SALT LAKE CITY COUNCIL MEMO

DATE:	May 30, 2006
SUBJECT:	**Final Report on the Management Audit of the City's Engineering Division**
STAFF REPORT BY:	Lehua Weaver
CC:	Rocky Fluhart, Sam Guevara, DJ Baxter, Rick Graham, Kevin Bergstrom, Max Peterson, Jennifer Bruno

Attached is a copy of the Final Audit Report from Citygate & Associates regarding their management audit of the City's Engineering Division. Citygate representatives will be at the May 30th Council Work Session to provide the Council with a presentation on the audit findings and recommendations.

A briefing will be scheduled at a later date with Public Services and Engineering staff for their responses and action items based on the audit recommendations. A more detailed Council staff report will be provided at that time.

The attached audit report provides an Executive Summary on pages one through 22 of the bound report document.

CITYGATE ASSOCIATES, LLC
FOLSOM (SACRAMENTO) MANAGEMENT CONSULTANTS

MANAGEMENT AUDIT OF THE SALT LAKE CITY ENGINEERING DIVISION

Final Report

MAY 19, 2006

2250 East Bidwell Street, Suite 100 Folsom, CA 95630
(916) 458-5100 Fax: (916) 983-2090
CITYGATE ASSOCIATES, LLC

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Pursuant to the City Council policy to conduct periodic management reviews of City Departments and Divisions, the City Council chose to have a review conducted of the Engineering Division. The principal purpose of the review was to assess the Division's organization structure, staffing levels, workload, project scheduling, workload prioritization, project management, outsourcing/contracting services, cost allocation formulas, cost allocation methodology, record keeping, customer service/relations, and the internal and external coordination of work.

To address the objectives of the management review, Citygate Associates used an approach involving five tasks.

Task 1: Project Initiation and Management

Task 2: Complete Initial Interviews and Related Data Collection

Tasks 3 and 4: Perform In-Depth Operational Analysis

Task 5: Review Preliminary Findings with the Board Audit Committee, Prepare Final Draft and Final Report

Prior to preparing a formal draft report, Citygate met with members of the Audit Committee to determine if there were any areas of interest to the City Council that needed additional study. Several comments and questions raised during that discussion helped to shape the topics addressed in the Final Report.

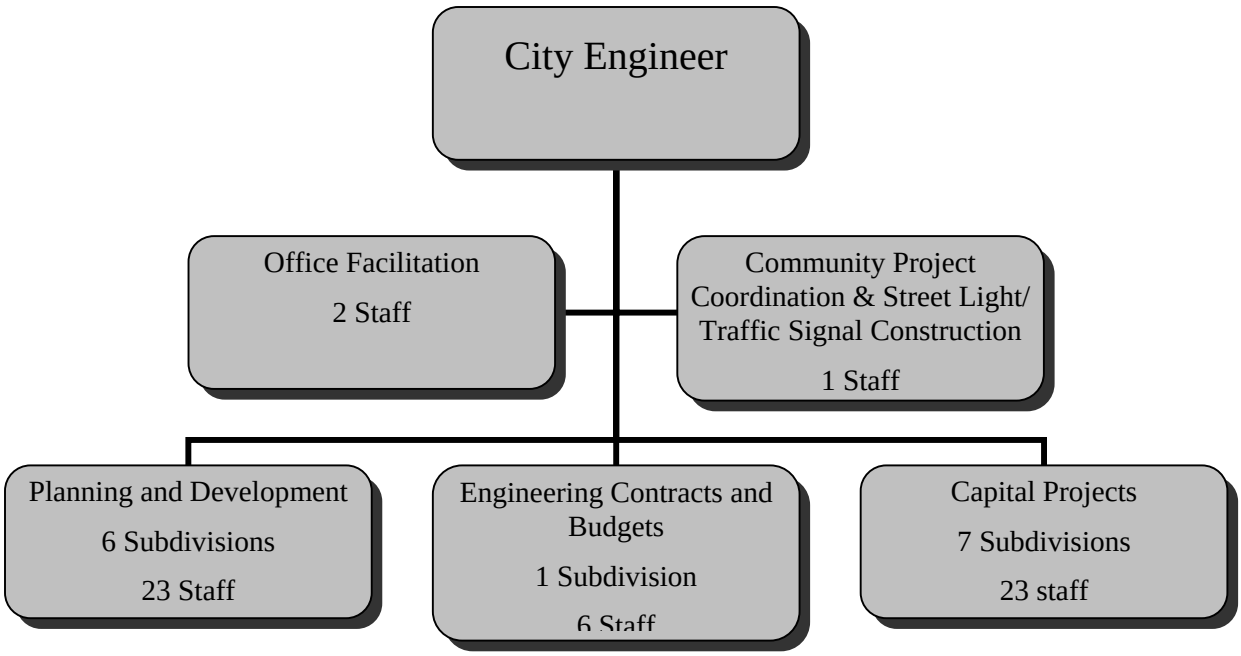
The various parts of this report will provide recommendations for improvement in work sections and processes of the Engineering Division. While we believe that the recommended changes will improve the efficiency and effectiveness of the Division, we found few operational problems and no large inefficiencies or ineffectiveness that have an adverse impact on Division output in the short-term. Furthermore, the staffing level is adequate to meet the present expectations of the City Council.

Rather, the significant problems we found are largely processes and procedures that are working well now because the Division staff has adapted old systems to current situations. However, the systems do not have the long-term capacity for change and so will adversely impact the City's ability to effectively deliver CIP projects in the future if the issues are not proactively addressed now.

The Division staff is very dedicated and focused on the timely delivery of CIP projects in a manner sensitive to the needs and perspective of the public. Yet the form and frequency of information flow and reporting to the City Council causes misunderstanding and have an adverse impact on the ability of the City Council to adequately perform its policy-making and oversight role.

A. DIVISION ORGANIZATION STRUCTURE AND WORKLOAD

On the formal organization chart, the Engineering Division is divided into five sections reporting to the City Engineer.



The organization format has resulted in "sections" composed of fairly common and interrelated functions, with the informal communication system in the Division working very well to overcome potential problems associated with separating activities that require mutual coordination and sharing of information. Even where there are a large number of employees in a work "section," work is adequately supervised because the long tenure and experience of employees permits delegation of responsibility in an environment in which employees share a common understanding of their mission and priorities.

While the total number of employees in the Engineering Division is 56, a key descriptive element is its heavy reliance on technical staff below the level of registered engineer and its relatively small number of registered engineers. With the exception of the Civil Projects Design and Construction, the function of most of the registered engineers and architects is review and supervision, which effectively leverages this more costly expertise, and is also consistent with larger private architectural or engineering firms.

While about half of the projects involved the use of outside consultants, overall the in-house engineering staff performed 85 percent of the work on an average of 30 projects per year. This is because two-thirds of the consulting services were devoted to 8 large street projects during the three-year period we reviewed. The size and type of projects projected over the next ten years in the City's CIP supports the view that the present staffing level is adequate to handle the projected volume of work, since they have been able to deliver about that annual volume of projects over the past three years.

The Architectural and Parks functions make greater use of in-house architects than is usually found in cities. While the work volume presently supports this level of staffing, the uneven scheduling of projects in the Ten Year CIP may make it necessary for the Engineering Division to adjust project schedules to properly balance the use of in-house staff with outside consultants.

However, an additional measure that should be examined to obtain a more complete picture of whether the staffing level is adequate is the backlog of work. To achieve an understanding of the

backlog, we analyzed which projects are currently under design, and how many of those were under design one and two years ago. We found that only about half a dozen projects over a two-year period did not have an obvious explanation for why the project was listed for more than 12 months in the "Design" portion of the monthly report.

Just determining the status of these design projects over a 24-month period using available Division reports was a lengthy and tedious process, because the monthly report does not provide all of the information that is needed to understand project history and status, and the information in the report is not presented in a visually easy way to use/understand. The present Engineering Division Monthly Project Status Report does not provide a clear and easily usable status report that permits policymakers to participate effectively in setting and adjusting priorities among CIP projects.

B. Project Planning and Project Management

The Salt Lake City Engineering Division adopted a unique (for the time) and effective project planning and management system over two decades ago. That system is oriented around interdisciplinary Project Teams within the Engineering Division. These Project Teams are assigned a project and are responsible for it from the inception of design to acceptance of the final constructed or rehabilitated public facility.

The Division and Project Teams have a well-defined and well-understood project process. Each team is headed by a senior engineer, architect or landscape architect with a broad range of project experience and the authority to interpret and approve design changes based on field conditions. This provides the flexibility to assign members to construction management work during the short duration spring through fall primary construction season and to assign members to design activities and preparation for bidding during the less than ideal construction conditions often prevailing in late fall and winter. The Project Team approach allows a team member to always maintain a presence on the construction project in order to identify and resolve issues in a timely manner at lower levels. Succession Planning for the Project Team leaders needs to begin, since the senior project managers are expected to be retiring at or near the same time.

C. Prioritizing and Scheduling Work

As the City Council approves new CIP projects each year, there is no mechanism in that process for establishing priorities. Rather, the Engineering Division establishes the priorities. While the criteria used by the Division to prioritize projects are very reasonable and applied in a manner that appears to reflect a good understanding of the factors that will necessarily affect the scheduling of a project, neither the criteria nor their application are well known by people outside of the Engineering Division.

Projects are typically scheduled for design on a "first in—first out" basis. Of those projects, higher priority is given to those that have a well-defined scope and do not require significant collaboration with other parties or residents/business/property owners. Projects that provide a solution to multiple needs are often given next highest priority. Finally, of the above projects, those with fully identified and committed funding are usually placed ahead of those without adequate funds. If a project appears to be of obvious high priority to the City Council and cannot be accommodated reasonably in-house without causing significant disruption to the scheduling

of other projects, then the project will be outsourced to a consultant to proceed without distraction. The Engineering Division is not reluctant to delay a project if doing so will result in a better result or construction process for affected parties.

The Engineering Division should report project priority and the estimated schedule to the City Council in a report shortly after approval of the Annual Budget and CIP.

D. Coordination of CIP Projects With Other Unrelated Projects

From a construction perspective, the streets of Salt Lake City are a busy place. Not only does the City work in numerous blocks to seal, overlay or reconstruct streets, but they also repair sidewalks and replace underground wastewater, water and storm water facilities. Private utilities such as electricity, telephone and cable have facilities over and under the streets and other public rights of way. Coordination among different departments and agencies and with the needs of the public is largely a matter of having processes in place to ensure advance notice and an opportunity to rework schedules.

While the Engineering Division has made a good faith effort to remember the stakeholders that need to be involved in a project at its various stages, a formal comprehensive check list to serve as guidance to new project managers and to document coordination is not available.

Internally, the Public Services and Public Utilities Departments have a regularly scheduled coordination meeting to talk about the current projects on the Engineering Division monthly CIP report (that is accessible by computer). Each department delays or accelerates projects as necessary to ensure that construction of underground utilities coordinates well with the roadwork. Both the Public Services and Public Utilities Departments are satisfied with the process and level of coordination that presently occurs.

Even though both the Public Service and Public Utilities engineering functions need to share files and GIS system information more readily, both functions involve distinctly different engineering design activities. The engineering activities of Public Utilities and the Public Services Engineering Division are unique, with little crossover in their functions, but they have an obvious need to coordinate activities. A more formalized coordination will allow the two to function as well as if they were under a single structure. The only staffing advantage in combining a utility engineering function with a street, parks and building engineering function is the possible savings of one supervisory position. However, even this may be illusory if the workload requires an Assistant Division Head be added to oversee one half of the combined operation.

E. Reliability of Project Estimating

The Engineering Division has a reasonably rigorous process of establishing, updating and reviewing project cost estimates. Public building projects under $2,000,000 are estimated in-house using industry standards on a square foot basis and adjusted for recently completed projects of similar scope. On larger building projects, a professional estimator is used. Park projects are estimated in-house or by a design consultant based on unit costs of elements of the projects taken from recently bid projects with similar individual elements. Street projects are

estimated by in-house staff based upon senior staff's professional experience and historical trends in local market pricing.

The number of bidders who propose on a project can significantly affect project costs, with the number of bids usually reflecting the supply of either skilled labor or construction materials. Cost estimates in this dynamic environment are established as part of the budget process. Thus, they are often made as part of the CIP process, which is over a year in advance of the CIP approval process and possibly two years in advance of the earliest construction date anticipated for projects.

In 287 projects reviewed by Citygate, the aggregate actual construction cost for all projects was 12.5 percent lower than the total cost estimate on all of the projects. Of the 287 projects, 42 exceeded the cost estimate by 10 percent or less. Of the remaining 52 projects, half of them experienced a high percentage difference, but the actual dollar variance between the bid cost and the engineer's estimate was less than $20,000.

The Engineering Division cost estimates are reasonable in view of the short-term impact of labor and material costs and field changes necessary due to unforeseen underground conditions.

F. COST ALLOCATION

Until several years ago, most of the Engineering Division staff costs were supported by the City General Fund, and none of the design and project management expenses represented by in-house labor were allocated to individual capital projects. This meant that the City did not know the full cost of each project and often used General Fund money to pay for the design phase of a project that could be wholly funded from special state or federal money. The Division now uses a cost allocation model that is a straightforward calculation that determines a "billable" hourly rate for all employees who charge their time directly to capital projects. The contents of the formula are very standard, with the exception of omitting the support costs such as citywide finance, legal, and personnel.

These Engineering Division hourly rates compare quite favorably to a representative sample of hourly rates being charged to the City when it obtains consultant services. The hourly "billing" rates that the Engineering Division uses in developing charges for the Division's work on CIP and special improvement districts is reasonable and somewhat less than the rates charged for comparable work by consultants. The City is not including some overhead charges for citywide support services, such as finance, legal, capital planning, and personnel, in developing its "billing" rates. Including these costs will be consistent with practices by larger communities and will result in a more accurate reflection of the full cost of capital or special improvement district projects.

Using the existing Engineering Division rate structure, we examined the Design and Construction Management Costs on 92 recent Salt Lake City projects managed by the Engineering Division. We found that the overall average cost of Design and Construction Management (including the use of outside consultants with specific expertise) as a percentage of Total Project Cost for projects conducted in-house, was not quite within the range of the previous Hughes-Heiss Engineering Division study for about 45 percent of the projects, but certainly was well within the range of the more recent and very comprehensive and rigorous California benchmark study. This reflects an effective use of in-house staff. However, the Division

continues to use the outdated Hughes-Heiss study benchmark that should be either superseded or updated to provide the Division with a more effective management performance measurement tool.

Type of Project	City Average	City Range	Hughes-Heiss Study	Benchmark
Parks	18%	2-45%	20-22%	37-47%
Buildings	16%	7-43%	20-22%	49-60%
Streets	19%	11-56%	13-24%	31-54%

While the Engineering Division's cost allocation system is based on a very reasonable formula, maintaining the data in the system is very cumbersome. Originally, the system was developed on an Excel spreadsheet. This works adequately for producing a report that presents the data in such a way that all users can extract from it what they need by reading the single very large report. However, if there is a need to produce reports that arrange and summarize the data in unique fashions or to meet the needs of multiple users with very different interests, an Excel spreadsheet-based report is very time consuming to use. The cumbersome system is becoming an issue for those managing projects, because the Project Team is responsible for control of Design and Construction Management costs on each project, yet they neither have direct access to the needed data, nor can they reasonably obtain timely information. This is clearly frustrating to the Project Managers.

The Engineering Division should allocate funds to reform its present cost allocation reporting system so that it can provide information in a flexible manner to meet the needs of users at many levels and be able to provide easily unique reports in response to future management and policy needs.

G. OUTSOURCING ENGINEERING SERVICES

Almost every local government uses consulting architectural and engineering services to assist in delivering their capital projects. The level of consultant utilization will vary widely between agencies, based on the nature and level of specialization of the projects they are doing each year, the volume of projects, the engineering division vacancies the agency may be experiencing and the local philosophy regarding contracting versus in-house work.

Of the almost 100 projects reviewed by Citygate, about 36.7 percent of the Design and Construction Management work was outsourced. Consultants were used primarily for design work on Park and Building projects. About 57 percent of the consultant work was devoted to 7 street reconstruction and overlay projects, which are relatively easy to contract out.

The Division has appropriately allocated the work assignments between in-house staff and consultants. This takes advantage of areas in which consultants have expertise not available among Division staff and avoids project backlogs by assigning work to consultants.

The consultant procurement process and the forms used by the Division are similar to that used in other cities. The process, as applied by the Engineering Division, reasonably creates an environment in which the selection process is highly likely to result in the selection of the most

qualified firm. The Division has followed the City policy, understands that policy, concurs in the value of process as providing a neutral and objective evaluation of consultant services, and clearly makes an effort to conduct its procurement process in a manner that will be perceived as fair.

