **Outputs** | • Accepted Baseline<br>• Accepted Schedule Updates<br>• Reports used by Project Managers and Management to identify issues and review project progress. |
| **Tools/Systems** | • Primavera Project Manager P6.2<br>• Primavera Contractor 6.1<br>• Microsoft Project (used only for construction projects less than $300,000 construction contract and duration of 90 days or less)<br><br>***Note:*** *Contractors have been required to purchase either Primavera Project Manager P5.x or Primavera Contractor 4.1 or later.* |
| **Risks/Issues** | • The schedule as submitted doesn't include all of the tasks or realistic durations resulting in an unrealistic schedule.<br>• Schedules submitted without using or following City templates.<br>• Schedules created with incorrect calendars (using a 5 day work week calendar to show project duration on a 7 day a week calendar project, or using a 7 day work week calendar for activities when only working 5 days a week).<br>• Construction start on a project may be delayed because of failure by the contractor to turn in an acceptable schedule in a timely manner. |

**Project Schedule Baseline Creation**

| Assignee | Process Activity | Process Steps |
|---|---|---|
| Project Manager | Schedule Initiation | • Notifies scheduler of new project. Provides the type of project and over all concept |
| Scheduler | Provides Template | • Provides the Project Manager an existing schedule template that most closely reflects the |

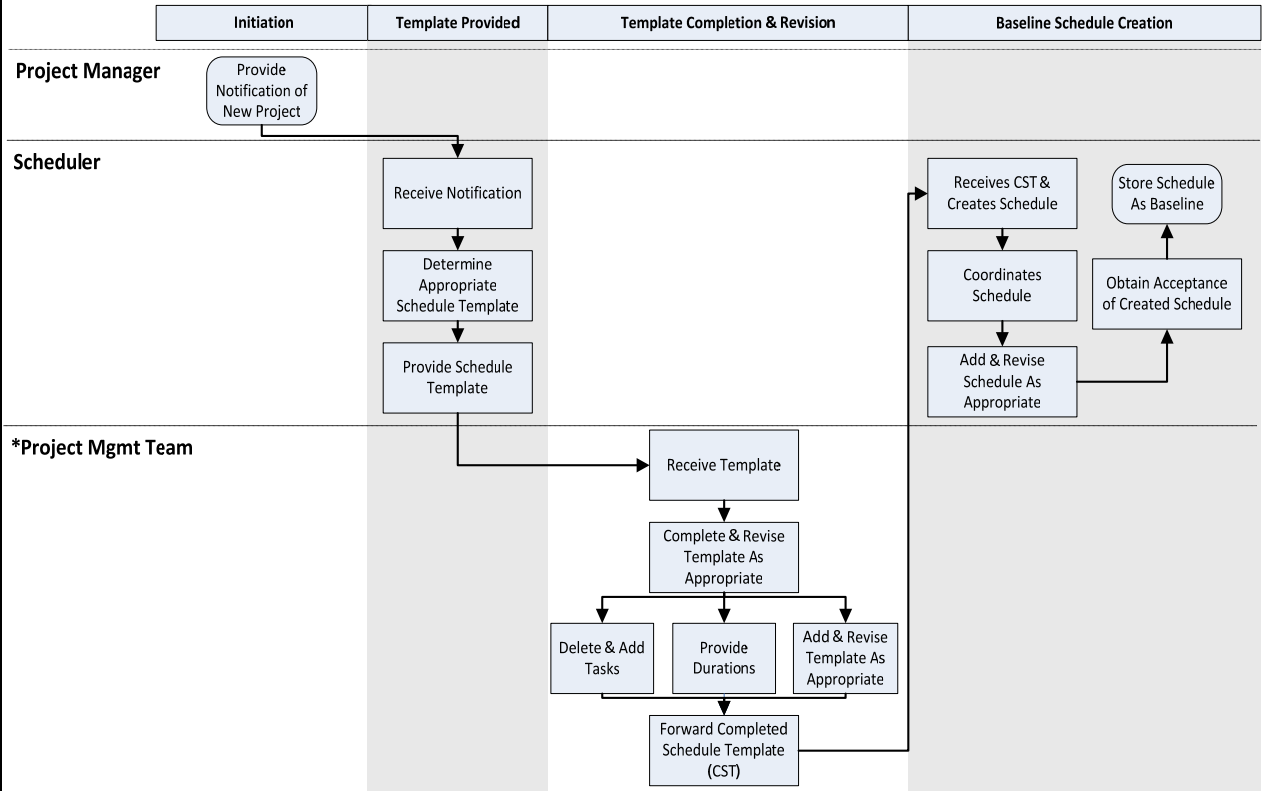
| | | |
|---|---|---|
| | | project being scheduled |
| Project Manager and other team members | Identify tasks, durations, and budgets | • Project Manager and others mark up the template (delete/add tasks, provide durations, and any logic changes) with input and assistance from the scheduler. |
| Scheduler | Baseline Schedule Creation | • Based on the marked up schedule template, scheduler creates the schedule.<br>• Coordinates schedule with project manager and others<br>• Once schedule is acceptable, stores schedule as baseline. |
| **Project Schedule Updates** | | |
| **Assignee** | **Process Activity** | **Process Steps** |
| Scheduler | Send out update forms | • Scheduler prepares copies of the schedule and schedule update forms. Project update forms show the previous month and four month ahead and are broken out by areas of responsibility.<br>• Scheduler emails to Project Manager and other project team members |
| Project Manager and other project team members | Review and update schedule update form | • Update the schedule update forms with the actual task start and completion dates and/or estimated completion date as appropriate.<br>• Meet with the scheduler to review their changes. |
| Scheduler | Update schedule and produce reports and new schedule | • Scheduler updates the schedule<br>• Produces/publishes reports and revised schedule for review by Project Manager and management. |
| **Construction Schedule Baseline Creation** | | |
| **Assignee** | **Process Activity** | **Process Steps** |
| Project Manager | Schedule Initiation | • Notifies scheduler who the contractor is, the total time duration and other general project information. |
| Scheduler | Creates template | • Creates/updates schedule template<br>• Emails template to Contractor to use in creating schedule |
| Contractor | Creates Schedule | • Creates schedule using Primavera software<br>• Emails schedule file to scheduler. |
| Scheduler, Project | Review Schedule | • Scheduler reviews schedule for general |

| | | |
|---|---|---|
| Manager, Inspections | | conformance, creates pdf of the schedule and reports and forwards for review.<br>• All review schedule and provide acceptance or comments to Scheduler |
| Scheduler | Accepts Baseline | • If the schedule is acceptable, the schedule is stored as the baseline, published and the contractor notified the schedule is acceptable.<br>• If the schedule is unacceptable, it is returned to the contractor for correction and resubmittal. |
| **Construction Schedule Updates** | | |
| **Assignee** | **Process Activity** | **Process Steps** |
| Contractor | Updates and submits current schedule | • Schedule is updated to reflect current status and schedule file is submitted to scheduler |
| Scheduler, Project Manager, Inspections | Review Schedule | • Scheduler reviews schedule for general conformance, creates pdf of the schedule and reports and forwards for review.<br>• All review schedule and provide acceptance or comments to Scheduler |
| Scheduler | Accepts Schedule | • If the schedule is accepted, scheduler publishes it and notifies contractor.<br>• If the schedule is unacceptable, it is returned to the contractor for correction and resubmittal. |

The scheduling specification for construction is Specification 700:
http://www.sanantonio.gov/cims/pdf/Special%20Provisions%20Summary%20February%202010.pdf

# RFCSP Exhibit 1

## Project Schedule Baseline Creation

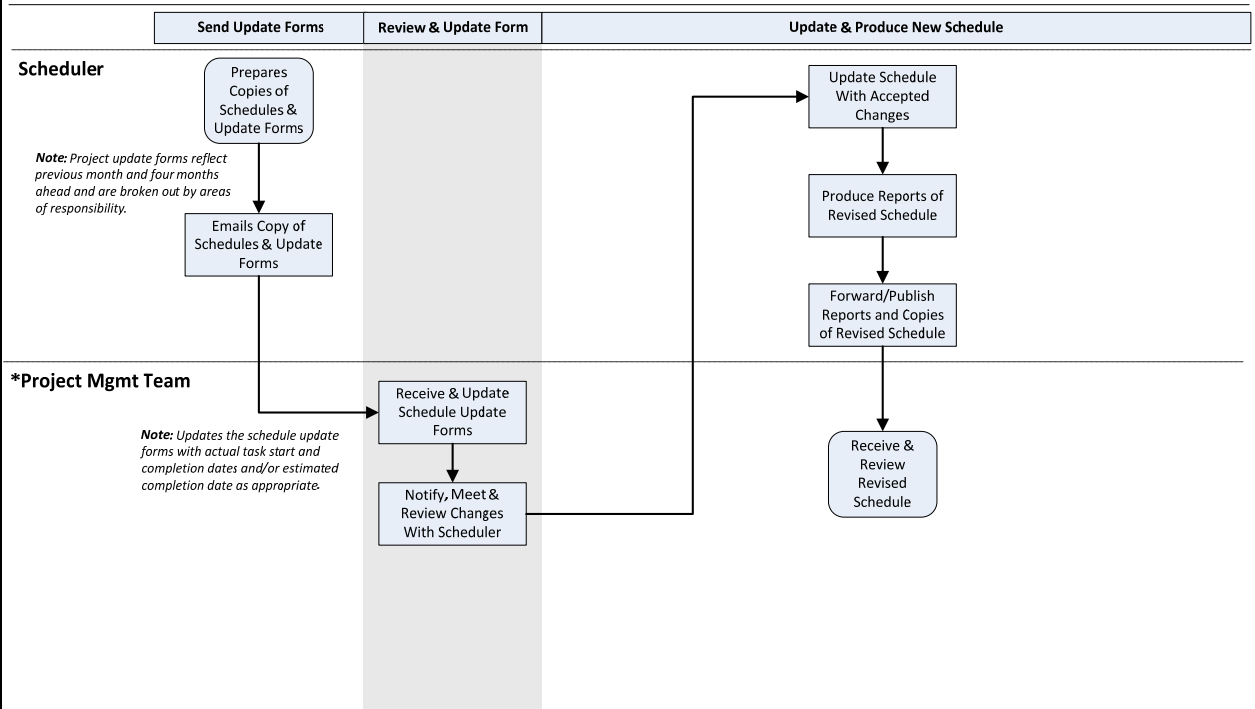



| | Initiation | Template Provided | Template Completion & Revision | Baseline Schedule Creation |
|---|---|---|---|---|
| **Inputs** | -Project Documentation | -Project Notification<br>-Project/Construction Schedule Templates | -Project Documentation<br>-Project/Construction Schedule Template<br>-List of tasks to be completed<br>-Time allowed<br>-Contract and/or other Restricting Documents | -Completed Schedule Template |
| **Key Tasks** | -Provides type of project and overall all concept | - Determines of the existing templates which most closely reflects project being scheduled | -Project Management Team members mark up template (delete/add tasks, provide durations, and changes) with input and assistance from the scheduler. | -Creates schedule based on submitted complete schedule template<br>-Coordinates with PM and Others on created schedule; once acceptable schedule is stored as baseline |
| **Tools/Systems** | -Outlook | - Primavera Project Manager, Primavera Contractor, MS Project | - Primavera Project Manager, Primavera Contractor, MS Project | -Primavera Project Manager, Primavera Contractor, MS Project |