H. Recordkeeping and Interface with GASB 34 Requirements

As organizations become larger and multiple people need access to plans and records, an efficient method needs to be found to file and retrieve documents. Not only staff within the Department may need the records, but also other departments, residents, professionals working on projects, emergency response personnel, and others often need the records and plans. It is common for the Engineering Division to be the repository of plans and specifications and all of the written documents associated with designing and constructing a project.

Recordkeeping takes in and processes about 12,000 engineering documents (including plans, reports, logs, etc.) per year. It responds to about 5,000 requests for information per year, or an average of 20 or more per day. They provide the sets of contract drawings and documents to bidders. In addition, they review and purge old documents, based on a records retention schedule. They presently have a 2-month backlog in purging old records that no longer need to be retained.

Using their records, the Engineering Division's approach to developing the value of older assets and the projected life of those assets is adequate for the needs of the City and the Division.

The City has adopted and is making reasonable progress in implementing an electronic data management system. However, at the present staffing level, the Division is not making much progress in digital capture of historical old plans/drawings, which are fragile and deteriorating. Most historical plan/drawings are not easily retrieved in the event of an emergency that requires the building, utility or other infrastructure information detailed on the historical plans.

While the records section appears to have adequate space, the records are not well protected. The area is not separated from the remainder of the building by an adequate firewall, and the fire protection system within the area is a water-based fire sprinkler system located in the ceiling that will saturate or destroy the already fragile surviving records, if any.

I. Geographic Information System

Like other medium to large cities, Salt Lake City has a Geographic Information System (GIS). The City has four focal points for its GIS system: The Airport with its own server and self-contained coordinate system; the Information Management System Department that maintains the base data on a server; the Public Utility Department that maintains a GIS system with utility data; and the Engineering Division that maintains a GIS system with its own server. In effect, the City has two separate GIS systems for the whole City, plus a separate system serving only the Airport.

The Engineering Division's GIS system is not a real-time system, and it relies upon deleting and re-creating maps in order to update the base data displayed on maps. With a six-person GIS function, the Engineering Division does a very effective job of making a cumbersome system work and serve the needs of the City. The problem is that as the City becomes larger, issues

facing the City become more complex, and as quality and timeliness of analysis and information becomes more important, the current system will not be adaptable to providing real-time management information.

The City has a large investment in the present GIS software and configuration, and it is returning substantial information value to the City. However, it does not appear to be a priority to forecast the geographic based information management needs of the City and to evaluate the value of changing the system. If the system is as cumbersome as it appears and is not able to provide real time information, then the longer the City waits to evaluate and update the GIS, the more costly will be any change because of the growing investment in the present system. That investment is not simply dollars, but more importantly, the City is developing and adapting sub-optimal work processes tied to the present system.

The City, possibly through the Engineering Division budget, should hire an outside consulting firm very familiar with all aspects of GIS. This firm should provide the City with an evaluation of the capabilities of its current system, the limitations, and evaluate the short- and long-term capability/value of alternatives to the present system, along with a range of cost for any alternatives.

J. ADA Requirements

Salt Lake City has taken a very proactive and responsible approach to compliance with the Americans with Disabilities Act, and it has made implementation of the removal of barriers to accessibility a high priority in the Engineering Division. Citygate Associates reviewed the policies and the CIP projects that implement ADA activities and found these projects reflective of the City's commitment and the requirements of the Act. The City has a comprehensive and well thought out approach to complying with ADA standards, updating an ADA Transition Plan, with the present inventory updated in 2005. The principle area of concern is lack of clarity regarding who in the City is responsible to ensure that special ADA accommodations are made in public places.

K. Permit Process and Enforcement

The Engineering Division's principal permit activity is issuing permits for work in the public rights of way. The purpose of the permitting is to ensure that the applicants know the regulations that apply to their proposed work/project that encroaches on the public rights of way, including restoration of the area, and to provide a tracking mechanism for the Division to use in scheduling inspections of the work throughout the duration of the project as well as near the end of the warranty period. Approximately 2,300 right of way permits are issued each year. Approximately 1,000 complaints annually receive a response from the permit staff. A proactive part of the work in the Public Rights of Way function is to review building permits, subdivisions, plan amendments, street closures, annexations and similar requests for possible right of way encroachment needs. They also provide review and inspection for an average of approximately 8 subdivisions per year.

The permit processing and management is adequately automated, although the system is not exactly real-time due to the limitations of the City's chosen software. However, the City does not measure the length of time it takes to issue a permit or respond to a request for public right

way project inspection, nor has it established performance measures that will assist management and the City Council in assessing the adequacy of the permit process.

L. COMMUNITY RELATIONS/CUSTOMER RELATIONS AND SERVICE

The Engineering Division uses two standardized customer service survey forms to assess how customers perceive the type of service they receive. One rates the service in the Division; the other is used to obtain feedback on various aspects of construction projects. Neither form is focused on external customers, and there is no apparent effort to assess how well they serve the departments/employees within the City who rely on and interact with the Engineering Division to accomplish their own work.

Very few customer survey forms assessing service within the Division are completed, giving the Division an incomplete understanding of how acceptable their customer service is when external customers seek assistance. The Division should develop a proactive plan to encourage both external customers and other City Departments to complete the survey forms at regular intervals.

There are no performance measures reported in the Division that are related to customer service to either internal or external customers. The Division should review the work activities of each function and select performance measures that can be easily administered and that relate directly to the provision of services to internal and external customers. These measures should be included in the Division Monthly Scorecard.

The Engineering Division is very sensitive to the concerns, needs and satisfaction of residents and business owners affected by CIP projects. A Customer Relations/Public Information liaison is assigned to each project where project impacts are anticipated. The liaison manages the project relations based on a basic template of activities that is adapted for the special aspects of each project.

An effective Customer Relations Program template has been developed by the Division; and the staff reflects a sincere desire to both promote good customer relations as well as to provide good customer service to individuals impacted by construction projects.

M. REPORTING TO THE CITY COUNCIL

In interviews throughout this project, there were two persistent themes. The first is a belief among many Division personnel that they are providing information in both regular reports, the annual budget, the Business Plan and individual Council Agenda reports on the status of projects and the other work of the Division; and yet, there are still questions coming from the policy level of the City that many Division personnel feel are answered in these regular reports and other sources of information. The second theme is a belief by some at the policy level that the status of projects and Engineering Division work is not adequately available unless specific questions are asked.

In our study we have found no fundamental problems in the organization or processes of the Engineering Division, but it is clear that substantial improvement needs to occur in the area of communicating information to the City Council and, in turn, communicating policy priorities to the Division.

All of the Division's Capital Improvement Projects that are not completed and closed out are currently included in the monthly CIP report that the Engineering Division believes goes to the City Council as the key source of information on the status of each project. In fact, the Council does not receive the full report. In addition, even if they did, the report neither contains all of the information necessary to fully understand the status of each project, nor is it in an easily usable format.

The CIP Monthly Status Report needs to be restructured substantially, with the design done in cooperation with the City Council so they are provided with the information they need in an easily understandable format.

The annual budget document appropriates money to capital projects. Once that has occurred, the Engineering Division has the authority, following the procurement procedures, to manage the project without coming back to the City Council for any additional approvals. The City Administration can even transfer funds into the project to cover cost overruns, with the Council not learning of this in any organized fashion, although there is an adopted procedure requiring notification to the City Council if funds are allocated to a project from an established cost overrun budget.

While it is probably not a good idea to have the City Council be involved in detailed administration by evaluating all cost overruns and approving transfers of funds, it is important that they be alerted to those projects where the scope and funding changes might be significant. A monthly report to the City Council should alert Council to those projects where a change in scope or transfer of funds is being contemplated based upon a significant change in the project. This will give the City Council the opportunity to inquire and discuss the issue prior to a decision being made.

The Division Business Plan is largely a descriptive document and not a "plan" that sets out the challenges in detail facing the City for which the Division has responsibility, a specific proposed path for addressing the challenges, a clear explanation of how the proposed solution will address the challenges, alternatives to addressing challenges (rather than simply lowering service levels), and specific measurable goals that will allow policymakers to know what to expect if they approve the proposed solutions. In its present form, the Business Plan provides little more than a description of what the Engineering Division does and very general statements of what additional resources they need. The Business Plan does not serve as a planning document or a context in which policymakers can consider alternative responses to challenges facing the City.

The performance measures used by the Engineering Division in the Business Plan do not relate to any standards or goals and serve little function in providing management or analytical information for either the Division management, the Administration or the City Council. The Engineering Division should develop a series of performance measures that communicate useful information to the City Council, serve as management and analytical tools for the Engineering Division, and generally meet the standards in the performance measurement scheme described in this report.

N. ACTION PLAN

A list of our recommendations and a blueprint for their implementation are presented in the following Action Plan. This plan contains:

- The priority of each recommendation
- The suggested implementation timeframe
- The anticipated benefits of each recommendation
- The responsible organization.

The legend at the bottom of each page of the Action Plan defines the level of each priority indicated by the letters "A" through "D." It is important to note that priorities have been established independent of the suggested timeframe. For example, a recommendation may have the highest priority (indicated by the letter "A") but may require an estimated six months to implement. Conversely, a recommendation with the letter "C" priority, which indicates that the recommendation is not critical but will improve operations, may have a two-month timeframe, since the estimated implementation effort would not require an extended period of time.

It is also important to note that an "A" priority, which indicates that the recommendation is deemed "mandatory or critical," should not be interpreted to mean that the recommendation is "mandated" by a statute or regulation--it is simply an "urgent" recommendation of high priority.

The timeframes indicated in the Action Plan do not necessarily mean the anticipated completion dates for the implementation of each recommendation. The responses from the City Manager and each department may indicate how much implementation progress can be made within the defined timeframes.

Action Plan

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
OVERALL DEPARTMENT ISSUES				
Recommendation II-1: The Engineering Division should review the long term CIP every few years and discuss priorities with the City Council. While the CIP is usually reviewed annually in looking at the proposed one-year CIP in the annual budget, every few years a broader long-term review should be done to make sure future projects are prioritized by the City Council. This is particularly important since some projects have several years of planning, public input, etc. before construction can begin.	B	24 months	CIP more accurately reflects City Council priorities and the Engineering Division has more assured direction	Engineering Division
Recommendation II-2: Particular attention should be paid to scheduling future Building and Architectural workload to ensure that in-house staff is fully utilized.	B	Annually	Staff more accurately matches the workload and the Division is not overstaffed	Engineering Division

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
PROJECT PLANNING AND PROJECT MANAGEMENT				
Recommendation III-1: Succession Planning for the Project Team leaders needs to begin, since the senior project managers are expected to be retiring at or near the same time.	B	36 months	Continued strong Project Teams and the effectiveness of the Project Team organizational approach	Engineering Division and Human Resources
PRIORITIZING AND SCHEDULING WORK				
Recommendation IV-1: The Engineering Division should report project priority and the estimated schedule to the City Council in a report shortly after approval of the Annual Budget and CIP.	A	1 month	City Council will have an opportunity for definitive input into work priorities before work begins	Engineering Division
Recommendation IV-2: The Monthly CIP Project Status Report should be modified, as recommended elsewhere in this report, to include a continual update on the project status compared to the original schedule.	C	3 months	Improved Council information	Engineering Division and City Council Office

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
COORDINATION OF CIP PROJECTS WITH OTHERS				
Recommendation V-1: Develop a formal list of all potential stakeholders, and when a project scope is developed, use the list to check off affected parties and send a formal documented communication alerting them to the project scope and schedule. Develop a mechanism by which they can respond if they have interest or questions. A shorter version of the list should receive plans for comment once they are completed in draft form, as occurs now.	C	1 month	Greater assuredness that there is effective notice and coordination of projects	Engineering Division
Recommendation V-2: All communications among agencies, whether formal or informal, should be documented in the project file.	C	1 month	More complete record that will shorten the time of later problem solving and decision making	Engineering Division
Recommendation V-3: A revision in the GIS service and installation of the Hummingbird program should be used as an opportunity to provide real time on-line access to all files by both engineering functions: utility and streets.	B	36 months	Faster access to records/information	Engineering Division, IT, and Utility Department

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
Recommendation V-4: There is little cost or operational improvement to be gained by combining the Utility engineering function and the Public Services Engineering Division, because they serve two separate functions and different customer groups.	C	Immediate	No change	City Council and Chief Executive Officer
RELIABILITY OF PROJECT ESTIMATING				
Recommendation VI-1: If the City Council continues to be concerned about underestimation of project costs, the Engineering Division should consider either putting a professional cost estimator on staff or subcontracting for cost estimating on all building and specialized projects along with all high dollar value projects.	D	8 months	Slight improvement in project estimating	Engineering Division and Human Resources
Recommendation VI-2: Regular training should be provided to all staff estimating projects.	C	6 months	Some improvement in project estimating	Engineering Division
Recommendation VI-3: Establish and maintain a historical database of both Engineering Division and outside agency cost and bid data to assist in future Division estimating, project management and cost control.	C	6 months	Some improvement in project estimating	Engineering Division

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
Recommendation VI-4: Establish criteria to identify bids in excess of the engineer's estimate and/or the budget estimate, which should be taken to the City Council for discussion regarding change in scope or appropriation of additional funds. This will permit the City Council to participate in the consideration of changing the scope to something other than what they anticipated when they approved the project. They can then participate in the consideration of the use of added funds, which will reduce funding available for other future projects and programs.	B	4 months	More effective Council participation in setting priorities and allocation of resources	Engineering Division and City Council Office
COST ALLOCATION				
Recommendation VII-1: If the City is interested in the full cost of constructing projects, it should consider adding a component to its cost allocation formula that recognizes the support services provided to the Engineering Division by other City Departments.	D	6 months	Improved cost accounting	Engineering Division and Finance Department

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
Recommendation VII-2: The Engineering Division should either adopt the California Benchmark Study standards as its guideline to measure the appropriateness of engineering expenses on projects or conduct its own study to establish benchmark standards that more closely reflect the local cost and contracting environment of Salt Lake City.	B	2-12 months	Improved decision-making regarding outsourcing projects and improved measurement of the effectiveness of Project Teams	Engineering Division
Recommendation VII-3: The Engineering Division should allocate funds to reform its present cost allocation reporting system so that it can provide information in a flexible manner to meet the needs of users at many levels and be able to provide easily unique reports in response to future management and policy needs.	A	18 months	Improved quality and quantity of information for the cost management of projects	Engineering Division

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
RECORDKEEPING AND INTERFACE WITH GASB 34 REQUIREMENTS				
Recommendation IX-1: The City needs to substantially accelerate the conversion of old plans/drawings to electronic format and to ensure steady progress toward implementing the "Hummingbird" system with the objective of having all historical records digitally captured in the system within five years. If the City does not do this, then it is imperative that they provide proper protection from fire or other natural disasters for the current hardcopy records.	A	24 months	Improved security of existing records so they are available for future capital projects and during emergencies	Engineering Division
GEOGRAPHIC INFORMATION SYSTEM				
Recommendation X-1: The City, possibly through the Engineering Division budget, should hire an outside consulting firm very familiar with all aspects of GIS. This firm should provide the City with an evaluation of the capabilities of its current system, the limitations, and evaluate the short- and long-term capability/value of alternatives to the present system, along with a range of cost for any alternatives.	A	12 months	Information regarding how to integrate and upgrade the City GIS systems	Engineering Division, IT, Utility Department, and Chief Executive Officer

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
ADA REQUIREMENTS				
Recommendation XI-1: Establish a citywide policy regarding who is responsible to ensure that special ADA accommodations are made in public places.	B	4 months	Faster and more consistent provision of ADA access/accommodations	Chief Executive Officer
Recommendation XI-2: Adopt a single standard for sidewalk ramp detectable warnings.	A	12 months	Consistency of standards among Utah communities	State of Utah
PERMIT PROCESS AND ENFORCEMENT				
Recommendation XII-1: As noted elsewhere in this report in discussing GIS, the City should consider having an outside consultant evaluate the overall City data management system and recommend changes that will provide sufficient flexibility and real-time data over the next decade.	A	12 months	Information regarding how to integrate and upgrade the City GIS systems	Engineering Division, IT, Utility Department, and Chief Executive Officer
Recommendation XII-2: Performance goals should be established with regard to the time it takes to issue a permit and respond to a request for inspection. The Division should then measure this "time" and report periodically to the City Council.	B	6 months	Measurement of whether improvement is needed in how permits are processed	Engineering Division

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
Recommendation XII-3: Specific questions on the customer survey should address the various aspects of permit issuance and management so that the Division can determine its level of performance and whether changes need to be made.	C	2 months	Improved information on customer perceptions of Division performance and a guide to where and how changes need to be made	Engineering Division
COMMUNITY RELATIONS / CUSTOMER RELATIONS AND SERVICE				
Recommendation XIII-1: Develop a proactive plan to encourage both external customers and other City departments to complete the survey forms at regular intervals.	C	3 months	Improved information on customer perceptions of Division performance and a guide to where and how changes need to be made	Engineering Division
Recommendation XIII-2: Revise the Monthly Scorecard report to contain information on the number of survey questionnaires completed and the average score on each of the questions.	C	3 months	Improved information on customer perceptions of Division performance and a guide to where and how changes need to be made	Engineering Division
Recommendation XIII-3: The Division should review the work activities of each function and select performance measures that can be easily administered and that relate directly to the provision of services to internal and external customers. These measures should be included in the Division Monthly Scorecard.	B	12 months	Information on where and how improvement is needed in Division operations and demonstrating the quality of work to the public	Engineering Division