*Note: The Project Management Team customarily includes the department's management (including Program Manager and Director) as well as CIMS Inspectors & Engineering, Project Manager, Consultant and (if applicable any) Joint-Bidding Agencies.

# RFCSP Exhibit 1

## Project Schedule Updates

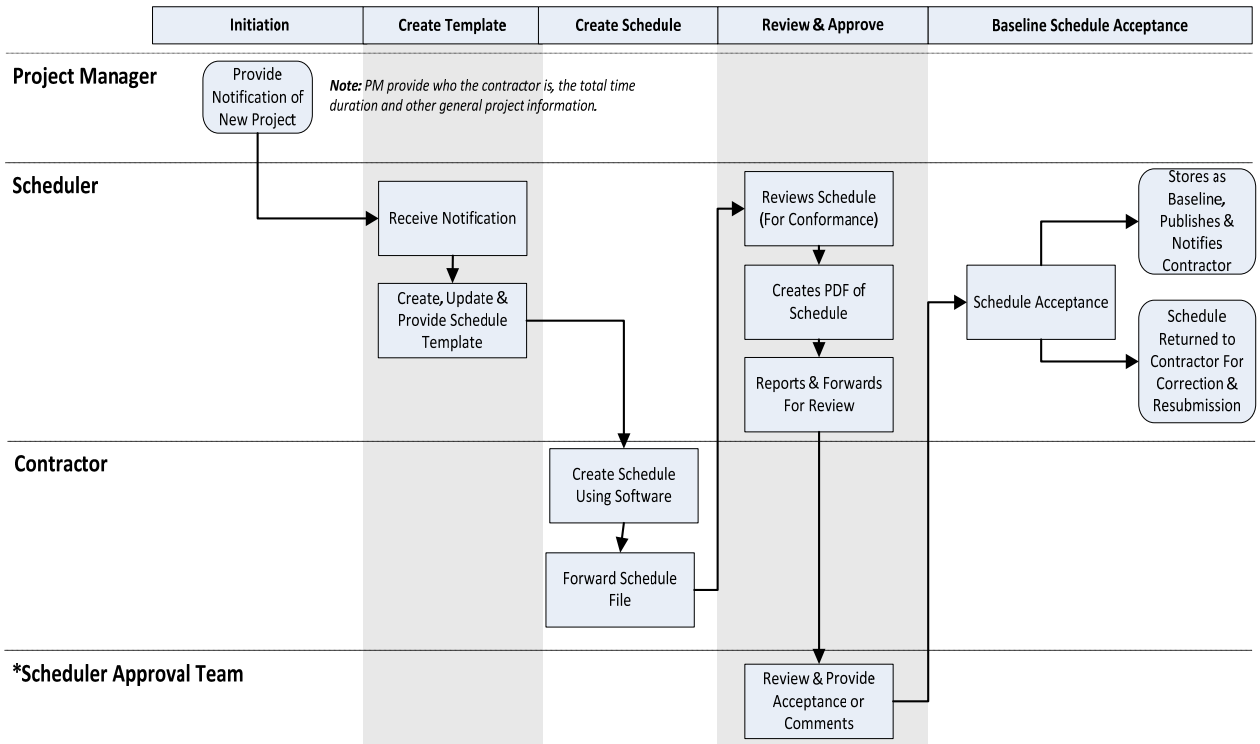



| | Send Update Forms | Review & Update Form | Update & Produce New Schedule |
|---|---|---|---|
| **Inputs** | -Baseline Schedule<br>-Current Schedule<br>-Previous Current Schedules | -Baseline Schedule<br>-Current Schedule<br>-Previous Current Schedules<br>-Schedule Update Forms | -Baseline Schedule<br>-Current Schedule<br>-Previous Current Schedules<br>-Completed & Accepted Schedule Update Forms |
| **Key Tasks** | -Prepares and forwards copies of schedule and update forms | - Completes update forms with appropriate dates and times | -Updates the schedule<br>-Produces, publishes and (as needed) forwards reports and copies of revised schedule for review by Project Management Team |
| **Tools/Systems** | -Outlook | - Primavera Project Manager, Primavera Contractor, MS Project | - Primavera Project Manager, Primavera Contractor, MS Project |

*Note: The Project Management Team customarily includes the department's management team (including Program Manager and Director) as well as CIMS Inspectors & Engineering, Project Manager, Consultant and (if applicable any) Joint-Bidding Agencies.

# RFCSP Exhibit 1

## Construction Schedule Baseline Creation

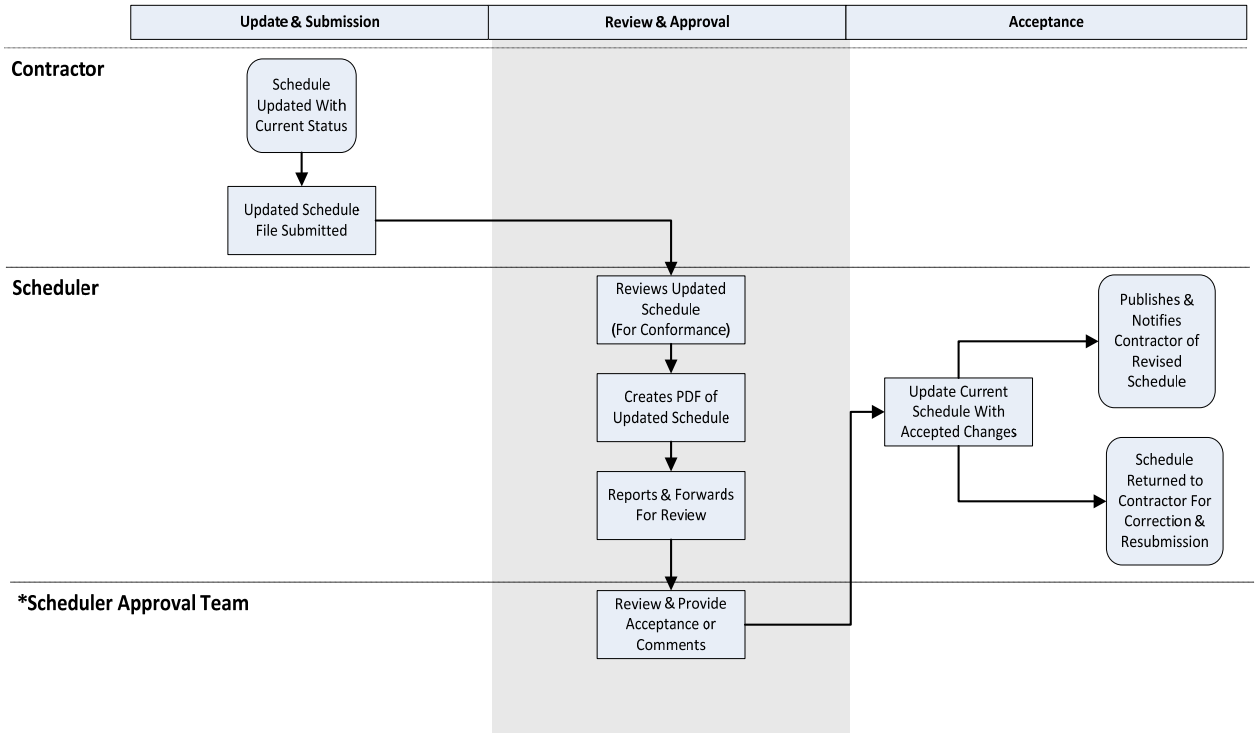



| | Initiation | Create Template | Create Schedule | Review & Approve | Baseline Schedule Acceptance |
|---|---|---|---|---|---|
| **Inputs** | -Project Documentation | -Project Notification<br>-Construction Schedule Templates | -Project Documentation<br>-Construction Schedule Template<br>-List of tasks to be completed<br>-Time allowed<br>-Contract and/or other Restricting Documents | -Completed Schedule Template | -Completed Accepted or Commented On Schedule Template |
| **Key Tasks** | -Provides general project information including who the contractor is and total duration of project | -Creates & updates schedule template<br>-Provides template to Contractor to use to create schedule | -Creates schedule using Primavera software<br>-Provides completed schedule file to Scheduler | -Reviews schedule for general conformance & forwards for review<br>-Scheduler Approval Team reviews schedule and provides acceptance or comments to Scheduler | -Accepted schedule: Schedule is stored as baseline, published and contractor is notified of accepted schedule<br>-Unaccepted schedule: Schedule is returned to the contractor for correction and resubmitted |
| **Tools/Systems** | -Outlook | - Primavera Project Manager, Primavera Contractor, MS Project | - Outlook, Primavera Project Manager, Primavera Contractor, MS Project | - Outlook, Primavera Project Manager, Primavera Contractor, MS Project | -Outlook, Primavera Project Manager, Primavera Contractor, MS Project |

*Note: The Scheduler Approval Team customarily includes the Scheduler, Project Manager and Inspections.

# RFCSP Exhibit 1

## Construction Schedule Updates




| | Update & Submission | Review & Approval | Acceptance |
|---|---|---|---|
| **Inputs** | -Baseline Schedule<br>-Current Schedule<br>-Previous Current Schedules | -Baseline Schedule<br>-Current Schedule<br>-Previous Current Schedules<br>-Updated Schedule | -Completed Accepted or Commented On Updated Schedule |
| **Key Tasks** | -Schedule is updated to reflect current status<br>-Updated schedule is submitted to Scheduler | -Reviews updated schedule for general conformance<br>-Creates PDF of updated schedule & reports and forwards for review<br>-Scheduler Approval Team reviews and provides acceptance or comments on updated schedule to Scheduler | -Accepted schedule: Schedule is stored as baseline, published and contractor is notified of accepted schedule<br>-Unaccepted schedule: Schedule is returned to the contractor for correction and resubmitted |
| **Tools/Systems** | -Outlook | - Outlook, Primavera Project Manager, Primavera Contractor, MS Project | -Outlook, Primavera Project Manager, Primavera Contractor, MS Project |

*Note: The Scheduler Approval Team customarily includes the Scheduler, Project Manager and Inspections.

### 3.3 System Objectives and Current Functionality

The Web Portal system is a compilation of many different software programs that are in some cases loosely connected or integrated with each other.

The major programs include:

- Citrix, *a virtual access gateway software that enables users (internal and external) secure access to the Web Portal*;
- MS Office SharePoint, *an intranet webpage set up to centralize, share, store and route project documentation (i.e. design plans, invoices, change orders, task orders, amendments, etc…)*;
- Nintex Smart Library, *an add-in to SharePoint that performs the routing function.*
- Primavera Contract Manager©, *a collaborative document control software program for contract administration and contract management*; and,
- Primavera Project Manager (5.x)© or Contractor 4.1©, or higher, *a web-based planning and scheduling program*.

***Note:*** *City is currently using Primavera Contractor 6.1 and Primavera Project Manager (6.2).*

<u>Functional and Technical Operations and Maintenance Responsibilities</u>
- The Web Portal is hosted on City ITSD systems.
- ITSD is responsible for the technical operations and maintenance of the system to include upgrades and maintenance of the program, backups, etc.
- CIMS Portal Division is responsible for the functional operations and maintenance of the system. It maintains the Portal Help Desk, assigns permissions, establishes procedures and policies related to usage, creates and maintains workflows, contracts, projects, payment applications, etc.

<u>System Objectives</u>
- Standardized procedures
- Improved invoicing, reimbursement and change management (specifically, routing, accuracy and timeliness)
- Improved communication & collaboration (amongst city staff, contractors/consultants, utilities and agencies)
- Improved vendor requests for information and submittals management
- Improved document management
- Increased accountability/visibility

<u>Current System Functionality</u>
- Electronic development and routing of invoices, change orders and select close out documents (retainage release)
- Electronic transmittal of reimbursement invoices
- Electronic processing of requests for information, submittals and punch lists

- Electronic storage of documents (plans, logs, project documents, etc…)
- Electronic upload of invoice data (specifically goods receipt) to the back-end accounting system (SAP)
- Supports accessibility and collaboration amongst project managers, city staff, contractor/consultants, utilities and (as needed) external agencies
- Supports and controls ability to view projects and schedules

***Note:** The Web Portal was developed primarily for city project and program mangers. It allows all project and program mangers, consultants, contractors, utilities and others based on access rights to have access to project statuses and documentation. The Web Portal provides cost information for only the Professional Services Contract and Construction Contracts. Other costs, such as administration, program management, right-of-way acquisition, environmental and material testing are either not processed through the web portal or the use of indefinite delivery type contracts where multiple projects are handled on the same contract are used. Therefore, city staff and/or program managers monitor total project costs through the SAP accounting system which includes all costs.*

**3.4 Current System Issues/Deficiencies**

Issue/Deficiency (1): Poor & Inconsistent System Efficiency

- Users frequently experience slow system performance, delayed system response times and sometimes system freezes which oftentimes result in system shut-downs and/or restarts. With this, users sometimes experience either data lost, interrupted approval/rejection workflow routings or miss notifications due to system restarts.

Issue/Deficiency (2): Problematic System Maintenance

- The system is a composite of many different programs which has made the system difficult to maintain particularly regarding upgrades. That is, a program can't be upgraded without impacting the other programs.

Issue/Deficiency (3): Extensive Operational Support and Maintenance

- The system is very compartmentalized and requires significant effort to make changes across the entire system (e.g., to change a person on a workflow routing requires manually changing the person on every individual workflow routing that person is in since the system is currently unable to make changes globally).

Issue/Deficiency (4): Limited System Flexibility

- The system presently lacks flexibility and is unable to accommodate Department specific requirements without essentially affecting all other users on the system.

Issue/Deficiency (5): System Not Intuitive/User-Friendly

- Since the system is not procedurally intuitive to the user – the system requires a significant amount of training thus resulting in the user's reluctance to use or learn the system.

Issue/Deficiency (6): Limited Reporting Capability

- Reporting across projects is difficult or impossible because the system is so compartmentalized, i.e. multiple program databases are presently used to store project data as opposed to one centralized database.

Issue/Deficiency (7): Limited Search Capability
- Users have limited capability to search for project documents across all projects, within projects, by project type, etc….

Issue/Deficiency (8): Limited Document Management
- Due to the system's various program limitations, users currently are unable to review and redline documents under review without having to have the original software program loaded on the computer. Presently, documents are printed, reviewed, scanned and downloaded back into the system to be routed back to the submitter.

Issue/Deficiency (9): Limited Routing Capabilities
- Due to the system's various program limitations, users presently have to manually download documents to be routed and select the appropriate workflow routings to be used as opposed to the system handling automatically.

- Presently, workflow routings are set up such that either all individuals on an approval line must approve and only one is required to reject or only one approve and all must reject. Which delays and oftentimes imposes requests for assistance from the Portal help desk to force approve or reject items.

Issue/Deficiency (10): Limited Cost Management Capabilities
- Due to the current portal set up with regard to indefinite delivery contracts (IDCs), contractors are submitting one invoice that may relate to several task orders which oftentimes poses issues with:
    - Rejection (Specifically, if one invoice is rejected all subsequent invoices are also rejected.); or
    - Invoice Funding Capacity/Availability Errors (Specifically, each invoice is part of a larger IDC contract and the contract as well as the project must have the funding capacity/availability for the invoices otherwise invoices can not be processed. The system currently doesn't reflect nor update in real-time the contract and project funding capacity/availability balances. Would ideally like to have the system update systematically in real-time and/or display contract/project funding capacity/availability dollars to help submitters indentify potential overruns and/or out of balances prior to invoice submission).

Issue/Deficiency (11): Redundancy
- Due to the system's various program limitations, users often have to repeat data entry on various comparable forms or duplicate work (i.e. create or re-create work on to a spreadsheet) to import data into the system.

Issue/Deficiency (12): Limited Copy and Pasting Capability
- Due to the system's various program limitations, users can not easily copy, cut or paste information within, to or from the system. Users presently have difficulty copying or uploading from a

spreadsheet or pasting from a clipboard the schedule of values/pay items for amendments, change order or task order.

Issue/Deficiency (13): Laborious Upload Capability

- Since the program generating invoices and change orders is different from the routing program, users have to print/save the completed form with the attachments as a new pdf document. Then save the newly combined document onto the user's hard drive. To route or save it along with the other project documentation the user must upload the document from their hard drive into the system.

Issue/Deficiency (14): Limited Retention and Retrieval Capabilities

- Presently, lack the functionality to export documents/files off the system after the project is completed for retention. Data can be exported however the data is either exported as a raw data file or entails a tedious print and save process (i.e. each document/file is printed into a form and/or report then re-printed as a pdf, the printed pdf is then saved to a common share-drive and/or desired file location).

Issue/Deficiency (15): Change Control

- Presently contractors upon entering the current pay period's quantities can add, edit or delete individual schedule of value items which causes a number of issues when done incorrectly with the processing of invoices. Ideally would like to restrict the contractor's ability to add, edit or delete individual schedule of value items however still allow them to enter their current pay period quantities.

## 4.0 Functional Requirements

The requirements that follow provide a description of the major information and processing capabilities for a capital improvements project management system portal. The following basic requirements have been identified by General Requirements, Specific Categories and capital improvement management functional area. These functional capabilities should be integrated with agency unique requirements in a manner that best supports the agency's programs, operations, technical environment and management philosophy.