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
Recommendation XIII-4: Results of the survey responses on construction projects should be included in the Monthly Scorecard and annual a summary shared with the City Council.	C	2 months	Provide improved information to the City Council regarding the quality customer responsiveness of the Division	Engineering Division
REPORTING TO THE CITY COUNCIL				
Recommendation XIV-1: The CIP Monthly Status Report needs to be restructured substantially, with the design done in cooperation with the City Council so they are provided with the information they feel they need in an easily understandable format. An evaluation should be made as to whether several reports might be better, each providing a different perspective; and elected officials might choose to review those of interest to them more frequently than the other reports. Each report could provide a different perspective on CIP projects. Consideration should be given to including both the Construction and Design Phase information on one "legal sized page" so the report user can see the full history and current status of a project.	A	6 months	Improved information to the City Council permitting better oversight and participation in setting priorities	Engineering Division and City Council Office

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

RECOMMENDATION	*Priority A/B/C/D*	*Time Frame for Implementation*	*Anticipated Benefits*	*Responsible Organization*
Recommendation XIV-2: A monthly report to the City Council should alert Council to those projects where a change in scope or transfer of funds is being contemplated based upon a significant change in the project. This will give the City Council the opportunity to inquire and discuss the issue prior to a decision being made.	A	3 months	Greater Council opportunity to participate in setting priorities and allocation of resources	Engineering Division
Recommendation XIV-3: The Engineering Division should develop a series of performance measures that communicate useful information to the City Council, serve as management and analytical tools for the Engineering Division, and generally meet the standards in the performance measurement scheme described in this report.	B	12 months	Information on where and how improvement is needed in Division operations and demonstrating the quality of work to the public	Engineering Division

LEGEND
A Recommendation mandatory or critical
B Strongly recommended
C Not critical, but will improve operations
D Recommended, but additional study required

SECTION 1—INTRODUCTION

A. THE CITY OF SALT LAKE CITY

Salt Lake City, with a population of approximately 180,000 and covering an area of 111 square miles, serves as the central city in the larger metropolitan area. It is a full service city functioning under the Council-Mayor form of government. The directly-elected Mayor serves as Chief Executive Officer and directs the activities of the various City departments, while the City Council serves as the legislative body responsible for adopting policy through ordinances and resolutions, as well as adopting of the annual budget and capital improvement program.

As part of its policy setting and oversight function, the City Council periodically provides for a management review of the various City departments and divisions that report to the Mayor and provide day-to-day services to the community. These management reviews assist the City Council in their legislative role and provide useful information and recommendations to the administration of the City.

B. STUDY BACKGROUND

Pursuant to the City Council policy to conduct periodic management reviews of City departments and division, the City Council chose to have a review conducted of the Engineering Division of the Public Services Department. The principal purpose of the review was to assess the Division's organization structure, staffing levels, workload, project scheduling, workload prioritization, project management, outsourcing/contracting services, cost allocation formulas, cost allocation methodology, record keeping, customer service/relations, and the internal and external coordination of work. In brief, the City is seeking an assessment of the current management systems and processes to determine whether there are changes that will improve the cost effectiveness of engineering services.

C. THE ENGINEERING DIVISION OF THE PUBLIC SERVICES DEPARTMENT

The Engineering Division is one of two engineering service providers in the City government of Salt Lake City. The Public Utility Department provides engineering services related to the construction, operation and maintenance of municipal utility services, while the Engineering Division of the Public Services Department is responsible for the following services:

- **Capital Improvement Program (CIP) –** Planning, programming, cost estimating, designing, budgeting, and construction of Capital Improvement Projects.
- **Engineering General Services –** Managing the public way including engineering records, survey information, street addresses, Geographical Information Systems, and special improvement districts.
- **Public Way Regulation and Control –** Ensuring that privately funded public way construction, including excavations, subdivision development, and street improvements, are constructed in accordance with established standards. Coordinating of public way activities to minimize public way damage and disruption to the traveling public and adjacent property owners.

The Engineering Division has 56 full-time staff members organized into five sections that report to the City Engineer. These sections include the following:

- **Office Facilitation -** Office Facilitator and Office Technician provide support services to the City Engineer and the remainder of the Division.
- **Community Project Coordination –** One staff person reports to the City Engineer in order to provide direct authority and clear responsibility for the Public Relations/Information functions associated with each Division project. As time permits, this person also serves as project manager for signal and street lighting projects.
- **Development Engineering –** Subdivision review and public way permit inspections, public way permit review and issuance, pavement management, land surveying, Geographical Information System and mapping, and planning and programming for the Division.
- **Engineering Contracts and Budgets -** Budgets, procurements, special assessments and engineering documents/data.
- **Capital Projects –** Civil project design and construction, architectural project design and construction, parks planning, design and construction, landfill and civil projects/engineering standards, engineering materials quality control, and sidewalk repair and replacement and access ramps.

The Division is quite busy, completing a significant number of projects each year, providing Geographic Information Services mainly to the Division operations and other City departments, surveying for City projects, maintaining engineering maps/records, and regulating access for construction in the public right of way. To illustrate the volume of work undertaken by the Division, on average each year they:

- Provide or manage the design of 28 street projects
- Provide or oversee construction management on 22 CIP projects
- Provide or oversee the design of 15 park projects
- Provide or oversee the design of 14 building projects
- Respond to 5,000 requests for general Engineering Records Information and process about 12,000 engineering documents
- Conduct a conditions survey of 15 percent of the City streets and update 3,000 street records to reflect the condition and planned repair activity
- File about 10 plats per year with the County Surveyor and respond to approximately 200 requests for information regarding public rights of way
- Perform development review on about 60 projects
- Review, issue and inspect approximately 2,300 excavation, sidewalk and curb gutter permits and review about 600 building permits per year.

While the above information is fairly representative of the work that goes on within the Division, it is only intended as a sample to provide a sense of both volume and scope.

D. OBJECTIVES OF THE MANAGEMENT REVIEW

This project is intended to provide an independent, objective and rigorously analytical appraisal of the Engineering Division. A number of dimensions were studied including organization, staffing, workload, scheduling, fiscal management issues and overall efficiency and cost/effectiveness of the various Division activities. The project expectation also includes suggestions, where warranted, for the creation of new methods and approaches, and the development of a plan to implement any necessary improvements. In addition, there are 22 specific issues and questions that are to be addressed.

1. Analysis of organization and administration (Is the Division organized properly?)
2. Appropriateness of staffing levels and types of positions.
3. Evaluation of efficiency and effectiveness of day-to-day operations.
4. Evaluation of work scheduling process (How are priorities set given the large unfunded need?)
5. Analysis of project management structure.
6. Evaluation of the effectiveness of the analysis used by the Division for setting criteria to prioritize workload.
7. Analysis of project planning and timeline determination from funding to completion.
8. Reliability of project estimating.
9. Comparisons of fully-loaded hourly rate with private engineering firms.
10. Evaluation of the use of in-house staff versus outsourcing (When and how is it determined to outsource? Which is usually more cost effective? How are consultants selected?)
11. Evaluation of the need for a City engineer to oversee outsourced projects. Would a lower-paid project manager-type person be an acceptable alternative?
12. Evaluation of workloads including backload.
13. Analysis of coordination of construction work within the public rights of way (street cuts) with street reconstruction or overlays. The review should include both the coordination between reconstruction or overlay of streets and sidewalks with the City's Public Utilities Department, with other utility companies, with the City's Redevelopment Agency, and with the City's capital improvement program.
14. Evaluation of engineering record keeping program.
15. Evaluation of project management system and its interface with the City's accounting system for required reporting under GASB 34.
16. Analysis of charging of engineering fees to projects.

17. Analysis of engineering costs charged to property owners of concrete special improvement districts (currently charging 15 percent of construction costs -- is this consistent with actual engineering time?).
18. Analysis of engineering permit process and enforcement.
19. Evaluation of community relations/customer service/business relations.
20. Determination of whether the City is meeting or exceeding the ADA requirements.
21. Evaluation of the coordination between the Engineering Division and a separate engineering group in the Department of Public Utilities. Determine whether there are any efficiencies or advantages of combining the two engineering groups.
22. Benchmark comparison with at least 10 other cities. Items to be benchmarked include costs to process, amount of time it takes, and amount of gap between estimates and actual.

Upon completion of the project, the City expects to have a good understanding of the structure, processes and management practices of the Engineering Division, including recommendations for potential improvements in efficiency, effectiveness, responsiveness, and the quality of services provided to customers and residents.

The end result of this study will be a report, including recommendations and a proposed implementation plan, provided to Salt Lake City, in order to help the Engineering Division achieve its goals and objectives. The report can be used to strengthen and enhance the efficiency and effectiveness of the Engineering Division in its endeavor to better serve the customers, citizens, and stakeholders of Salt Lake City.

E. STUDY APPROACH AND WORK PLAN

To address the objectives of the management review of the Engineering Division, Citygate used an approach involving six tasks.

Task 1 - Project Initiation and Management

Our initial task involved a Kick-Off Meeting with appropriate City personnel, including City Council, Public Services Department and Engineering Division staff. The purpose was to review and confirm our understanding of the project scope and objectives, task plan and project schedule, to review documents previously provided to Citygate Associates by the Engineering Division, and to obtain the initial assessment of Department and Division management on the principal issues in the "scope" of this management review. We also provided orientation material to the Division, outlining the objective of the review and Citygate's approach to accomplishing the tasks.

Task 2 – Complete Initial Interviews and Related Data Collection

Citygate worked with the Engineering Division liaison to develop an interview schedule that permitted us to meet with the working staff involved in each of the areas of interest in this review. We requested an extensive list of documents and work products, which were thoroughly reviewed prior to these meetings, thereby providing us with not only an initial understanding of the Division

processes and procedures, but also served as an excellent source for additional clarifying questions and requests for further documentation. Our familiarity with engineering operations allowed us to fairly quickly ask detailed questions regarding processes and procedures, to assess the Division staff's familiarity with other alternative practices and their understanding of any shortcomings in their current processes, equipment and technology availability. Organization charts, budgets, staffing plans, forms, reports, cost allocation plans, records, equipment and software, schedules and related work products were all part of the review conducted with the outstanding cooperation of Division staff.

Task 3 – Review Organizational Structure and Staffing Requirements

With the technical information gathered from Task 2, Citygate reviewed the organizational structure, answering a number of questions necessary in order to address the issues of interest to the City in their requested scope of work for this management review.

- What is the hierarchical structure of the Division and its subunits in terms of:
  - Who does what?
  - What is the role of supervisors and managers?
  - What is the span of control and responsibility?
- What do each of the sub-parts of the Division do?
- Is their overlap between parts of the organization?
- How does coordination of tasks occur both within and between subunits and with other City departments?
- Are there alternative organizational arrangements that might provide greater coordination and improved effectiveness in achieving the goals of the Division and the City?
- What are the staff needs in each of the parts of the organization and how does present staffing related to:
  - How schedules, priorities and specific assignments are made?
  - How projects and tasks are accomplished?
  - How are both routine and non-routine tasks handled?

With this understanding of the structural processes and relationships in the Engineering Division, we undertook Task 4.

Task 4 – Perform In-Depth Operational Analysis

The purpose of Task 4 was to conduct an in depth analysis of the technical and process functions of the Division to identify those functions where change might provide a noticeable improvement for the Division and the City. We had particular emphasis upon the 22 questions and issues of principal concern to the City.

The study of the technical and process aspects of the Division were used to analyze the project management structure, the scheduling of projects, the interrelationship between project management and budgeting, reporting to the City Council, cost allocation and cost estimating,

the use and management of consultants, record keeping and customer responsiveness, specific coordination structures/methods and feedback within the Division on how well it is doing.

Task 5 – Review Preliminary Findings With the City Council Audit Committee

Prior to preparing a formal Draft Report, we met with the City Council audit committee to determine if there were any areas of interest to the City that needed additional study. No additional study areas or emphases were identified by the committee.

Task 6 – Prepare and Present Draft and Final Report with Executive Summary

The final task incorporates two steps. The first is preparation of a Draft Report for review by the City to ensure that all of the areas of interest have been adequately addressed and that Citygate appropriately understood the facts of each situation analyzed. With approval of the Draft Report, the second step is completion of the Final Report (this report) with any needed modifications. This Final Report contains an Executive Summary and an Action Plan that is a compilation of the recommendations developed in the management review.

SECTION 2—OVERALL DEPARTMENT ISSUES

As each of the sections of the Engineering Division were reviewed, it was clear that the fundamental framework within which they all function is the overall Division organization. It is that organization, reporting relationships, resulting assignment of work workload and staffing levels that are the fundamental determinants of how well the Division functions. Policies, procedures and technology also influence Division effectiveness; but if the overall structure of the organization does not support coordination, the smooth flow of work, distribution of information for management purposes, and the even distribution of workload, then the quality, timeliness, effectiveness and efficiency of the organization and its output will be less than what it ideally could be. This section of the report addresses the overall Division organization and assesses its impact on the organization output.

A. OVERVIEW OF THE ENGINEERING DIVISION

Any organization will have some areas where it can improve, particularly where fiscal resources are limited and management must prioritize where it spends its available money. In large cities such as Salt Lake City, the coordination between City departments may be difficult due to inadequate coordination structures and limited fiscal resources to solve technology problems that may be at the heart of some problems. The subsequent sections of this report will provide recommendations for improvement in various sections and processes of the Engineering Division. While we believe that the recommended changes will improve the efficiency and effectiveness of the Division, we found few operational problems and no large inefficiencies or ineffectiveness that has an adverse impact on Division output in the short term. The staffing level is adequate to meet the present expectations of the City Council.

Rather, the significant problems that we found are largely processes and procedures that are working well now because the Division staff has adapted old systems to current situations. However, the systems do not have the long-term capacity for change and so will adversely impact the City's ability to effectively deliver CIP projects in the future if the issues are not addressed now.

The Division staff is very dedicated and focused on the timely delivery of CIP projects in a manner sensitive to the needs and perspective of the public. Yet, the form and frequency of information flow and reporting to the City Council causes misunderstanding and has an adverse impact on the ability of the City Council to adequately perform its policy making and oversight role.

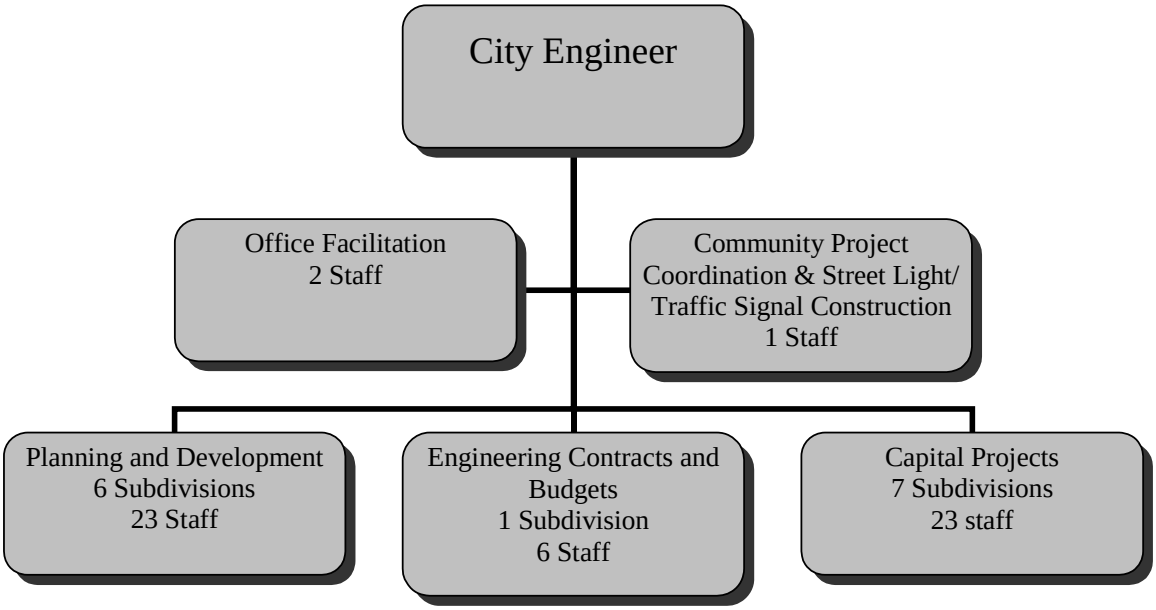
An underlying frustration that we sensed within most parts of the Engineering Division was their inability to communicate the shortcomings of their present management systems and the inability to get other parts of the City organization to give priority attention to the problems that are looming ever larger over the horizon. This is probably the frustration of most government departments in an environment focused on year-to-year delivery of services and projects, and little time and resources to address issues that will adversely affect the organization in later years.