For ease of reference, the business requirements described here within have been presented using the following functional categories:

| Functional Category | Description |
|---|---|
| Cost Management | Refers to the management of cost related activities achieved by collecting, analyzing, evaluating and reporting cost information used for budgeting, estimating and monitoring costs. Cost related activities include (but are not limited to): contracts, purchase orders, invoices, pay applications, costs, actuals, budget and etc… |
| Change Management | Refers to the management of change related activities such as (but not limited to): identification, submission, tracking and evaluation of change orders, amendments and task orders. |
| Document Management | Refers to the collaboration and control of the flow (storage, retrieval, processing, routing and distribution) of project related documents in a secure and efficient manner, to ensure that these documents are accessible to authorized personnel as and when required. |
| Field Administration | Refers to the management of field related activities such as (but not limited to): A/E field observation reports, daily work journals, inspections and tests, punch lists, logs and etc… |
| Report Management | Refers to the ability to generate, store, retrieve, distribute, print and display reports used for budgeting, estimating and monitoring project progress. Report management related activities include (but are not limited to): project reporting, program reporting, cost reports, daily/monthly/annual reports, dashboards and etc… . |
| Schedule Management | Refers to the management of project and construction schedule related activities to include the creating, updating, reviewing, accepting and reporting on project and construction schedules. |

**Ratings for Features:**

| | |
|---|---|
| **Rating of 1** | Feature has significant and direct impact to:<br>• **Costs** (budget) – must be associated to hard dollars whereby this would impact someone's budget, such that without this feature the business unit would request additional funding.<br>• **Headcount** – must impact a business unit's overall headcount, such that without this feature the business unit would be requesting additional |

| | |
|---|---|
| | headcount.<br>• **Risk to business** – has some element of judgment that needs to rise to a level that without this feature there would be risk to compromise the business unit ability to function. |
| **Rating of 2** | Feature has significant impact to:<br>• **Usability** – impacts the user's ability to perform a task correctly – possible negative impact on downstream processes due to a large number of user errors that would be difficult to catch and/or correct.<br>• **Efficiency** – impacts the amount of time it takes a user to perform a task – to rise to this level there must be significant amount of additional time it would take to perform a task without this feature – the task should generally be common and frequent, not an exception or infrequent process. |
| **Rating of 3** | Strong preference for the feature with some impact to cost, headcount, risk, usability or efficiency – there is an impact to one or more of the factors listed that does not meet the criteria for a higher rating, yet has enough impact that there is a strong preference supporting this feature. |
| **Rating of 4** | Preferred way of how system should be designed – some impact to one or more of the factors listed, but has minimal impact to other factors or other areas or functionality – not viewed as particularly important or significant to the overall process – a "nice to have" feature. |

**Priority Scale for Requirements:**

| Priority | Description |
|---|---|
| 1 | Must Have |
| 2 | Should Have |
| 3 | Like to Have |

# RFCSP Exhibit 1

| Functional Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **1.0** | **2** | **Cost Management** | • **All CIP Users** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **1.1** | The system *shall* support ability to integrate with other business systems and software programs (e.g. SAP and Primavera Project Manager (6.2) or higher). | 1 | *City's backend financial system (SAP) and enterprise scheduling management software (Primavera)* |
| **1.2** | The system *shall* support ability to manage and track multiple projects associated with various types of contracts (e.g. engineer/architectural design, construction, indefinite delivery design and construction, job order contracts, real estate appraisals, material testing, environmental, etc…). | 1 | |
| **1.3** | The system *shall* allow users to prepare, define, track, manage and compare all contracts, purchase orders and other forms of project commitment costs. | 1 | |
| **1.4** | The system *shall* support ability to track actuals, commitments, costs and savings or overruns. | 2 | |
| **1.5** | The system *shall* provide and assign a "unique identifier" for all invoices such that it can be cross referenced with both internal (e.g. SAP) and external (e.g. new CIP Portal) systems. | 2 | |
| **1.6** | The system *shall* support ability to create invoice templates such that the following information is retained, processed and tracked on every invoice: Purchase Order (PO) number, PO line item number, SAP material code for payment, invoice type, quantities, percentages and amount. | 1 | *Invoice type distinguishes whether an invoice is for payment to contractor (i.e. Goods Receipt) or collection from the contractor (i.e. Credit Memo).* |
| **1.7** | The system *shall* allow appropriate users to document, submit, verify and (as needed) modify invoices. | 1 | |
| **1.8** | The system *shall* allow users to set up key financial terms, conditions and preferences (i.e. schedule of values, retainage, partial retainage, tax codes, etc…) to help facilitate the functionality of contract-related invoices and change orders. | 1 | |

| | | | |
|---|---|---|---|
| **1.9** | The system *shall* allow retainage and the partial release of retainage (as applicable) to be tracked and reflected (i.e. displayed) on invoices. | 1 | *Need ability to show partial release of retainage on invoice.* |
| **1.10** | The system *shall* support ability to auto-populate fields based on default settings established during contractual set-up and (as needed) allow fields to be overwritten during completion process. | 3 | |
| **1.11** | The system *shall* support ability to generate initial invoices based on imported/entered financial data (e.g. purchase order/schedule of values) and all consecutive invoices to be generated systematically based on the previous invoice processed. | 1 | |
| **1.12** | The system *shall* support ability to systematically update in real-time and/or display contract/project funding availability dollars to help to identify potential overruns or out of balances prior to invoice submission. | 3 | |
| **1.13** | The system *shall* support ability to calculate and/or reflect an estimated payment date based on the Finance Department's invoice receipt date and expected time of completion. | 3 | *Expected time of completion = established expected time of completion standard ± 2 – 3 additional days in event of issues.* |
| **1.14** | The system *shall* support ability to update invoices from approved change orders, amendments and/or task orders. | 1 | |
| **1.15** | The system *shall* allow attachments (if applicable) to be attached to invoices. | 1 | |
| **1.16** | The system *shall* support ability to process all invoices from request through completion with user-defined workflow routings. | 1 | |
| **1.17** | The system *shall* support access control so that those entering the current pay period's quantity can not add, edit or delete individual schedule of value items. | 2 | |
| **1.18** | The system *shall* support ability to display invoice in sections. | 2 | *Need invoice to display such that all City, Utility and other agency specific information are grouped together – makes the review and approval process easier.* |

| | | | |
|---|---|---|---|
| **1.19** | The system *shall* track all vendor invoices (including quantities, stored materials and retention). | 1 | |
| **1.20** | The system *shall* track authorized, previous and current invoiced amounts. | 1 | |
| **1.21** | The system *shall* track all documents associated with contract (e.g. dates, detailed schedules of values and links to designs, related invoices and other project-related documents). | 2 | |
| **1.22** | The system *shall* allow users to search and view cost information (e.g. actual billing, actual cost, associating invoices of proposed/actual change orders, purchase order information, etc…). | 2 | |
| **1.23** | The system *shall* support ability to view rolled up financial information from contracts, purchase orders, change orders, amendments and task orders. | 2 | |
| **1.24** | The system *shall* support ability to track material stored on-site. | 2 | |

| Functional Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **2.0** | **2** | **Change Management** | • **All CIP Users** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **2.1** | The system *shall* support ability to automatically present only those change management request forms that are applicable to the contract, project and type of request. | 2 | *Example: For construction only change and task order forms would be available and for professional services only amendment and task order forms.* |
| **2.2** | The system *shall* provide and assign a "unique identifier" for all change orders, amendments and task orders. | 1 | *Eliminate and minimize redundant entry and duplicate processing.* |
| **2.3** | The system *shall* allow change orders, amendments and task orders to be systematically processed and tracked (i.e. both approved and rejected). | 1 | *Should ideally have ability upon creation and submission of the form to route it without any further manual intervention.* |
| **2.4** | The system *shall* allow appropriate users to enter, submit, verify and modify (as necessary prior to submission) change orders, amendments and task orders. | 1 | |
| **2.5** | The system *shall* support ability to attach support documentation onto a change order, amendment and/or task order request. | 1 | |
| **2.6** | The system *shall* support ability to view support documentation of common file types associated with a change order, amendment and/or task order request in one viewer. | 2 | *Refer to requirement 3.19.* |
| **2.7** | The system *shall* support ability to systematically update in real-time and/or display contract/project funding availability dollars to help to identify potential overruns or out of balances prior to form submission. | 3 | |
| **2.8** | The system *shall* support ability to auto-populate all succeeding change orders, amendments and/or task order requests with previously submitted information or allow users to copy/paste from a previous request and allow users to modify fields (as needed). | 3 | *Submitted information could include for example: Project Name, Purchase Order (PO) number, PO Line Item numbers, SAP material code for payment, etc….* |
| **2.9** | The system *shall* support ability to process change orders, amendments and/or tasks orders from request through closure using defined/user-defined workflow routings. | 1 | |

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| **2.10** | The system *shall* allow users the ability to group change orders, amendments and/or task orders (as needed) to route through the workflow routing process. | 3 | |
| **2.11** | The system *shall* track all change management documents as well as all associating invoices and payments. | 1 | |
| **2.12** | The system *shall* support the ability for users to easily copy, cut and paste information from within, to or from the system. | 2 | *Need to allow for the easy copying or uploading from a spreadsheet or pasting in from a clipboard the schedule of values/pay items for an amendment, change order or task order.* |

| Functional Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **3.0** | **2** | **Document Management** | • **All CIP Users** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **3.1** | The system *shall* allow users to configure and customize (as needed) the system to fit City and departmental needs (e.g., nomenclature, screens, forms, reports, etc…). | 2 | |
| **3.2** | The system *shall* support project control features tailored to construction and capital projects. | 1 | |
| **3.3** | The system *shall* provide a system that conforms with common to high usability (i.e. user friendliness) standards. | 1 | *System must be easy to learn for both novices and users with experience from similar systems.* |
| **3.4** | The system *shall* allow designated staff to maintain (i.e. add, update, reset or remove) and track user access, password maintenance and user capabilities. | 1 | |
| **3.5** | The system *shall* support ability to permit and restrict user access levels and/or capabilities at multiple levels (e.g. by folder, document, project phase, etc…). | 1 | |
| **3.6** | The system *shall* provide unlimited access for all authorized users. | 2 | *Prefer enterprise licensing* |
| **3.7** | The system *shall* support ability to centralize documents in one location across all departments by program(s) and project(s). | 1 | |
| **3.8** | The system *shall* support ability to manage project related documents and communications including design drawings and specifications, submittals and approvals and ongoing correspondence such as meeting minutes, notes, RFIs and transmittals through entire project lifecycle. | 1 | |
| **3.9** | The system *shall* allow users to document, update and track in real-time correspondence documents such as meeting minutes, notes and issue logs. | 2 | |

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| **3.10** | The system *shall* allow user to document, assign, update and manage meeting documents including item history and resulting action items assigned to each person. | 2 | |
| **3.11** | The system *shall* allow users to import project plans and checklists and assign the appropriate set of documents to the program or project. | 2 | |
| **3.12** | The system *shall* support ability to automate customized business rules regarding the handling of project-related documents (e.g. require project team to fill out a required set of multiple documents in a certain sequence and then route them through an approval process). | 3 | |
| **3.13** | The system *shall* support ability to manage, collaborate, route, track and distribute drawings, plans and submittals through multiple review cycles across various project team members (i.e. consultants, contractors, engineers, project managers, etc…) via workflow routings. | 1 | |
| **3.14** | The system *shall* support ability to systematically document, submit, route, review and respond to Requests For Information (RFIs) and related issues. | 1 | |
| **3.15** | The system *shall* track and manage RFIs along with request date, response, status and the ability to link RFIs (as applicable) to proposed and actual change orders. | 1 | |
| **3.16** | The system *shall* support ability to systematically retrieve, review, import and manage data files such as digital photos, CAD files, MS Office documents and PDFs, and links to other shared documents. | 1 | |
| **3.17** | The system *shall* allow users to view files regardless of file forms/types with one viewer (e.g. digital photos, CAD files, MS Office Documents, PDFs, etc…). | 3 | |
| **3.18** | The system *shall* allow users to easily view, redline and mark-up any files (e.g. photos, drawings, design files, etc.) during the approval process. | 2 | |

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| **3.19** | The system *shall* allow users to save mark-ups in PDF format for easy viewing and distribution for users lacking the software to view file. | 1 | *Reviewers must be able to review attachments without having unique software load on their system (e.g. CAD drawings, specifications, etc…).* |
| **3.20** | The system *shall* allow users to share electronic redline notations on CAD files, photos, and other files with other team members. | 2 | |
| **3.21** | The system *shall* support ability to track all drawings and specification revisions (i.e. approvals and rejections). | 1 | |
| **3.22** | The system *shall* provide, track and manage document version control. | 1 | *Provide a means of version control to help determine who and when documents are changed, added and/or deleted.* |
| **3.23** | The system *shall* allow users to group multiple related submissions (i.e. drawings, plans and submittals) and route the group through workflow routing process. | 1 | *Streamline approval process.* |
| **3.24** | The system *shall* allow workflow routings to be added, modified and/or deleted (as needed). | 1 | |
| **3.25** | The system *shall* allow workflow routings to be added, modified and deleted (as needed) without affecting other routings. | 1 | |
| **3.26** | The system *shall* allow workflow routing changes to be tracked and completed (as applicable). | 1 | |
| **3.27** | The system *shall* support ability to allow various workflow routing approval options (i.e. sequential, concurrent, etc…) within defined workflow routings. | 1 | |
| **3.28** | The system *shall* support the ability to customize and modify (as appropriate) workflow routing notification settings for reviewers (e.g. set up reoccurring timely reminders, customize notification verbiage based on approval/rejection, etc…). | 2 | |

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| **3.29** | The system *shall* support ability to notify preceding workflow routing reviewers of the final approval and/or rejection (with, if applicable, any comments) of a routed item. | 2 | |
| **3.30** | The system *shall* allow users to manage, review, collaborate and distribute design drawings and transmittals through multiple review cycles (across teams of architects, engineers, subcontractors, etc…) through the workflow routing process. | 1 | |
| **3.31** | The system *shall* allow users to create or import and track submittal request letters by issue date, received date and status (approved, rejected, revise and resubmit). | 1 | |
| **3.32** | The system *shall* support ability to track, document, add and update comments to reviewed items during workflow routing process. | 1 | |
| **3.33** | The system *shall* support the use of enterprise groups or provide a means such that if a particular person is in a group (e.g. CIMS Fiscal) that is in multiple workflows needs to be removed or replaced, they can be removed or replaced from all of the workgroups by making a change in one place. | 1 | |
| **3.34** | The system *shall* support smart workflows that based on the value in a particular field in a document (e.g., change order amount), the workflow takes a different route. | 2 | |
| **3.35** | The system *shall* support ability to prevent changes to documents/files while in route and/or automatically restart routing if (as needed) changes are made to documents/files. | 1 | |
| **3.36** | The system *shall* allow the assignment of due dates and responsible person(s) to documents and then be able to report on open/completed documents. | 2 | |
| **3.37** | The system *shall* support ability to systematically roll up all document submissions (RFIs, submittals, etc…) by project and/or program. | 1 | |

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| **3.38** | The system *shall* support ability to accept and comply with City electronic signature requirements. | 2 | *For additional reference please refer to: http://www.sanantonio.gov/hr/admin_directives/cosa/ads/AD7-8F.pdf* |
| **3.39** | The system *shall* support ability to export all documents off the system after project completion for storage, retaining all documents in the preferred form and/or report format. | 1 | *System ought to provide a means of archving data (e.g. provide data via external media, file transfer, etc..)* |

| Functional Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **4.0** | **2** | **Field Administration** | • All CIP Users |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **4.1** | The system *shall* support ability for onsite personnel to access, enter, import, retrieve and review logs, journals, tests, analysis and data files such as photos and links to other shared documents. | 1 | |
| **4.2** | The system *shall* support ability to enter and track daily work journals (i.e. daily construction activities and/or jobsite information such as weather, equipment, manpower, activities, events, etc…). | 1 | |
| **4.3** | The system *shall* allow users the option to duplicate a previous day's journal or log entry and make modifications (as necessary). | 3 | |
| **4.4** | The system *shall* track the review and acceptance of daily journal or log entries. | 1 | |
| **4.5** | The system *shall* allow users ability to search and sort data such that they can view journal or log entries by contract, contractor, project or by time period. | 2 | |
| **4.6** | The system *shall* support ability to prepare, enter, collect and maintain inspections, tests and other related information (i.e. status reports, check-lists, plans, etc…). | 1 | |
| **4.7** | The system *shall* allow users the option to duplicate a previous or similar type of inspection item and make modifications (as necessary) eliminate re-entry of similar items. | 3 | |
| **4.8** | The system *shall* support ability to track the progress and completion of required inspections and tests. | 2 | |
| **4.9** | The system *shall* support ability to prepare, enter and/or import, track and retain punch lists items (i.e. list of deficient items in need of improvement, repair or replacement). | 2 | |
| **4.10** | The system *shall* allow users to create a single punch list of items and/or provide users an option to batch punch list items into one merged list as it related to a particular inspection. | 3 | |

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| **4.11** | The system *shall* support ability to automatically build and maintain a master punch list, inspection and test lists such that users are able to access, search and update (as appropriate). | 3 | |
| **4.12** | The system *shall* support ability to prepare and track compliance notices. | 2 | |
| **4.13** | The system *shall* support ability to prepare, enter, retrieve and track safety notices, issues, accidents or any significant events. | 2 | |
| **4.14** | The system *shall* allow designated users to assign action items and provide notification to assignees by way of notification including a link to the specific item (i.e. inspection, test or punch list) and/or flag items warranting a follow up. | 2 | |
| **4.15** | The system *shall* support ability to customize, initiate and track automatic notifications and/or flag critical items (i.e. inspections, testing, notice of compliance, safety issues, etc…). | 2 | |
| **4.16** | The system *shall* track and maintain the progress (e.g. issue date, date of completion, correspondence) and results of action items. | 1 | |
| **4.17** | The system *shall* support ability to update, close and track action items. | 1 | |
| **4.18** | The system *shall* allow designated users to manage tasks such as resource assignments, daily project journals, and quality management via punch lists and inspections. | 2 | |

| Functional Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **5.0** | **2** | **Report Management** | • All CIP Users |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **5.1** | The system *shall* support ability for users (e.g. contractors/consultants, designated City staff and project team members) to customize/configure their own portal views similar to a dashboard and/or homepage set up. | 1 | *Provide a dashboard or home page to display online summary statistics of those projects and/or items relevant to user (e.g. restrict view to only specific projects, RFI stats, Change Orders, etc…)* |
| **5.2** | The system *shall* support ability for users to filter and conduct field searches using available data fields. | 1 | |
| **5.3** | The system *shall* support the automation and routing of standard internal reports by division (i.e. Horizontal, Vertical, Environmental, etc…) and/or program (i.e. Construction, Design, etc...). | 2 | |
| **5.4** | The system *shall* allow users to design, automate and retrieve full and customizable reports. | 1 | |
| **5.5** | The system *shall* support ability to distribute all report output using email. | 2 | |
| **5.6** | The system *shall* allow the export of data into other applications/tools (e.g. Word, Excel, etc…). | 2 | |
| **5.7** | The system *shall* allow users to print groups of reports all at once. | 2 | |
| **5.8** | The system *shall* support ability of users to generate reports regarding the performance of their programs and projects from funding, budget, contract obligations and actual cost perspectives. | 1 | *Example: Anticipated Costs vs Project Budget.* |
| **5.9** | The system *shall* allow users to access and generate reports based on budget (current, pending, estimated, adjustments, projected) and commitments (original, approved, revised, pending, estimate to complete, anticipated). | 1 | *To help determine dollars spent from each source.* |
| **5.10** | The system *shall* allow report generation by account or funding source. | 3 | |

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| **5.11** | The system *shall* allow report generation on contract status by project, program or any other captured field. | 1 | |
| **5.12** | The system *shall* allow report generation by project a roll up of all financial transactions into an anticipated and actual cost report (information would include: contract value, proposed changes, approved changes, new contract amounts and actuals to date). | 1 | |
| **5.13** | The system *shall* allow report generation on approved invoices by contract, project and/or program. | 1 | |
| **5.14** | The system *shall* allow report generation on project status of each project and program of projects overall (information to include major milestones completed and to be completed, project funding and a current financial summary). | 1 | |
| **5.15** | The system *shall* allow report generation on proposed and approved change requests (i.e. change orders, amendments and task orders) by contract, project and/or program. | 1 | |
| **5.16** | The system *shall* allow report generation of proposed, pending, active and completed RFIs (i.e. contractor/consultant, project, submit date, receive date, assignee, response status). | 1 | |
| **5.17** | The system *shall* allow report generation of all on-site activities for the day (e.g. daily work journals, inspections, testing). | 1 | |
| **5.18** | The system *shall* allow report generation on items/activities that are due or over due by project/category (e.g. Open Action Log). | 1 | |
| **5.19** | The system *shall* allow report generation on workflow routing performance data. | 1 | |
| **5.20** | The system *shall* allow report generation on new, current and deleted users. | 1 | |
| **5.21** | The system *shall* allow report generation on any user access changes (i.e. updates and deletions). | 1 | |

| Functional Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **6.0** | **2** | **Schedule Management** | • All CIP Users |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **6.1** | The system *shall* be compatible with Primavera Project Manager (6.2) or higher. | 1 | *Primavera Project Manager is the City's Enterprise Schedule Management software.* |
| **6.2** | The system *shall* allow users to review and publish schedules and reports. | 1 | |

## 5.0 Technical Requirements

The requirements that follow provide a description of the major technical capabilities for a capital improvements project management system portal. These technical capabilities should be integrated with agency unique requirements in a manner that best supports the agency's programs, operations, technical environment and management philosophy.