One function of this report is to draw attention to long-term issues and to urge the City to devote resources to the resolution of the problems. In most cases, the outlay is relatively small in relationship to the overall organization and the present annual surplus of revenue over annual

expenditures. At this moment in time, it does appear from the City's annual financial reports that some resources are available to begin addressing longer-term issues such as improvement in the Geographic Information System, project financial reporting system and recordkeeping systems. These issues will be addressed at greater length elsewhere in this report.

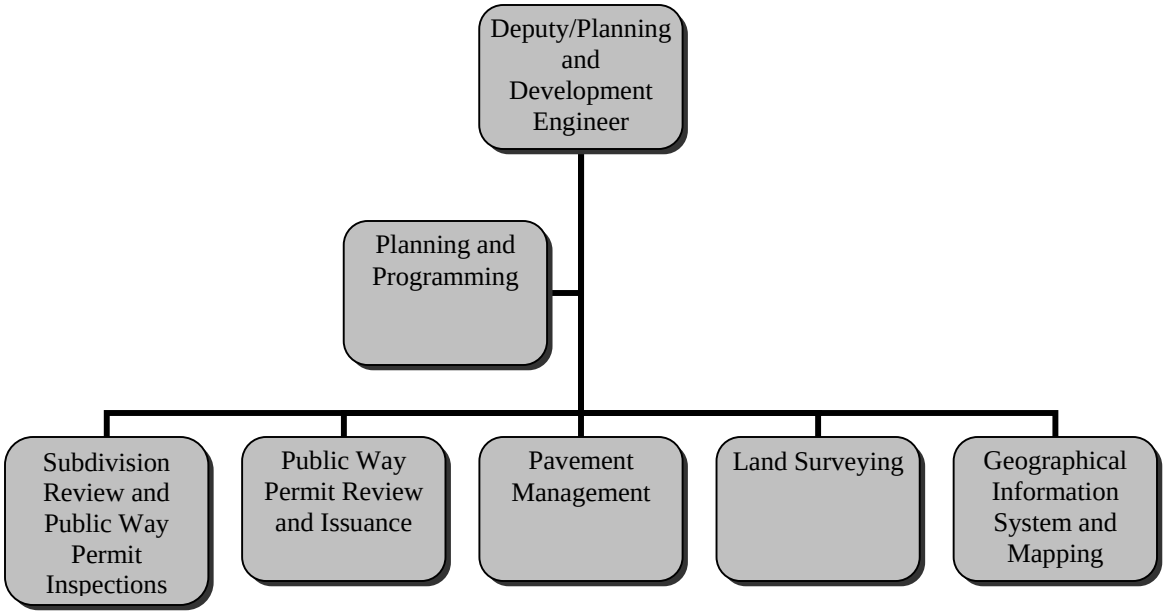
B. ORGANIZATION AND REPORTING RELATIONSHIP

On the formal organization chart, the Engineering Division is divided into five sections reporting to the City Engineer. The number of subdivisions and the number of staff are indicated in each box of the organization chart. There are a total of 56 employees in the Division.



In designing an organization, one must balance both the number of employees in each reporting relationship and the relatedness of the functions in each reporting unit (or box on the organization chart). One must avoid having more than 5-7 people reporting to each supervisor, having too many different skills and unrelated functions reporting to one supervisor, or having functions that must closely coordinate report to different supervisors. Unfortunately, it is rare to meet all those organizational design criteria. There need to be compromises; and where there are compromises, the organization needs to have compensating mechanisms. Often, the most effective compensating mechanism is the "informal organization" created by personal interrelationships among long-term employees. This latter is the situation in the Engineering Division.

The Planning and Development Section has very different functions reporting to the Deputy/Planning and Development Engineer, and yet this diversity has not resulted in a fundamental lack of coordination among functions and employees in the department.



The compromise in organization design made by the Engineering Division has resulted in "sections" composed of fairly common and interrelated functions. For example, the Capital Projects Section, unlike the Planning and Development Section above, is composed principally of 7 functional areas, most devoted to design and construction: civil, architectural, park and sidewalk/ADA projects.

It is fairly standard for organizations to have a turnover rate averaging 3-8 percent per year, which equates to 2-4 employees per year in the Engineering Division. The Division staffing is very stable with little or no turnover each year. This has allowed the development of a common vision/mission, a common ethos to produce projects well and timely, and to coordinate effectively between each other. It is this organizational characteristic that permits the compromises in organizational design to work effectively. Of course, organizations are dynamic, and a change in leadership or other critically placed employees can change the simple coordination to one of separateness or what is called "silo mentality."

Finding: **The present organizational design of the Engineering Division serves well as a result of the informal organization based in the long tenure of employees. The design does not stifle coordination or communication among employees and functions within the Division. Work is adequately supervised because the long tenure and experience of employees permits delegation of responsibility in an environment in which employees share a common understanding of their mission and priorities.**

C. WORKLOAD AND ITS IMPACT ON STAFFING

While the total number of employees in the Engineering Division is 56, a key descriptive element is its heavy reliance on technical staff below the level of registered engineer and its relatively small number of registered engineers. There are 11 registered engineers, and 31

professional and technical level engineering staff members distributed throughout the organization, 3 landscape architects and 2 licensed architects. Most of the remainder of the staff perform support functions for the Division, other Departments, the public, contractors, and engineering/architectural professionals who need the information. The eleven registered engineers are located as noted in parentheses below:

- City Engineer (1)
- Sections Heads
  - Deputy/Planning and Development Engineer (1)
    - Subdivision Review and Public Way Permit Inspections (1)
  - Engineering Contracts and Budgets (1)
  - Deputy/Capital Projects Engineer (1)
    - Civil Project Engineer (4)
    - Landfill and Civil Projects/Engineering Standards (1)
    - Sidewalk Repair and Replacement/ADA Access Ramps (1)

With the exception of the Civil Projects Design and Construction, the function of most of the registered engineers and architects is review and supervision, which is also consistent with larger private architectural or engineering firms. Professional technical staff then produce and manage work on a daily basis. This is necessitated by the number of employees reporting to each registered professional. The earlier organizational chart reflected 22 employees each reporting to two of the registered engineer section heads responsible for most of the work in the field.

Over the past three years, the average annual value of projects delivered by the Division, including all construction, design and management costs, is approximately $10,687,000, with an average of $327,000, and an average of 33 projects completed each year. While about half of the projects involved the use of outside consultants, overall the in-house engineering staff performed 85 percent of the work on an average of 30 projects per year. This is because two-thirds of the consulting services were devoted to 8 large street projects during this three-year period. This overall Division workload is consistent with the value of projects approved in the CIP for the current fiscal year and with the projected value of projects over the next ten years as reflected in the CIP.

The size and type of projects projected over the next ten years in the City's CIP supports the view that the present staffing level is adequate to handle that volume of work, since they have been able to deliver about that annual volume of projects over the past three years. However, the projects are not evenly distributed in the CIP over the ten-year period to maximize the use of in-house staff and minimize the use of outside consultants. Of course, CIP programs change and the distribution of projects from year to year may actually be adjusted to even out the volume of projects annually. Every few years, the CIP priority of projects should be reviewed with the City Council, and the Division should make recommendations for shifting projects among years to balance the workload. This is particularly important since some projects have a long lead-time as a result of planning, community input, design activities, or funding application before construction can begin. Shifting of projects is a fine balancing act, since both funding sources and the urgency of public interest in projects plays a role in scheduling as well.

The mirror image question in looking at workload is whether there are too many staff positions for the workload. In the sections of this report on "Cost Allocation" and "Outsourcing Engineering Services," we conclude that the Division is neither overstaffed nor understaffed at its present volume of work.

Finding: **The Division is adequately and appropriately staffed to handle the present volume of work.**

Finding: **The City's Ten Year Capital Improvement Program does not have projects scheduled in a manner that will maximize the use of in-house staff and minimize the use of consultants to handle variations in workload. This is not uncommon in Capital Improvement Programs, but signals that there will likely be changes in schedule and prioritizing projects in later years.**

Recommendation II-1: **The Engineering Division should review the long term CIP every few years and discuss priorities with the City Council. While the CIP is usually reviewed annually in looking at the proposed one-year CIP in the annual budget, every few years a broader long-term review should be done to make sure future projects are prioritized by the City Council. This is particularly important since some projects have several years of planning, public input, etc. before construction can begin.**

Note should be made that the Capital Projects Section Architectural function has two licensed architects reporting to the function's project manager and the Parks Planning and Design/Construction function has three landscape architects. This higher level staffing is somewhat unusual in Citygate's experience, because many larger cities use consultants for the higher-level building and landscape architectural work. In Salt Lake City, the work volume appears to support this number of professionals, and the overall rate of charges to projects is consistent with an adequate workload to support them. In addition, the ten-year capital improvement program currently has projected a workload not only to support this staff but also to require hiring consultants as a supplement. Nevertheless, as the CIP schedule and projects change over the years, this staffing level in these two functions should be reviewed to ensure that the in-house staffing level matches the workload.

Finding: **The Architectural and Parks functions make greater use of in-house architects than is usually found in cities. While the work volume presently supports this level of staffing, the uneven scheduling of projects in the Ten Year CIP may make it necessary for the Engineering Division to adjust projects schedules to properly balance the use of in-house staff and outside consultants.**

Recommendation II-2: **Particular attention should be paid to scheduling future Building and Architectural workload to ensure that in-house staff is fully utilized.**

D. BACKLOG OF WORK

In the subsections above and in the "Outsourcing Engineering Services" Section of this report, we addressed the fact that both the time and cost devoted to projects by the Engineering staff and the annual dollar volume of CIP projects delivered support the fact that the Division staff is working at an acceptable level of effort and is delivering projects at the same volume as generally expected, on average, over the next ten years. However, an additional measure that should be examined to get a more complete picture of whether the staffing level is adequate is the backlog of work. Just because the staff is able to handle roughly $10-12,000,000 in annual projects does not mean that there is not a mounting backlog that might require greater use of consultants or more staff.

To get an understanding of the backlog, we analyzed which projects are currently under design as reported in the Division monthly report and how many of those were under design one and two years ago. For each project that was under design for more than 12 months during that period, we looked at the nature of the project and issues such as funding availability, participation by other departments and community stakeholders that might reasonably cause the delay.

We found that only about half a dozen projects over a two-year period did not have a readily obvious explanation for why the project was listed for more than 12 months in the "Design" portion of the monthly report. Even for street related work where approximately one-third of the projects were listed in the report for more than 12 months, these 10-15 projects could be largely explained by funding issues, community participation process and the involvement of other government agencies and City Departments.

Finding: **There is not a large backlog of work that is the result of staffing shortage or inadequate use of consultants. Most of the projects that appear to be taking somewhat longer in the design phase involve complications over which the Engineering Division does not have full control.**

What we did observe, however, is that in a few cases the longer design period might be shortened if it was made clear that these were priority projects and that greater staff time needed to be devoted to resolving the issues slowing down the project. This is not an uncommon situation in which the staff may encounter difficulties and then shift staff priorities elsewhere. Unless there is an adequate reporting system that permits the elected officials to be aware of the difficulties, the elected officials cannot participate in the process of determining priorities.

Just determining the status of design projects over a 24-month period using available Division reports was a lengthy and tedious process, even for people who understand funding, design and construction issues. The monthly report does not provide all of the information that is needed to understand project history and status, and the information in the report is not presented in a visually easy way to use/understand. The Division has assumed that this monthly report does provide the City Council with an update and understanding of project status; but in fact, the City Council as a whole does not receive the report in its entirety. Based on the Engineering Division Monthly Project Status Report, it is reasonable to assume that policymakers in the City do not have a complete picture of project status, except when they make individual inquiries, or the

subject might be brought up in the context of an individual City Council agenda item. This issue will be addressed more completely in the "Reporting to the City Council" Section of this report.

Finding: **The present Engineering Division Monthly Project Status Report does not provide a clear and easily usable status report that permits policymakers to participate effectively in setting and adjusting priorities among CIP projects.**

SECTION 3—PROJECT PLANNING AND PROJECT MANAGEMENT

Even if a City can prioritize projects well, if it cannot plan and execute the project, the system is perceived as being dysfunctional. The Salt Lake City Engineering Division adapted a unique, for the time, and effective project planning and management system over two decades ago. That system is oriented around the Project Teams. These are interdisciplinary teams within the Engineering Division that are assigned a project and are responsible for it from the inception of design through to acceptance of the final constructed or rehabilitated public facility. Each team is headed by either a professionally licensed engineer, architect or landscape architect who has the ability to design projects, sign off on their adequacy and responsibly make or approve field changes in design during construction. The team not only designs a project (or supervises a consultant designer), but also oversees estimating, bidding, construction, field inspection and final project acceptance.

Finding: **The Division has a well-defined and well-understood project process that includes: scope definition and initial project cost estimating; obtain CIP approval; assemble project team and assign design responsibility, either to the team or outsource to a consultant managed by the project manager; design development; public input; project management; project design, document and estimate review; bidding, contract analysis and award; construction monitoring and inspection; substantial project completion; and final project close-out.**

In assigning a project to a Team, the full project schedule is affected by a number of factors discussed in the section of this report regarding "Prioritizing and Scheduling Work." Unfortunately, a rigid schedule cannot always be established because external factors, such as the availability of construction funding or coordination with other agencies, may delay a project. Consequently, Project Team work assignments and priorities may frequently be changed, requiring the team to be flexible and agile in the shifting of its internal resources. Flexibility and agility is promoted by the 3 - 5 person Project Team size.

Finding: **The Project Team approach is very effective in consolidating responsibility for the budget, schedule, design, bid, construction and project completion. Each team is headed by a senior engineer, architect or landscape architect with a broad range of project experience and the authority to interpret and approve design changes based on field conditions. This provides the flexibility to assign members to construction management work during the short duration spring through fall primary construction season and to assign members to design activities and preparation for bidding during the less than ideal construction conditions often presented in late fall and winter.**

Finding: **The Project Team approach allows a team member to always maintain a presence on the construction project in order to**

identify and resolve issues in a timely manner at lower levels on-site during construction.

Finding: **The Project Team approach creates a well-rounded cross-trained staff that accepts responsibility for projects.**

One significant reason the Project Teams work so well is that the team leaders are senior long-term City employees. It would appear as if there will be significant turnover in these positions during the next 5 or so years. Since the City has relatively few registered engineers, promotion into these positions from within is problematical. Yet, effectively leading the team requires substantial experience with the City systems and with the Engineering Division staff.

Recommendation III-1: **Succession Planning for the Project Team leaders needs to begin, since the senior project managers are expected to be retiring at or near the same time.**

SECTION 4—PRIORITIZING AND SCHEDULING WORK

As the City Council approves new CIP projects each year, there is no mechanism in that process for establishing priorities. Rather, the Engineering Division establishes the priorities and assigns projects to the Project Teams based on a general set of prioritizing criteria. The application of the criteria requires considerable judgment on the part of the Division management, and yet the outcome appears to accurately reflect the realities of factors usually not fully under the Division's control. While simple street overlay activities can primarily follow the recommendations of the Pavement Management System for a clear project scope, several longer-term projects may not have a well-defined scope or may evolve significantly from what was originally conceived over the term of the project. Projects requiring a lot of interagency collaboration or planning with nearby residents and businesses may also move much slower.

While the criteria used by the Division to prioritize projects are very reasonable and applied in a manner that appears to reflect a good understanding of the factors that will necessarily affect the scheduling of a project, neither the criteria nor their application are well known by people outside of the Engineering Division. As a result, the City Council does not have an opportunity to know the priority of projects, the projected schedule, or how to express their own priorities in a fashion that is compatible with the scale of the Capital Improvement Program.

Finding: **Projects are typically scheduled for design on a "first in—first out" basis. Of those projects, higher priority is given to those that have a well-defined scope and do not require significant collaboration with other parties or residents/business/property owners. Following those well-defined projects, those projects that provide a solution to multiple needs are often given next highest priority. Finally, of the above projects, those with fully identified and committed funding are usually placed ahead of those without adequate funds. If a project appears to be of obvious high priority to the City Council and cannot be accommodated reasonably in-house without causing significant disruption to the scheduling of other projects, then the project will be outsourced to a consultant to proceed without distraction.**

Once a project schedule has been established, a number of factors can delay the project. While these are well understood by those familiar with CIP design and construction, the reporting of both the initial schedule and any changes does not effectively convey this information to the Elected Officials. This issue is discussed more fully in the section on "Reporting to the City Council." The modifications to scheduling are largely handled internally by the Engineering Division Management as they constantly balance the ever-changing needs and priorities of the Capital Improvement Program. Within the Division, the highest priority is always placed on obtaining a quality project as opposed to placing first emphasis on a "speedy" project.