For ease of reference, the technical requirements described here within have been presented using the following technical categories:

| Technical Category | Description |
|---|---|
| Security | Refers to the activities related to the security of the system. Related activities include (but are not limited to): User-ids and Passwords Admin, Access Authentication, etc… |
| Architecture & Infrastructure | Refers to the intended/expected technical capabilities as required by users, based on COSA technology standards and data processing needs. |
| Accessibility (Interfaces & Usability) | Refers to the intended/expected usability and appearance of the system. |

**Ratings for Features:**

| | |
|---|---|
| **Rating of 1** | Feature has significant and direct impact to:<br>• **Costs** (budget) – must be associated to hard dollars whereby this would impact someone's budget, such that without this feature the business unit would request additional funding.<br>• **Headcount** – must impact a business unit's overall headcount, such that without this feature the business unit would be requesting additional headcount.<br>• **Risk to business** – has some element of judgment that needs to rise to a level that without this feature there would be risk to compromise the business unit ability to function. |
| **Rating of 2** | Feature has significant impact to:<br>• **Usability** – impacts the user's ability to perform a task correctly – possible negative impact on downstream processes due to a large number of user errors that would be difficult to catch and/or correct.<br>• **Efficiency** – impacts the amount of time it takes a user to perform a task – to rise to this level there must be significant amount of additional time it would take to perform a task without this feature – the task should generally be common and frequent, not an exception or infrequent process. |
| **Rating of 3** | Strong preference for the feature with some impact to cost, headcount, risk, usability or efficiency – there is an impact to one or more of the factors listed that does not meet the criteria for a higher rating, yet has enough impact that there is a strong preference supporting this feature. |
| **Rating of 4** | Preferred way of how system should be designed – some impact to one or more of the factors listed, but has minimal impact to other factors or other areas or |

| | |
|---|---|
| | functionality – not viewed as particularly important or significant to the overall process – a “nice to have” feature. |

**Priority Scale for Requirements:**

| Priority | Description |
|---|---|
| 1 | Must Have |
| 2 | Should Have |
| 3 | Like to Have |

# RFCSP Exhibit 1

| Technical Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **1.0** | **2** | **Security** | • **All CIP Users** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **1.1** | The system *shall* provide a secure infrastructure and tools for protection of programs and data from intentional unauthorized access attempts and/or security breaches. | 1 | |
| **1.2** | The system *shall* provide the ability to secure the system to prevent unauthorized use of the system. | 1 | |
| **1.3** | The system *shall* provide the ability to protect the system against virus attacks. | 1 | |
| **1.4** | The system *shall* provide a single-sign on for authentication. | 1 | *System should allow users to only have to sign on once and enable users to navigate seamlessly between modules without having to sign on to each individual module.* |
| **1.5** | The system *shall* be configurable to enforce password complexity rules including strength, length, reuse and expiration. | 2 | *Examples: Requires user to not use any of the previous 5 passwords, passwords require a combination of letters, numbers and at least one capital.* |
| **1.6** | The system *shall* encrypt user IDs and passwords. | 1 | |
| **1.7** | The system *shall* automatically log, and disable access to user accounts following a specified, administrator configurable number of unsuccessful log-on attempts. | 2 | |
| **1.8** | The system *shall* allow authorized users to enable and disable user access and reset user passwords. | 1 | |
| **1.9** | The system *shall* require the user to change the password at next successful logon after user account has been reset. | 1 | |
| **1.10** | The system *shall* provide ability to force users to change their passwords periodically. | 2 | |
| **1.11** | The system *shall* provide user-defined role-based access to users to ensure only authorized users have access to restricted application functionality (features). | 1 | |

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| **1.12** | The system *shall* authenticate the user before allowing access to the system or application including when user is not connected to a network (e.g. mobile devices). | 1 | |
| **1.13** | The system *shall* enforce an idle user logoff timeout. | 2 | *Examples: Automatically terminate session after a pre-determined period of inactivity. Intended to log-off a user who is idle for an extended period of time and not using system or for those users who forget to log-off system.* |
| **1.14** | The system *shall* provide a history of security roles assigned to a user. | 3 | |
| **1.15** | The system *shall* support removal of a user's privileges without deleting the user from the system. | 2 | *Desire to have the ability to remove a user's privileges but maintain a history of the user in the system.* |
| **1.16** | The system *shall* support a configurable logon page for the purpose of displaying acceptable use policies or links to relevant policies and/or information. | 3 | |
| **1.17** | The system *shall* display system or application screens only when the log-on process has been successfully completed. | 1 | |
| **1.18** | The system *shall* provide ability to maintain a directory of all users who currently use or access the system. | 1 | |

| Technical Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **2.0** | **2** | **Architecture & Infrastructure** | • **All CIP Users** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **2.1** | The system *shall* provide integration with COSA's architecture listed in Appendix A & B here within this document. | 1 | |
| **2.2** | The system *shall* utilize a consolidated architecture approach to eliminate multiple places where transaction logs are stored to simplify reporting and ensure system reliability. | 2 | *Ideally like to minimize number of interfaces, any additional configuration, monitoring and potential failures.* |
| **2.3** | The system *shall* be easy to use, maintain and is fully supported. | 1 | |
| **2.4** | The system *shall* provide (when and where possible) integration and interoperability with other enterprise systems. | 2 | |
| **2.5** | The system *shall* be flexible, reasonably configurable and scalable. | 1 | |
| **2.6** | The system *shall* utilize web-based technology and support protocol, i.e. be browser-based application. | 1 | |
| **2.7** | The system *shall* have ability to support multiple browser formats (refer to Appendix A) | 3 | |
| **2.8** | The system *shall* provide self-serve capabilities. | 1 | *Example: Enable administrators to delegate permissions to responsible users based on job function without giving them access to the entire system.* |
| **2.9** | The system *shall* incorporate multi-channel access that supports mobile customers and users. | 1 | *System is accessible via desktop and mobile devices such as laptops, PDAs, celluar devices, etc…* |
| **2.10** | The system *shall* allow the sharing of information across system functions. | 1 | |
| **2.11** | The system *shall* centralize information on the system and makes it instantly available to all authorized users. | 1 | |
| **2.12** | The system *shall* allow system to enter information once and the system auto-populates appropriate data to all appropriate areas of the application. | 2 | |

| | | | |
|---|---|---|---|
| **2.13** | The system *shall* allow users to define department/program specific screens, data fields, etc… | 2 | |
| **2.14** | The system *shall* include the ability to record updates and retain historical data. | 2 | |
| **2.15** | The system *shall* allow designated personnel to "lock and unlock" certain data fields. | 2 | |
| **2.16** | The system *shall* include robust online help readily available to users. | 3 | *Example: Provide easy online help for technical issues such as how to print a report, how to expand a column, how to I import a document, etc… Ideally foresee Web Portal Team assisting with more procedural and process related questions as opposed to technical.* |
| **2.17** | The system *shall* support ability to manage business rules via a business rules engine. | 2 | |
| **2.18** | The system *shall* allow modification of business rules via a standard GUI. | 3 | |
| **2.19** | The system *shall* support ability to be supported on multiple platforms. | 1 | *Specifically intended for external users since not all agencies, contractors, etc… operate on the same operating environments (e.g. Windows, Macs, etc…)* |

| Technical Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **3.0** | **2** | **Accessibility (Interfaces & Usability)** | • **All CIP Users** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **3.1** | The system *shall* support user-designated required data fields. | 1 | |
| **3.2** | The system *shall* support ability of auto-population of user-defined data fields (when and where appropriate). | 2 | |
| **3.3** | The system *shall* support ability to easily import and export data. | 1 | *System allows users to import and export data in and out of the system.* |
| **3.4** | The system *shall* allow users to use multiple screens simultaneously from various system modules during use. | 3 | |
| **3.5** | The system *shall* allow users to toggle back and for the between screens and/or modules without having to login or out or close out screens. | 2 | |
| **3.6** | The system *shall* provide user-defined parameters for notifications and/or alerts and define interfaces to mobile devices, cell phones and other PDA devices. | 2 | *System can be configured to send notifications or alerts to users regarding items requiring their attention.* |
| **3.7** | The system *shall* provide a means of preventing user from entering invalid information, e.g. mechanisms can include pick list, field formatting, and rules on field entry triggered by field entry or exit. | 2 | |
| **3.8** | The system *shall* provide word processing functionality for text fields (e.g. spell check). | 3 | |
| **3.9** | The system *shall* allow copy and paste of text from one field to another. | 2 | |
| **3.10** | The system *shall* provide both online and context-sensitive help. | 2 | |
| **3.11** | The system *shall* have a user interface compliant with American Disability Act (i.e., Section 508 compliant). | 1 | |
| **3.12** | The system *shall* allow users to personalize their workspace, such as preferences for personal layout, navigation and the use of tools appropriate to their role. | 2 | |

| | | | |
|---|---|---|---|
| **3.13** | The system *shall* provide an easily viewed navigation structure that allows them to know where they are at all times and can easily return them to desired screen as and when needed. | 2 | |
| **3.14** | The system *shall* label or otherwise indicate mandatory fields. | 2 | |
| **3.15** | The system *shall* label or otherwise indicate conditionally mandatory fields. | 2 | |
| **3.16** | The system *shall* provide a unique visual indication (e.g. grayed out) for read-only fields. | 2 | |
| **3.17** | The system *shall* provide a consistent appearance throughout the application. | 1 | |
| **3.18** | The system *shall* provide sort functionality as appropriate for data displayed in tabular format. | 3 | |
| **3.19** | The system *shall* display the assignee, due date, time (of assignment and completion), status (Open, Pending, Closed) and abbreviated task description (e.g. RFI, Change Order, etc…) for tasks assigned that have deadlines. | 2 | |
| **3.20** | The system *shall* clearly document and track all error messages. | 2 | |
| **3.21** | The system *shall* identify and track submission errors. | 2 | |
| **3.22** | The system *shall* support ability to display a list of submission errors, as needed. | 2 | |
| **3.23** | The system *shall* retain properly entered data during the submission error correction process. | 2 | |
| **3.24** | The system *shall* identify errors and provide an editing and validation function to support the correction of any data entry errors. | 2 | |
| **3.25** | The system *shall* support ability to direct the user to the location where data entry errors occur. | 2 | |
| **3.26** | The system *shall* support ability to prompt the user when the user attempts to close a window that has unsaved changes. | 2 | |

## 6.0 Operational Requirements

The requirements that follow provide a description of the major operational capabilities for a capital improvements project management system portal. These operational capabilities should be integrated with agency unique requirements in a manner that best supports the agency's programs, operations, technical environment and management philosophy.

For ease of reference, the operational requirements described here within have been presented using the following operational categories:

| Operational Category | Description |
|---|---|
| System Administration | Refers to the activities related to the system's administration of the system. Related activities include (but are not limited to): Security Administration (namely, roles and privileges), Administrator Accessibility and Abilities, etc… |
| System Monitoring & Auditing | Refers to the activities related to the monitoring and auditing of the system. Related activities include (but not limited to): Audit Logs, System Tracking/Monitoring, etc… |
| System Performance | Refers to the performance and responsiveness expectations of the system. |
| Data Archival & Retrieval | Refers to the activities related to the archiving or retrieval of archived data from system. |

**Ratings for Features:**

| | |
|---|---|
| **Rating of 1** | Feature has significant and direct impact to:<br>• **Costs** (budget) – must be associated to hard dollars whereby this would impact someone's budget, such that without this feature the business unit would request additional funding.<br>• **Headcount** – must impact a business unit's overall headcount, such that without this feature the business unit would be requesting additional headcount.<br>• **Risk to business** – has some element of judgment that needs to rise to a level that without this feature there would be risk to compromise the business unit ability to function. |
| **Rating of 2** | Feature has significant impact to:<br>• **Usability** – impacts the user's ability to perform a task correctly – possible negative impact on downstream processes due to a large number of user errors that would be difficult to catch and/or correct.<br>• **Efficiency** – impacts the amount of time it takes a user to perform a task – to rise to this level there must be significant amount of additional time it would take to perform a task without this feature – the task should generally be common and frequent, not an exception or infrequent process. |
| **Rating of 3** | Strong preference for the feature with some impact to cost, headcount, risk, usability or efficiency – there is an impact to one or more of the factors listed that does not meet the criteria for a higher rating, yet has enough impact that there is a |

| | |
|---|---|
| | strong preference supporting this feature. |
| **Rating of 4** | Preferred way of how system should be designed – some impact to one or more of the factors listed, but has minimal impact to other factors or other areas or functionality – not viewed as particularly important or significant to the overall process – a “nice to have” feature. |

**Priority Scale for Requirements:**

| Priority | Description |
|---|---|
| 1 | Must Have |
| 2 | Should Have |
| 3 | Like to Have |

| Operational Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **1.0** | **2** | **System Administration** | • **CIMS** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **1.1** | The system *shall* provide ability to provide system administration functions (which include but not limited to: all parameter driven set up, including security functions. | 1 | |
| **1.2** | The system *shall* provide ability to define a system administrator, who will have access to all functions in the system, including system administration and security as well as all transaction types (i.e. invoice, change order, amendments and task orders). | 1 | |
| **1.3** | The system *shall* provide ability to allow multiple groups and roles that govern individual access to the system and transactions within the system. | 1 | *Example: Users of the system will be placed in an appropriate group and assigned accessibility based on defined roles. Roles may be further restricted based on the context of their project involvement.* |
| **1.4** | The system *shall* provide ability for authorized security administrator personnel to access all security audit logs. | 1 | |

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| Operational Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **2.0** | **2** | **System Monitoring and Auditing** | • **CIMS** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **2.1** | The system *shall* provide ability to support statutory compliance measures like audit trails and rules-based policy enforcement. | 1 | |
| **2.2** | The system *shall* provide audit-tracking reports for user access and usage logs. | 1 | |
| **2.3** | The system *shall* provide ability to track all log-ins, log-offs and log-in failures. | 1 | |
| **2.4** | The system *shall* provide transaction logs to record all executed functions. | 1 | *Used to facilitate diagnosis (i.e. trouble-shooting) and reconciliation of system errors.* |
| **2.5** | The system *shall* provide a full audit trail of all events that take place on system (i.e. information to include date and time of event, where event occurred, type of event (log on, submission, etc...), user identity and outcome (success or failure) of event). | 2 | |
| **2.6** | The system *shall* support ability to prevent/restrict any modification to audit trail data. | 1 | |
| **2.7** | The system *shall* support ability to search all system logs. | 1 | |
| **2.8** | The system *shall* provide authorized administrators with capability to read all audit information from audit records either by allowing them to generate reports and/or allow the export of logs into a text or recognizable file type (e.g. excel). | 2 | *Ideally like to query a log based on range such as system date and time.* |
| **2.9** | The system *shall* prohibit all users read access to audit records, except those users that have been granted explicit read-access. | 1 | |
| **2.10** | The system *shall* provide the ability to protect the stored audit records from unauthorized deletion. | 1 | |

| Operational Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **3.0** | **2** | **System Performance** | • **All CIP Users** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **3.1** | The system *shall* provide failure back up recovery (i.e. ensuring key system modules are redundant with automatic failure capabilities). | 1 | |
| **3.2** | The system *shall* provide business continuity, disaster recovery and redundancy to avoid/minimize disruptions of service. | 1 | |
| **3.3** | The system *shall* provide ability for system to restore functionality in a fully operational and secure state (i.e. includes restoration of the application data, security credentials and log/audit files prior to disruption). | 1 | |
| **3.4** | The system *shall* provide a means for the vendor/COSA the ability to proactively monitor system performance and notify system administrator(s) as problems arise. | 1 | |
| **3.5** | The system *shall* allow remote access for service/maintenance monitoring. | 1 | |

| Operational Requirements | | | |
|---|---|---|---|
| **No.** | **Rating** | **Feature Category** | **Stakeholder** |
| **4.0** | **2** | **Data Archival and Retrieval** | • **All CIP Users** |

| **Requirement** | | | |
|---|---|---|---|
| **No.** | **Description** | **Priority** | ***Comments*** |
| **4.1** | The system *shall* provide flexible archiving function wherein completed projects and/or select documentation can be archived based on specific rules. | 2 | *Rules may possibly entail automatically archiving certain project document upon closure of project after x-number of days.* |
| **4.2** | The system *shall* provide ability to retain data online for designated period of time and provide ability to access archived data with a reasonable response time. | 2 | |
| **4.3** | The system *shall* support ability to retain data until otherwise purged, deleted, archived or otherwise deliberately removed. | 1 | |

**Appendix A - COSA Information Technology Standards**

City of San Antonio
Information Technology Environment Description

**For A Proposed Hosted Solution**
The Information Technology components of the proposed hosted solution will be in accordance with a Service Level Agreement (SLA) to be jointly developed by ITSD, the solution Respondent, and the business owner of the solution. Management of the Application Layer (business logic) will be determined by SLA.

To the extent that information technology equipment necessary to support the solution must be deployed outside of the City's managed datacenter environment, the respondent must include in their response the scope necessary to provide appropriate environmental and compliance controls for the proposed solution.

Any information technology components (hardware or software) proposed by the respondent that will interface with any City information systems or information technology infrastructure must comply with the City's current information technology standards (see Appendix A1 – A4 and Appendix B).

**For A Proposed Alternative Solution**
Respondents are permitted to propose alternative solutions for consideration, including a "self-hosted" option that meets the requirements described here within.

The City of San Antonio's Information Technology Services Department (ITSD) will leverage its existing software and hardware infrastructure with the proposed alternative solution being presented by respondents to this RFCSP as much as possible. For a list of the City's current software and infrastructure standards see Appendix A1 – A4.

ITSD will provide computing and infrastructure services for the selected hardware and software solution in one or both of the two datacenters that are currently in operation. The two datacenters are interconnected by redundant high-speed Dense Wavelength Division Multiplexing (DWDM) links with servers and storage hosted in both environments. ITSD will manage the Data Center Layer, Networking Layer, Device Layer, Operating System Layer, and Application Infrastructure Layer for the information technology components of the proposed alternative solution in accordance with a Service Level Agreement (SLA) to be jointly developed by ITSD, the solution Respondent, and the business owner of the solution. Management of the Application Layer (business logic) will be determined by SLA.

To the extent that information technology equipment necessary to support the solution must be deployed outside of the City's managed datacenter environment, the respondent must include in their response the scope necessary to provide appropriate environmental and compliance controls for the proposed solution.

Any information technology components (hardware or software) proposed by the respondent that will

interface with any City information systems or information technology infrastructure must comply with the City's current information technology standards (see Appendix A1 – A4 and Appendix B).