Finding: **The Engineering Division is not reluctant to delay a project if doing so will result in a better result or construction process for affected parties.**

Finding: **Given the difficulty of construction work in the winter, the ideal time to start construction is in spring. However, if short-term factors delay that start very long, the project will be outside of the peak bidding season; and depending on the anticipated length of construction, the project could be held over a full year.**

Recommendation IV-1: **The Engineering Division should report project priority and the estimated schedule to the City Council in a report shortly after approval of the Annual Budget and CIP.**

Recommendation IV-2: **The Monthly CIP Project Status Report should be modified, as recommended elsewhere in this report, to include a continual update on the project status compared to the original schedule.**

SECTION 5—COORDINATION OF CIP PROJECTS WITH OTHERS

From a construction perspective, the streets of Salt Lake City are a busy place. Not only does the City work in numerous blocks to seal, overlay or reconstruct streets, but they also repair sidewalks and replace underground wastewater, water and storm water facilities. However, private utilities such as electricity, telephone and cable have facilities over and under the streets and other public rights of way. Even within the City, the projects undertaken in or adjacent to the streets are funded and/or managed by several departments, including Public Services, Public Utilities and the RDA. Utah Department of Transportation projects may also occur within the City limits and interface with City streets and current City construction work.

The public often wonders whether the left hand knows what the right hand is doing with regard to street construction. Are all of these projects coordinated so that work is not duplicated, torn up and then replaced or prematurely disturbed, and is the public inconvenienced as little as possible? Do various agencies adjust their work schedules to take advantage of economies of scale? Are the projects coordinated with the needs of businesses and individuals? Of course, the obvious answer is that coordination is never perfect; but also apparent lack of coordination often has a logical explanation regarding both unavoidable events and there simply being more events, people and organizations to coordinate than are possible to schedule/organize seamlessly without overlap, duplication of effort or inconvenience.

Coordination among different departments and agencies and with the needs of the public is largely a matter of having processes in place to ensure advance notice and an opportunity to rework schedules. The key element of the processes is to identify all of the stakeholders that have an interest in the project boundaries as well as those that may be indirectly affected by the project.

Finding: **While the Engineering Division has made a good faith effort to remember the stakeholders that need to be involved in a project at its various stages, a formal comprehensive check list to serve as guidance to new project managers and to document coordination is not available.**

Recommendation V-1: **Develop a formal list of all potential stakeholders, and when a project scope is developed, use the list to check off affected parties and send a formal documented communication alerting them to the project scope and schedule. Develop a mechanism by which they can respond if they have interest or questions. A shorter version of the list should receive plans for comment once they are completed in draft form, as occurs now.**

Recommendation V-2: **All communications among agencies, whether formal or informal, should be documented in the project file.**

The Public Services and Public Utilities Departments have a regularly scheduled coordination meeting to talk about the current projects on the Engineering Division monthly CIP report (that is accessible by computer). The November meeting always involves coordinating the list of projects that have been approved by the City Council as part of the new budget CIP. Each

department delays or accelerates projects as necessary to ensure that construction of underground utilities coordinates well with the roadwork. Issues, such as the complexity of design and immediate availability of construction funding, help determine project timing. The Engineering Division may accelerate a project by several years to ensure that new asphalt is laid after a major leak is repaired or a new service line is run through the street to adjacent property. Both the Public Services and Public Utilities Departments are satisfied with the process and level of coordination that presently occurs.

The Engineering Division routinely provides copies of plans to other agencies for their comment prior to the formal completion of design. This does not ensure that the other agencies will review the plans in a timely manner and seek to coordinate with the City. With regard to private utilities, the City does have an adequate ordinance attempting to control premature "cuts" into new pavement and has very good revised specifications for repair of utility cuts. The City has worked closely with both the City Public Utilities Department and private utilities to productively divert money into full street overlay that might go into less comprehensive "repair of a street" following a utility cut. This "economy of scale" and coordination of funds and work results in a better street at less cost to the public.

Finding: **Formal and informal meetings are held with City Public Utilities to coordinate their underground utility work with City projects, but there is no formalized procedure to ensure that CIP construction jobs are discussed in a timely manner. Some of the CIP street projects that appear to be delayed are on hold in order to coordinate with underground utility construction contracts.**

Finding: **Plans are provided to affected agencies, both within and outside of the City organization, so that they can identify the location of their facilities and any interest they might have in performing work ahead of or at the same time as the City construction project is underway. However, such coordination is provided on an as-needed basis as perceived by the Engineering Division.**

Finding: **Occasionally, the Public Services Department will install a temporary patch to meet certain short-term needs and then soon thereafter begin street reconstruction. Where this has occurred, there appears to have been a good rationale, although the process does not appear to be cost effective to the casual observer.**

Both the Engineering Division and the Public Utilities Department maintain a GIS function that serves the needs of each operation. However, neither fully understands the method of operation and the content of the other departments GIS files. Additionally, neither system can be accessed from a desktop by engineers in the other department. Citygate discussed GIS with representatives of both departments and found substantially different descriptions of the content and capabilities of each system; and yet, both departments use and need the information in both GIS systems. The lack of shared on-line information creates a cumbersome process to obtain

and use the information created by the "other department." A similar situation exists with regard to the plans and other project documentation.

Finding: **Engineering and Public Utilities each maintain separate historical document files and GIS systems without ready on-line access by either engineering function.**

Recommendation V-3: **A revision in the GIS service and installation of the Hummingbird program should be used as an opportunity to provide real time on-line access to all files by both engineering functions: utility and streets.**

Even though both the Public Service and Public Utilities engineering functions need to share files and GIS system information more readily, both functions involve distinctly different engineering design activities. Given the work volume in both design and construction management and the current Engineering Division method of organizing projects around an interdisciplinary team, there is no "down time" among Engineering Division staff that could accept spill over work assignments from the Public Utilities Department. The only substantial overlap between the two department engineering activities is the need to coordinate projects and to recognize the occasional value in bidding a large job with both street and utility components as a single project in order to shift some coordinating responsibility for the various components from the City to the contractor.

Finding: **The engineering activities of Public Utilities and the Public Services Engineering Division are unique, with little cross over in their functions, but they have an obvious need to coordinate the activities. A more formalized coordination will allow the two to function as well as if they were under a single structure.**

Finding: **The only staffing advantage in combining a utility engineering function with a street, parks and building engineering function is the possible savings of one supervisory position. However, even this may be illusory if the workload requires an Assistant Division Head be added to oversee one half of the combined operation.**

Recommendation V-4: **There is little cost or operational improvement to be gained by combining the Utility engineering function and the Public Services Engineering Division, because they serve two separate functions and different customer groups.**

SECTION 6—RELIABILITY OF PROJECT ESTIMATING

The Engineering Division has a reasonably rigorous process of establishing, updating and reviewing project cost estimates. Public building projects under $2,000,000 are estimated in house using industry standards on a square foot basis and adjusted for recently completed projects of similar scope. On larger building projects, a professional estimator is used. Park projects are estimated in-house or by a design consultant based on unit costs of elements of the projects taken from recently bid projects with similar individual elements. Street projects are estimated by in-house staff based upon senior staff's professional experience and historical trends in local market pricing.

Project costs can be significantly affected by the number of bidders who propose on a project, with the number of bids usually reflecting the supply of either skilled labor or construction materials within the local construction market at the time of the proposal. Typically, a project with 3 or fewer bidders will be expected to produce bids that exceed the engineer's estimate. Projects with 6 or more bidders will be expected to produce a bid below the engineer's estimate.

Finding: **Project costs can be strongly influenced by short-term price hikes in construction materials, energy costs or labor availability. Short-term price hikes cannot be reasonably anticipated in cost estimates.**

Cost estimates are established as part of the budget process. Thus, they are often made as part of the CIP process, which is over a year in advance of the CIP approval process and possibly two years in advance of the earliest construction date anticipated for projects. Projects that are estimated in the CIP in the spring and approved in July are targeted for design so that bidding can occur shortly after December for standard projects.

Finding: **The one-year lead in making cost estimates amplifies the affect of short-term price hikes in labor and materials.**

Finding: **Unforeseen conditions in the right of way involving utilities and inaccurate record drawings can significantly affect costs through change orders, with the percentage difference being very high on small cost projects.**

In 287 projects reviewed by Citygate, the aggregate actual construction cost for all projects was 12.5 percent lower than the total cost estimate on all of the projects. Of the 287 projects, 42 exceeded the cost estimate by 10 percent or less. Of the remaining 52 projects, half of them experienced a high percentage difference, but the actual dollar variance between the bid cost and the engineer's estimate was less than $20,000.

Finding: **The Engineering Division cost estimates are reasonable in view of the short-term impact of labor and material costs and field changes necessary due to unforeseen underground conditions.**

Recommendation VI-1: **If the City Council continues to be concerned about underestimation of project costs, the Engineering Division should consider either putting a professional cost estimator on staff or subcontracting for cost estimating on all building and specialized projects along with all high dollar value projects.**

Recommendation VI-2: **Regular training should be provided to all staff estimating projects.**

Recommendation VI-3: **Establish and maintain a historical database of both Engineering Division and outside agency cost and bid data to assist in future Division estimating, project management and cost control.**

Recommendation VI-4: **Establish criteria to identify bids in excess of the engineer's estimate and/or the budget estimate, which should be taken to the City Council for discussion regarding change in scope or appropriation of additional funds. This will permit the City Council to participate in the consideration of changing the scope to something other than what they anticipated when they approved the project. They can then participate in the consideration of the use of added funds, which will reduce funding available for other future projects and programs.**

SECTION 7—COST ALLOCATION

Until several years ago, most of the Engineering Division staff costs were supported by the City General Fund, and none of the design and project management expenses represented by in-house labor were allocated to individual capital projects. This meant that the City did not know the full cost of each project and often used General Fund money to pay for the design phase of a project that could be wholly funded from special state or federal money. In order to address both problems, the Engineering Division was asked to develop and implement a cost allocation model that would fairly capture both the direct and indirect costs of the Division activities that supported both the capital and special improvement district projects. This model has now been in place for over two years, and the City is interested in an independent review of both the adequacy and the application of this model to various city construction/project activities.

Citygate Associates reviewed the Engineering Division cost allocation model and the resultant in-house rates. These were compared to hourly rates being charged by local consulting firms providing the same services to the City under contract, to the benchmark being used by the Division from an old Hughes-Heiss study of the department, and to a benchmarked model updated regularly by a consortium of California cities. We also reviewed the manner in which the Division's cost allocation model is actually applied to capital projects and special improvement districts, comparing this application to the local consulting hourly rates and the benchmarked model. This review is summarized below.

A. COST ALLOCATION MODEL

The cost allocation model is a straightforward calculation that determines a "billable" hourly rate for all employees who charge their time directly to capital projects. For FY 2005-06, the rate is 1.89 times the *direct* salary-based hourly rate of the employee. The formula results in a rate that adds 89 percent to the direct hourly rate to cover the following three components:

1. A calculation of the percentage of time spent on CIP projects by each of 12 administrative staff, common use costs such as materials and supplies, phones, computers and training, and the cost of vehicles associated with CIP projects incurred by the Engineering Division. The annual dollar value of the administrative time and the common use costs are added together to determine an overhead rate of 32.5 percent. This is quite a bit lower than overhead rates that Citygate has seen because it does not include an allocation of costs for other "support services" within the City, such as Finance, Legal, Capital Planning, Personnel, depreciation of office space etc. This omission is the only notable departure from standard formulas for calculating "billable" hourly rates.
2. A factor of 23.6 percent is added to the formula to account for vacation, sick leave, holidays and other non-billable hours.
3. Employee benefit costs are included in the formula at 32.7 percent.

The contents of the formula are very standard, with the exception of omitting the support costs such as citywide finance, legal, and personnel. Citygate frequently sees formulas that use a multiplier of 2 to 2.5 times the direct salary.

The average direct hourly rate of the City employees working on CIP projects is reported by the Engineering Division to be $27. While this results in a "billable" hourly rate of about $51 per hour, the actual billable hourly rate ranges from $33.74 per hour for office/clerical staff up to $54.08 per hour for the registered engineers and $68.44 per hour for the Project Managers.

These Engineering Division hourly rates compare quite favorably to a representative sample of hourly rates being charged to the City when it obtains consultant services. This is typically done either because the workload requires the additional assistance or because the consultants have specialized skills, such as electrical or mechanical engineering, that are not used often and so are better outsourced. The outsource hourly rates are quite a bit lower than Citygate has seen elsewhere, which is reflective of the Salt Lake City market rate for such services when project management and engineering services are contracted from local firms. The range in the table below reflects not only a range of type of professional consultant being hired, but also the organizational level, such as senior engineer compared to associate engineer on the staff of the firms providing the service.

Type of Service	City	Engr/Arch/Landscape Arch Consultants
Project Manager	$68	$84-156
Professional	$54*	$58-128
Administrative/Clerical	$34	$29-50

*The cost of some professional positions is lower.

The hourly rate being charged is only one indicator that the City costs are not out of line with those charged by private firms offering the same skills and services. An important question is whether the City's total costs for providing engineering services on a project are comparable to those provided by private firms. If the City spends more hours to accomplish a project, its costs might be higher than the cost of using consultants for the same work. This issue is addressed in the next section.

Finding: **The hourly "billing" rates that the Engineering Division uses in developing charges for the Division's work on CIP and special improvement districts is reasonable and somewhat less than the rates charged for comparable work by consultants.**

Finding: **The City is not including some overhead charges for citywide support services, such as finance, legal, capital planning, and personnel, in developing its "billing" rates. Including these costs will be consistent with practices by larger communities and will result in a more accurate reflection of the full cost of capital or special improvement district projects.**

Recommendation VII-1: **If the City is interested in the full cost of constructing projects, it should consider adding a component to its cost allocation formula that recognizes the support services provided to the Engineering Division by other City Departments.**

B. CITY ENGINEERING PROJECT COSTS COMPARED TO BENCHMARKS

Delivering a completed Capital Improvement Project begins with the initial project planning and cost estimating, development of the basic project proposal for consideration by the Administration and the City Council, design, bidding, preparation and execution of the contract, management of the construction, inspection, change orders related to field conditions, and finally, formal project acceptance and inspection during the warranty period. Even if the City chooses to contract out the design and construction management portion of a project, the remainder of the functions requires City staff involvement, including the additional burden of to soliciting, contracting with, and managing the consultant firm.

Economies of scale, complexity – whether technically or politically – of a project and the frequency with which the City undertakes a particular type of project will determine the percentage of total project cost dedicated to design, construction management, and project administration. To illustrate the range of cost for professional support for the execution of an ongoing capital improvement program, the California Multi-Agency CIP Benchmarking Study reflects that Design and Construction Management will cost a range of 47 percent - 54 percent for Street Reconstruction work with a total capital improvement cost under $500,000. That percentage range falls dramatically to 16 percent - 22 percent for projects costing over $3,000,000. There is a similar illustrative range for Street Signal work, where projects under $500,000 experience Design and Construction Management of 37 percent - 44 percent while for projects costing over $3,000,000, the range falls to 13 percent - 21 percent. Playground, bike paths and community buildings all exhibit a similar change in Design and Construction cost as a percentage of total project cost.

We examined the Design and Construction Management Costs on 92 recent Salt Lake City projects managed by the Engineering Division. We found that the overall average cost of Design and Construction Management (including the use of outside consultants with specific expertise) as a percentage of Total Project Cost for projects conducted in-house, was not quite within the range of the previous Hughes-Heiss study for about 45 percent of the projects, but certainly was well within the range of the more recent and very comprehensive and rigorous California benchmark study for projects of similar size to those in Salt Lake City. Although the Hughes-Heiss study has provided a reasonable starting point for the City, it is based largely on the professional judgment of that consulting firm. Conversely, the California Benchmark Study is a very analytical and methodologically rigorous study that incorporates updated data every two years in order to provide detailed best management practice guidance to the participating agencies.

Type of Project	City Average	City Range	Hughes-Heiss Study	Benchmark
Parks	18	2-45	20-22%	37-47%
Buildings	16	7-43	20-22%	49-60%
Streets	19	11-56%	13-24%	31-54%

The data changes marginally if only the cost of in-house staff work is considered as shown below:

Type of Project	City Average	City Range	Hughes-Heiss Study	Benchmark
Parks	15%	2-37%	20-22%	37-47%
Buildings	26%	25-26%*	20-22%	49-60%
Streets	27%	15-56%	13-24%	31-54%

*2 Projects

Even including additional citywide support costs as part of the Engineering Division cost allocation formula will result in the City remaining well within and likely toward the low end of the Benchmark range.

It was challenging to compare the overall total project cost of in-house City Design and Construction Management to that of consultants, because the City did not often hire consultants to perform all of the project functions but to supplement in-house staff where needed. The City was typically responsible to perform all of the front-end planning and contracting as well as final inspection and management of consultant work. Nevertheless, we were able to compare the average cost of Design and Construction Management on projects where consultants were used to some extent with projects where the City performed all functions in-house. In-house City staff project costs compared well to those involving consultants as reflected in the table below.