**A1. Information Management**

***S=*Standard* Product(s), P=*Preferred* Product(s), G=*Guidance* Info Only.**

| Information Management Technical Area | Policy or Product | S/P/G * | Remarks |
|---|---|---|---|
| Enterprise Backup | Symantec NetBackup 7.x | S | |
| Directory Services | Microsoft Server 2003 Active Directory | S | The City is currently evaluating LDAP-based alternatives |
| Relational Database Management Systems | Oracle 11.2.0<br>MS SQLServer2008<br><br>Oracle 11.2.0<br>MS SQLServer2008 | P<br>S<br><br>G | Enterprise and large-scale systems with high capacity, complex design and/or high volume transactional requirements<br><br>Mid-scale systems with moderate capacity and/or transactional volume requirements |
| Database Access | SQL*Plus<br>OCI-compilant client<br><br>ODBC | S<br>G<br><br>G | |
| File Formats | IT guidance | G | Follow IT guidance for recommended file extensions |
| Data Administration Implementation | IT guidance | G | IT is currently evaluating the use of tools in this area |
| Data Warehousing and Mining | Business Objects XI R2<br><br>SAP BI 7.01/EHP1 non-unicode | S<br><br>G | IT is currently implementing Xcelius and ETL tools<br><br>For SAP-based data |
| Messaging | Microsoft Exchange 2007 SP2 | S | |
| Presentation and Interface Standards<br><br>• Application Standard Interfaces<br><br>• Mobile Devices | <br><br>.Net 2.0 or higher<br>Web Services<br>.Net 3.5<br>API | <br><br>P<br><br>P<br>?<br><br>G | <br><br>Follow IT guidance |

## A2. Information Distribution

***S=*Standard* Product(s), P=*Preferred* Product(s), G=*Guidance* Information Only**

| Information Distribution Technical Area | Policy or Product | S/P/G * | Remarks |
|---|---|---|---|
| E-Mail with Attachments | | | |
| • SMTP | MS Exchange with outbound SMTP | S | |
| • ActiveSync | Supported with "smartphones" | S<br>S | See IT for guidance |
| | BlackBerry Enterprise Server 4.0 | S,P | |
| File Transfer Service | | | |
| • HTTPs | | S | |
| • FTPs | FTPs Client (Core FTP LE 2.1) | S | |

## A3. Applications
***S=*Standard* Product(s), P=*Preferred* Product(s), G=*Guidance* Information Only**

| Applications Technical Area | Policy or Product | S/P/G * | Remarks |
|---|---|---|---|
| Enterprise Resource Planning | SAP ECC6 / EHP4 / NW 2004s / 7.01 non-unicode | S | Production implementation date was April 2004 ECC6 upgrade completed during April 2009.<br><br>Core modules include:<br>HR<br>FI<br>MM<br>SD<br>PS<br>PM (in process, planned completion 2010)<br><br>The application is accessible from any site or client VPN within the corporate network<br><br>Current access methods include: client server run-time objects and Citrix. SAP Enterprise Portal implementation will be completed in a future scope of work. |
| Document Management | FileNet P8 v4.5 | S | |
| Cooperative Work Applications<br><br>• Collaborative Processing (internal use only)<br><br>• Workflow<br><br>• External File Sharing | <br><br>MS Exchange 2007<br>MS SharePoint 2003<br><br>SAP<br>IBM FileNet<br>Adobe LiveCycle<br><br>Globalscape EFT Server | <br><br>S<br><br>G<br><br>S | <br><br><br><br>See IT for guidance |
| Content Management | FileNet P8 v4.5 | G | See IT for guidance |
| Web Portal | Citrix XenApp 5.0 and 6.0 | P | See IT for Guidance |
| Web Server | IIS 7.0 | S | |
| Office Automation | MS Office 2003<br><br>MS Internet Explorer 7 (or higher)<br>Firefox 3.x<br>Safari<br><br>MS Outlook 2003 | S<br><br>S<br>S<br>S<br><br>S | Excludes MS Access<br><br>See IT for guidance on “extensions” |

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| Applications Technical Area | Policy or Product | S/P/G * | Remarks |
|---|---|---|---|
| | Adobe Reader 9.x<br><br>MS Project 2003<br><br>MS Visio 2003 Std. | S<br><br>G<br><br>G | |
| GIS Mapping | ESRI software suite v9.3<br>GeoValidation Web Service Arc GIS Server v9.3 | S<br>S | |
| Web Development Tools | MS Visual Studio 2008<br>ApplinX v5.2.4.0029 | S<br>S | Follow IT guidance<br>Follow IT guidance in extending legacy systems to the Web and Service-Oriented Architecture |
| Digital Signature | Pending | G | |
| Application Development Tools | MS Visual Studio 2008<br>Netweaver 7.x<br>Adobe Live Cycle for forms<br>PL SQL | S<br>S<br>S<br>S | Follow IT guidance for configuration |
| Report Writers | Business Objects XI R2 | S | Follow IT guidance for data integrity and access |

## A4. Computing Resources
***S=*Standard* Product(s), P=*Preferred* Product(s), G=*Guidance* Information Only**

| Computing Resources Technical Area | Policy or Product | S/P/G * | Remarks |
|---|---|---|---|
| Workstation<br>• Tier 1<br>• Tier 2<br>• Tier 3 | <br>3.06GHz Intel Core i3<br>Two 2.4GHz Quad-Core Intel Xeon E5620 | <br>S<br>P<br>G | In general, current IT standards provide a minimum baseline. IT will provision best value desktops that efficiently support the Refresh Policy.<br>For specialized requirements seek IT guidance |
| Bus Standards | PCI | G | |
| Memory (RAM) Standards (EDO, SDRAM, DRAM)<br>• Tier 1<br>• Tier 2<br>• Tier 3 | <br>2GB<br>4GB<br>4GB | <br>S<br>P<br>G | In general, current IT standards provide a minimum baseline. IT will provision best value desktops that efficiently support the Refresh Policy.<br>For specialized requirements seek IT guidance |
| Server Hardware Configuration | SUN SPARC64 VI<br>UltraSPARC T1<br>AMD Opteron | P<br><br>S | Solaris Database Server: M5000<br>Solaris Application Server: M4000, Blade 6000<br>Windows: Quad Core Xeon 5500 or 5600 Processor, 8MB Cache 2.66GHz, 1333MHz FSB, Dell R710 or equivalent |
| Virtual Server Environment | VMWare Vsphere 4.0 | S | |
| Mainframe Environment | IBM z890<br>z/OS 1.10<br>Software AG Natural 4.2.4<br>Software AG Adabas 8.1.4 | G | The IBM z-series mainframe platform is being twilighted by the City |
| Disk Storage | FC SAN (HDS, Cisco)<br>NTFS<br>CIFS (NetApp) | S<br>S<br>S | |
| Workstation Operating Systems | Windows XP Professional SP3<br>Mac OSX 10.x | S<br>G | |
| Server Operating Systems<br>• General File & Print Servers<br>• Application Servers<br><br><br>• Database Servers | <br>Windows Server 2008 EE<br>Windows Server 2008 EE<br>Solaris 10 Zones<br>Solaris 10<br>Windows Server 2008 EE<br>Solaris 10 | <br>S<br>S<br>P<br>S<br>S<br>P | Follow IT guidance |
| Application Integration | Web Services<br>Netweaver XI | S<br>G | Follow IT guidance |
| Telephony | Cisco Call Manager 7.x | P | ACD with Avaya is a retiring technology; however, current users |

| Computing Resources Technical Area | Policy or Product | S/P/G * | Remarks |
|---|---|---|---|
| • IVR<br>• VoIP<br>• ACD | Cisco<br>Cisco<br>Avaya Communication Manager 1.1 | P<br>P<br>S | are part of Phase 1 CRM implementation |

## Appendix B - COSA Web Development Technology Standards

*As identified in the City of San Antonio Information Technology Plan for FY 2000-01, the following tables summarize the web development tools supported and used by ITSD:*

| **Department Webmaster Tools** | |
|---|---|
| **Tool Description** | **File Type(s)** |
| *Media Player™/Netshow™/Real Audio™* | • .MPG<br>• .WAV<br>• .MOV |
| *Image Composer™/Photo Editor 2000™* | • .GIF<br>• .JPG |
| *SQL 2000™/7.0* | • Databases |
| *FrontPage 2000* | • Web Page Publishing |
| *Adobe Acrobat™* | • PDF |
| *Microsoft Office Suite™* | • Word to HTML<br>• Excel<br>• PowerPoint |

| **Web Developer Tools** | |
|---|---|
| **Tool Description** | **File Type(s)** |
| *Visual Studio .Net 2003* | • ASP Pages/ASPX Pages |
| *Visual Studio.Net Framework* | • COM+ Applications |
| *Dream Weaver™, Visual Interdev™, HomeSite™* | • HTML Pages |
| SQL 7.0/2000, MS Access™, *Software AG's ADABAS™* | • Database |
| *Web Page Scripting Tools* | • VB Script, JavaScript™ |
| *Web Page Scripting tools – Post Release VS 7.0* | • VB, C++, C# |
| | |

**Appendix C – SAP Data Exchange Grouping Requirements**

Described below are the grouping requirements used (within the current Contract Manager Program) to update the data table SAP extracts data from to perform the Goods Receipt (GR) transaction.

(1) Data is filtered such that only projects that were certified and contain the current (as of today's) date are included.

(2) Data is then grouped by all payment lines (multiple payment lines on each invoice, some with the same PO line and PO), specifically by:
   a. System Contract Number (unique across system)
   b. System Application Number (unique per contract)
   c. Project Number
   d. Purchase Order Number
   e. Purchase Order Line
   f. Material Line Item Number (which should always be the same because of the PO Number and PO Line)

(3) Data is then summed for the period dollars based on the groupings (as described in #2 above).

(4) Data updated on the table will display the following fields:
   a. Purchase Order Number
   b. Purchase Order Line
   c. Material Line Item Number
   d. COSA
   e. Date (YYYYMMDD)
   f. Transaction Code
   g. Absolute Value of the Sum of the Dollars
   h. Vendor Inputted Invoice Number (Unique Number across all Pay Estimates)