Type of Project	Average of City In-House Projects	Average of Projects Using Consultants	Average of "All" Projects
Parks	15%	19%	18%
Buildings	26%	16%	16%
Streets	27%	17%	19%

Special Improvement Districts are a special case in establishing the cost of engineering services. Assessments are estimated prior to construction and final assessments are set when construction is completed and all costs are known. Consultants are generally used on large dollar volume projects, while in-house staff design smaller projects with associated higher percentages due to the smaller project size. The City charges actual Engineering costs to the SID, reflecting the cost of all engineering services, which averages around 25 percent.

Finding: **City engineering charges for special improvement districts are reasonable and well under the range of design and construction management cost normally expected on a street project with total project costs between $500,000 and $3,000,000.**

Finding: **The Engineering Division costs for in-house Design and Construction Management, as a percentage of total project cost, are well within both a comprehensive Benchmark Study as well as Citygate's own experience. This reflects an effective**

use of in-house staff. However, the Division continues to use an outdated Hughes-Heiss study benchmark that should be either superseded or updated to provide the Division with a more effective management performance measurement tool.

Recommendation VII-2: **The Engineering Division should either adopt the California Benchmark Study standards as its guideline to measure the appropriateness of engineering expenses on projects or conduct its own study to establish benchmark standards that more closely reflect the local cost and contracting environment of Salt Lake City.**

C. MANAGEMENT OF THE COST ALLOCATION SYSTEM

While the Engineering Division's cost allocation system is based on a very reasonable formula and the Division's costs are usually below the lower end of the range of expected costs, maintaining the data in the system is very cumbersome. Originally, the system was developed on an Excel spreadsheet. This works adequately for producing a report that presents the data in such a way that all users can extract from it what they need by reading the single very large report. However, if there is a need to produce reports that arrange and summarize the data in unique fashions or to meet the needs of multiple users with very different interests, an Excel spreadsheet-based report is very time consuming to use.

Like so many report systems, as users have realized what information is available, the need for unique reports has multiplied. Each new need seems relatively small and requires only small modifications to the spreadsheet or only a few minutes to "cut and paste" information into a unique report. However, over time the sum of all needs results in a cumbersome system that does not allow users to access the database and create their own real-time reports. In addition, the Excel spreadsheet system does not interface with the City's accounting system, resulting in both delay in reporting project costs in a timely manner useful to project managers, but also a significant time investment in creating and generating useful reports. In simple terms, the present system can be described as heading up a "dead end alley" in which there is little room for growth or timely and flexible project cost information reporting to meet future project management and accounting needs.

The cumbersome system is becoming an issue for those managing projects, because the Engineering Division is responsible for control of Design and Construction Management costs on each project, yet, they do not have direct access to the needed data, nor can they reasonably obtain timely information. This is clearly frustrating to the Project Managers. The Engineering Division Management recognizes the management shortcomings of the present cost control reporting system.

Finding: **The Engineering Division cost allocation reporting system is cumbersome and does not provide adequate timely information to project managers to permit real-time control of the various engineering costs associated with each individual project.**

Recommendation VII-3: **The Engineering Division should allocate funds to reform its present cost allocation reporting system so that it can provide information in a flexible manner to meet the needs of users at many levels and be able to provide easily unique reports in response to future management and policy needs.**

SECTION 8—OUTSOURCING ENGINEERING SERVICES

Almost every local government uses consulting architectural and engineering services to assist in delivering their capital projects. The level of consultant utilization will vary widely between agencies, based on the nature and level of specialization of the projects they are doing each year, the volume of projects, the engineering division vacancies the agency may be experiencing and the local philosophy regarding contracting versus in-house work. A comparison of Salt Lake City with seven large agencies in a multi-agency benchmarking study reflects the other agencies expending an overall average of 23.9 percent of all Design and Construction Management costs by hiring consultants while the overall range was between 14.1 percent and 54.5 percent. Salt Lake City expended 40 percent of similar engineering costs on consultants. While this measure may provide a broad indicator as to whether Salt Lake City Engineering contracts in "roughly" similar proportion to other agencies, Citygate Associates was asked to analyze if the current consulting level is a prudent choice given the City staffing. We were also asked to determine if consultants were used, is the City following an appropriate procedure for selecting consultants.

A. WHEN ARE CONSULTANTS USED BY THE ENGINEERING DIVISION?

With a total of 56 Full Time staff, the Engineering Division has only 11 licensed as Professional Engineers, 2 Licensed Architect positions and 3 landscape architects. There are no electrical or mechanical engineers on the staff. In order to accomplish the annual CIP with the limited number of professional staff, the City has relied heavily on their very experienced technical staff of 31 junior engineer and technician level personnel, most with long City experience. While the Division's objective is to accomplish as much work as possible in-house, it does have to outsource work based on several criteria, including lack of in-house technical skill set, project urgency, and in-house project work load.

Of the almost 100 projects reviewed by Citygate, about 36.7 percent of the Design and Construction Management work was outsourced. It is interesting, however, to look at the details behind this broad percentage.

Total Design and Construction Management	Percentage In-House	Percentage Design by Consultants	Percentage Construction Management by Consultants	Percentage Other Misc. Work by Consultants
$5,933,032	63.3%	23.6%	13%	.1%

Consultants were used primarily for design work on Park and Building projects. About 57 percent of the consultant work was devoted to 7 street reconstruction and overlay projects, which are relatively easy to contract out. On these local street projects, consultants do most of the construction management, and it is relatively easy for the City to maintain quality control because the work is not complex. This is borne out by the relatively low percentage of total project cost (12-15 percent) devoted to engineering services on this street work.

A logical question is whether the projects assigned to consultants as a result of perceived excess workload could in fact have been done in-house. The short answer to the question is, *no* the outsourced work generally needed to be contracted because either the technical knowledge/skill

was not available in-house or the projects would have been delayed due to the workload. Although a detailed time and motion type study of the Engineering Division might provide a more detailed analysis, we have nevertheless concluded, based on our review of consultant use on individual projects, that outsourcing was appropriate. The overall Design and Contract Management Costs allocated to projects by the Engineering Division are reflective of an efficient use of staff time.

A good measure of the efficient use of staff time is whether the Division has reasonably met its target dollar amount in the annual budget for charging labor and other expenses to projects. Since the present cost recovery policy has been fully in effect, the Division has been quite reasonably close to the target and appears very likely to do so again in the current fiscal year. Since the Division is reaching the target by charging less, on average, to projects than the benchmarks used by the Division (as reported in the section of this report on "Cost Allocation"), our conclusion is that an excess amount of in-house staff time is not being used on projects, and the outsourcing of work has been necessary as a result of the CIP workload of the Division.

Finding: **The Division has appropriately allocated the work assignments between in-house staff and consultants. This takes advantage of areas in which consultants have expertise not available among Division staff and avoids project backlogs by assigning work to consultants that relieves the workload without adding substantial work in overseeing the consultants.**

B. Is It Cost Effective To Use Consultants?

An added question raised by outsourcing is whether it would be more cost effective to hire additional staff to reduce the amount of work that is contracted to consultants. There are two measures that help address this question. The first is whether there is a significant difference in the cost of Design and Construction Management on jobs using consultants; and the second is whether the dollar volume of work outsourced would even support hiring additional in-house staff.

With regard to the cost difference on projects between in-house and consultant Design and Construction Management, those projects that used consultants for purposes other than unique technical knowledge or skill reflected that total Design and Construction Management costs, as a percentage of total project cost, were both below the benchmark as well as generally lower than in-house conducted projects. In examining the nature of projects where consultants were used, it was apparent that the lower cost was a result of the nature of the projects rather than more efficient work by consultants. The staff generally retained those projects that were more complex and would require a proportionately greater number of engineering hours, because in-house hourly rates, as discussed in the "Cost Allocation" section of this report, are lower than those of consultants.

C. How Are Consultants Selected?

The City has a procurement policy that establishes the procedures for hiring consultants such as those used by the Division for Design and Construction Management work. We discussed the procedures with the Division and reviewed a sample of the individual consultant contracts. Citygate was particularly interested in the evaluation and selection process, because it is in these

areas that judgment enters into the process and where there will be the greatest potential for complaints and appeals.

The Engineering Division has two distinct broad types of consulting services. The first is a "Term Contract" for under $70,000, with a consulting firm to provide services "on-call" during a two to four-year period. These contracts are used for small consulting jobs, typically those requiring technical knowledge/skill that the Division does not have on staff, or occasionally, small fill-in tasks particularly in park development where the workload necessitates obtaining outside assistance. The second type of consulting contract is a specific project contract usually for a very large, unique job.

For the Term Contract, the Division uses a Request for Qualifications (RFQ) proposal process that asks interested firms to submit their qualifications to do a particular class of work. The City advertises the opportunity to submit proposals, with most firms seeing the upcoming contract opportunity on the City's website. If firms express their interest, they receive an RFQ package. The City Project Manager assists in putting together the questions in the RFQ, but all RFQs are sent out through one person in the Division. All subsequent questions from interested firms go to this Division liaison, which responds in writing and issues addenda to all potential proposers if the questions and/or answers are materially substantive. This is a normal process followed by most cities.

An evaluation team of 3-7 individuals is selected, but the Proposers are not permitted to contact them nor do the members of the team talk to each other while they individually read and evaluate the proposals. Each person on the team completes a rating sheet on each proposal and then the entire team meets. The ratings are tallied prior to any oral discussion in order to prevent the ratings of one person affecting those of another evaluator. The results are provided to the team; and then collectively they orally evaluate the proposals and arrive at a final ranking of the top 3 - 5 firms, who are then interviewed by the team. The ranking process is repeated to select the firm with which the Division will negotiate a contract. The City Engineer is the designated City procurement officer and can negotiate and sign the contracts.

The procurement process for consulting services on more complex projects follows a very similar process with several exceptions. For these projects, there is normally a two-step process in which the firms will first respond to an RFQ. Using the evaluation process described above, the Division will rank the firms and create a short list of usually 3-5 firms (depending on the number and quality of the proposing firms). Members of the evaluation team usually include one or more people from the City Department or Departments affected by the project and possibly someone from outside of the City staff if there is a clearly affected community stakeholder group that can provide effective evaluation assistance. The selected firms on the "short list" will then be asked to complete a more comprehensive proposal that addresses the conditions of the particular large or complex project for which consulting services are sought. Interviews of the selected firms are held by the evaluation team, which uses an evaluation process and evaluation forms in the same manner as is done at the RFQ stage of the selection process.

In both types of consultant procurement processes, firms are not asked to submit a "price," but rather firms are selected based on qualifications. After tentative selection, the Division negotiates a contract, including the price using a standard City contract form. If the Division is unable to reach agreement with the first selected firm, they then move on to negotiate with the

second firm. This infrequently happens, and almost never does the City move beyond the second ranked firm in reaching acceptable contract terms.

Finding: **The consultant procurement process and the forms used by the Division are similar to that used in other cities. The process, as applied by the Engineering Division, reasonably creates an environment in which the selection process is highly likely to result in the selection of the most qualified firm**

Finding: **The Division has followed the policy, understands that policy, concurs in the value of process as providing a neutral and objective evaluation of consultant services, and clearly makes an effort to conduct its procurement process in a manner that will be perceived as fair.**

D. How Are Consultants Managed

Each project in the Engineering Division is assigned to a project manager. That person is responsible for overseeing the design, bidding, construction, inspection and acceptance of a project. For the larger projects, there may be a team of 3 to 4 people, each performing different functions throughout the project. For the smaller project, one person may be responsible for most of the phases of project delivery. Wherever possible, the principal responsibility for overseeing the design work of a consultant is that of the project manager. For the larger and more complicated street projects, this will be a registered engineer, while for smaller projects, depending upon staff availability, it will still be a design professional, but the level of education/license or registration will be appropriate to the complexity of the project.

As discussed in another section of this report, the Engineering Division uses project teams and delegates responsibility to make change order approval/field design adjustments, as conditions require. This necessitates a responsible project manager with the design experience and familiarity with the project to make those decisions. This speeds up the project by avoiding construction delays while several layers of administration might otherwise have to approve a change; it can limit the cost of change orders; and it reduce the chances of contractor claims for delay caused by the City taking extensive time to approve changes in design.

The City has a very limited number of licensed engineers and has used licensed engineers for the four principal project management positions mainly engaged in street-related projects. These individuals not only design projects themselves particularly during the winter months when construction is not occurring, but also manage the design consultants when they are used. The Division assigns this responsibility to the project manager because that position is both responsible for approving the design as well as then overseeing the project construction. This close tie not only improves coordination of the project as it moves through its phases, but it also improves the quality of the City's construction management, as discussed in the paragraph above.

Finding: **The use of Project Teams and the Project Manager to oversee consultant work improves the coordination, speed and quality of project work in comparison to an organizational design that would separate consultant oversight, design approval and**

construction management into more separate organizational units.

SECTION 9—RECORDKEEPING AND INTERFACE WITH GASB 34 REQUIREMENTS

For anyone who has ever tried to work on five projects in one day, each at a different stage of progress, and left the files on the desk, the mess and difficulty of finding something when you return briefly to one of the projects may be an all too familiar agony. It is at that moment that we may briefly dream of the joy of an effective filing system that keeps records in a form that provides easy access. Hunting for historical files may bring the familiar refrain, "I remember we prepared that report or plans, maybe eight years ago; and so where did we put it?"

As organizations become larger and multiple people need access to plans and records, an efficient method needs to be found to file and retrieve documents. Not only staff within the department may need the records, but also other departments, residents, professionals working on projects, emergency response personnel, and others often need the records and plans. Older cities, such as Salt Lake City with older streets, underground utilities, and buildings, need the plans in order to do work in and around these older facilities.

While the City Recorder will be the repository of many official city records, it is common for the Engineering Division to be the repository of plans and specifications and all of the written documents associated with designing and constructing a project. The Engineering Division has a section largely devoted to recordkeeping, and its workload, in measurable terms, is very large. They are the principal information repository of a substantial amount of the assets owned by the City.

A. RECORDKEEPING FUNCTION

Recordkeeping takes in and processes about 12,000 engineering documents (including plans, reports, logs, etc.) per year. It responds to about 5,000 requests for information per year, or an average of 20 or more per day. They provide the sets of contract drawings and documents to bidders. In addition, they review and purge old documents, based on a records retention schedule. They presently have a 2-month backlog in purging old records that no longer need to be retained.

The Division has a very sophisticated approach to its record management system. They are implementing "Hummingbird," a software system being installed and implemented citywide. This system promotes the scanning of documents into digital form and the digital capture of some documents generated within the City at the point of creation. Documents may also be captured digitally as they are faxed to and from the City. Once in the system, all City staff granted access to the records management system will be able to access the records by project number and type of document.

Both the records staff and the project manager will customarily retain hard copies of documents for a limited period of time, then purge the documents, based on the records retention schedule. Hard copies of documents that need to be retained in perpetuity are retained at the Division offices for five years and then moved to offsite secure storage.

Old plans/drawings and design documents provide critical information when making improvements in and around existing infrastructure. These historical documents are used by both the City staff and private professionals/firms for all improvements made in the City's public

ways or to existing facilities as well as private development dependant on the City for access and services. Review of the records storage area and methods, found many of the documents to be fragile and exposed even though they are stored in traditional and adequate storage racks. Many of the older plans simply were not created on materials that maintain the integrity of the document for very long, particularly if handled periodically. The old paper is deteriorating and ink is no longer adhering to the sepia and Mylar documents. Presently about a third of the plans/drawings have been captured electronically, but the user has to unroll or unfold the original document to view the remainder.

Finding: **The City has adopted and is making reasonable progress in implementing an electronic data management system, "Hummingbird," which will provide greater physical security and broader access to records. This is a good system that will serve the City well if an adequate staff level is maintained in the records section that permits keeping up with the filing and maintenance of records.**

Finding: **The Division is not making much progress in digital capture of historical old plans/drawings, which are fragile and deteriorating. Most historical plan/drawings are not easily retrieved in the event of an emergency that requires the building, utility or other infrastructure information detailed on the historical plans.**

While the records section appears to have adequate space, the records are not well protected. The area is not separated from the remainder of the building by an adequate firewall, and the fire protection system within the area is a water-based fire sprinkler system located in the ceiling that will saturate or destroy the already fragile surviving records, if any.

The microfilm equipment utilized is outdated in that parts to repair or maintain the equipment are challenging to find. A modest investment in new equipment will help assure continued access to records should the equipment fail during the years that it will take to convert all of the records/plans/drawings to an electronic format and remove them to offsite secure/controlled storage.

Finding: **The Engineering Division records are reasonably well organized but are not protected from damage due to fire or some other natural disaster or catastrophic event.**

Finding: **Microfilm equipment is outdated and parts are not readily available to maintain the equipment, placing the Division and the City at risk of not being able to access microfilmed records easily when the equipment is out of service.**

Recommendation IX-1: **The City needs to substantially accelerate the conversion of old plans/drawings to electronic format and to ensure steady progress toward implementing the "Hummingbird" system with the objective of having all historical records digitally captured in the system within five years. If the City does not**

do this, then it is imperative that they provide proper protection from fire or other natural disasters for the current hardcopy records.

Recordkeeping is often a backwater concern of administration, causing substantial inefficiencies and loss of costly professional staff time when records are not managed and available in a timely manner. Information to address policy questions may not be easily found or available in a timely manner if recordkeeping does not receive a high enough priority to implement and maintain and adequate system. The inadequacy of a recordkeeping system is often not recognized until the user cannot find what is needed or experiences delays. The present system being implemented has the potential to meet the City's needs, but some areas outlined above need to be given greater priority in order to obtain the benefits of the electronic data management system for both the City and other users.

B. GASB 34

GASB 34 is the accounting standards rules that require local governments to record the value of their assets as part of their financial statements. New assets are entered into the asset record each year and existing assets are depreciated. The primary objective of the GASB 34 rules was to provide a more complete picture of the financial condition of local government, which invests substantial money annually in new fixed assets and expends large amounts maintaining and extending the life of existing assets.

The City has chosen a relatively simple approach to recording assets, similar to that of other communities. The asset and its value is reported to the finance department at the end of the year in which it is completed, and then assets are depreciated on a straight line schedule. While this satisfies the requirements of GASB 34, it assumes that the City maintains all of its assets in a manner such that all predicted lifespans are fully realized. In fact, some assets will last longer and some will not. The City did not know the original value of many assets, such as streets. Thus, a reasonable cost was developed with an average lifecycle assumed for all of the assets.

A more sophisticated approach would be to reassess asset value and asset life as it undergoes major maintenance and rehabilitation. However, this takes additional staff time and does not really return the City any additional "value."

Finding: **The Engineering Division's approach to developing the value of older assets and the projected life of those assets is adequate for the needs of the City and the Division.**

SECTION 10—GEOGRAPHIC INFORMATION SYSTEM

Like other medium to large cities, Salt Lake City has a Geographic Information System (GIS). In its traditional form, GIS is a database system that produces maps to visually present the data on a map. When GIS was first utilized by cities, the primary use was to produce maps on a parcel base map that reflected the location of various facilities: streets, utility lines, streetlights and traffic signals. The collection and digital representation of this information was to provide both City staff and the public a central source of record information. In the GIS system, one could call up and print a map from the computer at a level of detail ranging from the "whole city" down to parts of a block. Eventually, census data was integrated into GIS, and the system took on a whole new role as not just a representation of physical facilities but an analysis tool that could provide information to better inform those making public policy decisions. Policy models that integrated data and maps allowed agencies to make future projections or to complete alternatives analysis to investigate what the future might look like as they planned programs and facilities.

As GIS has matured, the more sophisticated systems offer the capability of entering and retrieving data in real time, so that it is a real-time information and management tool. For instance, as various City departments issue permits, this information may become part of the system, and shortly thereafter, a City planner, code enforcement, fire or police looking for the permit history of the property will know the real-time status. Properly integrated into a police Records Management and Dispatch System and available to the Fire Department as well as an Emergency Operations Center in the event of a natural disaster, GIS provides access to a wide array of data that is very helpful in managing a public safety emergency situation.

The City has four focal points for its GIS system. One is the Airport with its own server and self-contained coordinate system. The second is the Information Management System Department that maintains the base data on a server and acts as a data source from which the City Divisions/Departments can extract base data and then add individual Division information to the maps created and maintained on the Engineering Divisions GIS server. The third focal point is the Public Utility Department that maintains a GIS system with utility data. Finally, the fourth focal point is the Engineering Division that maintains a GIS system with its own server.

Engineering has the most comprehensive map capability, providing information to all departments. Transportation, Police and Planning each have a GIS person who knows how to access and use the available GIS information, most of which is on the Engineering server. In addition, they do make use of information on – and the capability of – the Public Utilities system as well. In effect, the City has two separate GIS systems for the whole City, plus a separate system serving only the Airport.

The Engineering Division's GIS system is not a real-time system, and it relies upon deleting and re-creating maps in order to update the base data displayed on maps. With a six-person GIS function, the Engineering Division does a very effective job of making a cumbersome system work and serve the needs of the City. The problem is that as the City becomes larger, issues facing the City become more complex, and as quality and timeliness of analysis and information becomes more important, the current system will not be adaptable to providing real-time management information.

The limitations in the current system are illustrated by the limited connectivity between various "Power Builder" applications in City departments. While City employees can access applications in other departments, they have to search to find the data elements they need, import these back to their own application and then create a report that draws from this data. A fully integrated system would permit the user to simply create a report by querying the entire system for the data elements needed and have them aggregated into the desired report. This data cannot be imported directly into a GIS map layer either.

Finding: **As the City becomes larger, more complex and creates an increasing number of semi-independent "Power Builder" based applications, the cumbersome nature of drawing upon this data for reports and analysis will become ever more obvious.**

The City has a large investment in the present GIS software and configuration, and it is returning substantial information value to the City. However, it does not appear to be a priority to forecast the geographic based information management needs of the City and to evaluate the value of changing the system. If the system is as cumbersome as it appears and is not able to provide real time information, then the longer the City waits to make that evaluation, the more costly will be any change because of the growing investment in the present system. That investment is not simply dollars, but more importantly, the City is developing and adapting sub-optimal work processes tied to the present system.

The Engineering Division Business Plan notes the need for an additional position in GIS and that requests will have to be prioritized if this is not approved. The staffing request and need may be more related to the shortcomings of the current GIS system, and approval is not recommended until after the City has evaluated the present system and alternatives, as recommended below.

Finding: **The Engineering Division understands the value of GIS and is making as effective use of the system as its current limitations will permit. However, the present GIS system does not provide real time information.**

Recommendation X-1: **The City, possibly through the Engineering Division budget, should hire an outside consulting firm very familiar with all aspects of GIS. This firm should provide the City with an evaluation of the capabilities of its current system, the limitations, and evaluate the short- and long-term capability/value of alternatives to the present system, along with a range of cost for any alternatives.**

SECTION 11—ADA REQUIREMENTS

Salt Lake City has taken a very proactive and responsible approach to compliance with the Americans with Disabilities Act, and it has made implementation of the removal of barriers to accessibility a high priority in the Engineering Division. The City's policy and its particular application to special events is featured on the City's website. Citygate Associates reviewed the policies and the CIP projects that implement ADA activities and found these projects reflective of the City's commitment and the requirements of the Act.

Finding: **The City has a comprehensive and well thought out approach to complying with ADA standards. This approach includes: 1) incorporating accessibility into new public facilities, 2) upgrading existing infrastructure, buildings and parks, 3) maintenance of public ways, 4) ongoing assessment of public facilities, 5) public dialogue through established committees, and 6) defined procedures for accommodation during temporary events in public spaces.**

Finding: **The City has an ADA Transition Plan based on a 1995 inventory of public way street intersections and has upgraded two-thirds of the approximately 15,000 locations where ramps were needed to meet current ADA standards. The inventory of sites was updated in 2005.**

Finding: **It is not clear who is responsible to ensure that special ADA accommodations are made in public places, although the written documents provide a mechanism by which this is to occur.**

Recommendation XI-1: **Establish a citywide policy regarding who is responsible to ensure that special ADA accommodations are made in public places.**

Over the years, several acceptable methods have been approved for providing a warning on sidewalk ramps where the edge or end of the ramp is near. Although a variety of different methods have been used in the past, in 2002 the Engineering Division settled on a single standard. The Engineering Division has used a variety of different methods and apparently not settled on a single standard. They are now working through an APWA ADA Committee to have single standard adopted statewide.

Recommendation XI-2: **Seek statewide adoption of the present Salt Lake City**

SECTION 12—PERMIT PROCESS AND ENFORCEMENT

The Engineering Division's principal permit activity is issuing permits for work in the public rights of way. The purpose of the permitting is ensure that the applicants know the regulations that apply to their proposed work/project that encroaches on the public rights of way, including restoration of the area, and to provide a tracking mechanism for the Division to use in scheduling inspections of the work throughout the duration of the project as well as near the end of the warranty period. Approximately 2,300 right of way permits are issued each year.

The Division also responds to complaints regarding ongoing work permitted within the public right of way. The Division monitors the status of permits, which allows them to identify who might be working in the area of a complaint and to dispatch an inspector with the original permit information. Approximately 1,000 complaints annually receive a response from the permit staff.

A proactive part of the work in the Public Rights of Way function is to review building permits, minor subdivisions, plan amendments, street closures, annexations and similar requests for possible right of way encroachment needs. They also provide review and inspection for an average of approximately 8 subdivisions per year.

In order to manage the permit activity, the Division requires permit applicants to obtain the permit at the first floor Engineering Division counter, where the information is entered into the computer. The permit location is displayed on a computer map and the permit information can be accessed. Inspectors in the field use a laptop with wireless connection to enter permit inspection information. Warranty inspections are listed as the "due date" approaches in order to schedule this final inspection.

Finding: **The permit processing and management is adequately automated, although the system is not exactly real-time due to the limitations of the City's chosen software. Presently the permit program must be shut down and restarted in order for any new information that has been entered to be reflected and accessible on the maps.**

Recommendation XII-1: **As noted elsewhere in this report in discussing GIS, the City should consider having an outside consultant evaluate the overall City data management system and recommend changes that will provide sufficient flexibility and real-time data over the next decade.**

Even with the current level of automation in the permit process, the Engineering Division does not measure or report how long it takes to issue a permit or how long it takes to respond to a request for project inspection. Current customer service questionnaire responses do not ask directly whether response time on permits is adequate. The number of questionnaires returned is inadequate to provide any meaningful evaluation of customer response to the permit system.

Finding: **The City does not measure the length of time it takes to issue a permit or respond to a request for public right way project inspection.**

Finding:	**The Engineering Division has not established performance measures that will assist management and the City Council in assessing the adequacy of the permit process.**
Recommendation XII-2:	**Performance goals should be established with regard to the time it takes to issue a permit and respond to a request for inspection. The Division should then measure this "time" through an appropriate sampling procedure and report periodically to the City Council.**
Recommendation XII-3:	**Specific questions on the customer survey should address the various aspects of permit issuance and management so that the Division can determine its level of performance and whether changes need to be made.**

SECTION 13—COMMUNITY RELATIONS / CUSTOMER RELATIONS AND SERVICE

Community Relations and Customer Relations and Service really refer to several aspects of the basic question: "How well do we serve our customers?" This is not only a measure of how pleased the customer is with the particular transaction or encounter they have with government, as reflected on a survey form, but how well did the Division serve its customers measured by customer service performance measures. This section will review Community and Customer Relations and Service from both of these perspectives as well as assess the proactive process the Division has for anticipating and meeting the needs and concerns of the residents of the community who are affected by the projects managed by of the Division.

A. CUSTOMER SERVICE SURVEYS

The Engineering Division uses two standardized customer service survey forms to assess how customers perceive the type of service they receive. One rates the service in the Division; the other is used to obtain feedback on various aspects of construction projects. Neither form is focused on external customers, and there is no apparent effort to assess how well they serve the departments/employees within the City who rely on and interact with the Engineering Division to accomplish their own work.

The Division Service survey form asks the respondent to check a box identifying the type of service they received and then to rate from "5 or Excellent" to "1 or Poor" whether the employees were available, courteous, helpful and professional, the information clear concise and provided in a timely manner, requirements were fair and reasonable and finally a rating of the overall experience. The six simple questions make the form quick and easy to complete and provide an opportunity for the respondent to comment and to request a reply.

Between January 2003 and December 2005, the Division received forms in only 10 of the months, and in almost all cases, the average numerical rating of the responses to the six questions was 5 or Excellent. The rating never fell below 4.8 for any service.

Finding: **Very few customer survey forms assessing service within the Division are completed, giving the Division an incomplete understanding of how acceptable their customer service is when external customers seek assistance.**

Finding: **There is not an organized and consistent effort to assess the customer service provided by the Division to other City operations and employees.**

Finding: **The monthly scorecard, reporting customer survey results, does not contain the detail associated with the individual questions, which would be valuable in understanding the specific aspects of customer service that need improvement.**

Recommendation XIII-1: **Develop a proactive plan to encourage both external customers and other City departments to complete the survey forms at regular intervals.**

Recommendation XIII-2: **Revise the Monthly Scorecard report to contain information on the number of survey questionnaires completed and the average score on each of the questions.**

B. CUSTOMER SERVICE PERFORMANCE MEASURES

While a survey form records customer reaction and perception to the service they receive, performance measures can assess how well the Division does in delivering the service using objective measures. For instance, a goal of issuing permits over the counter might be to achieve an average issuance time of 15 minutes. Records or plans and drawings might be provided within 24 hours of the request.

Performance measures need to be something that is actually measurable without creating an administrative burden, and they must be something that the customers perceive as affecting the quality of the service they receive. Just because something can be counted does not mean it is a useful performance measure. In fact, the most useful performance measures are those that are developed in conjunction with the customers, so that the department or division is sure they are measuring something that is meaningful to their customers. Each function in a department may have different performance measures, just as each function has different customers. Customers may be both external as well as internal customers.

The Public Services Business Plan includes a number of measures of output and activity, but none appear to relate to the provision of public service as might be perceived by the customers. It is important for a function to have such customer service related performance measures that measure service activities, which the Division might choose to change or improve as they succeed/or not in meeting their performance measure goals.

Finding: **There are no performance measures reported in the Division that are related to customer service to either internal or external customers.**

Recommendation XIII-3: **The Division should review the work activities of each function and select performance measures that can be easily administered and that relate directly to the provision of services to internal and external customers. These measures should be included in the Division Monthly Scorecard.**

C. CUSTOMER SERVICE AND SATISFACTION ON PUBLIC WAY PROJECTS

The Engineering Division is very sensitive to the concerns, needs and satisfaction of residents and business owners affected by CIP projects. This sensitivity includes not only a willingness to allow participation in the design process where reasonable alternatives may be available in both street and park design, but also informing and accommodating individuals affected by their projects as much as reasonably possible before and during the construction phase. A Customer Relations/Public Information liaison is assigned to each project where project impacts are

anticipated. The liaison manages the project relations base on a basic template of activities that is adapted for the special aspects of each project.

It is the intent of the Division to contact people who will be impacted by a project well in advance of actual construction, to be proactive in the investigation of design alternatives, where appropriate, and to address issues such as parking, access, refuse collection, deliveries, utilities, timing of partial street closures, traffic control in advance of mobilization and commencement of activities on the project. There is a concerted effort to identify issues that are perceived as critical in the construction zone so that accommodations can be made, when possible.

The liaison position is usually performed by an in-house staff person associated with the project who can answer questions directly, respond to emergencies, and has the authority to alter construction timing as needed. Contractors are also required to have a designated contact person and an on-site contact person who can provide timely responses on behalf of the contractor to make operational modifications or to address typical construction issues, such as interrupted utility or plumbing facilities that may accidentally be damaged. The City's on-site project managers are encouraged to resolve field issues in a timely manner so that they are not unnecessarily elevated higher in the organization, frustrating the affected residents and business owners and taking added time of City staff. The Division's commitment to customer service is evident in the standard contract provision, which gives the City the authority to remove any rude or abusive employee of the contractor from the job site.

The Division expressed the view that "You cannot start talking to people too soon." While this is the attitude expressed by many agencies, few have as formal and proactive a process of Community Relations as we have found in Salt Lake City.

Finding: **An effective Customer Relations Program template has been developed by the Division; and the staff reflects a sincere desire to both promote good customer relations as well as to provide good customer service to individuals impacted by construction projects.**

For each project, there is a ten question Citizen Response Questionnaire that allows affected people to rate from Excellent to Poor how various aspects of a CIP project were conducted. Questions include accommodation for refuse collection, traffic and pedestrian access and flow, how well informed they were, how quickly the City/Contractor addressed problems, how courteous and considerate City and Contractor personnel were, and if the survey respondent was pleased with the outcome of the project.

Unlike the survey discuss in subsection "A" above, there is a fair sampling of surveys returned to the City. A December 2005 report lists the responses to each of the tend questions individually for 33 surveys. All but one of the questions had an average rating of 4.25 or higher (on a scale of 5 for Excellent and 1 for Poor). Only the question concerning whether the contractor took appropriate measure to minimize noise, dust and vibration created by the project received a lower rating of 3.88.

While the overall average rating for all questionnaires on all ten questions was 4.3, the Division also separately reports the response to the two questions of whether the City personnel were considerate and helpful and if the project improved conditions in the neighborhood. The average rating here was 4.5. Each month the Division reports this subset score on its Monthly Scorecard

and directly associates the score with the City Project Manager. The three-year average of this survey score subset is 4.7.

It is reasonable to expect that not every project will proceed smoothly and/or not seriously inconvenience some adjacent properties. On major projects, the Division knows that there will very likely be a substantial loss of business for affected businesses in spite of the best efforts to keep access open and schedule construction work, when possible, to avoid peak traffic and business hours. Of the 33 questionnaires in December 2005, two reflected in the response to almost all of the questions a very high level of dissatisfaction with how the construction proceeded, while an additional four showed a moderate level of dissatisfaction. All of the remainder of the responses rated the project conduct as Very Good or Excellent.

Finding: **Neither the overall average survey rating for construction projects nor the average response to key individual questions regarding how the project was conducted are included in the Monthly Scorecard, although the information is available in the Division.**

Recommendation XIII-4: **Results of the survey responses on construction projects should be included in the Monthly Scorecard and annually a summary shared with the City Council.**

SECTION 14—REPORTING TO THE CITY COUNCIL

In interviews throughout this project, there were two persistent themes. The first is a belief among many Division personnel that they are providing information in both regular reports, the annual budget, the Business Plan and individual Council Agenda reports on the status of projects and the other work of the Division; and yet, there are still questions coming from the policy level of the City that many Division personnel feel are answered in these regular reports and other sources of information. The second theme is a belief by some at the policy level that the status of projects and Engineering Division work is not adequately available unless specific questions are asked.

From neither the perspective of the Division personnel nor the policy level of the City does it appear as if this "disconnect" is deliberate or the result of poor work. Rather, it seems to be accepted that the "disconnect" between what information is thought to be provided and what is perceived as being received "simply exists." While the problem creates frustration, it has not risen to the level of someone expressing a need for an overall solution. Yet, the information disconnect seems to be at the heart of many of the questions and frustrations Citygate Associates heard throughout this project.

Finding: **In our study we have found no fundamental problems in the organization or processes of the Engineering Division, but it is clear that substantial improvement needs to occur in the area of communicating information to the City Council and, in turn, communicating policy priorities to the Division.**

A. CIP MONTHLY PROJECT STATUS REPORT

All of the Division's Capital Improvement Projects that are not completed and closed out are currently included in the monthly CIP report that the Engineering Division believes goes to the City Council as the key source of information on the status of each project. In fact, the Council does not receive the full report. In addition, even if they did, the report neither contains all of the information necessary to fully understand the status of each project, nor is it in an easily usable format. Council members have limited time and need to be able to view and understand information quickly and usually need an Exception and Summary section as a starting point. Neither of these elements is included in the monthly report.

The present monthly report separates projects by type (Street, Building, Parks and Subdivision), and within each type, the report separates those projects that are still in the design stage from those which are now in the construction stage.

Each report page for projects "Under Construction" includes the title of the project and source of funding, the project engineer and contact phone number, the contractor and amount of the contract (which does not always match the listed amount of appropriated funds), the date the contractor was given notice to proceed, estimated construction time and elapsed time, and percent of the project that is completed. A comment section allows for miscellaneous relevant information to be included.

For projects under design, the project title, project engineer and contact number are listed along with the budget source, the design budget amount and anticipated construction cost. The months

during which design is to occur are listed along with the percent of the design portion completed, the anticipated bid opening date and expected length of construction period. There is a comment section in this portion of the report for each project as well.

There are several problems with the report format described above.

- Neither report section indicates when the project was first approved by the City Council so it can be seen if a project has been delayed in beginning design.
- By separating the construction reporting from the design phase reporting, there is no way to tell "why a project has taken so long" once it goes into the construction phase because all of the historical design phase information on the project is deleted.
- Even though there is a percent complete in each phase, there is no way to tell if the project is on schedule, and if not, comments are often so limited as to provide no understandable answer to someone who may not be very familiar with how projects proceed and the history of this particular project.
- When the design and construction budget exceed available funds, there is no ready indication that this has occurred, particularly once the historical design information has been omitted from the project. Without this information, the City Council has no way to know where the additional funds will come from and how that might then limit their choices for future projects. This is mitigated somewhat by the fact that presently cost overrun is not a common occurrence and the City Council is involved in approving additional funding for large cost overruns. Project cost control is critical in a tight financial environment, particularly since failure to do so limits policymakers' future choices, and in this case, they do not even know it is occurring until well after the fact.
- There is no Summary section or Exception section that allows policy makers to quickly scan all projects and to see which ones are not on schedule and within budget.

Finding: **The CIP Monthly Status Report does not contain information necessary for the City Council to perform their policy and oversight roles, nor does it provide them with the information necessary to respond effectively to some types of constituent questions.**

Recommendation XIV-1: **The CIP Monthly Status Report needs to be restructured substantially, with the design done in cooperation with the City Council so they are provided with the information they need in an easily understandable format. An evaluation should be made as to whether several reports might be better, each providing a different perspective; and elected officials might choose to review those of interest to them more frequently than the other reports. Each report could provide a different perspective on CIP projects. Consideration should be given to including both the Construction and Design Phase information**

on one "legal sized page" so the report user can see the full history and current status of a project.

B. Annual Budget and Subsequent Fiscal Reports

The annual budget document appropriates money to capital projects. Once that has occurred, the Engineering Division has the authority, following the procurement procedures, to manage the project from design through completion of construction without coming back to the City Council for any additional approvals. The City Administration can even transfer funds into the project to cover cost overruns, with the Council not learning of this in any organized fashion, although there is an adopted procedure requiring notification to the City Council if funds are allocated to a project from an established cost overrun budget. By not knowing about cost overruns often until well after the fact, the City Council does not have the ability then to perform an oversight role and participate in the decision of whether to modify a project or go ahead and add more funding. While this may not be a significant issue on minor projects, downsizing a project may affect council constituents in a noticeable way. Adding more funding to a project instead of downsizing may reduce funding available to meet cost overruns in other projects or authorize new projects.

Finding: **While it is probably not a good idea to have the City Council be involved in detailed administration by evaluating all cost overruns and approving transfers of funds, it is important that they be alerted to those projects where the scope and funding changes might be significant. Currently the City Council does not receive a regular report alerting them to significant project changes and thereby providing an opportunity for dialogue with the City Council, if the elected officials think it is important. This possibility is usually known by staff in sufficient time to inform the Council without delaying the project.**

Recommendation XIV-2: **A monthly report to the City Council should alert Council to those projects where a change in scope or transfer of funds is being contemplated based upon a significant change in the project. This will give the City Council the opportunity to inquire and discuss the issue prior to a decision being made.**

C. Business Plan and Performance Measures

The Public Services Department Business Plan/Engineering Division Section consists of a description of the Engineering Division functions, a selection of information reporting the number of things produced, delivered, or requests answered and three performance measures that relate specifically to Engineering. For several of the functions described, the Business Plan says additional staff is needed, and if they are not approved, then service will need to be prioritized.

The Division Business Plan is largely a descriptive document and not a "plan" that sets out the challenges in detail facing the City for which the Division has responsibility, a specific proposed path for addressing the challenges, a clear explanation of how the proposed solution will address

the challenges, alternatives to addressing challenges (rather than simply lowering service levels), and specific measurable goals that will allow policymakers to know what to expect if they approve the proposed solutions.

Finding: **In its present form, the Business Plan provides little more than a description of what the Engineering Division does and very general statements of what additional resources they need to handle workload problems in one or more functional areas. The Business Plan does not serve as a planning document or a context in which policymakers can consider alternative responses to carefully described challenges facing the City.**

The performance measures cover only three subjects: completion of CIP projects on time; amount of the street network rehabilitated each year; and the amount of paved streets that are in satisfactory condition. The first measure would be reasonably useful if there were any way of knowing what the "start" date is for each project in order to determine whether "on-time" is measured from when the City Council approved a project or when the Division first began working on the project. Is a project being "on-time" measured against a schedule established and communicated to the City Council?

The second performance measure records work output (street rehabilitation) but does not measure this against any standard or goal. Is this amount of work adequate to maintain City streets at an acceptable level of maintenance?

The third performance measure concerning the condition of City streets reports a baseline and a target, but does not give any indication what it means to accomplish the target in terms of City Council or public expectations regarding street quality.

Effective performance measures are intended to be integrated into management of the organization, to describe what is happening in the organization in a way that helps managers and policymakers understand what work is being done, how it is being done, whether the work is meeting expectations and the measures then serve as the basis for analysis and justification for either asserting that "all is well" or quantifying what changes need to occur to improve things. Expressed in a simpler way, performance measures help us know how well the organization is being managed.

There are several types of performance measures, each of which is useful while each serves a different purpose. Below is one scheme for categorizing types of performance measures.

- **Input Measures:** This counts things like number of employee hours used, number of complaints received, and number of requests for records. These measures are important as an indicator of work volume or service demand and are largely useful as a comparative tool in looking at changes over time. When not associated with a validated standard, we do not know whether the service demand is large or small.
- **Output Measures:** These measures identify how much work was performed such as the number of projects completed, records requests responded to, GIS maps provided, consultants managed or bids awarded. From this information, we can tell how much work was done and variability over time, but we do not know

whether this is an acceptable output without validated standards. We do not know how efficiently or how well the work was done; only how much was done.

- **Efficiency Measures:** These measures relate the amount of work performed as a ratio of resources (such as money, electricity, or gasoline) used. While these help the organization gauge whether it is using resources wisely, efficiency may be achieved at the expense of effectiveness.

- **Outcome Measures:** These measures focus on program results and service quality, which requires the organization to develop validated standards against which to judge its activities and these standards need to relate to the policy goals of the City. The number of citizens rating a service as "very good or excellent" is an important measure if one of the objectives of a customer relations program is to deliver a capital project with as little perceived disruption as possible. Similarly, if a goal of the organization is to assist residents in understanding and establishing a Special Improvement District, then the citizens' rating along a number of question /dimensions may be very useful in knowing if the objective or outcome was achieved.

- **Process Measure:** These measures are related to outcome measures. Often the time it takes to process something is related to the satisfaction experienced by the person receiving the service. The amount of time it takes to issue a permit, to provide an inspection, to resolve a complaint or to complete a capital project are all important measures if process is an important goal of the organization. By establishing standards or targets, the organization can measure how well it is doing in processing things, which then serves as a guide to where and how improvement might be achieved.

Finding: **The performance measures used by the Engineering Division in the Business Plan do not relate to any standards or goals and serve little function in providing management or analytical information for either the Division management, the Administration or the City Council.**

Recommendation XIV-3: **The Engineering Division should develop a series of performance measures that communicate useful information to the City Council, serve as management and analytical tools for the Engineering Division, and generally meet the standards in the performance measurement scheme described in this report.**

SECTION 15—SURVEY OF SIMILAR ENGINEERING DEPARTMENTS/DIVISIONS

Citygate surveyed 10 other cities that are of similar size and have Engineering Departments or Divisions that perform much the same functions as the Salt Lake City Engineering Division. The purpose of the survey was to determine if the Salt Lake City Engineering Division is staffed and organized similarly and whether its performance is similar along some key measures of interest to the City Council.

The Salt Lake City population is 178,605, while the population range of the cities surveyed is from 90,570 to 269,100. A brief review of the data below reflects that Salt Lake City Engineering is reasonably staffed compared to other agencies when you combine the perspective of the size of the CIP program and the percentage of that program designed by consultants. Citygate's own review of the specific workload of the Division, as discussed in other sections of this report, confirms this view.

An important policy and economic issue is whether Salt Lake City relies on more expensive consultants than other communities and whether the City is achieving the right cost effective balance between in-house and outsourced design. The survey reflects that Salt Lake City consultant rates are similar to those in other communities, recognizing that the local wage market will somewhat affect the hourly rate charged. Within this report, we have then compared the hourly rate to the cost of in-house design and found that the City is somewhat less expensive on an hourly basis, but uses consultants to both undertake work that requires skills that the City staff does not have and to smooth out unusual peak workloads, in order to avoid overstaffing.

The principal performance measure that we were able to find in use in engineering divisions is the amount of time it takes to process a right of way permit. Salt Lake City does not formally keep this measure, although indicating that it may take only a few minutes or hours if the permit request is not complex. Other cities report a range of time from a few hours to as much as 7 days. We have suggested in this report that the Division needs to develop performance measures in order to determine how well they are doing in meeting the public's needs as well as to measure the on-going effectiveness of the operation.

Related to the issue of performance measures, is whether an agency uses customer surveys. Salt Lake City is one of the few that does so, reflective also of the fact that the Division has a very comprehensive public relations outreach program to help people impacted by projects. The City's program is one of the best we have seen.

An area of particular concern to the City has been the quality of engineer's estimates compared to the bids. Salt Lake City Engineering has a record substantially better than most of the surveyed communities. This is substantiated again in a section of this report specifically devoted to the issue.

Finally, a critical issue that is often given low priority is the maintenance of old records. Salt Lake City is doing at least as well as most of the agencies in the survey. Only three reported that all old drawings and plans have been electronically preserved. All of the agencies appear to be working on this problem, and we have encouraged that this is an important area of focus for Salt Lake City.

The conclusions to be drawn from the survey below are that Salt Lake City is not overstaffed compared to the other cities; and that along measures that were important elements of this Management Review by Citygate, the Engineering Division is doing as well or better than most agencies. Unfortunately, most agencies are so busy "getting out designs" that attention to fine-tuning the organization is not of high priority. The request for this Management Review for the Salt Lake City Engineering Division reflects that fine-tuning the organization is important to the City. The results of the review are that the Division is appropriately staffed, well organized and makes good judgments regarding the allocation of its time and resources, but can improve in areas that will benefit both the Division and the City.

Survey of Engineering Departments/Divisions Comparable to Salt Lake City

City	Population	Staff, inc Dev. Review/GIS/ Engineering Functions	Engineers & Engr Technicians in Engineering & Dev. Review	# of Engineers that are registered (PE) Engineers	# of staff that are licensed Bldg. Architects	# of staff that are licensed Landscape Archtects	FY 2005/06 Budgeted CIP, excluding utilities	Range of Hrly rates paid consultants for professional engr & arch. services	Avg time to issue a right of way encroachment permit	Cost to process an average right of way encroachment permit	Aggregate total of Engrs Estimate and actual bid on CIP projects during the last CY or FY	Does the department use and encourage the use of customer surveys on each project?	Does the department use and encourage the use of customer surveys by people coming to the counter for assistance or service	Are all old drawings and plans preserved in electronic form. If not, approximately what % are?	What average % of each project cost is represented by in-house and consultant design/inspection and project mgt costs?
Boise ID	197,600	40	11	7	0	0	$6,251,025	$44-$146	N/A	N/A	$15.6Mil/ $18Mil	Yes	No	Yes	12% in-house 78% consultant
Chandler AZ	233,990	60	17	7	0	0	$87,892,331	$65-$180	w/Street: 1-2 Wks; w/o 1-2 Days	$75	No bids-Use CMAT or Design Built	No	No	All current as-built; Working on plan to copy old plans	40% In-house; 60% Consultants
Fremont CA	209,100	47	24	16	1	2	$31,709,000	$100-$200	15 Min. if all paperwork in hand	$204	Don't know	No	On Traffic Serv, Encroahment, Subdivision processing	Last 5-10 Years in AutoCAD	Design: 85%-90% in-house; Insp/Prot mgt: 100% in-house
Glendale CA	205,420	60	14	5	0	0	$7,000,000	$75-$150	7 days	$50	$9.3Mil/ $10Mil	No	No	Last 5 years, in-house only	100% in house 2005 & future
Greensboro NC	235,262	80	10	3	0	0	$72,920,014	Unknown	3 days	$30	$19Mil/ $20Mil	Used to	No	Yes	80% in-house
Hyntington Beach CA	194,228	39	19	14	0	1	$25,407,625	$75-$145	10 mins if all paperwork in hand	$20	$15Mil/ $20Mil	No	No	Implementing-15% completed	50/50
Modesto CA	206,200	25	11	11	0	0	$8,639,000	$50-$150	Minor: 20 min.; Major: 1 wk-2 mos.	$64-$299	$9Mil/$10Mil	Large only	No	Scanning now	Design 50/50; Mgt 80/20
Reno NV	197,960	39	31	8	0	0	$68,000,000	$35-$150	24 hrs	$265	$55 Mil-$68 Mil	Street projects only	No	Implementing	68% in-house
Salt Lake City UT	178,605	56	31	11	2	3	$11,273,181	$84-$156	N/A	N/A	$128M-$112M (for sample period)	Yes	Yes	33%	63% in-house 37% consultant
Santa Barbara CA	90,570	47	37	4	0	0	$213,000,000	$45-$200	1 mo.	Unknown	Eng. $181 Mil; Actual $213 Mil	Implementing	No	All current	Design:80%; Insp 100%; Mgt. 70% in- house
Stockton CA	269,100	48	41	12	0	0	$17,826,000	$70-$225	1.5-2 hrs	$320	N/A	No	No	Not yet	99% Consultant